

**IBM® Rational® Test Automation Server**  
**10.2.1 Documentation**  
**September 2021**

## Special notice

Before using this information and the product it supports, read the information in [Notices on page cdx](#).

# Contents

<b>Chapter 1. Release Notes.....</b>	<b>7</b>
Product description.....	7
What's new in 10.2.1.1.....	7
What's new in 10.2.1.....	8
Installing and upgrading.....	8
Known issues.....	9
Contacting IBM Rational Software Support.....	9
<b>Chapter 2. System Requirements.....</b>	<b>10</b>
Hardware.....	11
Operating systems and Containers.....	11
Host prerequisites.....	13
Supported software.....	14
<b>Chapter 3. Getting Started Guide .....</b>	<b>16</b>
Server overview.....	16
Supported versions of assets and resources.....	17
Tests supported on Rational Test Automation Server.....	18
Task flow: Test runs and results.....	20
Task flow: Server access from desktop clients.....	22
Accessibility features.....	24
<b>Chapter 4. Administrator Guide.....</b>	<b>25</b>
Installation of the server software.....	25
Installation of the server software on Red Hat OpenShift.....	26
Installation of the server software on Ubuntu.....	48
Server software upgrade methods.....	62
Server software upgrade on Red Hat OpenShift.....	62
Server software upgrade on Ubuntu.....	68
Backup and restoration of the server data.....	69
Backup and restoration of the server data on Red Hat OpenShift.....	70
Backup and restoration of the server data on Ubuntu.....	73
Uninstallation of the server software.....	77
Uninstalling the server software from Red Hat OpenShift.....	77
Uninstalling the server software from Ubuntu.....	78
Configuration of the server software.....	79
User administration.....	80
Certificate authority: Importing and extending lists.....	92
Copying third-party application Jars to Kubernetes.....	95
Changing the password seed.....	97
Team space administration.....	100
Team space overview.....	100
Creating a team space.....	103
Tasks in a team space.....	105
Tasks in projects in a team space.....	109
Management of licenses in Rational® Test Automation Server.....	111
<b>Chapter 5. Test Author Guide.....</b>	<b>119</b>
Datasets overview.....	119

Creating a dataset.....	120
Editing a dataset.....	121
Publishing a dataset.....	129
Viewing a dataset.....	130
Deleting a dataset.....	132
<b>Chapter 6. Test Execution Specialist Guide.....</b>	<b>134</b>
System modeling.....	134
Task flows for working with a system model.....	137
Adding a repository to a team space.....	138
Creating a system model.....	141
Creating components.....	142
Creating child components.....	143
Creating linkages between components.....	146
Deleting linkages between components.....	147
Modifying components.....	149
Deleting components.....	151
Publishing changes to the system model.....	151
Associating resources with components.....	152
Viewing resources associated with components.....	153
Removing resources associated with components.....	156
Publishing changes of associating resources with components.....	157
Viewing the system model.....	158
Deleting a system model.....	159
Deleting a repository that is added to a team space.....	159
Prerequisites to running tests.....	160
Test run considerations for AFT Suites.....	161
Test run considerations for API Suites.....	162
Test run considerations for schedules.....	165
Considerations for using Jaeger traces in reports.....	166
Management of agents.....	167
Test run considerations for running tests on remote agents.....	168
Viewing agents that are registered with Rational® Test Automation Server.....	169
Adding an agent to a project.....	170
Working with agent capabilities.....	172
Management of Docker hosts.....	174
Test run considerations for running tests on remote Docker hosts.....	174
Setting up a remote Docker host.....	176
Setting up a secure remote Docker host.....	178
Copying third-party application Jars to a remote Docker host.....	179
Registering a remote Docker host.....	181
Viewing remote Docker hosts that are registered with IBM® Rational® Test Automation Server.....	183
Adding a remote Docker host.....	184
Editing configurations.....	186
Deleting a remote Docker.....	188
Unregistering a remote Docker host from IBM® Rational® Test Automation Server.....	189
Test run configurations.....	190
Configuring a test for a quick run.....	191

Configuring an AFT Suite run.....	192
Configuring an API Suite run.....	202
Configuring a run of a Compound Test that contains HTML tests.....	212
Configuring a run of a Compound Test that contains Web UI tests.....	221
Configuring a run of a Compound Test that contains mobile tests.....	231
Configuring a run of a Compound Test that contains performance tests.....	240
Configuring a run of a Rate Schedule or VU Schedule.....	249
Management of running tests.....	259
Viewing the state of test assets.....	259
Viewing the progress of running test assets.....	263
Checking logs.....	266
Resetting the configuration settings for a test run.....	267
Stopping test runs.....	268
Canceling scheduled test runs.....	271
Management of virtualized services.....	272
Prerequisites for running virtual services.....	274
Viewing intercepts that are registered with a team space on IBM® Rational® Test Automation Server.....	280
Viewing virtual service resources.....	281
Configuring a run of a virtual service.....	284
Running HTTP virtual services without using proxies.....	296
Viewing running instances of virtual services.....	301
Viewing configurations of running instances of virtual services.....	306
Modifying configurations of running instances of virtual services.....	311
Viewing routing rules of the virtual services.....	313
Viewing usage statistics of virtual services.....	315
Stopping virtual services.....	317
Test results.....	318
Test results and reports overview.....	319
Resource monitoring service.....	328
Resource monitoring capabilities.....	331
Resource monitoring agents.....	348
Managing sources.....	360
Configuration of a change management system.....	368
Configuration of Jira as a change management system.....	368
Integrating with other applications.....	377
Integration plugin compatibility matrix.....	377
Integration with Azure DevOps.....	378
Integration with IBM® Engineering Test Management.....	385
Integration with Jenkins.....	392
Integration with UrbanCode™ Deploy.....	402
Managing access to the server .....	418
<b>Chapter 7. Test Manager Guide.....</b>	<b>420</b>
Team space management.....	420
Viewing team spaces.....	420
Adding members to a team space.....	421
Modifying the configuration of a team space .....	424
Viewing the configuration of a team space .....	426

Becoming a team space member.....	428
Managing members and their roles in a team space.....	429
Deleting a team space.....	432
Test assets and a server project.....	433
Working with projects in a team space.....	433
Repository considerations for a server project.....	434
Adding a project.....	436
Adding repositories to a server project.....	437
Secrets configuration .....	438
Adding users to a project.....	438
Viewing active projects.....	439
Changing the visibility configuration of a project.....	440
Becoming a project member.....	441
Managing access to server projects.....	442
Archiving or unarchiving server projects.....	444
Deleting server projects.....	445
Project overview.....	446
Managing repositories.....	447
Adding repositories to a server project.....	448
Updating the authentication credentials of the repository.....	449
Deleting a repository.....	450
Refreshing repositories manually.....	450
Selecting the global branch in a project.....	452
Creating webhooks.....	453
Protecting API test assets by using secrets.....	454
Managing secrets collections.....	454
Granting access to members or member roles.....	457
Creating a secret in a secrets collection.....	456
Managing secrets.....	459
Managing an encrypted dataset.....	460
Creating a classification.....	461
Editing or deleting a classification.....	462
Moving an encrypted dataset to another classification.....	463
Removing a dataset from the classification.....	464
Granting classification access to members or members roles.....	465
Managing notifications.....	466
Managing in-app notifications.....	467
Managing email notifications.....	473
<b>Chapter 8. Troubleshooting.....</b>	<b>479</b>
Troubleshooting issues.....	479
Security Considerations.....	cdlxxxviii
Notices.....	cdxc
Index.....	494

# Chapter 1. Release notes for IBM® Rational® Test Automation Server

This document includes information about What's new, installation and upgrade instructions, known issues, and contact information of IBM Customer Support.

## Contents

- [Product description on page 7](#)
- [What's new in 10.2.1.1 on page 7](#)
- [What's new in 10.2.1 on page 8](#)
- [Deprecated capabilities on page 8](#)
- [Removed capabilities on page 8](#)
- [Installing and upgrading on page 8](#)
- [Known issues on page 9](#)
- [Contacting IBM Rational Software Support on page 9](#)

## Product description

You can find the description of IBM® Rational® Test Automation Server.

Rational® Test Automation Server is a server that includes capabilities such as project and role-based security, Docker-based distribution and installation, and running of test cases. For more information about the server, see [IBM Rational Test Automation Server overview on page 16](#).

## What's new in 10.2.1.1

This release addresses the issue of the security vulnerability in CVE-2021-44228 that is specific to Apache Log4j 2 / Log4Shell.

This release replaces IBM® Rational® Test Automation Server 10.2.1 and includes all updates made in the 10.2.1 release.

For customers that need to execute IBM® Rational® Performance Tester tests that use Rational® Performance Tester's Apache JMeter Test Extension from the server, upgrading to Rational® Test Automation Server 10.2.1.1 release from the entitlement registry is recommended. Although the `log4j` libraries installed with the Apache JMeter Test Extension are never loaded by Rational® Performance Tester, the presence of `log4j-core-2.11` may concern customers.

For more information about remediation instructions, refer to [Security Bulletin: Rational Test Automation Server](#).

If you installed Rational® Test Automation Server 10.2.1, you must first uninstall it, and then install Rational® Test Automation Server 10.2.1.1. For installation instructions, see [Installation of the server software on page 25](#).

## What's new in 10.2.1

You can find information about the features introduced in this release of Rational® Test Automation Server.

The following sections list the new features, enhancements or other changes made in this release.

- **Integration with IBM Engineering Test Management**

You can now integrate Rational® Test Automation Server with IBM® Engineering Test Management to run the test assets in a project in your team space from Engineering Test Management. After the tests run, you can view the results on the **Results** page. See [Integration with IBM Engineering Test Management on page 385](#).

- **Overriding results database**

When you want to override the Results Database that is configured in the API Suite project, you can now provide the URL, user name, password, and the database driver as program arguments in the **Advanced** settings in the **Execute test asset** dialog box. You can optionally use an encrypted password that is generated by using the **EncryptPassword** application that is in the installation directory of Rational® Integration Tester.

### Deprecated capabilities

The following capabilities are deprecated. IBM will no longer invest in enhancing these capabilities and is planning to remove them in a future release. If you have any concerns, contact either an IBM representative or your IBM Client Support team for this program:

- No capabilities were deprecated in this release.

### Removed capabilities

The following capabilities that were announced in previous releases as deprecated are removed in this release:

- No capabilities were removed in this release.

## Installing and upgrading

You can find information about the installation and upgrade instructions for Rational® Test Automation Server.

### Installing Rational® Test Automation Server

For instructions about installing the software, see [Installation of the server software on page 25](#).

### Upgrading of Rational® Test Automation Server

For instructions about upgrading the software, see [Server software upgrade methods on page 62](#).



## Known issues

You can find information about the known issues identified in this release of Rational® Test Automation Server.

**Table 1. Release documents - Fix list and known issues**

Product	Download document	Knowledge Base
Rational® Test Automation Server	<a href="#">Release document</a>	<a href="#">Knowledge articles</a>

Known problems are documented in the download document for each product and in the form of individual technotes in the Support Knowledge Base:

The knowledge base is continually updated as problems are discovered and resolved. By searching the knowledge base, you can quickly find workarounds or solutions to problems.

## Contacting IBM Rational Software Support

You can find information about Contacting IBM Rational Software Support.

- For contact information and guidelines or reference materials that you might need when you require support, read the [IBM Support Guide](#).
- For personalized support that includes notifications of significant upgrades, subscribe to [Product notification](#).
- Before you contact IBM Rational Software Support, you must gather the background information that you might need to describe your problem. When you describe a problem to an IBM software support specialist, be as specific as possible and include all relevant background information so that the specialist can help you solve the problem efficiently. To save time, know the answers to these questions:
  - What software versions were you running when the problem occurred?
  - Do you have logs, traces, or messages that are related to the problem?
  - Can you reproduce the problem? If so, what steps do you take to reproduce it?
  - Is there a workaround for the problem? If so, be prepared to describe the workaround.

# Chapter 2. System Requirements

This document includes information about hardware and software requirements for IBM® Rational® Test Automation Server.

## Contents

- [Hardware on page 11](#)
- [Operating systems and Containers on page 11](#)
  - [Operating systems on page 12](#)
  - [Containers on page 12](#)
- [Host prerequisites on page 13](#)
  - [Licensing on page 13](#)
  - [Web browsers on page 13](#)
- [Supported software on page 14](#)
  - [Development tools on page 14](#)
  - [Integrations on page 14](#)
  - [Runtime environment on page 15](#)
- [Disclaimers on page 10](#)

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## Hardware

You can find information about the hardware requirements for IBM® Rational® Test Automation Server.

Hardware	Platform	Requirement	Notes
Disk space	Container	256 GB	Additional resources are required by the cluster for the execution of test assets.
Memory	Container	32 GB	Additional resources are required by the cluster for the execution of test assets.
Processor	Container	8 CPUs	Additional resources are required by the cluster for the execution of test assets.
Network	Container	Gigabit (1000) Ethernet	
Other hardware	Container		Operating system support is specified by the supported platforms: Kubernetes and OpenShift. Refer to their associated documentation for a list of supported operating systems.

Related information

[System Requirements on page 10](#)

## Operating systems and Containers

You can find details about the supported operating systems and containers.

### Contents

- [Operating systems on page 12](#)
- [Containers on page 12](#)

## Bit version support

Different parts of a product might run on the same operating system but support different application bitness.

For example, one part of the product might run only in 32-bit mode, whereas another might support 64-bit tolerate mode.

Bitness	Description
64-Tolerate	The product or part of the product runs as a 32-bit application in the 64-bit platforms listed as supported.
64-Exploit	The product or part of the product runs as a 64-bit application in the 64-bit platforms listed as supported.

## Operating systems

Operating system	Hardware	Bitness	IBM® Rational® Test Automation Server	Notes
Ubuntu Server 18.04 LTS	x86-64	64-Exploit	✓	Running K3s v1.21
Ubuntu Server 20.04 LTS	x86-64	64-Exploit	✓	Running K3s v1.21

## Containers

You can find details about the supported containers.

Container	Runtime	Version	Notes
IBM® Rational® Test Automation Server	OpenShift Container Platform	4.7	The Container Platform that is available on IBM Cloud.
		4.6	The Container Platform that is supported by OpenShift V4.6.23.

Related information

[System Requirements on page 10](#)

## Host prerequisites

You can find the prerequisites that support the operating capabilities for IBM® Rational® Test Automation Server.

### Contents

- [Licensing on page 13](#)
- [Web browsers on page 13](#)

### Licensing

License Server	Version	IBM® Rational® Test Automation Server	Notes
IBM Common License Key Server	9	✓	

### Web browsers

Browser	Version	IBM® Rational® Test Automation Server
Apple Safari	13 or later	✓
Google Chrome	78 or later	✓
Microsoft Edge	80 or later	✓
Microsoft Edge Chromium	86 or later	✓
Mozilla Firefox (including ESR versions)	68 or later	✓

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Related information

[System Requirements on page 10](#)

## Supported software

You can find details about the additional software that are supported.

### Contents

- [Development tools on page 14](#)
- [Integrations on page 14](#)
- [Runtime environment on page 15](#)

### Development tools

Supported software	Version	IBM® Rational® Test Automation Server
Git	2.19.0	✓
	2.21.0	✓
	2.22.0	✓

### Integrations

Supported software	Version	IBM® Rational® Test Automation Server
Azure Plugins	Cloud version, latest	✓
IBM® Engineering Test Management	7.0.2	✓
Jenkins	2.x	✓
Jira	8.x	✓
UrbanCode™ Deploy	7.1	✓

**Runtime environment**

Supported software	Version	IBM® Rational® Test Automation Server	Notes
Helm CLI	3.6.3	✓	Required locally for Helm.
	3.6.2	✓	
Jaeger Operator		✓	Required if tests contribute trace information. The version depends on the target platform.
OpenShift Container Platform CLI (oc)	4.7	✓	Required locally for OpenShift Container Platform.
	4.6	✓	
OpenShift Container Platform (OCP)	4.7	✓	The Container Platform that is supported by OpenShift V4.7.19 on IBM Cloud.
	4.6	✓	The Container Platform that is supported by OpenShift V4.6.62.

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Related information

[System Requirements on page 10](#)

# Chapter 3. Getting Started Guide

This guide provides an overview of IBM® Rational® Test Automation Server. You can find the task flows to get you started with Rational® Test Automation Server. This guide is intended for new users.

## IBM® Rational® Test Automation Server overview

IBM® Rational® Test Automation Server brings together test data, test environments, and test runs and reports into a single, web-based browser for testers and non-testers.

IBM® Rational® Test Automation Server provides the following capabilities:

### **Web-based continuous testing platform**

Rational® Test Automation Server is a web-based continuous testing platform built on modern, cloud native technologies that enables test teams to run a breadth of tests that includes API, functional, and performance tests and to benefit from a holistic view of test progress. Rational® Test Automation Server is built on Docker for easy deployment. You can scale your testing on the cloud or remote on premise systems with native Docker, Kubernetes, and IBM Red Hat OpenShift support.

### **Role-based access and security**

Security is a key concern for IBM clients and therefore, Rational® Test Automation Server brings a comprehensive, role-based access control scheme to the server with project owners assigning specific member's key permissions (by using roles), for example managing test data or working with secrets such as passwords.

### **Running of tests from the server by using Docker containers**

Server-based running of tests is the starting point for Rational® Test Automation Server. For members of a project with the appropriate role, Rational® Test Automation Server enables direct running of tests from the browser by using transient Docker containers.

### **Connected agents for existing performance agents**

Agent owners can connect existing performance agents to the server and add them to a project for running schedules and Accelerated Functional Testing (AFT) Suites on the current infrastructure.

### **Project overview statistics**

The **Overview** page for Rational® Test Automation Server offers you a quick, simple view on the state of testing for your projects.

### **Project home page**

The home page lists your projects and other projects, which makes it easy to manage different projects within an organization.

### **Reporting and the Resource Monitoring Service**

Rational® Test Automation Server provides the home for capabilities that previously were hosted on Rational® Test Control Panel. Reporting and the Resource Monitoring Service are in Rational® Test



Automation Server and provide a more direct relationship with their related projects. These capabilities also benefit from the project level, role-based access controls. You can view unified test results to help you make informed business decisions.

### Test data authoring

Beyond the concept of a project held in a Git repository for a simple location of tests and related assets, you can do full concurrent editing of test data sets directly from Rational® Test Automation Server. This true multiuser capability enables team members to collaborate more easily as well as try out data changes without impacting the rest of the team. When satisfied with the results, team members can push their changes.

### Integration with DevOps tools

You can integrate Rational® Test Automation Server with various popular DevOps tools like Jenkins, UrbanCode™ Deploy and Microsoft Azure DevOps to get more value from your DevOps pipelines. You can use UrbanCode™ Deploy to define a deployment process that automatically triggers test cases and have those test insights available directly within UrbanCode Velocity. With the Microsoft Azure DevOps integration, you can also define a DevOps pipeline that includes direct execution of tests by using the Rational® Test Automation Server scalable infrastructure. Rational® Test Automation Server also integrates with Jira for defect tracking and GitHub for software source management and version control.

## Supported versions of assets and resources

You can find information about the versions of assets, resources, agents and Dockers that are supported in Rational® Test Automation Server. You can also find information about the versions of the desktop clients that are supported.

The following table lists the versions of assets or resources created in the desktop clients along with the agents, Dockers, or proxies that are supported in Rational® Test Automation Server:

Resource	Supported	Not supported
Assets or resources created in IBM® Rational® Functional Tester	Assets or resources created in Rational® Functional Tester which are of versions earlier or the same as Rational® Test Automation Server.	Assets or resources created in any later version of Rational® Functional Tester that is later than the version of Rational® Test Automation Server.
Assets or resources created in IBM® Rational® Integration Tester	Assets or resources created in Rational® Integration Tester which are of versions earlier or the same as Rational® Test Automation Server	Assets or resources created in any later version of Rational® Integration Tester that is later than the version of Rational® Test Automation Server.
Assets or resources created in IBM® Rational® Performance Tester	Assets or resources created in Rational® Performance Tester which are	Assets or resources created in any later version of Rational® Performance Tester that is later than the

Resource	Supported	Not supported
	of versions earlier or the same as Rational® Test Automation Server	version of Rational® Test Automation Server.
IBM® Rational® Performance Tester Agents	Rational® Performance Tester Agents which is the same version as Rational® Test Automation Server	Before you install the agents that are of the current version, see <a href="#">Management of agents on page 167</a> .
Dockers on a remote host computer	Image of Rational® Test Automation Server which is the same version as Rational® Test Automation Server that you want to use to run tests, must be installed on the Docker on a remote host computer.	Before you set up Dockers remotely, see <a href="#">Management of Docker hosts on page 174</a> .
HTTP proxies	Installation of the proxy component from Rational® Test Control Panel which is the same version as Rational® Test Automation Server.	Before you use HTTP proxies, see <a href="#">Setting up the HTTP proxy on page 278</a> .

If there is a mismatch in the versions of the assets, resources, agents, or images used in Dockers with the version of Rational® Test Automation Server that you are using, any of the following events can occur:

- Warnings or Errors are displayed when you add a repository to a project in your team space.
- Warnings or Errors are displayed when you open a project that you migrated from a previous version of Rational® Test Automation Server.
- Warnings or Errors are displayed when you add or manually refresh a repository to which you added assets or resources that were created on a desktop client with a version previous to or later than the version of Rational® Test Automation Server that you want to use.
- Test runs that you start or schedule on an agent or Docker fail to run.
- You cannot view the proxies that are registered with Rational® Test Automation Server on the **Agents and Intercepts** page.

## Tests supported on Rational® Test Automation Server

You can find information about the types of tests that you can configure for a test run in a project on Rational® Test Automation Server. You can also find information about the desktop clients in which you can create the test.

The following table lists the test types that are supported and those tests that are not supported for running on Rational® Test Automation Server:

Product	Supported test runs	Not supported test runs
IBM® Rational® Functional Tester	<ul style="list-style-type: none"> <li>• Accelerated Functional Testing (AFT) Suites</li> <li>• Compound Tests that contain any of the following types of tests:               <ul style="list-style-type: none"> <li>◦ Web UI tests</li> <li>◦ Traditional HTML tests</li> <li>◦ Mobile tests</li> </ul> </li> </ul>	<p>Traditional non-HTML tests.</p> <p>An independent Web UI test and a mobile test outside of a Compound Test or an AFT Suite.</p>
IBM® Rational® Integration Tester	<p>API Suites that include the following Test Suites:</p> <ul style="list-style-type: none"> <li>• Test Suites that contain scenarios with references to local stubs.</li> <li>• Test Suites that contain stubs that virtualize services run in any Kubernetes cluster or in the Kubernetes cluster that hosts Rational® Test Automation Server.</li> </ul> <p>Stubs</p>	<p>Test Suites that have tests with subscribe actions that operate in the watch mode.</p> <p>A stand-alone API test case cannot be run independently. An API test case must be part of a Test Suite.</p>
IBM® Rational® Performance Tester	<ul style="list-style-type: none"> <li>• Compound Tests that contain performance tests</li> <li>• Rate Schedules</li> <li>• VU Schedules</li> </ul>	<p>A single test script of any test extension.</p> <p>Tests that belong to 32-bit test extensions and SOA Quality included in VU Schedule, Rate Schedule, and Compound Test.</p>



**Note:** You must create compound tests for the same type of tests. For example, you can create a compound test that has different mobile tests that use different mobile testing platforms.



**Restriction:** You cannot merge folders that contain different test projects in the same project directory. For example, you cannot create a project directory that contains a Performance test project and an API Suite project. You must create separate project directories for each test type. For example, you must create the



Performance test in the project directory as `/MyPerfProject/` and the API Suite in the project directory as `/MyAPIProject`, before you commit the projects to the remote repository.

---

Related information

Tests configurations and test runs

## Task flow: Test runs and results in IBM® Rational® Test Automation Server

You can use the task flow diagram to get started with IBM® Rational® Test Automation Server. After you install the software, you can complete the tasks in sequence to run test assets in Rational® Test Automation Server and view and analyze the test results.

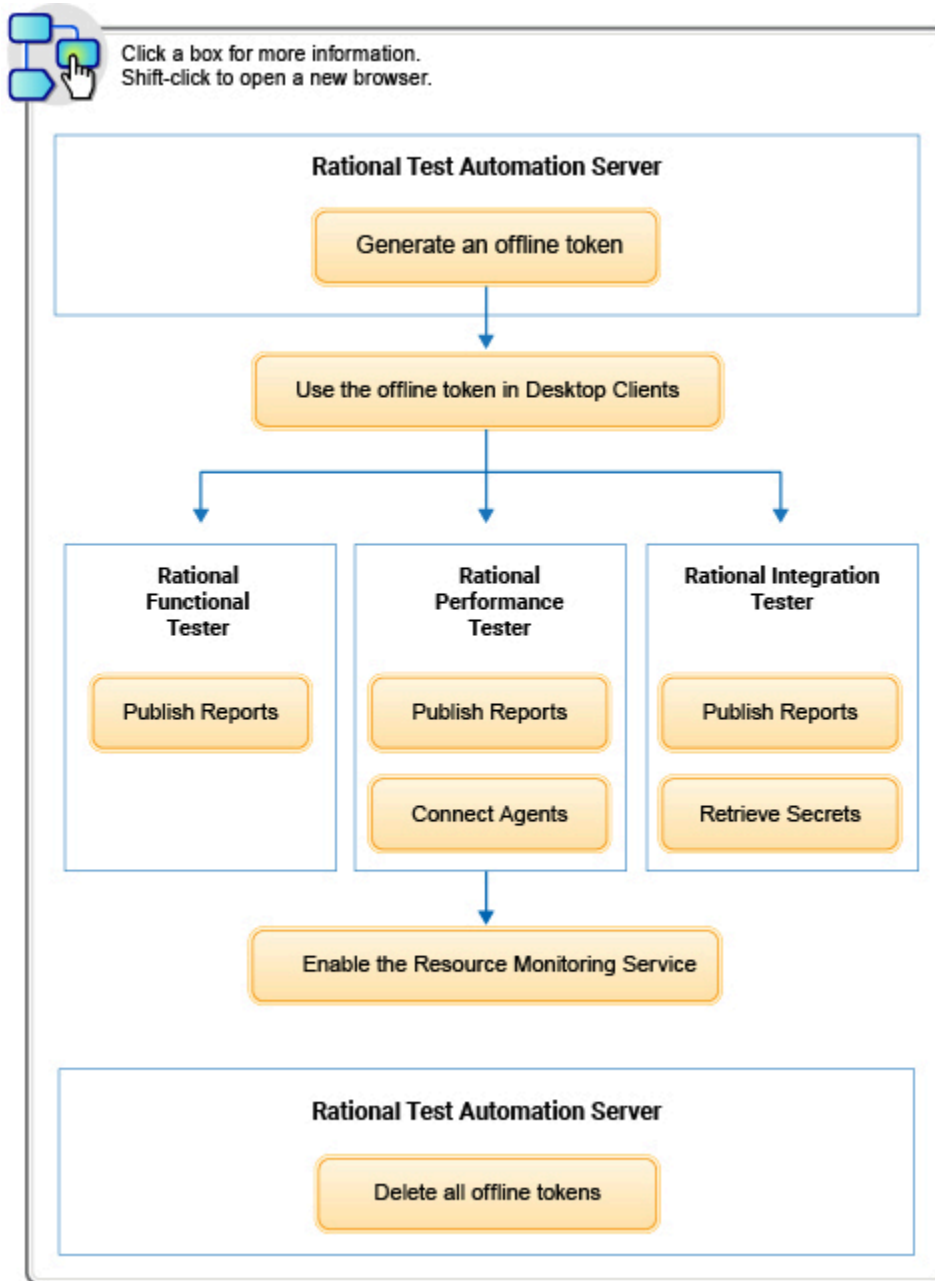
You can click the links to get more information about the tasks. The diagram also provides the tasks to be performed by personas. Rational® Test Automation Server supports user roles.



1. Default user administration on page 80
2. Test assets and a server project on page 433
3. Adding a project on page 436
4. Adding repositories to a server project on page 437
5. Protecting API test assets by using secrets on page 454
6. Managing an encrypted dataset on page 460
7. Adding users to a project on page 438
8. Adding an agent to a project on page 170
9. Tests configurations and test runs

## Task flow: IBM® Rational® Test Automation Server access from desktop clients

You can use the task flow diagram to help you access the server from the different desktop clients to retrieve secrets, publish reports, or enable resource monitoring agents. You can perform these tasks after you install and set up the server.



1. [Managing access to IBM Rational Test Automation Server on page 418](#)
2. [Test results and reports overview on page 319](#)
3. [Test results and reports overview on page 319](#)
4. [Test results and reports overview on page 319](#)
5. [Retrieving secrets](#)
6. [Managing access to IBM Rational Test Automation Server on page 418](#)
7. [Managing access to IBM Rational Test Automation Server on page 418](#)
8. [Installing Rational Performance Tester Agent](#)
9. [Enabling of Resource Monitoring services for a schedule](#)

Related information

[Managing access to server projects on page 442](#)

## Accessibility features

Accessibility features help users who have physical disabilities, such as visual and, hearing impairment, or limited mobility, to use the software products successfully.

### Accessibility compliance

To understand the accessibility compliance status for IBM® Rational® Test Automation Server, refer to [Accessibility Conformance Reports](#).

For more information about IBM and accessibility, refer to [IBM Accessibility](#).

The product documentation is published by using Oxygen XML WebHelp Responsive. To understand the accessibility compliance status for Oxygen XML WebHelp Responsive, refer to [WebHelp Responsive VPAT Accessibility Conformance Report](#).

### Accessing UI elements

Rational® Test Automation Server supports navigation in the UI by using different methods such as a mouse, keyboard, or touchpad.

You can use the keyboard keys such as **Tab**, arrow keys such as **UP**, **DOWN**, **LEFT**, and **RIGHT** to navigate to the different pages in the **Navigation** pane or to the different action labels in the right pane on the UI.



# Chapter 4. Administrator Guide

This guide describes how to install IBM® Rational® Test Automation Server software.

After you install the software, you can perform administration tasks such as license configuration, user management, security, memory and disk usage management, back up and restore user data, and other tasks that a server administrator can perform. This guide is intended for administrators.

## Installation of the server software

To get started with IBM® Rational® Test Automation Server, you must first install the server software.

You can install Rational® Test Automation Server on the following platforms:

- Red Hat OpenShift
- Ubuntu Server (using k3s)

### Installation task flows

#### Red Hat OpenShift Container platform

You must perform the following tasks to install Rational® Test Automation Server:

1. Set up a Red Hat OpenShift Container Platform (OCP).
2. Install the Jaeger operator to trace test logs and Jaeger-based reports when you run tests.
3. Install the OCP command-line interface (CLI) and the Helm software.
4. Install Rational® Test Automation Server.

#### Ubuntu server

You must perform the following tasks to install Rational® Test Automation Server:

1. Set up an Ubuntu Server.
2. Install the OpenSSH server and the Helm software.
3. Set up the Kubernetes environment (k3s) by using the provided script.
4. Install Rational® Test Automation Server.

To learn more about installation of the server software on platforms such as Red Hat OpenShift and Ubuntu, refer to the following topics:

## Installation of the server software on Red Hat OpenShift

You can find information about the tasks that you can perform to install Rational® Test Automation Server software on the Red Hat OpenShift platform.

If you have an OpenShift Container Platform (OCP) cluster with no access to the internet, you can install Rational® Test Automation Server by using an air-gapped environment.

## Prerequisites for installing the server software on Red Hat OpenShift

You must complete certain tasks before you install Rational® Test Automation Server on the Red Hat OpenShift platform.

The following sections describe each prerequisite in detail:

- [Entitlement key on page 26](#)
- [Red Hat OpenShift platform on page 26](#)
- [Mandatory software on page 27](#)
- [Persistent storage on page 27](#)
- [Service virtualization through Istio on page 28](#)
- [Service virtualization usage metrics on page 28](#)

### Entitlement key

You must copy the **Entitlement key** from the [Container software library](#) to pull the images that are used by the server software. For more information, refer to [Creating an API key](#).

### Red Hat OpenShift platform

You must set up the Red Hat OpenShift platform, and then install the following components in your IT infrastructure:

- Red Hat OpenShift Container Platform (OCP). For more information, refer to the Installing section in the [Red Hat OpenShift](#) documentation.
- Dynamic Volume Provisioning that supports ReadWriteOnce (RWO) and ReadWriteMany (RWX) access modes. For more information, refer to the Dynamic provisioning section in the [Red Hat OpenShift](#) documentation.
- **Optional:** Jaeger operator to trace test logs and Jaeger-based reports when you run tests. For more information, refer to [Installing the Operators](#).
- **Optional:** Red Hat Service Mesh 2.0, if service virtualization through Istio, a Tech Preview feature is required. For more information, refer to the Installing Red Hat OpenShift Service Mesh section in the [Red Hat OpenShift](#) documentation.

For more information about the service virtualization feature, see [Management of virtualized services on page 272](#).

- **Optional:** You can configure the OpenShift software-defined networking (SDN) to provide a unified cluster network that enables the communication between pods across the OpenShift Container Platform cluster. The default installation process includes the NetworkPolicy resources and these resources are acted upon only if you configure the SDN appropriately. For more information, refer to the OpenShift SDN default CNI network provider section in the [RedHat OpenShift](#) documentation.

You must have access to the OpenShift cluster with cluster administrator privileges. One of the ways to get access to the OpenShift cluster is to run the following command on the OpenShift command-line interface:

```
oc login -u kubeadmin -p {password} https://api.{openshift-cluster-dns-name}:6443
```



**Note:** For more information about specific versions of software requirements, see [System Requirements on page 10](#).

## Mandatory software

You must install the following software on Red Hat OpenShift:

- Helm. For more information, refer to the Installing a Helm chart on an OpenShift Container Platform cluster section in the [Red Hat OpenShift](#) documentation.
- OpenShift CLI. For more information, refer to the Getting started with the CLI section in the [Red Hat OpenShift](#) documentation.

## Persistent storage

Rational® Test Automation Server requires persistent storage in addition to the minimum resources required by the cluster. Depending on the workload, you might require additional persistent storage.

The default configuration creates the PersistentVolumeClaim that dynamically provision the PersistentVolume. The following table lists the PersistentVolumeClaim, its size, and access mode during the configuration:

PersistentVolumeClaim	Size	Access Mode	Content
data-{my-rtas}-post-gresql-0	26 GB	ReadWriteOnce  <b>CLI Abbreviation:</b> RWO	User data used by services
data-{my-rtas}-rabbitmq-0	8 GB	RWO	Notifications between services
data-{my-rtas}-results-0	8 GB	RWO	Reports

PersistentVolumeClaim	Size	Access Mode	Content
data-{my-rtas}-tam-0	32 GB	RWO	Cloned git repositories
data-{my-rtas}-userlibs-0	1 GB	ReadWriteMany <b>CLI Abbreviation: RWX</b>	User-provided third-party libraries and extensions



**Note:** {my-rtas} is the name of the release that is provided during the installation of the server software.

## Service virtualization through Istio



**Disclaimer:** This release contains access to the Istio virtualized services feature in IBM® Rational® Test Automation Server as a Tech Preview. The Tech Preview is intended for you to view the capabilities of virtualized services offered by Rational® Test Automation Server, and to provide your feedback to the product team. You are permitted to use the information only for evaluation purposes and not for use in a production environment. IBM provides the information without obligation of support and "as is" without warranty of any kind.

To provide your feedback, you can send an email to [devops24@us.ibm.com](mailto:devops24@us.ibm.com).

The default configuration does not enable service virtualization through Istio. To use the service virtualization feature through Istio, you must configure it appropriately. As a Tech Preview feature, you can virtualize the *bookinfo* sample application.

You must install the *bookinfo* application in the `bookinfo` namespace because Rational® Test Automation Server supports service virtualization through Istio only for the *bookinfo* sample application.

For more information about the *bookinfo* application, refer to the [Istio](#) documentation.

## Service virtualization usage metrics

You must perform the following tasks so that Rational® Test Automation Server shows the correct usage of service virtualization metrics:

- Create the `cluster-monitoring-config` ConfigMap object to configure the OpenShift Container Platform (OCP) monitoring stack, if the ConfigMap does not exist.

For more information about creating a cluster monitoring config map, based on the version of OCP that you use, refer to [Creating a cluster monitoring config map](#).

- Enable the user workload monitoring services in the OpenShift cluster to show the service virtualization usage metrics in Rational® Test Automation Server.

For more information about the enabling monitoring of your services, based on the version of OCP that you use, refer to [Enabling monitoring of your services](#)

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#### Related information

[OpenShift Container Platform 4.6 Documentation](#)

[OpenShift Container Platform 4.7 Documentation](#)

[OpenShift Container Platform 4.8 Documentation](#)

[System Requirements on page 10](#)

## Installing the server software on Red Hat OpenShift

You can install Rational® Test Automation Server on the Red Hat OpenShift server that has the Kubernetes Engine environment to run functional, integration, and performance tests. Rational® Test Automation Server combines test data, test environments, and test runs and reports into a single web-based browser for testers and non-testers.

### Before you begin

You must have performed the following tasks:

- Completed tasks provided in the Prerequisites section. See [Prerequisites for installing the server software on Red Hat OpenShift on page 26](#).
- Installed the following software:
  - OpenShift CLI
  - Helm
- Copied the **Entitlement key** from the [Container software library](#).

1. Log in to your OCP cluster as a cluster administrator by running the `oc login` command.
2. Create a namespace in which you want to install the server software by running the following command:

```
oc new-project test-system
```



**Remember:** The `test-system` is the name of the namespace. If you created a namespace by using a different value, then you must use that value in place of `test-system` in all the instances in this procedure.

3. Add the entitlement registry to Helm to access the server install charts by running the following command:

```
helm repo add ibm-helm https://raw.githubusercontent.com/IBM/charts/master/repo/ibm-helm
```

4. Run the following command to get the latest updates from the repository:

```
helm repo update
```

5. Run the following command to retrieve the charts:

```
helm pull --untar ibm-helm/ibm-rtas-prod --version 6.1021.1
```

6. Create a Secret to pull images that are used by Rational® Test Automation Server by running the following commands:

```
oc create secret docker-registry cp.icr.io \
-n test-system \
--docker-server=cp.icr.io \
--docker-username=cp \
--docker-password={your_entitlement_key} \
--docker-email=example@abc.com
```



#### Notes:

- You must substitute `{your_entitlement_key}` with the key that you copied from the [Container software library](#).
- You can replace `example@abc.com` with the email address of the administrator if required.



**Remember:** `test-system` is the name of the namespace. If you created a namespace by using a different value, then you must use that value in place of the `test-system` in all the instances in this procedure.

7. Perform one of the following steps to enable certificates as trusted certificates:

You must go to [Step 7.b on page 31](#) if you use OpenShift Service Mesh service virtualization, a Tech Preview feature.

- a. Perform the following steps to add the Certificate Authority (CA) into a Secret:

- i. Run the following command to verify whether an additional CA is required:

```
curl -sw'{http_code}' -o/dev/null \
"https://wildcard.${oc get -n openshift-ingress-operator ingresscontroller default
-ojsonpath='{.status.domain}'")"
```

If the result of the command is displayed as `503`, the CA is already trusted. You must continue with [step 8 on page 32](#).

If the result of the command is displayed as `000`, then CA must be added into a Secret. You must continue with [step 7.a.ii on page 30](#).

- ii. Run the following command to get the default CA in a PEM format:

```
oc get -n openshift-ingress-operator secret router-ca -ojsonpath='{.data.tls.crt}'
| base64 --decode > ca.crt
```

- iii. Run the following command to validate that the CA used to sign the certificate is the same for ingress:

```
curl -sw'%{http_code}' -o/dev/null --cacert ca.crt \
"https://wildcard.${oc get -n openshift-ingress-operator ingresscontroller default
-ojsonpath='{.status.domain}'}"
```

If the result of the command is displayed as `503`, then you must continue with next step.

If the result of the command is displayed as `000`, then the configuration of the certificate has been customized. You must find the signer of the certificate to continue with the next step.

- iv. Run the following command to create an ingress Secret to store the CA:

```
oc create secret generic -n test-system ingress --from-file=ca.crt=ca.crt
```

- b. Perform the following steps to add the Certificate Authority (CA) into a Secret if you use OpenShift Service Mesh service virtualization, a Tech Preview feature:

- i. Run the following script from the `ibm-rtas-prod/files` directory:

```
./files/certificate.sh -n istio-system -s istio-ingressgateway-certs
{openshift-cluster-dns-name}
```

You must replace the `{openshift-cluster-dns-name}` with the ingress DNS name that you selected for the server. You can run the following command to obtain the default value of `openshift-cluster-dns-name`:

```
oc get --namespace=openshift-ingress-operator ingresscontroller/default
-ojsonpath='{.status.domain}'
```

- ii. Run the following command to create an ingress Secret:

```
oc create secret generic -n test-system ingress \
"--from-literal=ca.crt=$(oc get -n istio-system secret istio-ingressgateway-certs
-ojsonpath='{.data.ca\.crt}' | base64 --decode)"
```

- iii. Run the following commands to enable an OpenShift route that the product creates for the Istio gateway:

```
cat <<EOF | oc apply -n istio-system -f - >/dev/null
apiVersion: maistra.io/v1
kind: ServiceMeshMemberRoll
metadata:
  name: default
spec:
  members:
    - test-system
EOF
```

When some components such as static agents or Docker agents want to communicate with Rational® Test Automation Server, the component presents its certificate to the server to verify its identity. Rational® Test

Automation Server trusts the component only if it is signed by a recognized and trusted CA. Therefore, you must add the signed CA into a trust by placing it in a Secret to enable certificates as trusted certificates.

8. Perform the following steps to install the server software:

- a. Run the following commands to update the runAsUser and fsGroup to match the Security Context Constraints (SCCs):

```
sed -i -e "s/runAsUser: 1001/runAsUser: $(oc get project test-system -oyaml \
| sed -r -n 's# *openshift.io/sa.scc.uid-range: *([0-9]*)/.*#\1#p')/g;
s/fsGroup: 1001/fsGroup: $(oc get project test-system -oyaml \
| sed -r -n 's# *openshift.io/sa.scc.supplemental-groups: *([0-9]*)/.*#\1#p')/g"
ibm-rtas-prod/values-openshift.yaml
```

Rational® Test Automation Server is compatible with the restricted SCC. You must run this command to ensure that the runAsUser and fsGroup strategies match with the SCC policy.

- b. Perform one of the steps described in the following table to install the server software based on your requirement:

Step description	Step no
To install the server software	Perform <a href="#">8.b.i on page 33</a>
To install the server software and enable the OpenShift Service Mesh service virtualization through Istio, a Tech Preview feature	Perform <a href="#">8.b.ii on page 33</a> and <a href="#">8.b.iv on page 34</a>
To install the server software, enable the OpenShift Service Mesh service virtualization through Istio, a Tech Preview feature, and enable Jaeger for performance and Web UI tests logs	Perform <a href="#">8.b.iii on page 33</a> and <a href="#">8.b.iv on page 34</a>
To install the server software and enable Jaeger for performance and Web UI tests logs	Perform <a href="#">8.b.v on page 34</a>



**Remember:**

- If you upgrade the product from the previous version, then you must use the same value for `global.persistence.rwxStorageClass` parameter that you used in the previous installation.

You can run the following command to obtain the value that you used for `global.persistence.rwxStorageClass` during the installation of the server software:





```
oc get pvc -n test-system data-{my-rtas}-userlibs-0 \
  -ojsonpath='{.spec.storageClassName}' && echo
```

- The default certificate that terminates TLS connections has a single wildcard. Therefore, you must prefix a single hostname segment for the `global.ibmRtasIngressDomain` parameter.

For example, `--set global.ibmRtasIngressDomain=rtas.{dns name of the openshift cluster}`

- If you create an ingress Secret either by performing step [7.a.iv on page 31](#) or [7.b.ii on page 31](#), then you must use the `--set global.ibmRtasCertSecretOptional=false` parameter in any of the following `helm install` commands.

- Run the following command to install the server software:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set global.rationalLicenseKeyServer=@{rlks-ip-address}
```

- Run the following command to install the server software and to enable OpenShift Service Mesh service virtualization, a Tech Preview feature:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set global.rationalLicenseKeyServer=@{rlks-ip-address} \
-f ibm-rtas-prod/values-openshift-demo.yaml
```

- Run the following command to install the server software, to enable OpenShift Service Mesh service virtualization, a Tech Preview feature, and to enable Jaeger for performance and Web UI tests logs:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set global.rationalLicenseKeyServer=@{rlks-ip-address} \
-f ibm-rtas-prod/values-openshift-demo.yaml \
```

```
--set-string execution.annotations.sidecar\\.jaegertracing\\.io/inject=true \
--set global.jaegerAgent.internalHostName=localhost \
--set global.jaegerDashboard.externalURL={my-jaeger-dashboard-url}
```

- iv. Run the following command to enable service virtualization through Istio, a Tech Preview feature in the specific namespace:

```
oc create rolebinding istio-virtualization-enabled -n
bookinfo --clusterrole={my-rtas}-execution-istio-test-system
--serviceaccount=test-system:{my-rtas}-execution
```

Where, {my-rtas} is the name of the release that you provided during the installation of the server software.



**Note:** When you uninstall the chart, the manually created role bindings are not deleted from the namespace. You can run the following command to delete the role bindings:

```
oc delete rolebinding istio-virtualization-enabled -n bookinfo
```

- v. Run the following command to install the server software and to enable Jaeger for performance and Web UI tests logs:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set global.rationalLicenseKeyServer=@{rlks-ip-address} \
--set-string execution.annotations.sidecar\\.jaegertracing\\.io/inject=true \
--set global.jaegerAgent.internalHostName=localhost \
--set global.jaegerDashboard.externalURL={my-jaeger-dashboard-url}
```

You must substitute the value of the variables in the helm install command with the actual value:

- {my-rtas} with the release name of your choice.



**Note:** The release name must consist of alphanumeric characters that are in lowercase or “-” (hyphen). The release name must also start with an alphabetic character and end with an alphanumeric character. For example, *my-org* or *abc-123*.

- {openshift-cluster-dns-name} with the ingress DNS name that you selected for the server.



**Remember:** You must provide the value that consists of alphanumeric characters that are in lowercase, "-"(hyphen) or "."(period). The value must also start and end with an alphanumeric character.



**Note:** You can run the following command to obtain the default value of `openshift-cluster-dns-name`:

```
oc get --namespace=openshift-ingress-operator ingresscontroller/default
  -ojsonpath='{.status.domain}'
```

- `{password-seed}` with a value of your choice.



**Important:** This password seed is used to create several default passwords for the server. You must store the password seed securely. When you install the server software by using the backup of the user data, you can reuse the password seed. You can use this seed to restore the backed-up files either on the current or later versions of the server software.

- **Optional:** `{rlks-ip-address}` with the IP address of Rational License Key Server, if you want to set the license value for the first time.



**Important:** If you upgrade the product from the previous version, you must configure the value of **Rational License Key Server** in the **Team Space License Configuration** window when the installation of the server is complete.

- `{my-jaeger-dashboard-url}` with the URL of the Jaeger server.

9. **Optional:** Run the following command to remove a job that is used to initialize the PostgreSQL database during the installation of the server software:

```
oc delete job {my-rtas}-postgresql-init -n test-system
```

10. **Optional:** Perform the following steps to migrate data into Rational® Test Automation Server, if you upgraded the product from the previous version (10.1.0, 10.1.1, or 10.1.2):

- a. Run the following script from the `ibm-rtas-prod/files` directory to create a directory that contains metadata related to the Persistent Volume Claims and their Persistent Volumes:

```
migrate.sh create-pvcs -n test-system {my-rtas}
```

- b. Run the following script from the `ibm-rtas-prod/files` directory to merge the data into the server:

```
migrate.sh merge-dbs -n test-system {my-rtas}
```

- c. Run the following command to remove the resources that were created during the migration process:

```
migrate.sh delete-temp-resources -n test-system {my-rtas}
```

where `{my-rtas}` is the name of the release that you provided during the installation of the server software.

11. Run the following command to verify and test the installed server software:

```
$ helm test {my-rtas} -n test-system
```

where `{my-rtas}` is the name of the release that was provided during the installation of the server software.

## Results

You have installed the server software. The command line displays the following information:

- Keycloak URL to manage and authenticate users.
- A URL to access the Rational® Test Automation Server UI.

## What to do next

You can perform the following tasks:

- Configure licenses for team spaces. See [Configuring licenses for team spaces on page 113](#).
- Configure the server software. See [Configuration of the server software on page 79](#).

---

### Related information

[Troubleshooting on page 479](#)

## Installation of the server software in an air-gapped environment

You can find information about the tasks that you can perform to install Rational® Test Automation Server on the Red Hat OpenShift platform in an air-gapped environment.

If your OpenShift Container Platform (OCP) cluster is within a restricted network with no access to the internet, then you can install the product on such OCP clusters by using an air-gapped environment. To install the product, unlike online installations, air-gapped installations require an internal registry to mimic a typical online installation by using images from your internal registry.

In an air-gapped environment, you can mirror the images of Rational® Test Automation Server from IBM Entitled Registry to the internal Docker registry that has access to the OCP cluster. With the help of a Bastion host that can connect to the internet and your OCP cluster, you can install Rational® Test Automation Server on the OCP cluster.

## Prerequisites for installing the server software in an air-gapped environment

You must complete certain tasks before you install Rational® Test Automation Server in an air-gapped environment on the Red Hat OpenShift platform.

The following sections describe each prerequisite in detail:

- [Entitlement key on page 37](#)
- [Red Hat OpenShift Container Platform on page 37](#)
- [Bastion host on page 37](#)
- [Docker registry on page 38](#)
- [Mandatory software on page 38](#)
- [Service virtualization through Istio on page 38](#)
- [Service virtualization usage metrics on page 38](#)

## Entitlement key

You must copy the **Entitlement key** from the [Container software library](#) to pull the images that are used by the server software. For more information, refer to [Creating an API key](#).

## Red Hat OpenShift Container Platform

You must install Red Hat OpenShift Container Platform (OCP) and have cluster administrator privileges. For more information, refer to the [Red Hat OpenShift](#) documentation.



**Note:** For more information about specific versions of software requirements, see [System Requirements on page 10](#).

You can run the following command on the OpenShift command-line interface to gain cluster administrator access:

```
oc login -u kubeadmin -p {password} https://api.{openshift-cluster-dns-name}:6443
```



**Note:** You can run the following command to obtain the default value of `openshift-cluster-dns-name`:

```
oc get --namespace=openshift-ingress-operator ingresscontroller/default
-ojsonpath='{.status.domain}'
```

## Bastion host

You must set up a Bastion host that has Linux installed. You must also have internet access.

A bastion host is a server that is provisioned with a public IP address and must be accessible through remote access Secure Shell (SSH).



**Note:** You must ensure that the Bastion host has access to your OCP cluster.

For more information refer to the [IBM Cloud Docs](#).

## Docker registry

You must set up a local Docker registry to store the images of Rational® Test Automation Server and ensure that it has access to the OCP cluster and the Bastion host.

For more information refer to the [Red Hat OpenShift](#) documentation.

## Mandatory software

You must install the following software on Red Hat OpenShift:

- OpenShift command-line interface (CLI) on the Bastion host. For more information, refer to the Getting started with the CLI section in the [Red Hat OpenShift](#) documentation.
- IBM Cloud Pak CLI (cloudctl) on the Bastion host to manage Container Application Software for Enterprises (CASE). For more information, refer to the [cloud-pak-cli](#) repository.
- Installed Helm. For more information, refer to the Installing a Helm chart on an OpenShift Container Platform cluster section in the [Red Hat OpenShift](#) documentation.

## Service virtualization through Istio



**Disclaimer:** This release contains access to the Istio virtualized services feature in IBM® Rational® Test Automation Server as a Tech Preview. The Tech Preview is intended for you to view the capabilities of virtualized services offered by Rational® Test Automation Server, and to provide your feedback to the product team. You are permitted to use the information only for evaluation purposes and not for use in a production environment. IBM provides the information without obligation of support and "as is" without warranty of any kind.

To provide your feedback, you can send an email to [devops24@us.ibm.com](mailto:devops24@us.ibm.com).

The default configuration does not enable service virtualization through Istio. To use the service virtualization feature through Istio, you must configure it appropriately. As a Tech Preview feature, you can virtualize the *bookinfo* sample application.

You must install the *bookinfo* application in the `bookinfo` namespace because Rational® Test Automation Server supports service virtualization through Istio only for the *bookinfo* sample application.

For more information about the *bookinfo* application, refer to the [Istio](#) documentation.

## Service virtualization usage metrics

You must perform the following tasks so that Rational® Test Automation Server shows the correct usage of service virtualization metrics:

- Create the `cluster-monitoring-config` `ConfigMap` object to configure the OpenShift Container Platform (OCP) monitoring stack, if the `ConfigMap` does not exist.

For more information about creating a cluster monitoring config map, based on the version of OCP that you use, refer to [Creating a cluster monitoring config map](#).

- Enable the user workload monitoring services in the OpenShift cluster to show the service virtualization usage metrics in Rational® Test Automation Server.

For more information about the enabling monitoring of your services, based on the version of OCP that you use, refer to [Enabling monitoring of your services](#)

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#### Related information

[OpenShift Container Platform 4.6 Documentation](#)

[OpenShift Container Platform 4.7 Documentation](#)

[OpenShift Container Platform 4.8 Documentation](#)

[IBM Cloud Pak foundational services](#)

[System Requirements on page 10](#)

## Configuring the Bastion host

You must configure the Bastion host to mirror the images of Rational® Test Automation Server from IBM Entitled Registry to the OpenShift Container Platform (OCP) cluster.

### Before you begin

You must have performed the following tasks:

- Completed the tasks provided in the Prerequisites section. See [Prerequisites for installing the server software in an air-gapped environment on page 36](#).
- Copied the **Entitlement key** from the [Container software library](#).

1. Log in to your OCP cluster as a cluster administrator by running the `oc login` command.
2. Run the following command to confirm that the container registry is accessible from the Bastion host:

```
oc get routes -n openshift-image-registry
```

3. **Optional:** Create a route to provide external access to the container registry if no resources are found:

```
oc patch configs.imageregistry.operator.openshift.io/cluster \
--patch '{"spec":{"defaultRoute":true}}' --type=merge
```

4. Create a namespace for the internal registry to host the mirror images:

```
oc new-project cp
```



**Note:** The `cp` is the name of the namespace and it is required to pull the images from IBM Entitled Registry.

5. Create the following environment variables with the image name and download the images of Rational® Test Automation Server to the offline store by running the following commands:

Before mirroring images of Rational® Test Automation Server, you must set the environment variables on your Bastion host, and connect to the internet so that you can download the corresponding CASE files from IBM Entitled Registry.

```
export CASE_NAME=ibm-rtas-case
export CASE_VERSION=6.1021.1
export CASE_ARCHIVE=${CASE_NAME}-${CASE_VERSION}.tgz
export CASE_REMOTE_PATH=https://github.com/IBM/cloud-pak/raw/master/repo/case/${CASE_ARCHIVE}
export OFFLINEDIR=$HOME/offline

cloudctl case save \
--case $CASE_REMOTE_PATH \
--outputdir $OFFLINEDIR
```

6. Run the following commands to store credentials to authenticate IBM Entitled Registry:

The images of Rational® Test Automation Server are within IBM Entitled Registry. You must log in to IBM Entitled Registry to access source images and log in to your internal registry that acts as a local registry when you copy the images.

```
export ENTITLEMENT_KEY=YOUR_ENTITLEMENT_KEY
export CASE_INVENTORY_SETUP=ibmRtasProd

cloudctl case launch \
--case $OFFLINEDIR/$CASE_ARCHIVE \
--inventory $CASE_INVENTORY_SETUP \
--action configure-creds-airgap \
--args "--registry cp.icr.io --user cp --pass $ENTITLEMENT_KEY"
```



**Note:** You must replace `YOUR_ENTITLEMENT_KEY` with the key that you copied from the [Container software library](#).

7. Run the following commands to store credentials to authenticate the local Docker registry:

```
export LOCAL_DOCKER_REGISTRY=$(oc get route default-route -n openshift-image-registry -o
jsonpath='{.spec.host}')
export LOCAL_DOCKER_USER=UNUSED
export LOCAL_DOCKER_PASSWORD=$(oc whoami -t)

cloudctl case launch \
--case $OFFLINEDIR/$CASE_ARCHIVE \
--inventory $CASE_INVENTORY_SETUP \
--action configure-creds-airgap \
--args "--registry $LOCAL_DOCKER_REGISTRY --user $LOCAL_DOCKER_USER --pass
$LOCAL_DOCKER_PASSWORD"
```



8. Run the following command to mirror the images from IBM Entitled Registry to the local Docker registry:

```
cloudctl case launch \
--case $OFFLINEDIR/$CASE_ARCHIVE \
--inventory $CASE_INVENTORY_SETUP \
--action mirror-images \
--args "--registry $LOCAL_DOCKER_REGISTRY --inputDir $OFFLINEDIR"
```

9. Run the following commands to configure the OCP cluster where Rational® Test Automation Server needs to be installed with a `global pull secret` for the local Docker registry:

By using the global pull secret, the OCP cluster can pull the images of Rational® Test Automation Server from your local Docker registry instead of IBM Entitled Registry.

```
cloudctl case launch \
--case $OFFLINEDIR/$CASE_ARCHIVE \
--inventory $CASE_INVENTORY_SETUP \
--action configure-cluster-airgap \
--namespace default \
--args "--registry $LOCAL_DOCKER_REGISTRY --inputDir $OFFLINEDIR"
```



#### Notes:

- After you perform step 9 on page 41, the cluster restarts all the nodes.
- The `namespace` argument is required for legacy reasons, its value can be any namespace that exists.

10. Run the following command to extract the mirrored images:

```
tar xf $OFFLINEDIR/charts/ibm-rtas-prod-6.1021.1.tgz
```

## Results

You have configured the Bastion host and mirrored the images of Rational® Test Automation Server.

## What to do next

You can install the server software on your restricted OCP. See [Installing the server software in an air-gapped environment on page 42](#).

---

### Related information

[Using image pull secrets](#)

[Configuring image registry repository mirroring](#)

[IBM Cloud Pak foundational services](#)

[IBM Cloud Pak CLI \(cloudctl\) CASE commands](#)

## Installing the server software in an air-gapped environment

You might have an environment that has a high level of security and is isolated from the internet. In such a scenario, you can install Rational® Test Automation Server on the Red Hat OpenShift platform in an air-gapped environment.

### Before you begin

You must have performed the following tasks:

- Completed the tasks provided in the Prerequisites section. See [Prerequisites for installing the server software in an air-gapped environment on page 36](#).
- Configured the Bastion host. See [Configuring the Bastion host on page 39](#).
- Copied the **Entitlement key** from the [Container software library](#).

1. Log in to your OCP cluster as a cluster administrator by running the `oc login` command.
2. Create a namespace in which you want to install the server software by running the following command:

```
oc new-project test-system
```



**Remember:** The `test-system` is the name of the namespace. If you created a namespace by using a different value, then you must use that value in place of `test-system` in all the instances in this procedure.

3. Perform one of the following steps to enable certificates as trusted certificates:

You must go to [Step 3.b on page 43](#) if you use OpenShift Service Mesh service virtualization, a Tech Preview feature.

- a. Perform the following steps to add the Certificate Authority (CA) into a Secret:

- i. Run the following command to verify whether an additional CA is required:

```
curl -sw'{http_code}' -o/dev/null \
"https://wildcard.${oc get -n openshift-ingress-operator ingresscontroller default
-ojsonpath='{.status.domain}'}"
```

If the result of the command is displayed as `503`, the CA is already trusted. You must continue with [4.b.i on page 45](#).

If the result of the command is displayed as `000`, then CA must be added into a Secret. You must continue with [step 3.a.ii on page 42](#).

- ii. Run the following command to get the default CA in a PEM format:

```
oc get -n openshift-ingress-operator secret router-ca -ojsonpath='{.data.tls.crt}'
| base64 --decode > ca.crt
```

- iii. Run the following command to validate that the CA used to sign the certificate is the same for ingress:

```
curl -sw'{http_code}' -o/dev/null --cacert ca.crt \
"https://wildcard.${oc get -n openshift-ingress-operator ingresscontroller default
-ojsonpath='{.status.domain}'}"
```

If the result of the command is displayed as `503`, then you must continue with the next step.

If the result of the command is displayed as `000`, then the configuration of the certificate has been customized. You must find the signer of the certificate to continue with the next step.

- iv. Run the following command to create an ingress Secret to store the CA:

```
oc create secret generic -n test-system ingress --from-file=ca.crt=ca.crt
```

- b. Perform the following steps to add the CA into a Secret if you use OpenShift Service Mesh service virtualization, a Tech Preview feature:

- i. Run the following script from the `ibm-rtas-prod/files` directory:

```
./files/certificate.sh -n istio-system -s istio-ingressgateway-certs
{openshift-cluster-dns-name}
```

You must replace the `{openshift-cluster-dns-name}` with the ingress DNS name that you selected for the server. You can run the following command to obtain the default value of `openshift-cluster-dns-name`:

```
oc get --namespace=openshift-ingress-operator ingresscontroller/default
-ojsonpath='{.status.domain}'
```

- ii. Run the following command to create an ingress Secret:

```
oc create secret generic -n test-system ingress \
"--from-literal=ca.crt=$(oc get -n istio-system secret istio-ingressgateway-certs
-ojsonpath='{.data.ca\.crt}' | base64 --decode)"
```

- iii. Run the following commands to enable an OpenShift route that the product creates for the Istio gateway:

```
cat <<EOF | oc apply -n istio-system -f - >/dev/null
apiVersion: maistra.io/v1
kind: ServiceMeshMemberRoll
metadata:
  name: default
spec:
  members:
    - test-system
EOF
```

When some components such as static agents or Docker agents want to communicate with Rational® Test Automation Server, the component presents its certificate to the server to verify its identity. Rational® Test

Automation Server trusts the component only if it is signed by a recognized and trusted CA. Therefore, you must add the signed CA into a trust by placing it in a Secret to enable certificates as trusted certificates.

4. Perform the following steps to install the server software:

- a. Run the following commands to update the runAsUser and fsGroup to match the Security Context Constraints (SCCs):

```
sed -i -e "s/runAsUser: 1001/runAsUser: $(oc get project test-system -oyaml \
| sed -r -n 's# *openshift.io/sa.scc.uid-range: *([0-9]*)/.*#\1#p')/g;
s/fsGroup: 1001/fsGroup: $(oc get project test-system -oyaml \
| sed -r -n 's# *openshift.io/sa.scc.supplemental-groups: *([0-9]*)/.*#\1#p')/g"
ibm-rtas-prod/values-openshift.yaml
```

Rational® Test Automation Server is compatible with the restricted SCC. You must run this command to ensure that the runAsUser and fsGroup strategies match with the SCC policy.

- b. Perform one of the steps described in the following table to install the server software based on your requirement:

Step description	Step no
To install the server software	Perform <a href="#">4.b.i on page 45</a>
To install the server software and enable the OpenShift Service Mesh service virtualization through Istio, a Tech Preview feature	Perform <a href="#">4.b.ii on page 45</a> and <a href="#">4.b.iv on page 46</a>
To install the server software, enable the OpenShift Service Mesh service virtualization through Istio, a Tech Preview feature, and enable Jaeger for performance and Web UI tests logs	Perform <a href="#">4.b.iii on page 45</a> and <a href="#">4.b.iv on page 46</a>
To install the server software and enable Jaeger for performance and Web UI tests logs	Perform <a href="#">4.b.v on page 46</a>



**Remember:**

- If you upgrade the product from the previous version, then you must use the same value for `global.persistence.rwxStorageClass` parameter that you used in the previous installation.

You can run the following command to obtain the value that you used for `global.persistence.rwxStorageClass` during the installation of the server software:



```
oc get pvc -n test-system data-{my-rtas}-userlibs-0 \
  -ojsonpath='{.spec.storageClassName}' && echo
```

- The default certificate that terminates TLS connections has a single wildcard. Therefore, you must prefix a single hostname segment for the `global.ibmRtasIngressDomain` parameter.

For example, `--set global.ibmRtasIngressDomain=rtas.{dns name of the openshift cluster}`

- If you create an ingress Secret either by performing step [7.a.iv on page 31](#) or [7.b.ii on page 31](#), then you must use the `--set global.ibmRtasCertSecretOptional=false` parameter in any of the following `helm install` commands.

- Run the following command to install the server software:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.rationalLicenseKeyServer=@{rlks-ip-address}
```



**Note:** You must use the `--set global.ibmRtasCertSecretOptional=false` parameter in the `helm install` command only if you performed step [3.a.iv on page 43](#) to create an ingress Secret to store the CA.

- Run the following command to install the server software and to enable OpenShift Service Mesh service virtualization, a Tech Preview feature:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
-f ibm-rtas-prod/values-openshift-demo.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.rationalLicenseKeyServer=@{rlks-ip-address}
```

- Run the following command to install the server software, to enable OpenShift Service Mesh service virtualization, a Tech Preview feature, and to enable Jaeger for performance and Web UI tests logs:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
```

```

--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set global.rationalLicenseKeyServer=@{rlks-ip-address} \
-f ibm-rtas-prod/values-openshift-demo.yaml \
--set-string execution.annotations.sidecar\\.jaegertracing\\.io/inject=true \
--set global.jaegerAgent.internalHostName=localhost \
--set global.jaegerDashboard.externalURL={my-jaeger-dashboard-url}

```

- iv. Run the following command to enable service virtualization through Istio, a Tech Preview feature in the specific namespace:

```

oc create rolebinding istio-virtualization-enabled -n
bookinfo --clusterrole={my-rtas}-execution-istio-test-system
--serviceaccount=test-system:{my-rtas}-execution

```

Where, {my-rtas} is the name of the release that you provided during the installation of the server software.



**Note:** When you uninstall the chart, the manually created role bindings are not deleted from the namespace. You can run the following command to delete the role bindings:

```
oc delete rolebinding istio-virtualization-enabled -n bookinfo
```

- v. Run the following command to install the server software and to enable Jaeger for performance and Web UI tests logs:

```

helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.rationalLicenseKeyServer=@{rlks-ip-address} \
--set-string execution.annotations.sidecar\\.jaegertracing\\.io/inject=true \
--set global.jaegerAgent.internalHostName=localhost \
--set global.jaegerDashboard.externalURL={my-jaeger-dashboard-url}

```



**Note:** You must use the `--set global.ibmRtasCertSecretOptional=false` parameter in the `helm install` command only if you performed step 3.a.iv on page 43 to create an ingress Secret to store the CA.

You must replace the value of the variables in the `helm install` command with the actual value:

- `{my-rtas}` with the release name of your choice.



**Note:** The release name must consist of alphanumeric characters that are in lowercase or “-” (hyphen). The release name must also start with an alphabetic character and end with an alphanumeric character. For example, *my-org* or *abc-123*.

- `{openshift-cluster-dns-name}` with the ingress DNS name that you selected for the server.



**Remember:** You must provide the value that consists of alphanumeric characters that are in lowercase, “-” (hyphen) or “.” (period). The value must also start and end with an alphanumeric character.



**Note:** You can run the following command to obtain the default value of `openshift-cluster-dns-name`:

```
oc get --namespace=openshift-ingress-operator ingresscontroller/default
-ojsonpath='{.status.domain}'
```

- `{password-seed}` with a value of your choice.



**Important:** This password seed is used to create several default passwords for the server. You must store the password seed securely. When you install the server software by using the backup of the user data, you can reuse the password seed. You can use this seed to restore the backed-up files either on the current or later versions of the server software.

- **Optional:** `{rlks-ip-address}` with the IP address of Rational License Key Server, if you want to set the license value for the first time.



**Important:** If you upgrade the product from the previous version, you must configure the value of **Rational License Key Server** in the **Team Space License Configuration** window when the installation of the server is complete.

- `{my-jaeger-dashboard-url}` with the URL of the Jaeger server.

5. **Optional:** Run the following command to remove a job that is used to initialize the PostgreSQL database during the installation of the server software:

```
oc delete job {my-rtas}-postgresql-init -n test-system
```

6. Run the following command to verify and test the installed server software:

```
$ helm test {my-rtas} -n test-system
```

where `{my-rtas}` is the name of the release that was provided during the installation of the server software.

## Results

You have installed the server software. The command line displays the following information:

- Keycloak URL to manage and authenticate users.
- A URL to access the Rational® Test Automation Server UI.

## What to do next

You can perform the following tasks:

- Configure licenses for team spaces. See [Configuring licenses for team spaces on page 113](#).
- Configure the server software. See [Configuration of the server software on page 79](#).

---

### Related information

[Troubleshooting on page 479](#)

## Installation of the server software on Ubuntu

You can find information about the tasks that you can perform to install Rational® Test Automation Server software on the Ubuntu platform.

## Prerequisites for installing the server software on Ubuntu

You must complete certain tasks before you install Rational® Test Automation Server on the Ubuntu platform.

The following sections describe each prerequisite in detail:

- [Internet access on page 49](#)
- [Entitlement key on page 49](#)
- [Ubuntu Server on page 49](#)
- [Backup of user data on page 49](#)
- [Mandatory software on page 49](#)
- [k3s environment on page 50](#)



- [Service virtualization through Istio on page 50](#)
- [Collection of usage metrics on page 50](#)

## Internet access

You must have access to the internet to install Rational® Test Automation Server.

## Entitlement key

You must copy the **Entitlement key** from the [Container software library](#) to pull the images that are used by the server software. For more information, refer to [Creating an API key](#).

## Ubuntu Server

You must install supported version of Ubuntu Server and have a working Domain Name Server (DNS) that resolves the host name into a machine-readable IP address.

For more information about specific versions of software requirements, see [System Requirements on page 10](#).



**Note:** Depending on your testing workload, Rational® Test Automation Server might require more resources. You must use the entire disk space and set up Logical Volume Manager (LVM) by using the `ext4` file system. If your organization requires application data to be stored in a separate partition, then you can create a mount point at `/var/lib/rancher/k3s/storage/` with at least 128 GB capacity.

## Backup of user data

If you want to upgrade the product from a previous version, then you must perform one of the following tasks based on the existing version of the server software:

- Back up the data from V10.0.2, Fix Pack 1 or earlier. See [Backing up the user data from a previous release](#).
- Back up the data from V10.1.0 or later. See [Backing up the server data on Ubuntu on page 73](#).



**Note:** You must select the existing version of Rational® Test Automation Server from the drop-down list to view the procedure for backing up and restoring the user data for your version because the instructions differ for different versions.

## Mandatory software

You must install the following mandatory software:

- Helm. For more information, refer to the [Helm](#) documentation. For more information about specific versions of software requirements, see [System Requirements on page 10](#).



**Note:** The Helm command must be in one of the directories in your **PATH** environment variable.

- OpenSSH Server. For more information, refer to the Installation section in the [OpenSSH Server](#) documentation.



**Note:** If you use ssh to log in to the computer, then you can skip this step because OpenSSH is already installed on your computer.

### k3s environment

You must set up the Kubernetes environment (k3s) along with other configurations such as firewall, Jaeger, and Prometheus server. See [Setting up a Kubernetes environment \(k3s\) on Ubuntu on page 50](#).

### Service virtualization through Istio



**Disclaimer:** This release contains access to the Istio virtualized services feature in IBM® Rational® Test Automation Server as a Tech Preview. The Tech Preview is intended for you to view the capabilities of virtualized services offered by Rational® Test Automation Server, and to provide your feedback to the product team. You are permitted to use the information only for evaluation purposes and not for use in a production environment. IBM provides the information without obligation of support and "as is" without warranty of any kind.

To provide your feedback, you can send an email to [devops24@us.ibm.com](mailto:devops24@us.ibm.com).

The default configuration does not enable service virtualization through Istio. To use the service virtualization feature, you must configure it appropriately. You can virtualize the *bookinfo* sample application. You must install this application in the `bookinfo` namespace. For more information about the *bookinfo* application, refer to the [Istio](#) documentation.

For more information about how to enable service virtualization through Istio, see [Setting up a Kubernetes environment \(k3s\) on Ubuntu on page 50](#).

### Collection of usage metrics

If you want Rational® Test Automation Server to display the usage statistics of the virtual service instances, you must install the Prometheus server at the time of server installation.

### Setting up a Kubernetes environment (k3s) on Ubuntu

You must set up a Kubernetes environment (k3s) so that you can install the server software on an Ubuntu server. You can use the script that is provided with Rational® Test Automation Server to set up a Kubernetes environment (k3s).

## Before you begin

You must have completed the following tasks:

- Installed the following software:
  - OpenSSH server
  - Helm
- Ensured that your computer has a Domain Name Server (DNS) resolvable host name to resolve the host name into a machine-readable IP address.

## About this task

As part of the Kubernetes environment (k3s) set up, you can install the following software:

- **Jaeger:** By using this software, you can trace test logs and Jaeger-based reports when you run tests.
- **Prometheus server:** By using this software, you can monitor your system resources by using metrics data that are collected by a Prometheus server.

1. Log in to the Ubuntu server using an SSH session.
2. Run the following command to retrieve the case from the IBM Cloud Pack repository:

```
curl -o ibm-rtas-case-6.1021.0.tgz
https://raw.githubusercontent.com/IBM/cloud-pak/master/repo/case/ibm-rtas-case-6.1021.0.tgz
```

3. Run the following commands to fetch the scripts that are used to install Kubernetes:

```
tar xvf ibm-rtas-case-6.1021.0.tgz
chmod +x ibm-rtas-case/inventory/ibmRtasBase/files/*.sh
```

4. Perform one of the steps described in the following table to install the k3s Kubernetes environment based on your requirement:

Step description	Step no
To install the Kubernetes environment (k3s)	Perform <a href="#">4.a on page 52</a>
To install the Kubernetes environment (k3s) by overriding the default name	Perform <a href="#">4.b on page 52</a>
To install the Kubernetes environment (k3s) and enable the service virtualization through Istio, a Tech Preview feature	Perform <a href="#">4.c on page 52</a>
To install the Kubernetes environment (k3s) by overriding the default name and enable the service virtualization through Istio, a Tech Preview feature	Perform <a href="#">4.d on page 52</a>

- a. Run the following commands to install the Kubernetes with a default domain name that is either based on IP address or fully qualified hostname:

Ubuntu version	Commands to be run
18.04	<pre>\$ cd ibm-rtas-case/inventory/ibmRtasBase/files \$ sudo ./ubuntu-init.sh</pre>
20.04	<pre>\$ cd ibm-rtas-case/inventory/ibmRtasBase/files \$ sudo HOME=\$HOME ./ubuntu-init.sh</pre>

- b. Run the following commands to install the Kubernetes environment (k3s) by overriding the default name:

Ubuntu version	Commands to be run
18.04	<pre>\$ cd ibm-rtas-case/inventory/ibmRtasBase/files \$ sudo INGRESS_DOMAIN={rtas.}myorg.com ./ubuntu-init.sh</pre>
20.04	<pre>\$ cd ibm-rtas-case/inventory/ibmRtasBase/files \$ sudo INGRESS_DOMAIN={rtas.}myorg.com HOME=\$HOME ./ubuntu-init.sh</pre>

- c. Run the following command to install the Kubernetes environment (k3s) and to enable the service virtualization through Istio, a Tech Preview feature:

Ubuntu version	Commands to be run
18.04	<pre>\$ cd ibm-rtas-case/inventory/ibmRtasBase/files \$ sudo ./ubuntu-init.sh --demo</pre>
20.04	<pre>\$ cd ibm-rtas-case/inventory/ibmRtasBase/files \$ sudo HOME=\$HOME ./ubuntu-init.sh --demo</pre>

- d. Run the following command to install the Kubernetes environment (k3s) by overriding the default name and to enable the service virtualization through Istio, a Tech Preview feature:

Ubuntu version	Commands to be run
18.04	<pre>\$ cd ibm-rtas-case/inventory/ibmRtasBase/files \$ sudo INGRESS_DOMAIN={rtas.}myorg.com ./ubuntu-init.sh --demo</pre>
20.04	<pre>\$ cd ibm-rtas-case/inventory/ibmRtasBase/files \$ sudo INGRESS_DOMAIN={rtas.}myorg.com HOME=\$HOME ./ubuntu-init.sh --demo</pre>

where:

- *{rtas.}* is a sub-domain name that you specified for the server. For example, `testenv`.



**Note:** The sub-domain must consist of lowercase alphanumeric characters, "-" (hyphen) or "." (period). Also, the value must start and end with an alphanumeric character.

- *myorg.com* is the domain name of your organization. For example, `ibm.com`

You can access the product through a web browser by using any of the following methods:

- **Fully Qualified Hostname:** When the server is configured, you can use `hostname -f` command to get the fully qualified host name defined in the DNS to access Rational® Test Automation Server. For example, `rtas.myorg.com`
- **IP address:** You can use the IP address to access Rational® Test Automation Server when you cannot create a specific DNS record for the server. For example, `ip-address.nip.io`.

## Result

On completion of the `ubuntu-init.sh` script, a namespace with the name `test-system` is created to install the server software and the output displays the following information on the command-line interface:

- The `INGRESS_DOMAIN` that is in use. This is the URL from where you can access Rational® Test Automation Server. You must use this value for the **global.ibmRtasIngressDomain** parameter in step 5 on page 56 in the server installation topic.
- The DNS information that the Kubernetes cluster uses to resolve names.
- Certificate Authority (CA) that you must import into the browser to prevent certificate errors.

You can run the following command to get the certificate from the system:

```
kubectl get secret ingress -n test-system -o jsonpath={.data.ca\\.crt} | base64 -d
```

- Instructions to confirm whether the Kubernetes environment has started.

You can refer to the **Results** section for more details on how to verify that the Kubernetes environment has started.

5. Perform one of the following options to configure a firewall:

**Choose from:**

- Run the following script to configure the firewall that allows traffic on *cni0* and port *443*:

Ubuntu version	Command to be run
18.04	\$ sudo ./ubuntu-firewall.sh
20.04	\$ sudo HOME=\$HOME ./ubuntu-firewall.sh



**Note:** You must consult your network administrator before you run this script, and confirm whether the firewall is compatible with your corporate policy.

- Update the firewall that allows traffic on *cni0* and port *443*, if your Ubuntu server is already configured with the firewall.

6. **Optional:** Run the following command to enable the Jaeger traces for performance and Web UI tests:

```
./service.sh expose jaeger
```



**Note:** If you do not enable Jaeger, Rational® Test Automation Server produces text output in a microservice log file instead of the Jaeger traces when you run performance and Web UI test assets.



**Important:** The Jaeger traces are not protected, thus, any information logged into the Jaeger server might be accessible by anyone who has or discovers the `<server-url>/jaeger` URL.

7. **Optional:** Run the following command to enable the Prometheus server to monitor your system resources by using metrics data:

```
./service.sh expose prometheus
```



**Important:** The Prometheus metrics are not protected, thus, any information logged into the Prometheus server might be accessible by anyone who has or discovers the `<server-url>/prometheus` URL.

## Results

You have set up the Kubernetes environment on Ubuntu.

## What to do next

- You must log in to the server host system again after the installation process is completed so that changes to the group membership are applied.



**Note:** You can run the `kubectl get pods -A` command to verify that the Kubernetes environment is working. After a while, the status of the pods display a `Running Or Complete` state.

- You can install the server software. See [Installing the server software on Ubuntu by using k3s on page 55](#).

### Related information

[Jaeger Operator](#)

[Prometheus server](#)

[Troubleshooting on page 479](#)

## Installing the server software on Ubuntu by using k3s

You can install Rational® Test Automation Server on the Ubuntu server that has a Kubernetes environment to run functional, integration, and performance tests. Rational® Test Automation Server combines test data, test environments, and test runs and reports into a single, web-based browser for testers and non-testers.

### Before you begin

You must have performed the following tasks:

- Completed the tasks provided in the Prerequisites section. See [Prerequisites for installing the server software on Ubuntu on page 48](#).
- Set up the Kubernetes environment (k3s). See [Setting up a Kubernetes environment \(k3s\) on Ubuntu on page 50](#).
- Logged in to the server host system again after you completed the k3s environment setup.
- Copied the following values to be used during the installation process:
  - The **Entitlement key** from the [Container software library](#).
  - The `INGRESS_DOMAIN` value that is displayed on completion of the `ubuntu-init.sh` script.

1. Log in to the Ubuntu server using an SSH session.
2. Add the entitlement registry to Helm to access the server install charts by running the following command:

```
helm repo add ibm-helm https://raw.githubusercontent.com/IBM/charts/master/repo/ibm-helm
```

3. Run the following command to get the latest updates from the repository:

```
helm repo update
```

4. Create a Secret to pull the images that are used by Rational® Test Automation Server by running the following command:

```
kubectll create secret docker-registry cp.icr.io \
-n test-system \
--docker-server=cp.icr.io \
--docker-username=cp \
--docker-password={your_entitlement_key} \
--docker-email=example@abc.com
```



**Notes:**

- You must substitute {your\_entitlement\_key} with the key that you copied from the [Container software library](#).
- You can replace example@abc.com with the email address of the administrator if required.

5. Perform the following steps to install the server software:

- a. Run the following command to get the latest updates from the repository:

```
helm repo update
```

- b. Run the following command to retrieve the charts required to install the server software:

```
helm pull --untar ibm-helm/ibm-rtas-prod --version 6.1021.1
```


- c. Run the following command to provide the execution permission for the scripts that are available in the files directory:

```
chmod +x ibm-rtas-prod/files/*.sh
```

- d. Perform one of the steps described in the following table to install the server software based on your requirement:

Step description	Step no
To install the server software	Perform <a href="#">5.d.i on page 57</a>
To install the server software and enable the service virtualization through Istio, a Tech Preview feature	Perform <a href="#">5.d.ii on page 57</a> and <a href="#">5.d.iv on page 57</a>
To install the server software, enable the service virtualization through Istio, a Tech Preview feature, and to use another instance of the Jaeger UI	Perform <a href="#">5.d.iii on page 57</a> and <a href="#">5.d.iv on page 57</a>



Step description	Step no
<p>To install the server software and to use another instance of the Jaeger UI</p> <p> <b>Note:</b> You must perform this step only if you want to use another instance of Jaeger than the one you installed during the setting up of the Kubernetes k3s environment.</p>	<p>Perform <a href="#">5.d.v</a> on page 58</p>

- i. Run the following command to install the server software:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-k3s.yaml \
--set global.ibmRtasIngressDomain={my-ingress-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set global.rationalLicenseKeyServer=@{rlks-ip-address}
```

- ii. Run the following command to install the server software and to enable Istio service virtualization, a Tech Preview feature:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-k3s.yaml \
--set global.ibmRtasIngressDomain={my-ingress-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set global.rationalLicenseKeyServer=@{rlks-ip-address} \
-f ibm-rtas-prod/values-k3s-demo.yaml
```

- iii. Run the following command to install the server software, to enable Istio service virtualization, a Tech Preview feature, and to use another instance of Jaeger than the one you installed during the setting up of the Kubernetes k3s environment:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-k3s.yaml \
--set global.ibmRtasIngressDomain={my-ingress-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set global.rationalLicenseKeyServer=@{rlks-ip-address} \
-f ibm-rtas-prod/values-k3s-demo.yaml \
--set-string execution.annotations.sidecar\\.jaegertracing\\.io/inject=true \
--set global.jaegerAgent.internalHostName=localhost \
--set global.jaegerDashboard.externalURL={my-jaeger-dashboard-url}
```

- iv. Run the following command to enable service virtualization through Istio, a Tech Preview feature in the specific namespace:

```
kubectl create rolebinding istio-virtualization-enabled -n
bookinfo --clusterrole={my-rtas}-execution-istio-test-system
--serviceaccount=test-system:{my-rtas}-execution
```

Where, {my-rtas} is the name of the release that is provided during the installation of the server software.



**Note:** When you uninstall the chart, the manually created role bindings are not deleted from the namespace. You can run the following command to delete the role bindings:

```
kubectl delete rolebinding istio-virtualization-enabled -n bookinfo
```

- v. Run the following command to install the server software and to use another instance of Jaeger than the one you installed during the setting up of the Kubernetes k3s environment:

```
helm install {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-k3s.yaml \
--set global.ibmRtasIngressDomain={my-ingress-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set global.rationalLicenseKeyServer=@{rlks-ip-address} \
--set-string execution.annotations.sidecar\\.jaegertracing\\.io/inject=true \
--set global.jaegerAgent.internalHostName=localhost \
--set global.jaegerDashboard.externalURL={my-jaeger-dashboard-url}
```

You must substitute the value of the following variables with the actual value in the command:

- {my-rtas} with the release name of your choice.




**Note:** The release name must consist of alphanumeric characters that are in lowercase or “-” (hyphen). The release name must also start with an alphabetic character and end with an alphanumeric character. For example, *my-org* or *abc-123*.


- {my-ingress-dns-name} with the INGRESS\_DOMAIN value that is displayed on completion of the `ubuntu-init.sh` script.
- {password-seed} with a value of your choice.



**Important:** This password seed is used to create several default passwords for the server. You must store the password seed securely. When you install the server software by using the backup of the user data, you can reuse the password seed. You

 can use this seed to restore the backed-up files either on the current or later versions of the server software.

- **Optional:** `{rlks-ip-address}` with the IP address of Rational License Key Server, if you want to set the license value for the first time.

 **Important:** If you upgrade the product from the previous version, you must configure the value of **Rational License Key Server** in the **Team Space License Configuration** window when the installation of the server is complete.

- `{my-jaeger-dashboard-url}` with the URL of the Jaeger server.

6. **Optional:** Run the following command to remove a job that is used to initialize the PostgreSQL database during the installation of the server software:

```
kubectl delete job {my-rtas}-postgresql-init -n test-system
```

7. **Optional:** Perform the following steps to migrate data into Rational® Test Automation Server, if you upgraded the server software from the previous version (10.1.0, 10.1.1, or 10.1.2):

- a. Run the following script from the `ibm-rtas-prod/files` directory to create a directory that contains metadata related to the Persistent Volume Claims and their Persistent Volumes:

```
migrate.sh create-pvcs -n test-system {my-rtas}
```

- b. Run the following script from the `ibm-rtas-case/inventory/ibmRtasBase/files` directory to back up the data:

```
sudo backup.sh create-pvc-links -v ~/migration-pvc-links
```

- c. Run the following command to stop the cluster and Rational® Test Automation Server:

```
k3s-killall.sh
```

- d. Run the following script from the `ibm-rtas-case/inventory/ibmRtasBase/files` directory to restore the backed-up data:

```
sudo backup.sh restore -v ~/migration-pvc-links --release <backup-release>:<target-release>
<backup-file-name>
```



**Note:** You must replace the following variables with the actual value:



- `<backup-release>` with the Helm release name of the server where the backup data is stored.
- `<target-release>` with the Helm release name of the server where you want to restore the data.
- `<backup-file-name>` with the name of the backed-up file that you saved.

e. Run the following command to restart Kubernetes and to start Rational® Test Automation Server:

```
sudo systemctl start k3s
```

f. Run the following script from the `ibm-rtas-prod/files` directory to merge the data into the server:

```
migrate.sh merge-dbs -n test-system {my-rtas}
```

g. Run the following command to remove the resources that were created during the migration process:

```
migrate.sh delete-temp-resources -n test-system {my-rtas}
```

**8. Optional:** Perform the following steps to restore the backed-up user data from previous version (10.1.3 or later) to the latest version:

a. Run the following script from the `ibm-rtas-case/inventory/ibmRtasBase/files` directory to create a directory that contains metadata related to the Persistent Volume Claims and their Persistent Volumes:

```
sudo backup.sh create-pvc-links
```

b. Stop the Kubernetes cluster by running the `k3s-killall.sh` command.

c. Restore the backed-up user data by running the following commands:

```
sudo ./backup.sh restore [options] <backup-file-name>
```



**Note:** You must replace `<backup-file-name>` with the name of the backed-up file that you saved.

You can use the following parameters along with the restore command:

- `--namespace` or `-n`: Use this parameter to restore a specific namespace from the backup file. If you do not mention the namespace, then volumes from all the namespaces in the backup file are restored. You can map one namespace to another namespace by using colon (:). The syntax is:

```
--namespace <name of the namespace> [ :<target-namespace> ]
```

- `--release` or `-r`: Use this parameter if the Helm release name of the server to which the backup is being restored is different than the Helm release name of the server where the backup was taken. The syntax is:

```
--release <backup-release>:<target-release>
```

- `--volumes` or `-v`: Use this parameter to specify the directory path of the Volumes. The syntax is:

```
--volumes <path-of-the-directory>
```

- `-k` or `--confirm`: Use this parameter to skip the confirmation step.

d. Restart the Kubernetes cluster by running the `systemctl start k3s` command to start Rational® Test Automation Server.

e. Run the following script from the `ibm-rtas-prod/files` directory to create all the missing databases:

```
migrate.sh create-missing-dbs {my-rtas}
```



**Note:** You can expect that the output of the command to contain a number of errors pertaining to objects that already exist. They do not indicate a problem with the execution of the script.

9. Run the following command to verify and test the installed server software:

```
$ helm test {my-rtas} -n test-system
```

where `{my-rtas}` is the name of the release that was provided during the installation of the server software.

## Results

On completion of the installation of server software, the output displays the following information on the command-line interface:

- Instructions to access Keycloak to manage and authenticate users.

The user name can be `keycloak` and the password can be retrieved by running the following command:

```
kubectrl get secret -n namespace rtas-keycloak-postgresql -o jsonpath="{.data.password}" | base64 --decode; echo
```

where:

- `rtas` is a sub-domain name that you selected for the server.
  - `namespace` is the name of the namespace that you created.
- The URL to access the Rational® Test Automation Server UI.

## What to do next

You can perform the following tasks:

- Configure licenses for team spaces. See [Configuring licenses for team spaces on page 113](#).
- Configure the server software. See [Configuration of the server software on page 79](#).

Related information

[Helm documentation](#)

[Troubleshooting on page 479](#)

## Server software upgrade methods

When you want to use the enhanced functionalities of Rational® Test Automation Server, you must upgrade the product to the latest version of the server software.

You can upgrade the server software by using two methods:

- **In-place upgrade:** In this method, you can upgrade the server software in the same location that contained 10.1.3 or later version of the server software by using the `helm upgrade` command.
- **Upgrade (by new install):** In this method, you can upgrade the server software by uninstalling the existing version of the product, and then by installing the latest version of the product.



**Note:** The upgrade procedures are different based on the existing version of the software.



**Important:** On the Ubuntu platform, the **in-place upgrade** method is not available. You must use the **upgrade (by new install)** method to upgrade the server software.

To learn more about server software upgrade methods on platforms such as Red Hat OpenShift and Ubuntu, refer to the following topics:

### Server software upgrade on Red Hat OpenShift

When you want to use the latest version of the server software on Red Hat OpenShift, you must upgrade Rational® Test Automation Server from the previous version of the software.

On the Red Hat OpenShift platform, you can either use **in-place upgrade** or **upgrade (by new install)** methods depending on existing version of the server software.

Existing version of the software	Method to use
10.1.3 or later	In-place upgrade
10.1.2 or earlier	Upgrade (by new install)

## Upgrading the server software by using the in-place upgrade method

When you want to install the latest version of the server software in the same location that contained the 10.1.3 or later, then you can upgrade Rational® Test Automation Server by using the `helm upgrade` command.

### Before you begin

You must have completed the following tasks:

- Informed users that Rational® Test Automation Server is offline temporarily during the upgrade process.
- Installed Helm. For more information, refer to the Installing a Helm chart on an OpenShift Container Platform cluster section in the [Red Hat OpenShift](#) documentation.
- Completed all test executions that are running on the existing version of Rational® Test Automation Server.
- Stopped all stub executions that are running on the existing version of Rational® Test Automation Server.
- Canceled any scheduled test runs that have a future date or time.
- Copied an Entitlement key from the [Container software library](#) to pull the images used by the server software. For more information, refer to [Creating an API key](#).

**Optional.** You can back up the user data from the previous version of the product. If the upgrade fails, then you can use that backup file to restore it on latest version of the server software. See [Backing up the server data on Red Hat OpenShift on page 71](#).



**Note:** For more information about specific versions of software requirements, see [System Requirements on page 10](#).

1. Log in to your OCP cluster as a cluster administrator by running the `oc login` command.
2. Add the entitlement registry to Helm to access the server install charts by running the following command:

```
helm repo add ibm-helm https://raw.githubusercontent.com/IBM/charts/master/repo/ibm-helm
```

3. Run the following command to get the latest updates from the repository:

```
helm repo update
```

4. Run the following command to retrieve the charts:

```
helm pull --untar ibm-helm/ibm-rtas-prod --version 6.1021.1
```

5. Create a Secret to pull images that are used by Rational® Test Automation Server by running the following commands:

```
oc create secret docker-registry cp.icr.io \
-n test-system \
--docker-server=cp.icr.io \
--docker-username=cp \
--docker-password={your_entitlement_key} \
--docker-email=example@abc.com
```

**Notes:**

- You must substitute `{your_entitlement_key}` with the key that you copied from the [Container software library](#).
- You can replace `example@abc.com` with the email address of the administrator if required.



**Remember:** `test-system` is the name of the namespace. If you created a namespace by using a different value, then you must use that value in place of the `test-system` in all the instances in this procedure.

6. Perform the following steps to upgrade the server software:

- a. Run the following commands to update the `runAsUser` and `fsGroup` to match the Security Context Constraints (SCC):

```
sed -i -e "s/runAsUser: 1001/runAsUser: $(oc get project test-system -oyaml \
| sed -r -n 's# *openshift.io/sa.scc.uid-range: *([0-9]*)/.*#\1#p')/g;
s/fsGroup: 1001/fsGroup: $(oc get project test-system -oyaml \
| sed -r -n 's# *openshift.io/sa.scc.supplemental-groups: *([0-9]*)/.*#\1#p')/g"
ibm-rtas-prod/values-openshift.yaml
```

Rational® Test Automation Server is compatible with the restricted Security Context Constraint. You must run this command to ensure that the `runAsUser` and `fsGroup` strategies match with the SCC policy.

- b. Perform one of the steps described in the following table to upgrade the server software based on your requirement:

Step description	Step no
To upgrade the server software	Perform <a href="#">6.b.i on page 65</a>
To upgrade the server software and enable the OpenShift Service Mesh service virtualization through Istio, a Tech Preview feature	Perform <a href="#">6.b.ii on page 65</a> and <a href="#">6.b.iv on page 66</a>
To upgrade the server software, enable the OpenShift Service Mesh service virtualization through Istio, a Tech Preview feature, and enable Jaeger for performance and Web UI tests logs	Perform <a href="#">6.b.iii on page 66</a> and <a href="#">6.b.iv on page 66</a>



Step description	Step no
To upgrade the server software and enable Jaeger for performance and Web UI tests logs	Perform <a href="#">6.b.v</a> on page <a href="#">66</a>

**Remember:**

- You can run the following command to obtain the value that you used for `global.persistence.rwxStorageClass` during the installation of the server software:

```
oc get pvc -n test-system data-{my-rtas}-userlibs-0 \
  -ojsonpath='{.spec.storageClassName}' && echo
```

- The default certificate that terminates TLS connections has a single wildcard. Therefore, you must prefix a single hostname segment for the `global.ibmRtasIngressDomain` parameter.

For example, `--set global.ibmRtasIngressDomain=rtas.{dns name of the openshift cluster}`

- You must use the `--set global.ibmRtasCertSecretOptional=false` parameter in any of the following `helm upgrade` commands only if you created an ingress Secret to store the CA during the previous installation of the server software.
- You must provide the values of the variable that you used during the installation of the previous version of the server software.

- Run the following command to upgrade the server software:

```
helm upgrade {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io
```

- Run the following command to upgrade the server software and to enable the OpenShift Service Mesh service virtualization feature:

```
helm upgrade {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
-f ibm-rtas-prod/values-openshift-demo.yaml
```

- iii. Run the following command to upgrade the server software, to enable the OpenShift Service Mesh service virtualization feature, and to enable Jaeger for performance and Web UI tests logs:

```
helm upgrade {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
-f ibm-rtas-prod/values-openshift-demo.yaml \
--set-string execution.annotations.sidecar\\.jaegertracing\\.io/inject=true \
--set global.jaegerAgent.internalHostName=localhost \
--set global.jaegerDashboard.externalURL={my-jaeger-dashboard-url}
```

- iv. Run the following command to enable service virtualization through Istio, a Tech Preview feature in the specific namespace:

```
oc create rolebinding istio-virtualization-enabled -n
bookinfo --clusterrole={my-rtas}-execution-istio-test-system
--serviceaccount=test-system:{my-rtas}-execution
```

Where, {my-rtas} is the name of the release that you provided during the installation of the server software.



**Note:** When you uninstall the chart, the manually created role bindings are not deleted from the namespace. You can run the following command to delete the role bindings:

```
oc delete rolebinding istio-virtualization-enabled -n bookinfo
```

- v. Run the following command to upgrade the server software and to enable Jaeger for performance and Web UI tests logs:

```
helm upgrade {my-rtas} ./ibm-rtas-prod -n test-system \
--set license=true \
-f ibm-rtas-prod/values-openshift.yaml \
--set global.persistence.rwxStorageClass=ibmc-file-gold \
--set global.ibmRtasIngressDomain=rtas.{openshift-cluster-dns-name} \
--set global.ibmRtasPasswordAutoGenSeed={password-seed} \
--set global.ibmRtasRegistryPullSecret=cp.icr.io \
--set-string execution.annotations.sidecar\\.jaegertracing\\.io/inject=true \
--set global.jaegerAgent.internalHostName=localhost \
--set global.jaegerDashboard.externalURL={my-jaeger-dashboard-url}
```

7. Run the following command to verify and test the upgraded server software:

```
$ helm test {my-rtas} -n test-system
```

where {my-rtas} is the name of the release that was provided during the installation of the server software.

## Results

On the successful upgrade of Rational® Test Automation Server, the output displays the following information:

- Keycloak URL to manage and authenticate users.
- A URL to access the Rational® Test Automation Server UI.

### What to do next

You can perform the following tasks:

- Configure licenses for team spaces. See [Configuring licenses for team spaces on page 113](#).
- Configure the server software. See [Configuration of the server software on page 79](#).

---

Related information

[Troubleshooting on page 479](#)

## Server software upgrade by using upgrade (by new install) method

When you do not have any specific requirement to upgrade the server software, you can uninstall the existing version of the server software, and then install the latest version.

Before you upgrade the server software, you must ensure that you have completed the following tasks:

- Installed Helm. For more information, refer to the Installing a Helm chart on an OpenShift Container Platform cluster section in the [Red Hat OpenShift](#) documentation.
- Completed all test executions that are running on the existing version of Rational® Test Automation Server.
- Stopped all stub executions that are running on the existing version of Rational® Test Automation Server.
- Canceled any scheduled test runs that have a future date or time.
- Informed users that Rational® Test Automation Server is offline temporarily during the upgrade process.



**Note:** For more information about specific versions of software requirements, see [System Requirements on page 10](#).

In upgrade (by new install) method, depending on the existing version of the software, you can upgrade the server software by using any of the following options.

To upgrade Rational® Test Automation Server (10.1.0 or later) to latest version, you must perform these tasks in sequence as listed in the following table:

Tasks	Task description	More information
1	Back up the user data from the previous version of Rational® Test Automation Server.	<a href="#">Backing up the server data on Red Hat OpenShift on page 71</a>
2	Uninstall the previous version of Rational® Test Automation Server.	<a href="#">Uninstalling the server software from Red Hat OpenShift on page 77</a>
3	Install the latest version of the server software and then migrate the data as part of the installation process.	<a href="#">Installing the server software on Red Hat OpenShift on page 29</a>

If your existing version of server software is 10.0.2, Fix Pack 1, or earlier, then you cannot directly upgrade to the latest version of the server software due to the steps involved in the migration process. Therefore, you must perform the tasks in sequence as listed in the following table:

Tasks	Task description	More information
1	Upgrade Rational® Test Automation Server 10.1.2.	<a href="#">Installation of the server software on Red Hat OpenShift</a>
2	Back up the user data from Rational® Test Automation Server 10.1.2.	<a href="#">Backing up the server data on Red Hat OpenShift on page 71</a>
3	Uninstall Rational® Test Automation Server 10.1.2.	<a href="#">Uninstalling the server software</a>
4	Install the latest version of the server software and then migrate the data as part of the installation process.	<a href="#">Installing the server software on Red Hat OpenShift on page 29</a>

## Server software upgrade on Ubuntu

When you want to use the latest version of the server software on Ubuntu, you must upgrade Rational® Test Automation Server from the previous version of the software.



**Important:** On the Ubuntu platform, the **in-place upgrade** method is not available. You must use the **upgrade (by new install)** method to upgrade the server software.

Before you upgrade the server software, you must ensure that you have completed the following tasks:

- Installed Helm. For more information, refer to the [Helm](#) documentation.
- Completed all test executions that are running on the existing version of Rational® Test Automation Server.
- Stopped all stub executions that are running on the existing version of Rational® Test Automation Server.
- Canceled any scheduled test runs that have a future date or time.
- Informed users that Rational® Test Automation Server is offline temporarily during the upgrade process.



**Note:** For more information about specific versions of software requirements, see [System Requirements on page 10](#).

In upgrade (by new install) method, depending on the existing version of the software, you can upgrade the server software by using any of the following options.

To upgrade Rational® Test Automation Server (10.1.0 or later) to latest version, you must perform these tasks in sequence as listed in the following table:

Tasks	Task description	More information
1	Back up the user data from the previous version of Rational® Test Automation Server.	<ul style="list-style-type: none"> <li>• For 10.1.0 or 10.1.1, refer to <a href="#">Backing up user data</a>.</li> <li>• For 10.1.2 or later, refer to <a href="#">Backing up user data</a>.</li> </ul>
2	Uninstall the previous version of Rational® Test Automation Server.	<a href="#">Uninstalling the server software from Ubuntu on page 78</a>
3	Install the latest version of the server software and then migrate the data as part of the installation process.	<a href="#">Installing the server software on Ubuntu by using k3s on page 55</a>

If your existing version of server software is 10.0.2, Fix Pack 1, or earlier, then you cannot directly upgrade to the latest version of the server software due to the steps involved in the migration process. Therefore, you must perform the tasks in sequence as listed in the following table:

Tasks	Task description	More information
1	Upgrade Rational® Test Automation Server 10.1.2.	<a href="#">Installation of the server software on Ubuntu</a>
2	Back up the user data from Rational® Test Automation Server 10.1.2.	<a href="#">Backing up user data - 10.1.2</a>
3	Uninstall Rational® Test Automation Server 10.1.2.	<a href="#">Uninstalling the server software</a>
4	Install the latest version of the server software and then migrate the data as part of the installation process.	<a href="#">Installing the server software on Ubuntu by using k3s on page 55</a>

## Backup and restoration of the server data

You must back up all your server data before you uninstall the current version of the server software or upgrade to the latest version of the server software. You must back up the server data to avoid data loss or inaccessibility of data.

A backup is the process of creating a copy of the data on your system and storing it elsewhere, generally on secondary storage. You can then use that copy to recover if your original data is lost or becomes inaccessible.

A restore is a process of copying the backed-up data from the secondary storage and restoring it to the original location. You can restore the backed-up data when your original data is lost or becomes inaccessible.

You must back up and restore the data when you perform the following tasks:

- Move the existing environment to a new system.
- Change the name of the release or namespace that you used during the installation of the server software.
- Minimize the downtime of Rational® Test Automation Server during disaster recovery.
- Upgrade to the latest version of the server software.

To learn more about backup and restoration of the server data on platforms such as Ubuntu and Red Hat OpenShift, refer to the following topics:

- [Backup and restoration of the server data on Ubuntu on page 73](#)
- [Backup and restoration of the server data on Red Hat OpenShift on page 70](#)

## Backup and restoration of the server data on Red Hat OpenShift

To secure the data in Rational® Test Automation Server that is installed on the Red Hat OpenShift platform, you can back up the data. At any point in time, after you install Rational® Test Automation Server, you can restore the backed-up data.

### Preparing Red Hat OpenShift cluster to backup and restore the server data

You must prepare your OpenShift cluster before you back up or restore the data of Rational® Test Automation Server.

#### **Before you begin**

You must have installed OpenShift CLI. For more information, refer to the Getting started with the CLI section in the [Red Hat OpenShift](#) documentation.

#### **About this task**

Velero is one of the tools that are available to back up and restore the data of Rational® Test Automation Server that is installed on the Red Hat OpenShift platform. You must prepare your cluster before you back up or restore the data by using Velero. You can also use the other tools to back up and restore the data. If you use a different tool, then you must include the Persistent Volumes in the cluster.

1. Log in to the cluster by using `oc login`.
2. Install and configure Velero with the Restic Integration.
3. Set the name of the namespace in which Rational® Test Automation Server is installed by running the following command:

```
NS=<namespace>
```

4. Update stateful sets to apply the annotations required by Velero to back up the PVs used by the pods by running the following commands:

```
for sts in $(oc get sts -n "$NS" -o name); do \
  if ! oc -n "$NS" patch --type=json "$sts" -p \
    '[{"op":"add","path":"/spec/template/metadata/annotations/backup.velero.io~1backup-volumes",
"value":"data"}]' 2>/dev/null; then
    oc -n "$NS" patch --type=json "$sts" -p \
      '[{"op":"add","path":"/spec/template/metadata/annotations",
"value":{"backup.velero.io/backup-volumes":"data"}}]'
  fi \
done
```

5. Change the security restriction of the pods by running the following commands:

```
for sts in $(oc get sts -n "$NS" -oname); do \
  if oc get -n "$NS" "$sts" -ojsonpath='{.spec.template.spec.securityContext}' | grep -q
  "runAsNonRoot:true"; then \
    echo $sts
    oc patch -n "$NS" "$sts" --type json \
      -p '[{"op":"replace", "path":"/spec/template/spec/securityContext", "value":
{"runAsNonRoot": false}}]'
  fi \
done
```

## Results

You have prepared your Red Hat OpenShift cluster to back up the server data.

## What to do next

You can back up the server data. See [Backing up the server data on Red Hat OpenShift on page 71](#).

---

Related information

[Velero Documentation](#)

## Backing up the server data on Red Hat OpenShift

When you want to upgrade to a new version of the server software or to move your existing environments to new systems, you must back up the server data.

### Before you begin

You must have completed the following tasks:

- Been assigned the same role that was required to install and uninstall the server software.
- Installed the server software and all of the Rational® Test Automation Server pods are in `Running` state.

- Communicated to the users that Rational® Test Automation Server might be unavailable for some time until the process is complete.
- Prepared your cluster to back up and restore data by using Velero. See [Preparing Red Hat OpenShift cluster to backup and restore the server data on page 70](#).

1. Log in to the cluster by using `oc login`.
2. Start the backup process by running the following command:

```
velero backup create <backup_file_name> --include-namespaces=<name_of_the_namespace>
```



**Note:** You must replace `<backup_file_name>` and `<name_of_the_namespace>` with the actual value in the command.

## Results

You have backed up the data of Rational® Test Automation Server.

---

Related information

[Velero Documentation](#)

## Restoring the server data on Red Hat OpenShift

You can restore the data that is backed up in Rational® Test Automation Server at any point in time after you install latest version of server software.

### Before you begin

You must have completed the following tasks:

- Been assigned the same role that was required to install and uninstall the server software.
- Communicated to the users that Rational® Test Automation Server might be unavailable for some time until the process is complete.
- Backed up the data from Rational® Test Automation Server.

1. Log in to the cluster by using `oc login`.
2. Start the restore process by entering the following command:

```
velero restore create --from-backup=<backup-name> --restore-volumes
```

## Results

You have restored the data of Rational® Test Automation Server.



---

Related information

[Velero Documentation](#)

## Backup and restoration of the server data on Ubuntu

To secure the data of Rational® Test Automation Server that is installed on the Ubuntu server, you can back up the data. At any point in time, after you install Rational® Test Automation Server, you can restore the backed-up data.

### Backing up the server data on Ubuntu

When you want to upgrade to a new version of the server software or to move your existing environments to new systems, you must back up the server data.

#### Before you begin

You must have completed the following tasks:

- Been assigned the same role that was required to install and uninstall the server software.
- Been granted with the *sudo* access.
- Installed the server software and all of the Rational® Test Automation Server pods are in `Running` state.
- Communicated to the users that Rational® Test Automation Server might be unavailable for some time until the process is complete.

1. Log in to the Ubuntu server and open a terminal.
2. Run the following command to retrieve the case from the IBM Cloud Pak repository:

```
curl -o ibm-rtas-case-6.1021.0.tgz
https://raw.githubusercontent.com/IBM/cloud-pak/master/repo/case/ibm-rtas-case-6.1021.0.tgz
```

3. Run the following commands to fetch the scripts that are used to install Kubernetes:

```
tar xvf ibm-rtas-case-6.1021.0.tgz
chmod +x ibm-rtas-case/inventory/ibmRtasBase/files/*.sh
```

4. Change to the `ibm-rtas-case/inventory/ibmRtasBase/files` directory.

This directory contains the `backup.sh` script which is required to complete the backup operation.

5. Create a directory that contains metadata related to the Persistent Volume Claims and their Persistent Volumes by running the following command:

```
sudo ./backup.sh create-pvc-links
```

You can use the following optional parameter along with the `create-pvc-links` command:

`--volumes` or `-v`: Use this parameter to specify the directory path of the Volumes.

For example, `backup.sh create-pvc-links -v ibm-rtas-case/inventory/ibmRtasBase/files/my-pvc-links` creates a directory called `my-pvc-links` that stores the metadata required for backup.



**Remember:**

- If you did not provide the volume parameter, by default, the command creates a sub-directory in the same directory where you have the backup script.
- You must ensure that the directory you create must be empty or not exist to avoid script failure.
- If you specify a directory by using the `-v` parameter, then you must use the same parameter value when you restore the data.

6. Run the following command to stop the cluster and Rational® Test Automation Server:

```
k3s-killall.sh
```

7. Run the following command to create a backup of the existing user data:

```
sudo ./backup.sh create [options] <backup-file-name>
```

After you run this command, a backup of the local Persistent Volumes is created. The backup is created as tar archives that is compressed by using gzip (.tar.gz). The **create** command archives the Persistent Volumes into the `<backup-file-name>`.

You can use the following parameters along with the **create** command:

- `--namespace` or `-n`: Use this parameter to back up the Persistent Volumes in the specified namespace. If you do not mention the namespace, then all the Volumes from all the namespaces are included in the backup. The syntax is:

```
--namespace <name of the namespace>
```

- `--volumes` or `-v`: Use this parameter to specify the directory path of the Volumes. The syntax is:

```
--volumes <path-of-the-directory>
```



**Remember:**

- If you did not provide the volume parameter, by default, the command creates a sub-directory in the same directory where you have the backup script.
- If you specify a directory by using the `-v` parameter, then you must use the same parameter value when you restore the data.

For example,

```
sudo ./backup.sh create --namespace test-system my-backup.tar.gz
```

This command creates a backup file named *my-backup.tar.gz* that contains all of the Persistent Volumes associated with pods available in the *test-system* namespace.

8. Run the following command to restart the cluster and Rational® Test Automation Server:

```
sudo systemctl start k3s
```

## Results

You have backed up the data of Rational® Test Automation Server.

## Restoring the server data on Ubuntu

You can restore the data that is backed up in Rational® Test Automation Server at any point in time after you install latest version of server software.

### Before you begin

You must have completed the following tasks:

- Been assigned the same role that was required to install and uninstall the server software.
- Been granted with the *sudo* access.
- Communicated to the users that Rational® Test Automation Server might be unavailable for some time until the process is complete.
- Backed up the data from Rational® Test Automation Server.

### About this task

The following procedure is for the restoration of the server data from the current release. If you are upgrading the server software, then you can restore the server data from the earlier version to the latest version during the installation of the server software. For more information, see the **Related information** section.

1. Log in to the Ubuntu server and open a terminal.
2. Run the following command to retrieve the case from the IBM Cloud Pack repository:

```
curl -o ibm-rtas-case-6.1021.0.tgz
https://raw.githubusercontent.com/IBM/cloud-pak/master/repo/case/ibm-rtas-case-6.1021.0.tgz
```

3. Run the following commands to fetch the scripts that are used to install Kubernetes:

```
tar xvf ibm-rtas-case-6.1021.0.tgz
chmod +x ibm-rtas-case/inventory/ibmRtasBase/files/*.sh
```

4. Change to the *ibm-rtas-case/inventory/ibmRtasBase/files* directory.  
This directory contains the *backup.sh* script which is required to complete the restore operation.
5. Create a directory that contains metadata related to the Persistent Volume Claims and their Persistent Volumes by running the following command if you have not done before:

```
sudo ./backup.sh create-pvc-links
```

You can use the following optional parameter along with the **create-pvc-links** command:

`--volumes` or `-v`: Use this parameter to specify the directory path of the Volumes.

For example, `backup.sh create-pvc-links -v ibm-rtas-case/inventory/ibmRtasBase/files/my-pvc-links` creates a directory called `my-pvc-links` that stores the metadata required to restore your user data.



**Remember:**

- If you did not provide the volume parameter, by default, the command creates a sub-directory in the same directory where you have the backup script.
- You must ensure that the directory you create must be empty or not exist to avoid script failure.

6. Run the following command to stop the cluster and Rational® Test Automation Server:

```
k3s-killall.sh
```

7. Run the following command to restore the backed-up user data:

```
sudo ./backup.sh restore [options] <backup-file-name>
```

The **restore** command overwrites the existing Persistent Volumes with data from the `<backup-file-name>`.

You can use the following parameters along with the restore command:

- `--namespace` or `-n`: Use this parameter to restore a specific namespace from the backup file. If you do not mention the namespace, then volumes from all the namespaces in the backup file are restored. You can map one namespace to another namespace by using colon (:). The syntax is:
 

```
--namespace <name of the namespace> [:<target-namespace>]
```
- `--release` or `-r`: Use this parameter if the Helm release name of the server to which the backup is being restored is different than the Helm release name of the server where the backup was taken. The syntax is:
 

```
--release <backup-release>:<target-release>
```
- `--volumes` or `-v`: Use this parameter to specify the directory path of the Volumes. The syntax is:
 

```
--volumes <path-of-the-directory>
```
- `-k` or `--confirm`: Use this parameter to skip the confirmation step.

For example,

```
sudo ./backup.sh restore --namespace test-system:new-test-system -r rel-1:rel-2 -k my-backup.tar.gz
```

This command restores the volumes that are backed up from the `rel-1` release in the `test-system` namespace to the `rel-2` release in the `new-test-system` namespace and skips the confirmation step.

8. Run the following command to restart the cluster and Rational® Test Automation Server:

```
sudo systemctl start k3s
```



**Note:**

- The cluster and Rational® Test Automation Server might take some time to restart and until that time, you cannot access the Rational® Test Automation Server URL.
- You can run the `kubectl get pods -A` command to verify that the Kubernetes environment is working. After a while, the status of the pods must be `Running` state.

## Results

You have restored the data of Rational® Test Automation Server.

---

Related information

[Server software upgrade on Ubuntu on page 68](#)

## Uninstallation of the server software

When you no longer require Rational® Test Automation Server, you can uninstall the server software. You can uninstall the server software depending on the platform on which you installed the server software.

### Uninstalling the server software from Red Hat OpenShift

When you want to install a new version of server software or you want to reinstall the server software when an ongoing installation fails, you can uninstall the server software and its components from the Red Hat OpenShift platform.

#### Before you begin

You must have completed the following tasks:

- Installed Rational® Test Automation Server software.
- Closed Rational® Test Automation Server, any open web browsers, and all other applications that are enabled by Rational® Test Automation Server.
- **Optional:** Backed-up data from the previous version of the product.

1. Open and log in to the terminal.
2. Run the following command to stop the workload that is running:

```
oc delete all,cm,secret --execution-marker --n test-system
```



**Remember:** `test-system` is the name of the namespace. If you created a namespace by using a different value, then you must use that value in place of the `test-system` in all the instances in this procedure.

- Run the following command to uninstall the server software:

```
helm uninstall {my-rtas} -n test-system
```

The PersistentVolumeClaims and PersistentVolumes that were created during the installation are not deleted automatically. If you reinstall the server software, the user data is reused unless you specifically delete those volumes.

- Run the following command to delete all user data that is contained in PersistentVolumeClaims and PersistentVolumes:

```
oc delete project test-system
```



**Important:** If you want to migrate data from a previous version to the latest version of the product, then you must ensure to back up the data before you run this command.

## Results

You have uninstalled the server software from the Red Hat OpenShift platform.

## Uninstalling the server software from Ubuntu

When you want to install a new version of server software or you want to reinstall the server software when an ongoing installation fails, you can uninstall the server software and its components from the Ubuntu platform.

### Before you begin

You must have completed the following tasks:

- Installed Rational® Test Automation Server software.
- Closed Rational® Test Automation Server, any open web browsers, and all other applications that are enabled by Rational® Test Automation Server.
- Optional:** Backed-up data from the previous version of the product.

- Log in to the Ubuntu server using an SSH session.
- Run the following command to stop the workload that is running:

```
kubectl delete all,cm,secret --execution-marker -n test-system
```

- Run the following command to uninstall the server software:

```
helm uninstall {my-rtas} -n test-system
```

The PersistentVolumeClaims and PersistentVolumes that were created during the installation are not deleted automatically. If you reinstall the server software, the user data is reused unless you specifically delete those volumes.

4. Run the following commands to delete the entire Kubernetes environment, including all user data:

```
#Run the following command if you are on Ubuntu 18.04
cd ibm-rtas-case/inventory/ibmRtasBase/files
sudo ./ubuntu-wipe.sh --confirm

#Run the following command if you are on Ubuntu 20.04
cd ibm-rtas-case/inventory/ibmRtasBase/files
sudo HOME=$HOME ./ubuntu-wipe.sh --confirm
```

After you run this command, the system returns to the same state as if `ubuntu-init.sh` was never run.



**Important:** If you want to migrate data from a previous version to the latest version of the product, then you must ensure to back up the data before you run this command.

## Results

You have uninstalled the server software from the Ubuntu platform.

## Configuration of the server software

You can find information about the tasks that you must perform after you installed the server software to configure Rational® Test Automation Server.

The following table describes the tasks that you can perform as an administrator after you installed the server software:

Requirement	Tasks	More information
Required	Review the default user management to know how the server software manages the users and their authentication.	<a href="#">User administration on page 80</a>
Required	Import Certificate Authority (CA) into a browser to prevent certificate errors when you access the Rational® Test Automation Server UI.	<a href="#">Certificate authority: Importing and extending lists on page 92</a>
Optional	Copy the third-party application Jars to Kubernetes to run API Suites that uses a transport.	<a href="#">Copying third-party application Jars to Kubernetes on page 95</a>

Requirement	Tasks	More information
Optional	Change the password seed to provide enhanced security to Rational® Test Automation Server.	<a href="#">Changing the password seed on page 97</a>

## User administration

After you install IBM® Rational® Test Automation Server, you must consider how the software manages users and authentication.

You can review the default user management provided by the server and decide what additional controls you might want to add. If you manage users and authentication through an existing LDAP/AD server, you can review how to use that server to manage Rational® Test Automation Server users.

### Default user administration

You installed IBM® Rational® Test Automation Server and you want to know about how the software manages user access.

Rational® Test Automation Server uses Keycloak V12.0.4 (<https://www.keycloak.org/>) to manage and authenticate users.

If you manage and authenticate users by using an LDAP and Active Directory server, you can configure Keycloak to connect to that server. For more information, see [LDAP user administration on page 82](#).

Keycloak uses the concept of a realm to manage and authenticate users. When you install the server software, a realm called testserver is created for you in Keycloak. All server users belong to this realm and when they log in to the server, they log into that realm.

As an administrator, it is important to consider the following points about the server administration:

- By default, there is no administrator for Rational® Test Automation Server.

Such an administrator is required for accessing additional functions, which includes claiming ownership of server projects and unarchiving them. But you can assign administrative privileges to any user. You must do this by adding the admin role to the user in Keycloak.

- You must sign up a user that you want to be the administrator. You must go to the Login page at `https://<fully-qualified-dns-name>:443` and sign up.





**Note:** Do not use that admin user to perform non-administration tasks. Instead, sign up another user.

- After you sign up the user that you want to be the administrator for Rational® Test Automation Server, you must log in to the Keycloak Admin Console at `https://<fully-qualified-dns-name>:443/auth/admin/` to make that user the server administrator.

The default user name for the Keycloak administrator is `keycloak`. The password is randomly generated when the software is installed. You can see the password by using the following kubectl command:

```
kubectl get secret -n test-system {my-rtas}-keycloak-postgresql -o jsonpath="{.data.password}" |
base64 --decode; echo
```



**Note:** You must substitute `{my-rtas}` with the release name of your choice.

After you log in to the Keycloak Admin Console, from the Users page, you can search and select the user that you want to make an administrator. From the **Groups** tab, you can join the user to the **Admins** group.

For more information about assigning user roles, see [Groups](#) in the Keycloak documentation.

Now that you are the server administrator, it is important to consider the following points about the default user management and authentication:

- Minimum password length defaults to 8 characters
- Email verification of new users is turned off
- The Forgot Password feature is turned on by default but no instructions are sent to the user to reset their password
- Forgotten user passwords are changed by you if you do not enable Keycloak to send instructions to reset a password

You can review the following sections about changing the default authentication controls.

## Email settings

By default, the testserver realm sets the Forgot Password switch on. However, as an administrator, you must enable Keycloak to send an email to the user with instructions to reset their password. If you want to verify an email, you must also enable Keycloak to send an email to the user to verify their email address.

You must provide SMTP server settings for Keycloak to send an email. After you log in to the Keycloak Admin Console, see [Email Settings](#) in the Keycloak documentation.

Then, to set up the email verification, see [Forgot Password](#) in the Keycloak documentation.

## Password policy

By default, the testserver realm has a password policy where the minimum length of a password is 8. As an administrator, you can update password policies in Keycloak.

After you log in to the Keycloak Admin Console, see [Password Policies](#) in the Keycloak documentation.

## User password

If you did not enable Keycloak to send instructions to a user about how to reset a password, you must use the Keycloak Admin Console to change their password for them.

After you log in to the Keycloak Admin Console, see [User Credentials](#) in the Keycloak documentation.

## User deletion

When a user is inactive or no longer needs to access the server, you can delete that user.

After you log in to the Keycloak Admin Console, see [Deleting Users](#) in the Keycloak documentation.

## LDAP user administration

After you installed IBM® Rational® Test Automation Server, you can use a Lightweight Directory Access Protocol and Active Directory HTTP server to manage users and authentication. Some of the following best practices, can help you to use an LDAP/AD server to manage user access to Rational® Test Automation Server.

Rational® Test Automation Server uses Keycloak V12.0.4 (<https://www.keycloak.org/>) to manage and authenticate users.

Existing user databases hold user credentials. Keycloak federates these existing external user databases through the concept of storage providers. By default, Keycloak supports an LDAP and Active Directory storage provider. By adding a storage provider, you can map LDAP user attributes into Keycloak. You can also configure more mappings.

Before you configure Keycloak to use an existing LDAP/AD provider, you might consider the following best practices:

- Set up your LDAP/AD provider as a read-only repository so that Rational® Test Automation Server cannot change it.
- Add and remove users in LDAP/AD and not the Keycloak local user database.
- Import and synchronize your LDAP/AD users to your Keycloak local database.

- Map a login style name, for example, `user1@server.com`, by using the `UserPrincipalName` attribute in LDAP/AD to a `username` in Keycloak. If you want the full name of the user as your login style, use the `cn` attribute in LDAP/AD.



**Note:** The LDAP/AD user name attribute must match the LDAP/AD provider user name attribute (**Username LDAP attribute**) in Keycloak for the LDAP/AD provider to connect with Keycloak.

The following sections use these best practices to guide you to set up Keycloak to connect to your LDAP/AD HTTP server.

### LDAP provider selection in Keycloak

You can use the Keycloak Admin Console to add an LDAP/AD provider.

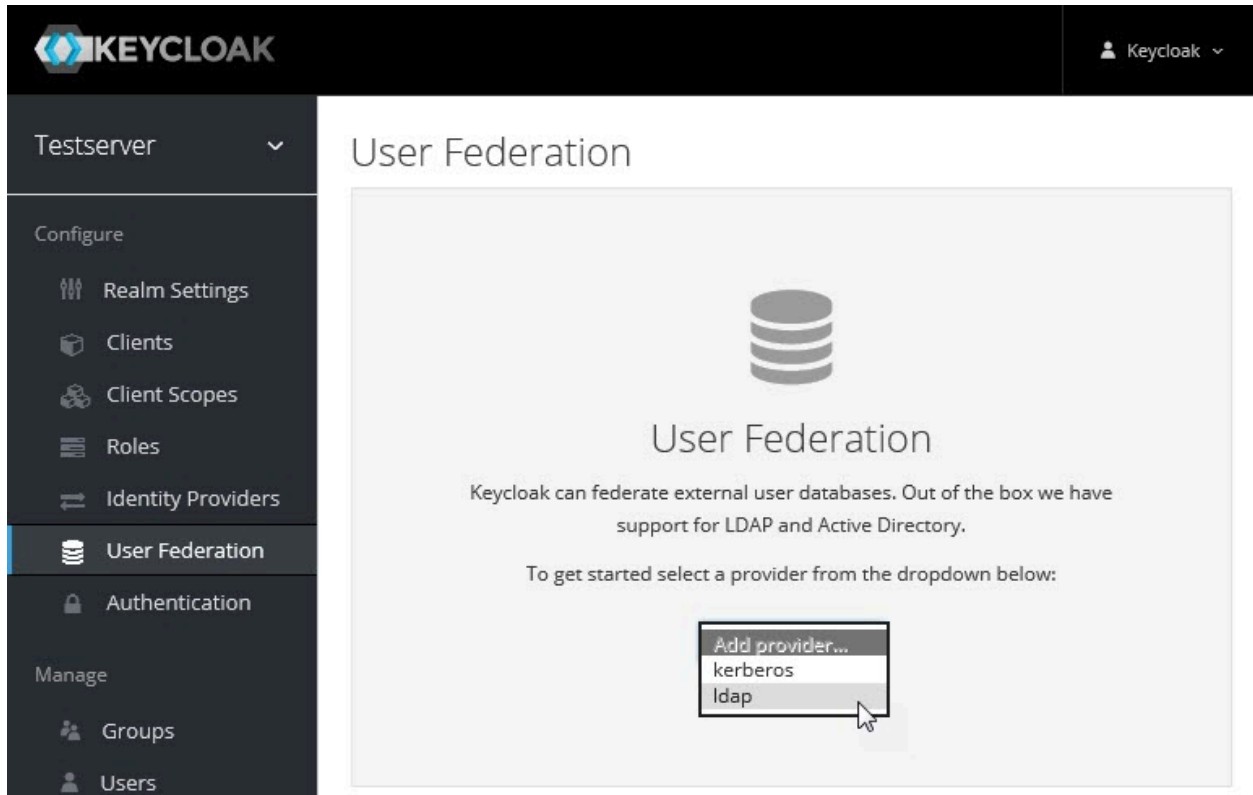
You can log in to the Keycloak Admin Console at `https://<fully-qualified-dns-name>/auth/admin`. The default user name for the Keycloak administrator is `keycloak`. The password is randomly generated when you installed the IBM® Rational® Test Automation Server software. You can see the password by using the following `kubectl` command:

```
kubectl get secret -n test-system {my-rtas}-keycloak-postgresql -o jsonpath="{.data.password}" | base64 --decode; echo
```



**Note:** You must substitute `{my-rtas}` with the release name of your choice.

After you log in, you can go to the User Federation page to add your provider.



The screenshot shows the Keycloak administration interface. The top navigation bar includes the Keycloak logo and a user profile dropdown labeled 'Keycloak'. The left sidebar is titled 'Testserver' and contains a 'Configure' section with the following items: Realm Settings, Clients, Client Scopes, Roles, Identity Providers, User Federation (highlighted), Authentication, and a 'Manage' section with Groups and Users. The main content area is titled 'User Federation' and features a database icon. The text reads: 'User Federation. Keycloak can federate external user databases. Out of the box we have support for LDAP and Active Directory. To get started select a provider from the dropdown below:'. A dropdown menu is open, showing 'Add provider...', 'kerberos', and 'ldap', with a mouse cursor hovering over 'ldap'.

You want to select the provider named **ldap** from the list. From the Add user federation provider page, you can use a form to complete your LDAP/AD connection parameters.


### **Required settings for a successful connection to your LDAP/AD provider**

The form includes many fields and several fields include default values. Tables describe the important fields that you must complete to ensure a successful HTTP connection to your LDAP/AD provider.

## Required Settings

Enabled ?	<input checked="" type="checkbox"/> ON
Console Display Name ?	<input type="text" value="Test Server LDAP/AD Provider"/>
Priority ?	<input type="text" value="0"/>
Import Users ?	<input checked="" type="checkbox"/> ON
Edit Mode ?	<input type="text" value="READ_ONLY"/>
Sync Registrations ?	<input type="checkbox"/> OFF
* Vendor ?	<input type="text" value="Active Directory"/>

Field	Description
Console Display Name	You want to make your console name recognizable, for example, Test Server LDAP/AD Provider. This name is shown in the Keycloak Admin Console.
Priority	The priority must be set to 0 so that when a user logs in to Rational® Test Automation Server, Keycloak looks up the user first in the list of users managed in the LDAP/AD user database. If the user is not found in your LDAP/AD user database, Keycloak then looks up the user in the local Keycloak user database.
Import Users	<p>You want to leave import users <b>ON</b> so that users in your LDAP/AD user database are synchronized (imported) automatically into the Keycloak local user database. The import uses the settings that you are defining now.</p> <p>After the initial import, when you add a user to your LDAP/AD user database and that user logs in to Rational® Test Automation Server, the LDAP/AD provider imports the LDAP/AD user into the Keycloak user database and authenticates the user against the LDAP/AD password.</p> <p>Similarly, after the initial import, when you remove a user from your LDAP/AD user database that user cannot log in to Rational® Test Automation Server.</p>

Field	Description
	 <b>Note:</b> For consistent user management, continue to manage users in your LDAP/AD user database.
Edit Mode	<p>Make sure that edit mode is set to <b>READ_ONLY</b>.</p> <p>This setting means that your LDAP/AD user database is read-only. No user data defined through the mapping of attributes in Keycloak such as the <code>username</code> is written back from the Keycloak user database to your LDAP/AD user database.</p> <p>This read-only setting also means that a new user cannot sign up from Rational® Test Automation Server as no user data can be written to your LDAP/AD user database.</p>
Vendor	You want to select <b>Active Directory</b> from the list of vendors. Many fields complete with default values based on this selection.

\* Username  LDAP attribute ?

\* RDN LDAP attribute  ?

\* UUID LDAP attribute  ?

\* User Object Classes  ?

\* Connection URL  ? Test connection

\* Users DN  ?

Custom User LDAP Filter  ?

Search Scope  ? ▼

\* Bind Type  ? ▼

\* Bind DN  ?

\* Bind Credential  ? Test authentication

Field	Description
Username LDAP attribute	<p>You can use the default value <code>cn</code> for the <code>username</code>, which is a first name, last name, or you can use <code>userPrincipalName</code>, which is <code>username@domain</code>.</p> <p>You might want a login that matches your company style. For example, you might prefer <code>joetester@mycompany.com</code> instead of <code>Joe Tester</code>.</p> <p>If you do make this change the <code>username</code> that you specify now must match the <code>username</code> in the Mapper. Keycloak makes this change for you.</p>
User Object Classes	Because LDAP user records are found based on a user object class, you must set the User Object Classes to <code>User</code> .
Connection URL	<p>So that Keycloak can connect to your LDAP/AD user database, you must enter your LDAP/AD URL, for example, <code>ldap://&lt;hostname&gt;.&lt;domain&gt;</code></p> <p>Make sure that you test the connection and confirm that the connection is successful.</p>
Users DN	You must provide the directory where the LDAP users are listed.
Custom User LDAP Filter	<p>You can filter your LDAP/AD users to import a subset of all your LDAP users.</p> <p>For example, you can set up a RTAS user group for your LDAP/AD user database such that only those users are imported to Keycloak.</p>
Bind DN Bind Credential	<p>You must also provide the LDAP/AD user database administrator user ID for <b>BIND DN</b> and password for the <b>BIND Credential</b>. These credentials are used by Keycloak to access the LDAP/AD user database.</p> <p>Make sure that you test the authentication and confirm that the authentication is successful.</p>

You can save the settings, which create your LDAP/AD provider.

## Mappers

Keycloak uses mappers to map the user attributes defined in the Keycloak user model such as **username** and **email** to the corresponding user attributes in the LDAP/AD user database. By default, when you saved your settings and created your LDAP/AD provider, the following mappers were created.

## Test Server LDAP/AD Provider

Settings

Mappers

<input type="text" value="Search..."/> <input type="button" value="Q"/> <input type="button" value="Create"/>	
Name	Type
email	user-attribute-ldap-mapper
creation date	user-attribute-ldap-mapper
MSAD account controls	msad-user-account-control-mapper
username	user-attribute-ldap-mapper
last name	user-attribute-ldap-mapper
modify date	user-attribute-ldap-mapper
full name	full-name-ldap-mapper

The username attribute that you specified in the **Username LDAP attribute** must match the **username** attribute defined in the Keycloak mapper for the LDAP/AD user database to connect with Keycloak.

Because you changed the **Username LDAP attribute** from the default value `cn` to `userPrincipalName`, Keycloak made the same change in the mapper called **username** to match.



## Username

ID

e5c30485-086e-44ae-81dc-eb12383d2de3

Name \* 

username

Mapper Type 

user-attribute-ldap-mapper

User Model Attribute 

username

LDAP Attribute 

userPrincipalName

Read Only 

ON

Always Read Value From LDAP 

OFF

Is Mandatory In LDAP 

ON

Is Binary Attribute 

OFF

Save

Cancel

### User synchronization

You must import all users from your LDAP/AD user database by using the option to **Synchronize all users**. Users are imported based on your saved settings when you set up your LDAP/AD provider.

Save

Cancel

Synchronize changed users

Synchronize all users

Remove imported

Unlink users

A successful import is followed by a success message with the number of users imported.

You can view all the LDAP/AD database users that were imported and authenticated from the Users page in the Keycloak Admin Console.

The screenshot shows the Keycloak Admin Console interface. The top navigation bar includes the Keycloak logo and a user profile dropdown. The left sidebar is titled 'Testserver' and contains a 'Configure' section with options like 'Realm Settings', 'Clients', 'Client Scopes', 'Roles', 'Identity Providers', 'User Federation', and 'Authentication', and a 'Manage' section with 'Groups' and 'Users'. The main content area is titled 'Users' and features a 'Lookup' button and a 'Permissions' link. Below this is a search bar and a 'View all users' button. A table displays a list of users with the following data:

ID	Username	Email	Last Name	First Name	Actions
2cfff9...	build.ver...	build....	verific...	build	Edit, Impersonate, Delete
36c7d...	rituser1...		User1...	RITUs...	Edit, Impersonate, Delete
94f62...	rituser4...		LastN...	RITUs...	Edit, Impersonate, Delete

Users are listed with ID, Username, Email, Last Name, and First Name. The ID is generated by Keycloak. The value of the other attributes is fetched from the LDAP/AD user database by using mappers.

**!** **Important:** If you get a message of a failed import for an LDAP/AD user, then the failed import might be due to any one of the following reasons:

- The **User logon name** field under the **Account** tab of that LDAP/AD user is blank.
- The value of the **Custom User LDAP Filter** field to import only a subset of all LDAP users does not match with the LDAP set of users.

You can check the log file of the Keycloak pod to understand the reason for the failed import.

You can perform the following steps to view the log file of the Keycloak pod:

1. Run the following command to view the list of all pods:

```
kubectl get pods -n test-system
```

2. Identify the Keycloak pod `ssocloak-0`.
3. Run the following command to view the log of the Keycloak pod:



```
kubectl logs {my-ots}-ssocloak-0 -n test-system
```



**Note:** Where, {my-ots} is the name of the release that is provided during the installation of the server software.

The log file of the Keycloak pod is displayed.

## Managing account settings

You might want to change your password or other settings for your account.

### About this task

As an account owner, you can view your account settings, which include your user name, email, and first and last name. You can also change all of these settings except the user name. Changing your password is also possible from your account settings.



**Note:** Account settings cannot be changed if IBM® Rational® Test Automation Server was configured to use an LDAP/AD provider. For more information about server security, see the related links.


- Edit your account details by following these steps:

1. Click the **User** icon  from the menu bar, and select **Account Settings**.

The Edit account page is displayed.

2. Edit your user details and save the changes. You can also reset your changes. If you cancel your changes, you return to the Home page.

- Change your password by following these steps:

1. Click the **User** icon  from the menu bar, and select **Account Settings**.

The Edit account page is displayed.

2. Click **Change password**.

The Change password page is displayed.

3. Type your current password followed by your new password

4. Confirm the new password by typing it again and save the changes. You can also reset your changes. If you cancel your changes, you return to the Home page.

---

Related information

[Default user administration on page 80](#)

## Certificate authority: Importing and extending lists

When you want browsers and other applications to access Rational® Test Automation Server, you must enable browsers to trust the certificate authority (CA) of Rational® Test Automation Server. For some applications that integrate with Rational® Test Automation Server, you must also extend the CA lists that are trusted by the applications.

You can find the following tasks to import the certificate authority in the browser that you want to use:

- [Importing Certificate Authority into the Google Chrome browser on page 92](#)
- [Importing Certificate Authority into the Microsoft Edge browser on page 93](#)
- [Importing Certificate Authority into the Mozilla Firefox browser on page 93](#)

You can find the following tasks when you want to extend the CA lists:

- [Extending the trusted CA list on Linux on page 94](#)
- [Extending the trusted CA list on Windows systems on page 95](#)

## Importing Certificate Authority into the Google Chrome browser

You must import certificate authority into the Google Chrome browser to prevent certificate errors when accessing the Rational® Test Automation Server UI.

### Before you begin

You must have completed the following tasks:

- Saved a certificate authority (CA) during the installation of Rational® Test Automation Server.

You can run the following command to get the certificate from the system:

```
kubectl get secret ingress -n test-system -o jsonpath={.data.ca\\.crt} | base64 -d
```



**Remember:** *test-system* is the name of the namespace. If you created a namespace by using a different value, then you must use that value in place of the *test-system*.

- Installed the browser that you want to use to access Rational® Test Automation Server.
1. Open a Google Chrome browser.
  2. Navigate to **Customize and control Google Chrome > Settings**.
  3. Click **Security** from the **Privacy and security** pane.
  4. Click **Manage certificates**, and then **Import**.

5. Click **Next** in the **Certificate Import Wizard** window.
6. Click **Browse** and select the CA that you want to import, and then click **Next**.
7. Select the **Place all certificates in the following store** option to store the CA securely.
8. Click **Browse**, and then select **Trust Root Certification Authorities** as certificate store.
9. Click **OK**, and then **Finish**.

### Results

You have imported the CA into the Google Chrome browser.

## Importing Certificate Authority into the Microsoft Edge browser

You must import Certificate Authority (CA) into the Microsoft Edge browser to prevent certificate errors when accessing the Rational® Test Automation Server UI.

### Before you begin

You must have completed the following tasks:

- Saved a certificate authority (CA) during the installation of Rational® Test Automation Server.

You can run the following command to get the certificate from the system:

```
kubectl get secret ingress -n test-system -o jsonpath={.data.ca\\.crt} | base64 -d
```



**Remember:** *test-system* is the name of the namespace. If you created a namespace by using a different value, then you must use that value in place of the *test-system*.

- Installed the browser that you want to use to access Rational® Test Automation Server.
1. Type `certmgr.msc` in the **Start** menu **Search** field, and then press **Enter**.
  2. Expand **Trusted Root Certification Authorities**, and then select **Certificate**.
  3. Right-click on the empty space, and then select **All tasks > Import**.
  4. Click **Next** in the **Certificate Import Wizard** window.
  5. Click **Browse** and select the CA that you want to import, and then click **Next**.
  6. Select the **Place all certificates in the following store** option to store the CA securely.
  7. Click **Browse**, and then select **Trust Root Certification Authorities** as certificate store.
  8. Click **Next**, and then **Finish** to import the certificate.

### Results

You have imported the CA into the Microsoft Edge browser.

## Importing Certificate Authority into the Mozilla Firefox browser

You must import Certificate Authority (CA) into the Mozilla Firefox browser to prevent certificate errors when accessing the Rational® Test Automation Server UI.

**Before you begin**

You must have completed the following tasks:

- Saved a certificate authority (CA) during the installation of Rational® Test Automation Server.

You can run the following command to get the certificate from the system:

```
kubectl get secret ingress -n test-system -o jsonpath={.data.ca\\.crt} | base64 -d
```



**Remember:** *test-system* is the name of the namespace. If you created a namespace by using a different value, then you must use that value in place of the *test-system*.

- Installed the browser that you want to use to access Rational® Test Automation Server.

1. Open a Mozilla Firefox browser.
2. Enter "about:preferences#privacy" in the address bar, and then press **Enter**.
3. Locate and click the **View Certificates** option.
4. Select **Authorities** tab, and then click **Import**.
5. Select the CA that you want to import, and then click **Open**.
6. Select **Trust this CA to identify websites** in the **Downloading Certificate** window.
7. Click **OK** to import the CA into the browser, and then close the window.
8. Restart Firefox.

**Results**

You have imported the CA into the Mozilla Firefox browser.

**Extending the trusted CA list on Linux**

Rational® Test Automation Server trusts the certificates signed by a recognized Certified Authority (CA). When you have any additional CAs, you must extend the trusted certificates list by using an environment variable on Linux.

**Before you begin**

You must have saved the CA assigned to Rational® Test Automation Server.



**Note:** You can contact the administrator of Rational® Test Automation Server if you do not have a copy of the CA.

1. Open the terminal.
2. Run the following command to create an environment variable on the Linux operating system:

```
export NODE_EXTRA_CA_CERTS= {path of the downloaded CA with the file extension}
```

For example,

```
export NODE_EXTRA_CA_CERTS=/opt/mycert/ca-master.crt
```

**Results**

You have extended the trusted CA certificates list on Linux.

**Extending the trusted CA list on Windows systems**


Rational® Test Automation Server trusts the certificates signed by a recognized Certified Authority (CA). When you have any additional CAs, you must extend the trusted certificates list by using an environment variable on Windows systems.

**Before you begin**

You must have saved the CA assigned to Rational® Test Automation Server.



**Note:** You can contact the administrator of Rational® Test Automation Server if you do not have a copy of the CA.

1. Right-click the Windows icon  from the Windows taskbar, and then click **System**.
2. Click **Advanced system settings** from the **Related setting** section.
3. Click the **Advanced** tab, and then click **Environment Variables**.
4. Click **New** from the **System variables** section.
5. Enter `NODE_EXTRA_CA_CERTS` in the **Variable name** field.
6. Enter the path of the downloaded CA with the file extension in the **Variable value** field.

For example, if you stored the `ca-master.crt` CA in the `C:\Users\Desktop\cert` location, then enter the **Variable value** field as `C:\Users\Desktop\cert\ca-master.crt`

7. Click **OK**.

**Results**

You have extended the trusted CA certificates list on Windows systems.

**Copying third-party application Jars to Kubernetes**

You can run API Suites in a project on Rational® Test Automation Server. If the API Suite uses a transport and the transport requires third-party application `Jar` files for a successful run, you must ensure that the third-party application `Jar` files are available at the test run time. To achieve this, you must copy the third-party application `Jar` files to the computer where Rational® Test Automation Server is installed on Kubernetes.

**Before you begin**

If you want to copy the third-party application `Jar` files to the remote Docker host, see [Copying third-party application Jars to a remote Docker host on page 179](#).

You must have server administrator or cluster administrator privileges.

You must have completed the following tasks:

- Identified the third-party application `jar` files that are required and copied the files. See [Test run considerations for API Suites on page 162](#).
- Copied the third-party application `jar` files from Rational® Integration Tester to the directory or folder in Kubernetes from where you can run the `kubect` commands.

**About this task**

You can copy the third-party application `jar` files to the folder that is specific for the application under the `/data/<application_name>` folder. You need not extract the files.

You can perform this task any time after you have installed Rational® Test Automation Server and you plan to run an API Suite that meets any of the following conditions:

- The API Suite uses transports and the transports require third-party application `jar` files to be available at the test run time.
- The API Suite in the project has a results database configured.

You can get help on the `kubect` commands by running the command: `kubect cp --help` from the `/kube` directory. For more information, refer to the [kubect documentation](#).

1. Use the following table to find the name of the folder that corresponds to the specific third-party application for the transport used in the API Suite.

**Table 2. Name of the folder for the application**

Application	Name of the folder to use
Camel	Camel
CentraSite	CentraSite
CICS	CICS
Coherence	Coherence
Database	JDBC
IMS	IMS
Integra	Integra
JMS	JMS
SAP RFC	SAP
Software AG Universal Messaging	SoftwareAGUM
TIBCO EMS	TIBCO
TIBCO Rendezvous	
TIBCO SmartSockets	



Application	Name of the folder to use
WebSphere Application Server Service Integration Bus (SiBus)	WAS
WebLogic	WebLogicJMX
Software AG webMethods	webMethods
WebSphere MQ	WMQ

- Open the command prompt from the `/kube` directory and copy the `Jar` files to the folder that corresponds to the application by using the following command:

```
kubectl cp <compressed_files> test-system/{my-rtas}-userlibs-0:/data/<application_name>/
```

For example, if you are copying the Database `Jar` files, then the name of the folder is `JDBC` and the command to use is:

```
kubectl cp mysql-connector-java.jar test-system/{my-rtas}-userlibs-0:/data/JDBC/
```



**Note:** You must substitute `{my-rtas}` with the release name of your choice.

- Verify whether the `Jar` files are copied by running the following command:

```
kubectl exec {my-rtas}-userlibs-0 -n test-system -- ls /data/<folder_created>
```

For example, if you copied the Database `Jar` files, `mysql-connector-java.jar` to the folder `JDBC`, then the command to verify is:

```
kubectl exec {my-rtas}-userlibs-0 -n test-system -- ls /data/JDBC
```

The following information is displayed for the `JDBC` folder:

```
mysql-connector-java.jar
```



**Note:** You must substitute `{my-rtas}` with the release name of your choice.

## Results

You have successfully copied the third-party application `Jar` files to the folder in Kubernetes.

## What to do next

You can configure the API Suite run. See [Configuring an API Suite run on page 202](#).

## Changing the password seed

As an administrator, you can change the password seed that is used when you install the server software to provide enhanced security to Rational® Test Automation Server.

## Before you begin

You must have completed the following tasks:

- Installed Rational® Test Automation Server. See [Installation of the server software on page 25](#).
- Installed the JSON command-line tool, jq, and ensured that the jq is in your environment PATH. For information about jq, refer to [jq documentation](#).
- Installed the Curl command line tool. For more information refer to [curl documentation](#).


## About this task

When you install Rational® Test Automation Server, you supply a password seed when you run the `helm install` command. This password seed is used to generate several Kubernetes secrets. Kubernetes Secrets can contain the following information:

- The authentication credentials for micro-services.
- An encryption key for the user-created secrets collection or other secrets.

When you change the password seed for Rational® Test Automation Server, you must consider the following scenarios:

- Rational® Test Automation Server cannot communicate until you reconcile the passwords which are in Kubernetes Secrets by using the old and a new password seed.
- Users cannot read secret collections or other secrets that they have created in Rational® Test Automation Server until you re-encrypt them using a new password seed.

 **Important:** You must provide an offline token and old password seed that you used during the installation of server software to re-encrypt user secrets.

1. Run the following command to change the password seed for Rational® Test Automation Server:

```
helm upgrade {my-rtas} ./ibm-rtas-prod -n test-system \
--reuse-values \
--set global.ibmRtasPasswordAutoGenSeed={my-new-super-secret}
```

 **Notes:** You must substitute the value of the following variables with the actual value in the command:

- `{my-rtas}` with the release name that you used during the installation of the server software.
- `{my-new-super-secret}` with a new value of your choice as the password seed.



- You must run the following `helm upgrade` command from the same directory where the `helm install` command was run during the installation of the server software. Because the upgrade is dependent on the helm charts and `.yaml` file values used during the run time of the `helm install` command.

2. Run the following script to generate new server secrets from the updated password seed and to save them to the persistent storage:

```
./ibm-rtas-prod/files/reconcile-secrets.sh -n test-system {my-rtas}
```

3. Run the following command to restart all the pods:

```
kubectl delete pods -n test-system \
-lapp.kubernetes.io/instance={my-rtas} \
-lapp.kubernetes.io/managed-by=Helm
```

4. Run the following commands to re-encrypt the user-created secrets collection or other secrets by providing the old password seed:

```
export ACCESS_TOKEN=$(curl -k -X POST {SERVER_URL}/rest/tokens/ \
-H "Content-Type: application/x-www-form-urlencoded" \
-H "accept: application/json" \
-d "refresh_token={OFFLINE_TOKEN}" | jq -r '.access_token')

curl -k -X POST {SERVER_URL}/rest/secrets/re-encrypt/ \
-H "Authorization: Bearer $ACCESS_TOKEN" \
-H "Content-Type: application/json" \
-d "{\"type\":\"helm\",\"password_auto_gen_seed\":\"{OLD_SEED}\"}"
```



**Note:** You must substitute the value of the following variables with the actual value in the following commands:

- `{SERVER_URL}` with the URL of your Rational® Test Automation Server UI.
- `{OFFLINE_TOKEN}` with the offline token that belongs to a user with the administrator role.
- `{OLD_SEED}` with the previous password seed that you used during the installation of the server software.

5. Run the following command to display the log file of the gateway pod:

```
kubectl logs {my-rtas}-gateway-abcdefghij-abcde -n test-system
```



**Note:** You must substitute the value of the following variables with the actual value in the command:



- `{my-rtas}` with the release name that you used during the installation of the server software.
- `abcdefghijkl-abcde` with an identifier that is assigned to the name of the gateway pod.

You can run the `kubectl get pods -n test-system` command to obtain the identifier that is assigned to the gateway pod.

### Result

The following message is displayed when re-encryption is completed:

```
reEncrypt complete. StringyReEncryptor [total=100, fixed=100, broken=0, noop=0]
```

### Results

You have successfully changed the password seed for Rational® Test Automation Server.

## Team space administration

You can find information about team spaces including the initial team space on IBM® Rational® Test Automation Server along with the tasks that you can perform to administer a team space.

You can find the following information about team spaces:

- [Team space overview on page 100](#)
- [Creating a team space on page 103](#)
- [Tasks in a team space on page 105](#)
- [Tasks in projects in a team space on page 109](#)
- [Management of licenses in Rational Test Automation Server on page 111](#)

### Team space overview

Team spaces are logical partitions of IBM® Rational® Test Automation Server. Team space is an exclusive, separate, and secure space on Rational® Test Automation Server that enables you to share a single installation among multiple teams.

You can find the following information about team spaces:

- [Initial team space on page 100](#)
- [Team spaces on page 101](#)
- [Migration from earlier releases of Rational Test Automation Server on page 102](#)

### Initial team space

After you install Rational® Test Automation Server and log in for the first time, you enter the **Initial team Space**.

The initial team space is the default logical partition that is created on an instance of Rational® Test Automation Server.

As a server administrator, you must consider the following points:

- After you install Rational® Test Automation Server and log in for the first time, the **Projects** page of the initial team space is displayed.
- You must configure the license server for the initial team space.
- Add or remove users in the team space and assign them different roles in a team space.
- You can assign the role of a *Team Space Owner* to any other member in the initial team space.
- Change the type of the initial team space from the default type of *permissive*.

The following table describes the type that you can assign to a team space:

Type	Description
Permissive	Specifies that any licensed user of Rational® Test Automation Server can access a team space and get assigned the default roles of a <i>Project Owner</i> and <i>Member</i> in the team space.
Restrictive	<p>Specifies that all licensed users of Rational® Test Automation Server must request for access to a team space and must be provided access and assigned roles by the <i>Team Space Owner</i>.</p> <p>The <b>Restrictive</b> type of team space can be either <b>Public</b> or <b>Private</b>. A <b>Public</b> team space is visible in the team spaces dashboard, while a <b>Private</b> team space is not visible in the team spaces dashboard.</p>

- You can evaluate the requirement and create team spaces other than the initial team space.

As a licensed user, you must consider the following points:

- When you log in for the first time immediately after the installation of Rational® Test Automation Server, the **Projects** page of the initial team space is displayed.
- After you log in to the initial team space, you are assigned the default roles of *Project Creator* and *Member* of the initial team space.
- On subsequent logins, the **My Projects** page in the initial team space is displayed as the default page.

## Team spaces

You can either work with the initial team space or you can create multiple team spaces on Rational® Test Automation Server. The team space facilitates users of the same team space to work together.

Apart from being a container for projects, a team space facilitates the registration of remote Docker hosts and Resource Monitoring agents, designing the system model, and viewing the registered agents, Dockers, or intercepts.

After you create a team space as a **server administrator**, you must consider the following actions:



**Note:** You are assigned the default role of a *Team Space Owner* for team spaces that you create.

- Add users in the team space and assign them different roles in a team space.
- Assign the role of a *Team Space Owner* to other team space members, if you want other members to own the team space.



**Note:** As a *Team Space Owner*, you can remove any member of your team space from the assigned role. The member who is removed from a team space, can send a request and become a member of that team space after the request is accepted.

- If the *Team Space Owner* is no longer a member of a team space, then you as the server administrator can access that team space with the default role of a *Team Space Owner*. You can then assign the role of a *Team Space Owner* to any other member.
- Delete the initial team space or any other team space that you created, if required.



**Note:** If you delete the initial team space, the users of the initial team space are redirected to the **Team Space Dashboard** page.

You as a server administrator or the *Team Space Owner* must perform the following tasks in a team space before other members can start using the team space:

- Configure the license server.
- Configure the team space type as either *Restrictive* or *Permissive*.
- Configure the SMTP server and add members who can receive notifications about the operations performed in the team space.

As a member of a team space, you must consider the following points:

- When you log in for the first time immediately after the installation of Rational® Test Automation Server, the **Projects** page of the team space is displayed.
- After you log in to the team space, you are assigned the default roles of a *Project Creator*, and *Member* of the team space.
- You can request to become a member of any other team space. After your request is approved, you are assigned the default role of a *Member* of that team space.
- You can become a member of either a **Permissive** or **Restrictive** type of team space.
- On subsequent logins, the **Team Space Dashboard** page is displayed as the default page.

## Migration from earlier releases of Rational® Test Automation Server

The initial team space is the only logical partition in Rational® Test Automation Server 10.1.3. If you migrate from an earlier release of Rational® Test Automation Server to 10.2 or later, then all the assets and resources that you created

and associated with the initial team space are migrated to associate with the initial team space in Rational® Test Automation Server 10.2 or later.



**Note:**

The results of migration are as follows:

- All projects are contained in the initial team space.
- If you created a repository in a team space, then you can find the repository in the initial team space in 10.2.
- All Dockers, agents, and intercepts that you registered with the server are then registered with the initial team space and you can view from the **Agents and Intercepts** page of the initial team space.
- If you configured a resource monitoring agent in any project, then the details of the configured agent are available in the project.
- You can find the details of SMTP configuration on the server. Only you as a server administrator can view the details of SMTP configuration.
- The license server that is configured for the server for earlier release of Rational® Test Automation Server is then configured for the initial team space.
- All users are assigned the role of a *Project Creator* and *Architect* of the initial team space.
- All users with server administrator roles are assigned the default role of a *Team Space Owner* of the initial team space.



**Notes:**

- All users of earlier releases are migrated to Rational® Test Automation Server 10.2 or later. You can view the list of all migrated users in the application only when they log into the application at least once.
- After you migrate the server data from a previous version to a newer version, the **Project Owner** must log in to Rational® Test Automation Server so that other members of the project can access the test assets in that project.

---

Related information

[Team space administration on page 100](#)

[Default user administration on page 80](#)

## Creating a team space

To manage projects in the logical containers of IBM® Rational® Test Automation Server, you must create team spaces.

### Before you begin

You must have been assigned the role of a server administrator of Rational® Test Automation Server.


## About this task

As a server administrator, you can create multiple team spaces on Rational® Test Automation Server.

1. Log in to Rational® Test Automation Server.

### Result

The **Projects** page of the initial team space is displayed.

2. Click the **Settings** icon  from the left navigation pane, and then click **Create team space**.

### Result

The **New Team Space** dialog box is displayed.

3. Provide a name to the team space.

### Result

The **URL alias** field is automatically filled.



**Note:** If you modify the name of a team space, the **URL alias** is also modified automatically.

4. **Optional:** Modify the **URL alias** for the team space, if required.



**Note:** You must enter the **URL alias** that starts with a letter.

5. Select an option to set the permissions to access the team space. You can select any one of the following options:

- **Permissive** – When a team space is set as **Permissive**, the new user gets the permissions automatically on sending the request to become a member of that team space.
- **Restrictive** – When a team space is set as **Restrictive**, the *Team Space Owner* provides permission to the new user who becomes a member of that team space.

You can set the visibility mode of the **Restrictive** type team space as **Public** or **Private**.

- The **Public** team space is visible to all users in the **Team Space Dashboard**.
- The **Private** team space is visible only to the members of that team space in the **Team Space Dashboard**.



**Note:** If you select the **Restrictive** type team space, then the default setting of the team space becomes **Public**.

6. Provide a brief description of the team space.
7. Select the owner of the team space from the list of users who accessed the application.

The selected user is assigned the role of a *Team Space Owner*.





**Note:** You can assign the *Team Space Owner* role to only one user when you create a team space.

8. Click **Create**.

**Result**

The dashboard of the team space is displayed.

**Results**

You have created a team space.

If you are assigned the role of a *Team Space Owner*, then you can view the name of the team space that you created in the navigation pane.

If you assigned any other licensed user with the role of a *Team Space Owner*, then you can view the team space under the **Other Team Spaces** panel.

**What to do next**

You must configure the license for your team space. See [Configuring licenses for team spaces on page 113](#) .

## Tasks in a team space

You can find information about the tasks that you can perform as a *Member*, *Project Owner*, *Architect*, or *Team Space Owner* in a team space on IBM® Rational® Test Automation Server.

The roles assigned in a team space for users are as follows:

Persona	Initial team space		Any team space	
	Role	Notes	Role	Notes
Server administrator	<i>Team Space Owner</i>	Default role assigned	<i>Team Space Owner</i>	Default role assigned
Licensed user	<i>Team Space Owner</i>	Role assigned by Server administrator	<i>Team Space Owner</i>	Role assigned by Server administrator
	<i>Architect</i>	Role assigned by <i>Team Space Owner</i>	<i>Architect</i>	Role assigned by <i>Team Space Owner</i>


Persona	Initial team space		Any team space	
	Role	Notes	Role	Notes
	<i>Project Creator</i>	Default role assigned	<i>Project Creator</i>	<ul style="list-style-type: none"> <li>• Default role assigned in a <i>Permissive</i> team space.</li> <li>• Role assigned by <i>Team Space Owner</i> in a <i>Restrictive</i> team space.</li> </ul>
	<i>Member</i>	Default role assigned	<i>Member</i>	Default role assigned in either a <i>Permissive</i> or <i>Restrictive</i> team space.


The following table shows the tasks that can be performed by licensed users with their assigned roles in a team space:

Tasks	Team Space Owner	Architect	Project Creator	Member
Configuring licenses	✓			
Configuring a Simple Mail Transfer Protocol (SMTP) server to send email notifications.	✓			
Changing the license server configuration	✓			
Adding members in a team space	✓			
Assigning different roles to other team space members	✓			
Modifying configuration details of a team space	✓			
Deleting a team space	✓			
Renaming a team space	✓			
Adding or removing the team space repository from a team space	✓	✓		
Designing a system model	✓	✓		
Creating projects in a team space	✓		✓	

Tasks	Team Space Owner	Architect	Project Creator	Member
Adding, removing, or modifying remote Docker hosts	✓	✓	✓	✓
Adding agents	✓	✓	✓	✓
Adding, modifying, or removing resource monitoring sources	✓			
Connecting resource monitoring agents	✓			
Adding resource monitoring labels	✓			
Working with projects in a team space	✓	✓	✓	✓

The following table provides the links to the information about the tasks that can be performed by users with different roles in a team space:

Tasks	Roles	More information
Configuring a team space license server	<i>Team Space Owner</i>	<a href="#">Configuring licenses for team spaces on page 113</a>
Configuring the Prioritized Floating Users	<i>Team Space Owner</i>	<a href="#">Adding users to the Prioritized Floating Users list on page 115</a>
Modifying the configuration of a team space	<i>Team Space Owner</i>	<a href="#">Modifying the configuration of a team space on page 424</a>
Viewing the configuration of a team space	All members of a team space	<a href="#">Viewing the configuration of a team space on page 426</a>
Reassigning the role of team space members	<i>Team Space Owner</i>	<a href="#">Managing members and their roles in a team space on page 429</a>
Becoming a team space member	<ul style="list-style-type: none"> <li>• <i>Team Space Owner</i></li> <li>• All users can send a request</li> </ul>	<a href="#">Becoming a team space member on page 428</a>
Viewing team spaces	All members of a team space   <b>Notes:</b> <ul style="list-style-type: none"> <li>• The <b>Permissive</b> and public <b>Restrictive</b> team spaces are visible to all the users.</li> </ul>	<a href="#">Viewing team spaces on page 420</a>

Tasks	Roles	More information
	 <ul style="list-style-type: none"> <li>The private <b>Restrictive</b> team spaces are only visible to its members.</li> </ul>	
Deleting a team space	<i>Team Space Owner</i>	<a href="#">Deleting a team space on page 432</a>
Adding a project in a team space	<i>Project Creator</i>	<a href="#">Adding a project on page 436</a>
Viewing existing projects	All members of a team space	<a href="#">Viewing active projects on page 439</a>
Viewing details about the users or license server	All members of a team space	<a href="#">Viewing license details of the team space on page 117</a>
Installing remote agents and configuring them to register with Rational® Test Automation Server	All members of a team space	<a href="#">Management of agents on page 167</a>
Registering a remote Docker host with Rational® Test Automation Server	All members of a team space	<a href="#">Registering a remote Docker host on page 181</a>
Editing configurations of a remote Docker host	All members of a team space	<a href="#">Editing configurations of a remote Docker host on page 186</a>
Unregistering a remote Docker host	All members of a team space	<a href="#">Unregistering a remote Docker host from IBM Rational Test Automation Server on page 189</a>
Viewing remote agents, remote Docker hosts, or intercepts that are registered with Rational® Test Automation Server in the initial team space	All members of a team space	<ul style="list-style-type: none"> <li><a href="#">Viewing remote Docker hosts that are registered with IBM Rational Test Automation Server on page 183</a></li> <li><a href="#">Viewing agents that are registered with Rational Test Automation Server on page 169</a></li> <li><a href="#">Viewing intercepts that are registered with a team space on IBM Rational Test Automation Server on page 280</a></li> </ul>

Tasks	Roles	More information
Adding resource monitoring sources and agents	<i>Team Space Owner</i>	<a href="#">Resource monitoring service on page 328</a>
Adding resource monitoring labels to the sources	<i>Team Space Owner</i>	<a href="#">Controlling resource monitoring sources in a schedule on page 362</a>
Viewing the performance metrics	All members of a team space	Viewing the performance metrics
Creating a model of the system under test	<i>Architect</i>	<a href="#">System modeling on page 134</a>
Adding a repository to a team space	<ul style="list-style-type: none"> <li>• <i>Team Space Owner</i></li> <li>• <i>Architect</i></li> </ul>	<a href="#">Adding a repository to a team space on page 138</a>
Viewing an existing system model	All members of a team space	<a href="#">Viewing the system model on page 158</a>

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#### Related information

[Team space administration on page 100](#)

## Tasks in projects in a team space


You can find information about the roles that you can assign in a project for members of a team space and the tasks that you can perform in projects in a team space.

Members of a team space with the role of a *Project Creator* can create projects in the team space and become the *Owner* of a project. The owners of projects can add *Members* of the team space to a project and assign them the following roles:

- *Owner*
- *Tester*
- *Viewer*

For the list of actions that members assigned any of the roles can perform, see [Managing access to server projects on page 442](#).

All projects are created in a team space. When you open a project, the options that are displayed in the navigation pane are specific to the projects within a team space.

When you are working on a project in a team space and you want to return to the options available to work in the team space, you can click the **Home** icon  in the navigation pane.



**Note:** You must be assigned the role of an *Owner*, a *Tester*, or a *Viewer* of a project.

The following table lists the tasks that members of a team space can perform while working with projects in a team space:

Tasks	More information...
Viewing projects in a team space.	<a href="#">Viewing active projects on page 439</a>
Adding a project.	<a href="#">Adding a project on page 436</a>
Adding a repository that contains test assets and resources that you want to run on the server.	<a href="#">Adding repositories to a server project on page 437</a>
Adding secrets to a secrets collection.	<a href="#">Secrets configuration on page 438</a>
Encrypting the data set resources.	Data security
Configuring a change management system.	<a href="#">Configuration of a change management system on page 368</a>
Adding members to a project and configuring their roles.	<a href="#">Adding users to a project on page 438</a>
Selecting the global branch in a project to view the test assets and resources.	<a href="#">Selecting the global branch in a project on page 452</a>
Adding agents to your project, if you are using remote agents as a location to run certain tests.	<a href="#">Adding an agent to a project on page 170</a>
Adding remote Dockers, if you are using a remote Docker host as a location to run tests.	<a href="#">Adding a remote Docker host to the project for running tests on page 184</a>
Reading the considerations that you must take into account before you configure a test run.	<a href="#">Prerequisites to running tests on page 160</a>
Reading the considerations that you must take into account before you configure a run or start a virtual service.	<a href="#">Prerequisites for running virtual services on page 274</a>
Configuring a run of the test assets.	<a href="#">Test run configurations on page 190</a>
Configuring a run of the virtual service resource.	<a href="#">Configuring a run of a virtual service on page 284</a>
Viewing the progress of a test run.	<a href="#">Viewing the progress of running test assets on page 263</a>
Managing a running test.	<a href="#">Management of running tests on page 259</a>
Viewing the results of a test run after the run is completed.	<a href="#">Test results on page 318</a>

Tasks	More information...
Reviewing the test results and creating defects for test runs from the <b>Results</b> page.	<a href="#">Creating Jira defects on page 373</a>

## Management of licenses in Rational® Test Automation Server

As a *Team Space Owner*, you can configure and manage licenses for your team spaces in Rational® Test Automation Server. As a member of any team space, you can only view the details of the licenses that are configured for the team space. If you are not a member of any team space, you cannot view or perform any operations in any of the team spaces on Rational® Test Automation Server.

Depending on your privileges, you can perform the following tasks in Rational® Test Automation Server:

Privileges	Tasks	More information
<i>Team Space Owner</i>	Read about licensing on Rational® Test Automation Server.	<a href="#">Server software licensing information on page 111</a>
	Configure licenses.	<a href="#">Configuring licenses for team spaces on page 113</a>
	Configure prioritized users.	<a href="#">Adding users to the Prioritized Floating Users list on page 115</a>
	Remove or replace prioritized users.	<a href="#">Removing or replacing prioritized users on page 116</a>
Licensed user	Perform tasks or operations in a team space.	<a href="#">Tasks in a team space on page 105</a>
	Viewing details about licenses.	<a href="#">Viewing license details of the team space on page 117</a>

## Server software licensing information

You can find information about the licensing on Rational® Test Automation Server.

To use the features offered by Rational® Test Automation Server, you must purchase licenses. You can then install the licenses on Rational License Key Server and configure the details of Rational License Key Server on the **License Configuration** page of Rational® Test Automation Server.

Rational® Test Automation Server requires an additional license when you use the service virtualization feature. You must have sufficient **Rational® Test Virtualization Server Concurrent Virtual Service** licenses to run instances of virtual services that are contained in API Suites on Rational Test Automation Server.

A single **Concurrent Virtual Service** license is used from the total number of **Rational® Test Virtualization Server Concurrent Virtual Service** licenses that are configured on Rational License Key Server for Rational® Test Virtualization Server when any of the following events occur:

- An instance of a virtual service is started by running a virtual service resource. A license is consumed for every running instance of the virtual service.
- An API suite is run that has a scenario that references a local virtual service and an instance of that virtual service is run.

The **Concurrent Virtual Service** license is returned to the license pool when the virtual service instance stops.

As a *Team Space Owner*, you can add users to the **Prioritized Floating Users** list from the **Team Space License Configuration** page. The prioritized floating users do not return their floating licenses to the license pool when they log out from Rational® Test Automation Server. Rational License Key Server ensures that the licenses are always available for the prioritized users. This feature is useful for those users who generate offline tokens that are used for long-run tests even when the members are logged out of Rational® Test Automation Server.



**Remember:** A single floating license is used from the total number of floating licenses when you perform most of the operations in Rational® Test Automation Server.



**Important:** You can perform only the following operations in team space without using a license:

- Configure Rational License Key Server
- Modify the user roles in a team space
- Delete the team space



**Remember:** The floating license that was assigned to you is returned to the license pool when you perform any of the following actions:

- Log out from Rational® Test Automation Server.



**Remember:** The floating licenses assigned to prioritized floating users are not returned to the license pool when they log out from Rational® Test Automation Server.

- End a session on Rational® Test Automation Server or session is timed out.
- Complete the test runs on any of the third-party applications that are integrated with Rational® Test Automation Server.



**Important:**





Processor Value Unit (PVU) licenses are not supported for running Rational® Performance Tester schedules in Rational® Test Automation Server. You must configure floating licenses to run Rational® Performance Tester schedules in Rational® Test Automation Server.

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Related information

[Configuring licenses for team spaces on page 113](#)

## Configuring licenses for team spaces

As a *Team Space Owner*, you can configure Rational License Key Server for the team spaces on the **License Configuration** page so that members of the team space can perform various operations such as creating a project, running tests, and so on.

### Before you begin

You must have completed the following tasks:

- Configured the licenses that you purchased on Rational License Key Server.
- Installed the product and signed up as a user on Rational® Test Automation Server.
- Optional: Created a team space. See [Creating a team space on page 103](#).
- Been assigned the role of a *Team Space Owner* of the team space.

### About this task

The team spaces are logical partitions of Rational® Test Automation Server. The team space facilitates users of the same team space to work together. As a *Server Administrator*, you have access to the initial team space. You can also create multiple team spaces, if required. As a *Server Administrator*, you can assign the role of *Team Space Owner* to any other user when you create the team space on Rational® Test Automation Server. If you are the *Server Administrator*, you can add yourself as a *Team Space Owner*.

You must have a valid license to work with the team spaces that you create on Rational® Test Automation Server. You must provide a separate IP address or Fully Qualified Domain Name (FQDN) of Rational License Key Server for the team spaces when you configure the licenses. If you provided the IP address or FQDN of Rational License Key Server that is already configured for any other team space, then the configuration of the license for the team space fails with an error message. If you delete the team space, then the IP address or Fully Qualified Hostname of Rational License Key Server used for that team space is released. You can then use that IP address or FQDN of Rational License Key Server for another team space.





**Note:** When you upgrade the server software from the previous version to the latest version, then the license configuration of the previous release applies to the initial team space. You can verify the information from the **License Configuration** page of the initial team space.

As a *Server Administrator*, you can assign the role of a *Server Administrator* to any user. For information about how to change the role, see [Default user administration on page 80](#).



**Remember:** When your role is changed from a user to a *Server Administrator*, you must log out and log in again so that Rational® Test Automation Server can apply the change in your role.

1. Log in to Rational® Test Automation Server.
2. Click the **Settings** icon  from the left navigation pane.
3. Open the team space for which you want to configure the license from the **Switch to** option.
4. Click the **Settings** icon , and then **License**.

#### Result

The **License Configuration** page is displayed.

5. Enter the number of floating user licenses in the **No. of floating users (Max)** field.

Alternatively, you can use the up-down control buttons to change the number of floating licenses in the field.



#### Remember:

- You must ensure that the number of floating licenses that you configure does not exceed the number of licenses you have purchased.
- You can allocate the purchased licenses across multiple Rational License Key Servers only if the total number of floating users that you configure across Rational License Key Servers does not exceed the total number of purchased licenses.

6. Enter the IP address or FQDN of the license server in the **Rational License Key Server** field to configure the licenses for the team space.



**Note:** You must enter either the IP address or FQDN in the *port\_number@<IP\_address> or <FQDN>* format. If you did not provide any port number, the default port number is used for the Rational License Key Server.

For example, the value of **Rational License Key Server** can be:



- 27000@licenseserver.com
- 27000@127.0.0.1

7. Click **Configure** to verify that you have entered the permissible number of licenses that you want to use for the team space.

The **Licensing compliance** dialog box is displayed.

8. Click **Confirm** to apply the license configuration.

## Results

You have configured the license for the team space. The **License usage** section displays the number of floating user licenses that are currently in use.



**Remember:** The **License usage** section does not display the number of **Concurrent Virtual Service** that are currently in use.

## What to do next

You can perform any of the following tasks:

- Add users to the **Prioritized Floating Users** list. See [Adding users to the Prioritized Floating Users list on page 115](#).
- Add members to your team space. See [Adding members to a team space on page 421](#).

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### Related information

[Default user administration on page 80](#)



## Adding users to the Prioritized Floating Users list

As a *Team Space Owner*, you can add users to the **Prioritized Floating Users** list so that the licenses are always available for those users.

### Before you begin

You must have completed the following tasks:

- Been assigned the role of a *Team Space Owner* of the team space.
- Optional: Created a team space. See [Creating a team space on page 103](#).
- Configured the license for the team space. See [Configuring licenses for team spaces on page 113](#)

1. Log in to Rational® Test Automation Server.
2. Click the **Settings** icon  from the left navigation pane.
3. Open the team space for which you want to add users from the **Switch to** option.
4. Click the **Settings** icon , and then **License**.

#### Result

The **License Configuration** page is displayed.

5. Enter the name or the email ID of the user in the **Add prioritized floating users** field, and then select the name from the list that displays to add members to the **Prioritized Floating Users** list.



**Note:** You can press **Ctrl** to select multiple users simultaneously.

6. Click **Add** to make selected users as **Prioritized floating users**.

### Results

You have added users to the **Prioritized Floating Users** list. The **License usage** section displays the following information:

- The number of floating user licenses that are currently in use
- The number of prioritized floating user licenses that are currently in use



**Remember:** The **License usage** section does not display the number of **Concurrent Virtual Service** that are currently in use.


## Removing or replacing prioritized users


When you want to remove a user from the list of prioritized users or you want to replace an existing user with another prioritized user, you as a *Team Space Owner* can perform these changes from the **License Configuration** page.

### Before you begin

You must have completed the following tasks:

- Been assigned the role of a *Team Space Owner* for the team space that you want to modify the users from the **Prioritized Floating Users** list.
- Added users to the list of prioritized users for the team space on Rational® Test Automation Server.




1. Log in to Rational® Test Automation Server.
2. Click the **Settings** icon  from the left navigation pane.
3. Open the team space for which you want to remove or replace the users from the **Prioritized Floating Users** list from the **Switch to** option.

4. Click the **Settings** icon , and then **License**.

**Result**

The **License Configuration** page is displayed.

5. Perform the actions described in the following table to remove or replace users from the **Prioritized Floating Users** list:

Task	Actions
Remove a user from the list of prioritized users	<p>Perform the following steps:</p> <ol style="list-style-type: none"> <li>Locate the user that you want to remove from the <b>Prioritized Floating Users</b> list.</li> <li>Click the <b>Menu</b> icon  next to the name of the user, and then click <b>Remove</b>.</li> <li>Click <b>Remove</b> on the <b>Remove prioritized user</b> dialog box to complete the action.</li> </ol> <p> <b>Remember:</b> When you remove the user from the <b>Prioritized Floating Users</b> list, the test runs scheduled by the user fail to run if sufficient floating licenses are unavailable. If the user is currently on Rational® Test Automation Server, then the license can be used while the current session remains active.</p>
Replace a user in the list of prioritized users	<p>Perform the following steps:</p> <ol style="list-style-type: none"> <li>Locate the user from the <b>Prioritized Floating Users</b> list that you want to replace with another user.</li> <li>Click the <b>Menu</b> icon  next to the name of the user, and then click <b>Replace</b>.</li> <li>Enter the email ID or name of another user that you want to add to the <b>Prioritized Floating Users</b> list.</li> <li>Click <b>Replace</b> to complete the action.</li> </ol>

**Results**

You have removed or replaced a user from the **Prioritized Floating Users** list.

## Viewing license details of the team space



You can find information about the number of licenses configured, licensed users, or details of the license server on the **License Configuration** page.

## Before you begin

The *Team Space Owner* must have configured the licenses for the team spaces on Rational® Test Automation Server.

## About this task

You as a licensed user can create projects or use the other features in Rational® Test Automation Server only after the *Team Space Owner* has configured the licenses for the team space. If you are not a licensed user, you cannot view or perform any operations on Rational® Test Automation Server.

1. Log in to Rational® Test Automation Server.
2. Click the **Settings** icon  from the left navigation pane.
3. Open the team space for which you want to view the license details from the **Switch to** option.
4. Click the **Settings** icon , and then **License**.

### Result

The **License Configuration** page is displayed with the following license information:

- The number of floating user licenses that are currently in use
- The number of prioritized floating user licenses that are currently in use, if your *Team Space Owner* has added the users to the **Prioritized Floating Users** list
- The total number of floating user licenses that are configured by the *Team Space Owner*
- The IP address or Fully Qualified Domain Name (FQDN) of Rational License Key Server
- The name and email ID of the users that are configured as prioritized floating users by the *Team Space Owner*



**Remember:** The **License usage** section does not display the number of **Concurrent Virtual Service** that are currently in use.

## Results

You have viewed the details about the licenses for the team space.

# Chapter 5. Test Author Guide

This guide describes how to create test assets in Rational® Test Automation Server and publish test assets to the Git repository that you have configured. This guide is intended for testers and test managers.


## Datasets overview

A dataset provides tests with variable data during a run. The test that uses a dataset at run time replaces a value in the recorded test with variable test data that is stored in the dataset.

In Rational® Test Automation Server, you can create a dataset and use it to replace the dataset values with original values during run time, when you want to run test assets that contain the dataset.

From the **Datasets** page, you can perform the following actions:

**Table 3. Options available in Datasets page**

Ac-tions	Descriptions
View	You can view the contents of a dataset. See <a href="#">Viewing a dataset on page 130</a> .
Cre-ate	You can create a dataset to use it during a test or schedule run. See <a href="#">Creating a dataset on page 120</a> .
Edit	You can edit a dataset when you want to run a test asset with different dataset values. See <a href="#">Editing a dataset on page 121</a> .
Con-figure	You can configure the string values in a dataset that contains variable data for tests to use when they run. See <a href="#">Editing a dataset on page 121</a> .
Delete	You can delete the dataset when it is not required in your test environment. See <a href="#">Deleting a dataset on page 132</a> .
Save As	You can save a copy of a dataset in a different folder or make a copy with a different name by clicking the <b>Menu</b> icon  and then by selecting the <b>Save As</b> option.
Branch selec-tion	<p>You can view the dataset listed in the other branches of the repository by selecting the name of the branch from the <b>Branch</b> list. When you access the <b>Datasets</b> page for the first time after adding the repository, the global branch is set to the default branch of the repository.</p> <p>When multiple repositories are added to the same project, the following events occur:</p>

**Table 3. Options available in Datasets page (continued)**

Ac-tions	Descriptions
	<ul style="list-style-type: none"> <li>• The datasets stored in the selected branch of all the repositories are displayed.</li> <li>• All the branches in all the repositories are listed in the drop-down list.</li> <li>• If the selected branch is not present in a repository, then datasets from that repository are not displayed.</li> </ul> <p>To differentiate a common branch across multiple repositories added to the project, the tooltip is not displayed in front of the common branch name in the list.</p>

**Notes:**

- Only a project **Owner** or a project member whose role is a **Tester** can view and edit the dataset.
- To view the content of an encrypted dataset, you must provide an encryption key that you set while encrypting the dataset column.
- As a **Viewer**, when you try to access the **Datasets** page, an error message is displayed because you do not have the permission to view this page.

## Creating a dataset

You can create datasets in Rational® Test Automation Server to replace the existing dataset values with new dataset values during a test or schedule run.

### Before you begin

You must be a member of the project with the **Owner** or **Tester** role and must have completed the following tasks:

- Created a project in Rational® Test Automation Server. See [Adding a project on page 436](#).
- Configured the Git repository in your project. See [Adding repositories to a server project on page 437](#).

### About this task

When you create a dataset in Rational® Test Automation Server, it always creates 1 Row, 2 Column (1R X 2C) dataset. Later, you can edit the dataset by adding some rows and columns that you want, to add the data in it.

1. Go to the Rational® Test Automation Server URL.
2. Enter your user name and password, and then click **Login**.
3. Open your project from the Rational® Test Automation Server UI.
4. Go to the **Datasets** page, and then click **Create dataset**.



5. Enter a name for the dataset in the **Asset name** field, and then select the place where you want to save the dataset in the **Location** drop-down list.
6. Click **Create**.

#### Result

The new dataset opens in a CSV Editor in a web browser. The dataset created is listed on the **Datasets** page.

#### Results

You have created a dataset in your project.

#### What to do next

- You can add, modify, or remove data in the dataset. See [Editing a dataset on page 121](#).
- You can publish the dataset to the Git repository so that other members of the project can use the dataset. See [Publishing a dataset on page 129](#).

## Editing a dataset

You can add, modify, remove, import, or export data from a dataset by using the CSV Editor. The working principle of the CSV Editor is similar to that of a spreadsheet.

#### Before you begin

You must have created a dataset or configured a repository that contains the dataset.

#### About this task

If you are a project **Owner** or **Tester** in Rational® Test Automation Server V10.1.0 or later, you can perform basic tasks in the CSV Editor by right-clicking any row, column, or cell in the dataset to organize your data in a better way. For example, you can perform tasks such as updating data in a cell, inserting or deleting rows and columns, or renaming column names.

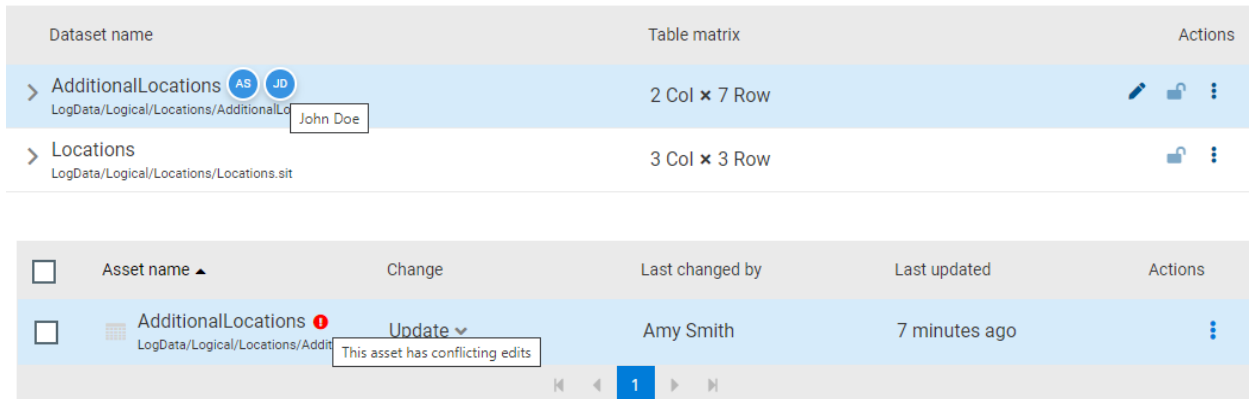
When you edit the dataset in the CSV Editor, you can use the following keyboard shortcuts to control the cursor selection in the CSV Editor:

- **Tab** - To move the cursor control to the next available option.
- **Shift-Tab** – To move the cursor control to the previous option.
- **Shift+F10** – To open the context menu from the dataset cell.

After you edit the dataset, you can save the changes made to the dataset, and then you can publish the dataset to the Git repository. If you save and close the edited dataset, the **Changes** page lists the edited dataset and later you can publish to the Git repository for other members to use.


When you or other members of the project edit the same dataset, you can see an icon with the initials of the member next to the name of the dataset on the **Datasets** and **Changes** pages. If you do not see the icon, you must refresh the

**Datasets** page to view the icons. The **Changes** page denotes conflicting edits when another member publishes their edited dataset first.



When a member with conflicting edits tries to publish the edited dataset, an error about conflicting changes is displayed. However, the member can use the **Save As** option to save and publish a copy of the dataset edits under a new asset name. The member must discard the edits that were made to the original dataset.

For example, consider a scenario when Amy Smith and John Doe edit the same dataset, and Amy Smith edits and publishes the dataset. On the **Changes** page, a message that indicates a conflict is displayed when John Doe tries to publish the same dataset.

 **Note:** You cannot resize the width of rows in the CSV Editor. When you have a large amount of data in a cell, you can right-click the cell and select **Copy** (or Ctrl+C), and then paste it into a text-editing program to view the content. Alternatively, you can hover the mouse over the cell to view the content.

When you have a CSV file that has data separated from a character, then you can import that CSV file into the dataset. You can select any of the following separator characters from the **Configure Dataset** window, and the selection can be the separator character that you used in the CSV file:

- Comma
- Semicolon
- Space
- Tab
- Other

Consider that you have the data in the CSV file in the following format:

Name;CCNum
John;1234 5678 1234 5678
Bob;1122 3344 5566 7788
Amy;2233 4455 6677 8899


When you import the CSV file in the dataset, and then select the separator value as **Semicolon**, the data in the dataset is displayed as follows:

	Name	CCNum
1	John	1234 5678 1234 5678
2	Bob	1122 3344 5566 7788
3	Amy	2233 4455 6677 8899

If you want the data in its original format, that is, a semicolon (;) character to separate the data, then you can choose any other separator value from the **Configure Dataset** window.





**Note:** The default separator value is **Comma**.








1. Go to the **Datasets** page and find the dataset which you want to edit.
2. Click the **Edit** icon  from the **Actions** column of the dataset.





#### Result



The dataset opens in the CSV Editor in a web browser.


3. Perform the following actions to use the options available in the CSV Editor:


Options	Actions
Find and Replace 	<p>To find:</p> <ol style="list-style-type: none"> <li>a. Click the <b>Find and Replace</b> icon .</li> <li>b. Enter the content that you want to search in the <b>Find</b> field.</li> <li>c. Select any or all the following options to find the search content more effectively: <ul style="list-style-type: none"> <li>▪ Select the <b>Case sensitive</b> checkbox to search the content that is the exact letter case of the content entered in the <b>Find</b> field.</li> <li>▪ Select the <b>Match entire cell contents</b> checkbox to search for cells that contain only the characters that you have entered in the <b>Find</b> field.</li> <li>▪ Select the <b>Search using regular expression</b> checkbox to search the pattern that matches strings.</li> </ul> <p>For example, to search a cell that contains any number between 0 to 9, do the following:</p> <ol style="list-style-type: none"> <li>i. Enter <code>\d</code> in the <b>Find</b> field.</li> <li>ii. Select the <b>Search using regular expression</b> checkbox.</li> <li>iii. Click <b>Find</b>.</li> </ol> </li> </ol>

Options	Actions
	<p>d. Click <b>Find</b>. If the text is found, the cell containing that text is selected.</p> <p>e. Click <b>Find</b> again to find further instances of the search text.</p> <p>To find and replace:</p> <p>a. Click the <b>Find and Replace</b> icon .</p> <p>b. Enter the content that you want to search in the <b>Find</b> field.</p> <p>c. Enter the content that you want to replace in the <b>Replace</b> field.</p> <p>d. Select any or all the following options to find and replace the content more effectively:</p> <ul style="list-style-type: none"> <li>▪ Select the <b>Case sensitive</b> checkbox to find the content that is the exact letter case of the content entered in the <b>Find</b> field.</li> <li>▪ Select the <b>Match entire cell contents</b> checkbox to find and replace for cells that contain only the characters that you have entered in the <b>Find</b> and <b>Replace</b> fields.</li> <li>▪ Select the <b>Search using regular expression</b> checkbox to find and replace the pattern that matches strings.</li> </ul> <p>e. Click <b>Replace</b> to replace the individual instances.</p> <p>f. Click <b>Replace All</b> to replace every instance of the content throughout the dataset.</p>
Undo 	<p>a. Click the <b>Undo</b> icon .</p> <p>b. Select the recent changes from the list that you want to undo, and then click the list.</p> <p>The <b>Undo</b> option undoes anything you do in the dataset. The CSV Editor saves the unlimited undo-able action. You can perform the undo action even after you save your changes made to the dataset.</p>
Redo 	<p>a. Click the <b>Redo</b> icon .</p> <p>b. Select the recent changes from the list that you want to redo, and then click the list.</p> <p>The CSV Editor saves the unlimited redo action.</p>
Import 	<p>When you have a large amount of data stored in a CSV file, you can import that into a dataset instead of creating a new dataset. You must have a .csv file that contains variable data to import into a dataset.</p> <p>a. Click the <b>Import</b> icon .</p> <p>b. Click <b>Choose File</b> and select the CSV file that you want to import in the <b>Import File</b> dialog box.</p> <p>c. Select one of the following options to append or overwrite data in the dataset:</p> <ul style="list-style-type: none"> <li>▪ Click <b>Overwrite</b> to add the rows and columns from the selected CSV file from the beginning of the dataset.</li> <li>▪ Click <b>Append</b> to add rows and columns from the selected CSV file to the end of the dataset.</li> </ul> <p>d. Select the <b>First row contains headers</b> checkbox if your CSV file contains the header.</p>

Options	Actions
Export 	<p>You can export variable data from the dataset into a CSV file to reuse in future tests when required. You must have a dataset that you want to export.</p> <p>Click the <b>Export</b> icon  to download the dataset as a CSV file.</p>
Set as current row	<p>During the test run, if you want variable data to be selected from a current row instead of the first row in a dataset, right-click any cell in a row and select <b>Set as current row</b>.</p> <p>Also, you can set the current row from the <b>Datasets</b> page by clicking <b>Menu</b>, and then the <b>Configure</b> option.</p> <p><b>When rows are deleted:</b></p> <p>If you delete any row between row 1 to current row, the current row data is taken from the next row. For example, when you set the current row as 6, and then you delete any row between row 1 to row 6, the current row remains at row 6, but the content of row 7 is moved to row 6.</p> <p><b>When rows are inserted:</b></p> <p>If you insert any new row between row 1 to the current row, the current row data is taken from the previous row. For example, when you set the current row as 6, and then you insert any row between row 1 to row 6, the current row remains at row 6, but the content of row 5 is moved to row 6.</p>
Dataset configuration settings 	<p>In the <b>Configure Dataset</b> window, you can change the row and column settings and configure the string values in the dataset that contains variable data for tests to use when they run.</p> <ol style="list-style-type: none"> <li>Click the <b>Menu</b> icon  , and then select the <b>Configure</b> option.</li> <li>Select any of the separator values that you used in the CSV file.</li> </ol> <p>The available options are <b>Comma</b>, <b>Semicolon</b>, <b>Space</b>, <b>Tab</b>, and <b>Other</b>. In the CSV file, if you have any other separator characters other than the available options, then you can select the <b>Other</b> option, and then can specify a value.</p> <p>For example, if the data in the CSV file is separated by a character #, then select the <b>Other</b> option and enter # in the field.</p> <ol style="list-style-type: none"> <li>Configure the following options to change the row and column settings:</li> </ol>

Options	Actions
	<ul style="list-style-type: none"> <li>▪ <b>Column header</b> - Use an up-down control button to increment or decrement the value of the column header.</li> <li>▪ <b>Data start point</b> - Use an up-down control button to increment or decrement the value of the data starting pointer.</li> <li>▪ <b>Current row</b> - Use an up-down control button to increment or decrement the value of the current row.</li> </ul> <p>d. Configure the following options to change the string values in the dataset:</p> <ul style="list-style-type: none"> <li>▪ <b>Treat as null</b> - Enter a string value that is to be treated as null when running the test.</li> <li>▪ <b>Treat as empty</b> - Enter a string value that is to be treated as empty when running the test.</li> </ul> <p>For example, when you run the test and the data 123 in the dataset to be treated as empty, then you can specify 123 in the <b>Treat as empty</b> field.</p> <ul style="list-style-type: none"> <li>▪ <b>Treat empty text as null</b> - Select this field when you want the dataset that contains any blank cells, and the value of those blank cells to be interpreted as null.</li> </ul> <p>e. Click <b>Update</b> to apply the changes.</p>
Discard 	Click the <b>Menu</b> icon  and select <b>Discard</b> to discard the changes made to the dataset.

4. Click the **Save** icon  to save the changes made to the dataset.

5. Click the **Publish** icon  to publish the dataset to the Git repository, and then close the CSV editor.

## Results

You have edited the dataset.

## Dataset encryption

Encrypted datasets are useful when you want to run tests that contain confidential information such as a set of passwords or account numbers.

When you run a test that uses an encrypted dataset, then you must provide an encryption key for decrypting the encrypted data in columns so that the data can be used in the test. If the test uses data from the multiple encrypted dataset columns, you must enter the same encryption key for every encrypted dataset column that the test uses.

When you run the test that uses the dataset with the encrypted column, the value of the column is decrypted at a run time. The data in the column is sent as a clear-text string in requests to the server. The actual values of the encrypted dataset variables are not displayed in the test log. The test log displays asterisks for the encrypted dataset variables.

You can use only one encryption key to encrypt data in the columns in any dataset.

 **Important:**

The encryption keys that you use to encrypt data in a dataset are not stored on the server nor can be retrieved from the server. Therefore, you must remember to store the encryption keys in a secure location. You must use the same encryption keys to perform the following operations:


- View the encrypted values
- Decrypt data
- Enable the use of the encrypted dataset during test runs

## Encrypting a dataset column

To secure test data, you must encrypt datasets. You can encrypt data in the columns of a dataset by using an encryption key. When you run a test that utilizes a dataset with encrypted variables, you must enter the encryption key for the encrypted column that the test uses.

### Before you begin

You must have created a dataset. See [Creating a dataset on page 120](#).

1. Go to the Rational® Test Automation Server URL.
2. Enter your user name and password, and then click **Login**.
3. Open your project from the Rational® Test Automation Server UI.
4. Go to the **Datasets** page and find the dataset that you want to encrypt.
5. Click the **Edit** icon  from the **Actions** column of the dataset.

#### Result

The dataset opens in the CSV Editor in a web browser.

6. Right-click any cell in a column that you want to encrypt and select **Encrypt column data**.

#### Result

The **Encrypt Column** window is displayed.

7. Enter an encryption key in the **Encryption Key** field to encrypt the data in the column.



**Remember:** When you have already encrypted other columns in the dataset, you must enter the same encryption key that you used previously. You can use only one encryption key to encrypt columns in a dataset.



**Important:**

The encryption keys that you use to encrypt data in a dataset are not stored on the server nor can be retrieved from the server. Therefore, you must remember to store the encryption keys in a secure location. You must use the same encryption keys to perform the following operations:

- View the encrypted values
- Decrypt data
- Enable the use of the encrypted dataset during test runs

8. Click **Encrypt Column**.

**Result**

Asterisks are displayed instead of actual data for the encrypted column.

**Results**

You have encrypted the dataset column in your project.

**What to do next**


You can publish the dataset to the Git repository so that other members of the project can use the dataset. See [Publishing a dataset on page 129](#).

## Decrypting a dataset column

To view the content of an encrypted dataset, you can decrypt the dataset column. Removing encryption from a dataset revokes the protection offered to the test data.

**Before you begin**

You must have created at least one dataset and encrypted the dataset with an encryption key. See [Creating a dataset on page 120](#) and [Encrypting a dataset column on page 127](#).

1. Go to the Rational® Test Automation Server URL.
2. Enter your user name and password, and then click **Login**.
3. Open your project from the Rational® Test Automation Server UI.
4. Go to the **Datasets** page and find the dataset that you want to decrypt.
5. Click the **Edit** icon  from the **Actions** column of the dataset.

**Result**

The dataset opens in the CSV Editor in a web browser.



- Right-click encrypted cells that display the contents with asterisks, and then select **Decrypt column data**.

**Result**

The **Decrypt Column** window is displayed.

- Enter the encryption key that you used to encrypt the data in the column in the **Encryption Key** field.
- Click **Decrypt Column**.

**Result**

Asterisks are replaced with the actual data in the decrypted column.

**Results**

The encryption is removed from the selected column in the dataset. When you run a test that uses a dataset that contains decrypted data, the variable data is substituted for the original data in the recorded test without prompting for the encryption key.

**What to do next**

You can publish the dataset to the Git repository so that other members of the project can use the dataset. See [Publishing a dataset on page 129](#).

## Publishing a dataset

When you create or edit any datasets in Rational® Test Automation Server, you can publish your changes to the Git repository. Therefore, when you publish a dataset, other members in the project can use your dataset in their test assets run, if required.

**Before you begin**

You must have created, edited, or deleted dataset assets in Rational® Test Automation Server.


**About this task**

The **Changes** page lists dataset assets that are modified. You can publish all datasets or a single dataset listed in the **Changes** page to the Git repository by selecting the appropriate checkboxes.

<input type="checkbox"/>	Asset name ▲	Change	Last changed by	Last updated	Actions
<input type="checkbox"/>	ds_server Project4/ds_server.csv	Deletion ▼	User1	a few seconds ago	⋮
<input type="checkbox"/>	DS1 Project1/DS1.csv	Update ▼	User1	a few seconds ago	⋮

Rational® Test Automation Server processes one publish request at a time. Therefore, when multiple users attempt to publish the same dataset, the request that reaches first from the users is processed. The other users receive an error message, and they are unable to publish.

When you modify the dataset and publish it to the Git repository, the other members who have access to that dataset can view the updated dataset.

You can also perform the following actions from the Changes page by clicking the **Menu** icon .

- **Edit** - If you want to make any last-minute updates to the dataset before publishing.
- **Discard** - To remove the changes that you made to the dataset asset.
- **Save As** - To save a copy of dataset.

1. Go to the Rational® Test Automation Server URL.
2. Enter your user name and password, and then click **Login**.
3. Open your project from the Rational® Test Automation Server UI.
4. Go to the **Changes** page, find the dataset that you want to publish.
5. Select the checkbox that precedes the **Dataset name** to publish to the Git repository, and then click **Publish**.
6. Enter a description for the changes made to the dataset, and then click **Publish**.

#### **Result**

A message is displayed for successful pushing of changes to the Git repository.

### **Results**

You have published the modified dataset into the Git repository.

## Viewing a dataset


When test assets includes datasets, you can view the contents of a dataset from Rational® Test Automation Server. The datasets residing in the Git repository are listed in the **Datasets** page.

### **Before you begin**

You must be a member of the project with the **Owner** or **Tester** role and must have completed the following tasks:

- Created a project in Rational® Test Automation Server. See [Adding a project on page 436](#).
- Configured the Git repository in your project. See [Adding repositories to a server project on page 437](#).
- Created at least one dataset and encrypted the dataset with an encryption key. See [Creating a dataset on page 120](#) and [Encrypting a dataset column on page 127](#).
- Created a classification for an encrypted dataset. See [Creating a classification on page 461](#).

1. Go to the Rational® Test Automation Server URL.
2. Enter your user name and password, and then click **Login**.
3. Open your project from the Rational® Test Automation Server UI.

4. Go to the **Datasets** page, find the dataset that you are interested in, and then expand the dataset by clicking the **Expand** icon .





**Note:** You can click the **Dataset Name** field to sort the datasets by name in alphabetical order. Alternatively, you can use the **Search** field to search the dataset by name.

### Results

You have viewed the contents of the dataset.

## Viewing an encrypted dataset

You can use the **Dataset** page to view the contents of an encrypted dataset from Rational® Test Automation Server.

1. Go to the **Datasets** page, find the encrypted dataset that you are interested in, and then expand the dataset by clicking the **Expand** icon .
2. Perform the following steps, if you have created a classification but yet to add the encrypted dataset to it:
  - a. Find the encrypted dataset that you are interested in, and then click the **Lock** icon  from the **Actions** column of the dataset.
  - b. In the **Change the classification for the dataset** window, select a classification from the list and enter the encryption key set for the dataset.
  - c. Click **Save** to save the classification details.
3. Right-click the encrypted column and click **Show encrypted data**.

You can right-click the decrypted column and select **Hide encrypted data** to encrypt the data again.



**Important:** The **Show encrypted data** option is available only when you have added the encrypted dataset to the respective classification.

### Results


You have viewed the contents of an encrypted dataset.

## Changing classification for an encrypted dataset

To move the encrypted dataset from one classification to another, you can change the classification for an encrypted dataset from the **Dataset** page.

### Before you begin

You must have created at least two or more classifications. See [Creating a classification on page 461](#).

1. Go to the **Datasets** page and find an encrypted dataset for which you want to change the classification.
2. Click the **Lock** icon  from the **Actions** column of a dataset.
3. In the **Change the classification for the Dataset** window:

- a. Choose the classification from the list.
- b. Enter the encryption key for the dataset that was set while encrypting the dataset column.
- c. **Save** the classification details.



**Remember:** You can perform this task only if you know the encryption key set for the dataset while encrypting the dataset column.

## Results

You have changed the classification for an encrypted dataset.

---

Related information

[Managing an encrypted dataset on page 460](#)

[Creating a classification on page 461](#)

## Deleting a dataset

You can delete the dataset when it is not required in your test environment.

### Before you begin

You must have at least one dataset asset in your Git repository that you have configured.

### About this task


You can delete datasets in Rational® Test Automation Server in the following scenarios:

- Datasets that you created in the desktop clients and that are cloned to the repository in your project on Rational® Test Automation Server.
- Datasets that you created in Rational® Test Automation Server and that are published to the repository in your project.
- Datasets that are in the `.csv` file format.

You cannot delete the following datasets:

- Datasets that you created or edited in Rational® Test Automation Server and that are not published to the repository in your project.
- Datasets that are in the `.sit` file format.

1. Go to the Rational® Test Automation Server URL.
2. Enter your user name and password, and then click **Login**.
3. Open your project from the Rational® Test Automation Server UI.

4. Go to the **Datasets** page, find the dataset that you want to delete.
5. Click the **Menu** icon  from the **Actions** column of a dataset, and then click **Delete**.
6. Clear the **Publish delete to <branch name of the configured Git repository>** checkbox to delete the dataset from your project.

When you clear this option, the deletion of the dataset does not reflect in the configured Git repository. Therefore, the other members of the project can still use the dataset that you have deleted. If you want, later you can publish the dataset to the Git repository from the **Changes** page.



**Note:** By default, **Publish delete to <branch name of the configured Git repository>** field is selected.

7. Enter a description for deleting the dataset in the **Description of change** field.
8. Perform the following action:

Option	When	Action
<b>Publish delete to &lt;branch name of the configured Git repository&gt;</b>	Selected <input checked="" type="checkbox"/>	Click <b>Delete and Publish</b>
	Cleared <input type="checkbox"/>	Click <b>Delete</b>

#### Result

A message is displayed for the successful deletion of the dataset.

# Chapter 6. Test Execution Specialist Guide

This guide describes tasks that you must complete before you can configure and run tests in Rational® Test Automation Server. You can find information about configuring runs for the different test types that are supported. You can also find information about other tasks that you can perform on the Resource Monitoring Service, Virtualization, and Integrations with third-party applications. This guide is intended for testers or test execution specialists.

## System modeling

In this topic, you can find information about using the system model feature. You can also find the tasks that you can perform to create a system model. You must configure a repository to save the system model that you created for the application under test.

### Introduction to system model

A system model is a logical presentation of the components contained in a system under test and the relationships between components. You can create a system model when you want to visualize the different components and their relationships as a diagrammatic representation.

You can create only one system model within a team space on Rational® Test Automation Server. A team space repository is required to contain the system model that you create. Before you can create a system model, you must add a team space repository. The system model that is created or edited is stored in the team space repository. All projects within a team space share the same system model. All members of a team space can create, edit, and view the system model.

After you log in to Rational® Test Automation Server, you can go to the **System Model** page to create a system model for your team space. Alternatively, you can go to any of the projects in your team space and create a system model from the **System Model** page within a project. The system model is accessible from all the projects of your team space repository.

### Components in a system model

Components are the basic building blocks which are used to represent a piece of software in an application.

You can model a system by using components. You can create components that represent the type of asset or resource used by the system or application under test and can be of the following types:

Component type	Description
Database	The component type represents the database resource. You can select this component type when you want to represent a database asset or resource in the system model.
Service	The component type represents the virtual service resource. You can select this component type in the system model to represent a virtual service in the team space repository or associate a virtual service resource that is in the project repository.

Component type	Description
UI	The component type represents the User Interface (UI) resource. You can select this component type when you want to represent the User Interface resource in the system model.











You can create multiple components to depict the different resources in the system or application under test. You can also associate virtual service resources with the components. The components in the system model can then be associated with the virtual services stored in the repositories that are configured for each of the projects.

You can create the following types of relationships between the components:

- Components can be related as *child* components to *parent* components.
- Components can be related as *dependent* components. The dependency is displayed by a line-arrow with the arrow-head pointing to the dependent component. For example, if *Component A* depends on *Component B*, then the relationship is displayed with a line-arrow from *Component A* to *Component B* and the arrow points to *Component B*. If *Component B* is also dependent on *Component A*, then the relationship is displayed with a line-arrow from *Component B* to *Component A* and the arrow points to *Component A*.








## Using the system model UI

The following table lists the icons used in a system model and the icons that are displayed on the **System Model** page:


Icon	Description
	Represents a system model.
	Represents Suites and Tests in a repository.
	Represents a database resource. The component name is prefixed with this icon when you select the component type as database.
	Represents a service resource. The component name is prefixed with this icon when you select the component type as service.
	Represents a User Interface (UI) resource. The component name is prefixed with this icon when you select the component type as User Interface.
	Used to add components, child components, and dependent components.
	Used to search for components in the system model.
	Represents the virtual services.
	Used to publish the system model to the team space repository.
	Represents the dependency between the components.

Icon	Description
—	Represents the inherited dependencies.

You can perform the following operations when you view the model displayed on the **System Model** page:

Operation	Action
Pan the view of the model	<ol style="list-style-type: none"> <li>1. Click the <b>Pan</b> icon .</li> <li>2. Click on the area of the model that you want to pan and move the area keeping the mouse pressed.</li> </ol> <p> <b>Note:</b> You must click the <b>Pan</b> icon to exit from the pan mode.</p>
Zoom-in the view of the model	<ol style="list-style-type: none"> <li>1. Click the <b>Zoom-in</b> icon .</li> </ol> <p>The view is enlarged or zoomed-in.</p> <p> <b>Note:</b> You can repeatedly click the <b>Zoom-in</b> icon to further enlarge the view.</p>
Zoom-out the view of the model	<ol style="list-style-type: none"> <li>1. Click the <b>Zoom-out</b> icon .</li> </ol> <p>The view is diminished or zoomed-out.</p> <p> <b>Note:</b> You can repeatedly click the <b>Zoom-out</b> icon to further diminish the view.</p>
Reset the view	<ol style="list-style-type: none"> <li>1. Click the <b>Menu</b> icon  on the <b>System Model</b> page.</li> <li>2. Select <b>Reset Zoom</b>.</li> </ol> <p>The view is reset to the default view without any zoom applied. If the view was zoomed-in or zoomed-out, the view is reset to 100% of the size.</p>



Operation	Action
Position the model view	<ol style="list-style-type: none"> <li>1. Click the <b>Menu</b> icon  on the <b>System Model</b> page.</li> <li>2. Select from the following options: <ul style="list-style-type: none"> <li>◦ <b>Center</b>: Select this option to align the view of the model to the center of the page.</li> <li>◦ <b>Fit to View</b>: Select this option to fit the view of the model in the window on the <b>System Model</b> page.</li> </ul> </li> </ol>

### Tasks in system modeling

When you want to model the system under test for the first time after you install the server software and you are a licensed user in the team space, you must first add the team space repository. See [Adding a repository to a team space on page 138](#).

After a repository is configured as the team space repository, you can work with the system model. See [Tasks for working with a system model on page 137](#).

When you want to change, update or delete the repository, you can work with the team space repository. See [Tasks for working with the team space repository on page 138](#).

### Task flows for working with a system model

You can find information about the tasks that you can perform when you want to create a system model, create components, associate the components, create linkages among the components, and then publish the system model to the team space repository. Also, you can find information about the tasks that you must perform when you want to modify an existing system model.

### Tasks for working with a system model

You can find the tasks when you want to create a system model for the application under test in your team space.

Tasks	More information
Add a repository to the team space.	<a href="#">Adding a repository to a team space on page 138</a>
Create a system model.	<a href="#">Creating a system model on page 141</a>
Create components in a system model.	<a href="#">Creating components on page 142</a>
Create child components to existing components in a system model.	<a href="#">Creating child components on page 143</a>

Tasks	More information
Define the relationship between the components in a system model.	<a href="#">Creating linkages between components on page 146</a>
Delete the relationship between the components in a system model.	<a href="#">Deleting linkages between components on page 147</a>
Modify components in a system model.	<a href="#">Modifying components on page 149</a>
Delete components in a system model.	<a href="#">Deleting components on page 151</a>
Associate resources with components in a system model.	<a href="#">Associating resources with components on page 152</a>
View resources associated with components in a system model.	<a href="#">Viewing resources associated with components on page 153</a>
Remove resources that are associated with components in a system model.	<a href="#">Removing resources associated with components on page 156</a>
Publish changes made to the system model.	<a href="#">Publishing changes to the system model on page 151</a>
Publish changes of associating resources in a project with components in the system model.	<a href="#">Publishing changes of associating resources with components on page 157</a>
View system model.	<a href="#">Viewing the system model on page 158</a>
Delete system model.	<a href="#">Deleting a system model on page 159</a>

### Tasks for working with the team space repository

You can find the tasks that you can perform when you want to work with the team space repository.

Tasks	More information
Add a repository to the team space.	<a href="#">Adding a repository to a team space on page 138</a>
Delete a team space repository.	<a href="#">Deleting a repository that is added to a team space on page 159</a>

### Adding a repository to a team space

You must add a repository to the team space when you want to create, modify, or store a system model.

#### Before you begin

You must have completed the following tasks:

- Ensured that you are assigned a role as a *Team Space Owner* or an *Architect* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Been provided valid credentials to access the Git repository that you want to add.

### About this task

As a *Team Space Owner* or an *Architect*, you can add a repository to the team space. You can add a repository to the team space in any of the following methods:

- Add an existing repository that can contain test assets, which are created in the desktop products.
- Add a bare repository.



**Attention:** The repository that you want to add must not contain any projects or `.project` files under the root directory.

When you add a repository, the Git repository is cloned to the team space. While adding a repository, you must provide the necessary authentication credentials that are set for the Git repository. For example, if the authentication type is SSH, then you must provide the Git URL, a deploy key, and a passphrase.



**Important:** You can add only one repository to the team space. After you add a repository to the team space, the option to add another repository is not available. You must delete an existing repository before you can add a different repository.

1. Log in to Rational® Test Automation Server.
2. Open the team space to which you want a team space repository.

The **Active projects** page is displayed.

3. Click the **Settings** icon  from the left navigation pane, and then select **Manage team space**.

The **Details** page is displayed.

4. Click **Repository** on the left navigation pane.

The **Repository** page is displayed.

5. Click **Add repository**.

The **Add repository** dialog is displayed.

6. Enter the URL of the Git repository, which you want to add to the team space, in the **Git Repository** field.

The required fields are displayed based on the type of Git URL that you entered.

7. Enter the required credentials based on any of the following authentication methods configured in the repository.

To gain access to the repository, you must use any one of the authentication methods:

Authentication method	Credentials required
SSH	<ul style="list-style-type: none"> <li>◦ Deploy key</li> <li>◦ Passphrase</li> </ul>
HTTPS	<ul style="list-style-type: none"> <li>◦ User name</li> <li>◦ Password</li> </ul>
HTTP	<ul style="list-style-type: none"> <li>◦ User name</li> <li>◦ Password</li> </ul>



**Notes:**

- You must have defined the authentication type and set the authentication credentials in the Git repository.
- If you use SSH to connect to your remote repository and Rational® Test Automation Server displays an `Auth Fail` exception while using the deliver changes option, you can resolve this exception error by regenerating your SSH keys by using the `-m PEM` option.

8. Click **Add**.

The Git repository is added to the team space on Rational® Test Automation Server.



**Note:** Depending on the size of the repository you are cloning, it can take a few to several minutes to clone the repository.

**What to do next**

You can perform the following actions on the repository that you added:

- Update the authentication credentials if they are changed in the Git repository configuration. See [Updating the authentication credentials of the repository on page 449](#).
- Refresh a repository to fetch and synchronize changes from the remote repository. See [Refreshing repositories manually on page 450](#).
- Configure a webhook to notify the server if there is a push event in the remote repository. See [Creating webhooks on page 453](#).
- Add a system model to the repository. See [Creating a system model on page 141](#).
- Delete a repository that is added to the team space, if it is no longer required. See .

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Related information

[Managing repositories on page 447](#)

## Creating a system model

Before you can create components in a system model, you must create an empty system model and publish the system model to the team space repository.

### Before you begin

You must have completed the following tasks:

- Ensured that you are assigned a role as an *Architect* in the team space, a *Project Owner* or a *Tester* in the project. See [Managing members and their roles in a team space on page 429](#) or [Managing access to server projects on page 442](#).
- Added a repository to the team space. See [Adding a repository to a team space on page 138](#).

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Select an option to create a system model based on your role in the team space or in a project in the team space:

- If you are a *Team space owner* or an *Architect*, go to [Step 4 on page 141](#).
- If you are not a *Team space owner* or an *Architect* but a *Project Owner* or *Tester*, go to [Step 5 on page 141](#).

4. Perform the following steps, if you are a *Team space owner* or an *Architect*:

- a. Click **System Model** on the left navigation pane.

The **System Model** page is displayed.

- b. Click the **Add system model** icon .

An empty system model is created.

- c. Go to [Step 6 on page 142](#).

5. Perform the following steps, if you are not a *Team space owner* or an *Architect* but a *Project owner*:

- a. Open your project that is displayed under **My projects** on the **Active projects** page.

The **Overview** page is displayed.

- b. Click **System Model** on the left navigation pane.

The **System Model** page is displayed.

- c. Click the **Add system model** icon .

An empty system model is created.

- d. Go to Step 6 on page 142.

6. Click the **See unpublished commits** icon , and then select the **Publish changes** option.



**Note:** If you do not want to commit the changes that you made to the system model, you can select the **Discard changes** option.

7. Enter a commit message in the **Description of change** field, and then click **Publish**.

The empty system model is committed and published to the team space repository. When the system model is published to the team space repository, other members of the team space can work with the same system model from any of their projects in the team space.

## Results

You have created an empty system model and published it to the team space repository.

## What to do next

You can perform any of the following tasks:

- Create components in the system model. See [Creating components on page 142](#).
- Create child components for the components that you added to the system model. See [Creating child components on page 143](#).

## Creating components

The first step in building a system model is to create components. The components serve as the building blocks for the system model.

### Before you begin

You must have completed the following tasks:

- Created and published the system model. See [Creating a system model on page 141](#).


1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Click **System Model** on the left navigation pane.




The **System Model** page is displayed.

4. Perform the following steps to add a component to the system model:

- a. Click the **Add component** icon  in the **Components** row on the right pane.

The **Add a component** dialog is displayed.

- b. Enter a name for the component in the **Name** field.
- c. Select the type of component that you want to add from the following options displayed in the **Type** field.

-  **Service**
-  **Database**
-  **UI**

- d. Click **Add**.

The component is displayed as a circular block on the system model pane with the icon and name of the component below the block. The added component is also displayed under the **Components** list in the right pane.

You create components of other types or the same type in the system model following the preceding steps.

## Results

You have created components in the system model.

## What to do next

You can perform any of the following tasks:

- Publish the changes that you made to the system model. See [Publishing changes to the system model on page 151](#).
- Create child components for the components that you added to the system model. See [Creating child components on page 143](#).
- Create linkages between components in the system model. See [Creating linkages between components on page 146](#).

## Creating child components

You can create components as children of existing components in the system model.

### Before you begin

You must have completed the following tasks:

- Created and published the system model. See [Creating a system model on page 141](#).
- Created components in the system model. See [Creating components on page 142](#).

### About this task

You can create multiple components in your system model and multiple child components under any component in the system model. After you create a child for a component, the child is represented as a circular block within the circular component block in the system model.

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Click **System Model** on the left navigation pane.

The **System Model** page is displayed with the existing components.


4. Create child components in any of the following methods:

- To create child components from the left pane on the **System Model** page, go to [Step 5 on page 144](#).
- To create child components from the right pane on the **System Model** page, go to [Step 6 on page 145](#).

5. Perform the following steps to create child components from the left pane:

- a. Click the component under which you want to create child components in the left pane.




The details of the component are displayed in the right pane.

- b. Click the **Add child** icon  in the **Children** row on the right pane.

The **Add a child to...** dialog is displayed.

- c. Enter a name for the component in the **Name** field.

- d. Select the type of component that you want to add from the following options displayed in the **Type** field.

-  **Service**
-  **Database**
-  **UI**

- e. Click **Add**.




The child component is displayed as a circular block within the circular block of the parent component on the system model pane. The added child component is also displayed under the **Children** list under the component in the right pane.

You create child components of other types or the same type for the same or other components in the system model following the preceding steps.

6. Perform the following steps to create child components from the right pane of the stem model page:


a. Click the component name listed under the **Components** in the right pane.

b. Click the **Add child** icon  in the **Children** row on the right pane.

The **Add a child to...** dialog is displayed.

c. Enter a name for the component in the **Name** field.

d. Select the type of component that you want to add from the following options displayed in the **Type** field.

-  **Service**
-  **Database**
-  **UI**

e. Click **Add**.

The child component is displayed as a circular block within the circular block of the parent component on the system model pane. The added child component is also displayed under the **Children** list under the component in the right pane.

You create child components of other types or the same type for the same or other components in the system model following the preceding steps.

## Results

A component is created and it is associated as a child with the selected component and the name of the child is displayed under the **Children** section in the right pane.

## What to do next

You can perform any of the following tasks:

- Publish the changes that you made to the system model. See [Publishing changes to the system model on page 151](#).
- Create linkages between components in the system model. See [Creating linkages between components on page 146](#).

## Creating linkages between components

You can create linkages between components that display the relationship between them. The linkages can be between components or between child components of the same or different parent components.

### Before you begin

You must have completed the following tasks:

- Created and published the system model. See [Creating a system model on page 141](#).
- Created components in the system model. See [Creating components on page 142](#).
- Created child components. See [Creating child components on page 143](#).

### About this task

You can create multiple components in your system model and multiple child components under any component in the system model. You can specify the dependency among the components.

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Click **System Model** on the left navigation pane.


The **System Model** page is displayed.


4. Perform the following steps to create a relationship between the components in the system model:

- a. Click the component that you want.

The details of the component are displayed in the right pane.

- b. Select from the following types of relationships that you want to create:

Option	Action
Depends on	<p>Perform the following steps, if the component you selected is dependent on another component:</p> <ol style="list-style-type: none"> <li>i. Click the <b>Add dependency</b> icon  in the row of the <b>Depends on</b> in the right pane.</li> </ol> <p>The <b>Add dependency</b> dialog is displayed.</p> <ol style="list-style-type: none"> <li>ii. Select the component from the list of components displayed under <b>Depends on</b>.</li> <li>iii. Click <b>Add</b>.</li> </ol>

Option	Action
	The components linked are listed under <b>Depends on</b> in the right pane. The linkage between the first to the second component you select is shown with an arrow that starts from the first and ends in the second component.
Is a dependency of	<p>Perform the following steps, if the component you selected has a dependency of another component:</p> <ol style="list-style-type: none"> <li>i. Click the <b>Add dependent</b> icon  in the row of the <b>Is a dependency of</b> in the right pane.</li> </ol> <p>The <b>Add dependent</b> dialog is displayed.</p> <ol style="list-style-type: none"> <li>ii. Select the component from the list of components displayed under <b>Is a dependency of</b>.</li> <li>iii. Click <b>Add</b>.</li> </ol> <p>The components linked are listed under <b>Is a dependency of</b> in the right pane. The linkage between the first to the second component you select is shown with an arrow that starts from the second and ends in the first component.</p>

## Results

You have created linkages between components in the system model.

## What to do next

You can publish the changes that you made to the system model. See [Publishing changes to the system model on page 151](#).

## Deleting linkages between components

When you do not want to retain the linkages between components that you created in the system model, you can delete the linkages.

## Before you begin

You must have completed the following tasks:

- Created and published the system model. See [Creating a system model on page 141](#).
- Created components in the system model. See [Creating components on page 142](#).
- Created child components. See [Creating child components on page 143](#).
- Created linkages between components in the system model. See [Creating linkages between components on page 146](#).

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Click **System Model** on the left navigation pane.



The **System Model** page is displayed.

4. Perform the following steps to delete a relationship between the components in the system model:

- a. Click the component that you want.

The details of the component are displayed in the right pane.

- b. Select from the following types of relationships that you want to delete:

When...	Action
<p>The component depends on another component.</p>	<p>Perform the following steps, if the component you selected is dependent on another component:</p> <ol style="list-style-type: none"> <li>i. Select the component from the list of components displayed under the <b>Depends on</b> section in the right pane.</li> <li>ii. Click the <b>Delete selected</b> icon  inline with <b>Depends on</b> section.</li> </ol> <p>The <b>Delete relationship</b> dialog is displayed with the details of the component and the dependent component.</p> <ol style="list-style-type: none"> <li>iii. Click <b>Delete</b>.</li> </ol> <p>The component linkage is removed from the system model pane.</p>
<p>The component has a dependency by another component.</p>	<p>Perform the following steps, if the component you selected has a dependency of another component:</p> <ol style="list-style-type: none"> <li>i. Select the component from the list of components displayed under the <b>Is a dependency of</b> section in the right pane.</li> <li>ii. Click the <b>Delete selected</b> icon  inline with <b>Is a dependency of</b> section.</li> </ol> <p>The <b>Delete relationship</b> dialog is displayed with the details of the component and the component dependency.</p> <ol style="list-style-type: none"> <li>iii. Click <b>Delete</b>.</li> </ol> <p>The component linkage is removed from the system model pane.</p>

## Results

You have created linkages between components in the system model.

### What to do next

You can publish the changes that you made to the system model. See [Publishing changes to the system model on page 151](#).

## Modifying components

At any point in time, after you create a component, you can modify and update the details of the components such as the component type, and the relationships with other components.

### Before you begin

You must have completed the following tasks:

- Created and published the system model. See [Creating a system model on page 141](#).
- Created components in the system model. See [Creating components on page 142](#).
- Created child components. See [Creating child components on page 143](#).

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.



3. Click **System Model** on the left navigation pane.





The **System Model** page is displayed.

4. Click the component that you want to edit.

The component details are displayed in the right pane.

5. Perform the actions for the task to modify components as listed in the following table:

Task	Action
Change the component type.	Perform the following steps: <ol style="list-style-type: none"> <li>a. Identify the component that you want to modify from the components listed under <b>Components</b> in the right pane.</li> <li>b. Click the component checkbox.               <p style="margin-left: 40px;">The <b>Edit selected</b> icon  is enabled.</p> </li> <li>c. Click the <b>Edit</b> icon .</li> <p style="margin-left: 40px;">The <b>Edit component</b> dialog box is displayed.</p> <li>d. Select the component type.</li> <li>e. Click <b>Modify</b></li> </ol>

Task	Action
	The type of the component is modified.
Change the name of a component.	<p>Perform the following steps:</p> <ol style="list-style-type: none"> <li>Identify the component that you want to modify from the components listed under <b>Components</b> in the right pane.</li> <li>Click the component checkbox.</li> </ol> <p>The <b>Edit selected</b> icon  is enabled.</p> <ol style="list-style-type: none"> <li>Click the <b>Edit</b> icon .</li> </ol> <p>The <b>Edit component</b> dialog box is displayed.</p> <ol style="list-style-type: none"> <li>Edit the component name in the <b>Name</b> field.</li> <li>Click <b>Modify</b>.</li> </ol> <p>The name of the component is modified.</p>
Change the parent of a component.	<p>Perform the following steps:</p> <ol style="list-style-type: none"> <li>Identify the component that you want to modify from the components listed under <b>Components</b> in the right pane.</li> <li>Click the component checkbox.</li> </ol> <p>The <b>Change parent</b> icon  is enabled.</p> <ol style="list-style-type: none"> <li>Click the <b>Change parent</b> icon .</li> </ol> <p>The <b>Change parent</b> dialog box is displayed.</p> <ol style="list-style-type: none"> <li>Select another parent for the selected components that are listed under the <b>Parent</b> list.</li> <li>Click <b>Change</b>.</li> </ol> <p>The parent of the component is changed.</p>

### Results

You have edited components and updated the details successfully.

### What to do next

You can publish the changes that you made to the system model. See [Publishing changes to the system model on page 151](#).

## Deleting components

When you do not require a component, you can delete the component.

### Before you begin

You must have completed the following tasks:

- Created and published the system model. See [Creating a system model on page 141](#).
- Created components in the system model. See [Creating components on page 142](#).

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Click **System Model** on the left navigation pane.

The **System Model** page is displayed.

4. Click the component that you want to delete.

The component details are displayed in the right pane.

5. Click the **Delete component** icon  inline with the component name.

The **Delete component** dialog is displayed.

6. Click **Delete**.

### Results

You have deleted a component from the system model.

### What to do next

You can perform any of the following tasks:

- Publish the changes that you made to the system model. See [Publishing changes to the system model on page 151](#).
- Create components in the system model. See [Creating components on page 142](#).

## Publishing changes to the system model

When you create, delete, or modify components in a system model, the changes are saved locally and are not visible to the other project members or team space members. You must publish the system model changes to the team space repository to make your changes visible for all users of the team space.

### Before you begin

You must have completed the following tasks:


- Created and published the system model. See [Creating a system model on page 141](#).
- Performed actions to add or modify the system model that you want to publish.

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Click **System Model** on the left navigation pane.

The **System Model** page is displayed.

4. Perform any of the following actions:
  - Create a system model.
  - Delete a system model.
  - Modify a system model.
5. Click the **See unpublished commits** icon , and then select the **Publish changes** option.



**Note:** If you do not want to commit the changes that you made to the system model, you can select the **Discard changes** option.

6. Enter a commit message in the **Description of change** field, and then click **Publish**.

## Results

You have published the changes that you made in the system model to the team space repository. Other members of the team space can now view and use the system model.

## Associating resources with components

After creating components in the system model, you can navigate to a project in the team space to associate the virtual services resources in the project repositories with the components in the system model.

### Before you begin

- You must have created components.
- You must be a member of the project that contains the virtual service resources.

1. Click **Projects**.


The **Projects** page is displayed.

2. Click the project that contains the virtual service resources that you want to associate with components.
3. Click **System Model**.
4. Click the component that you want to associate with the virtual services resources.

The component details are displayed in the right pane.



5. Click the **Associate** tab.

The associated resources are displayed. To associate more resources, click the **Add association** icon  next to the resource type.



**Note:** Click the **Add** button to associate resources with the component for the first time.

To associate a resource with a component for the first time, you must perform the following steps:

a. Click **Add**.

A drop-down list is displayed.

b. Click the **Virtual Services** option if you want to associate your component with the virtual service resources.

The **Associate Virtual Services** page is displayed.




**Notes:**

- You can view all the available resources of virtual services by selecting the **Virtual Resources** check box.
- You can use the **Search** field to search for virtual service resources by entering the name of the virtual service resources.

c. Select one or more resources that you want to associate, and then click **Add**.

The added resources are displayed in the **Associate** and **Overview** tabs of the component.

6. **Optional:** Associate more resources by clicking the **Add association** icon  next to the resource type.

## Results

You have associated components with the virtual service resources.

## Viewing resources associated with components

After you associate virtual services resources with components in the system model, you can view the associated resources from the **System Model** page. You can opt to start an instance of the associated resource or stop a running instance of the associated resource.

### Before you begin

You must have completed the following tasks:

- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).
- Created and published the system model. See [Creating a system model on page 141](#).

- Created components in the system model. See [Creating components on page 142](#).
- Associated resources in a project with components in the system model. See [Associating resources with components on page 152](#).

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Click **Active projects > My projects > project\_name** to open the project that contains the test assets.

The **Overview** page of the project is displayed.

4. Click **System Model** on the left navigation pane.

The **System Model** page is displayed.






5. Click the component that you associated with the resources in the project repository.





The resources associated with the component are displayed under the resource type in the **Associate** tab.



6. Click the **Overview** tab, if it is not already displayed.

The resources that are associated with the component are displayed under the **Virtual Services** section.

7. View and perform the actions for the **Virtual Services** resources. Go to [8 on page 154](#).
8. Identify the virtual service resource that are listed under the **Virtual Services** section, and perform the action that you want described in the following table:

Field	Description	Action
<b>Collapse</b> icon 	You can collapse the resource sections by clicking the <b>Collapse</b> icon  .   <b>Note:</b> When the section is collapsed, you can view the number that is displayed of the resources that are associated.	Click the icon to toggle between the collapsed and expanded display of the <b>Virtual Services</b> section.
<b>Show all</b> icon 	You can opt to view the virtual services that are associated with the component either on the <b>Resources</b> or <b>Instances</b> page.	Perform the following steps: a. Click the <b>Show all</b> icon  .

Field	Description	Action
	<p>You can start an instance of the virtual service from the <b>Resources</b> page while you can stop a running instance from the <b>Instances</b> page.</p>	<ul style="list-style-type: none"> <li>▪ To start an instance of the virtual service:               <ol style="list-style-type: none"> <li>i. Select <b>Show all in resources page</b> to go to the <b>Resources</b> page.</li> <li>ii. Click the <b>Execute</b> icon  in the row of the virtual service.</li> <li>iii. Configure the settings for the run of the virtual service, if you want to change any of the settings, else click <b>Execute</b>.</li> </ol> <p>The virtual service starts to run.</p> </li> <li>▪ To stop a running instance of the virtual service:               <ol style="list-style-type: none"> <li>i. Select <b>Show all in instances page</b> to go to the <b>Instances</b> page.</li> <li>ii. Identify the instance that you want to stop and click the <b>Stop</b> icon  in the <b>Actions</b> column of the selected virtual service instance.</li> <li>iii. Click <b>Ok</b> in the <b>Stop virtual service instance</b> dialog that is displayed.</li> </ol> <p>The running virtual service instance is stopped.</p> </li> </ul>
<b>Name</b>	<p>You can view the name of the associated virtual service and the path in the repository.</p>	<p>There is no action to perform.</p>
<b>Instances</b>	<p>You can view the state of the running instance of the virtual service resource. The state is displayed as <code>Running</code> only if the instance is running.</p>	<p>There is no action to perform.</p>
<b>Action</b>	<p>You can go to the <b>Resources</b> page to view the virtual service resource when you click the <b>Show resource</b> icon .</p>	<p>Click the <b>Show resource</b> icon  to view the virtual service on the <b>Resources</b> page.</p> <p>The virtual service resource is displayed on the <b>Resources</b> page.</p>

Field	Description	Action
	You can start an instance of the virtual service from the <b>Resources</b> page.	
<b>Expand icon</b> 	<p>You can expand the virtual service card only if the virtual service is a running instance.</p> <p>In the expanded card, you can view the details such as the Environment, the total number of requests received by the virtual service, and the relative time from when the virtual service was started.</p> <p>You can stop a running instance of the virtual service from the <b>Instances</b> page.</p>	<p>Perform the following steps:</p> <ol style="list-style-type: none"> <li>Expand the virtual service card for a running instance.</li> </ol> <p>You can view the details of the instance.</p> <ol style="list-style-type: none"> <li>Click the <b>Show instance</b> icon  to go to the <b>Instances</b> page to view the running instance of the virtual service.</li> </ol> <p>The running instance of the virtual service is displayed on the <b>Instances</b> page.</p>

## Results

You have viewed the resources that are associated with a component from the **System Model** page.

## Removing resources associated with components

When you do not want to retain the resource that you associated with a component, you can delete the resource in the system model.

### Before you begin

You must have completed the following tasks:

- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).
- Created and published the system model. See [Creating a system model on page 141](#).
- Created components in the system model. See [Creating components on page 142](#).
- Associated resources in a project with components in the system model. See [Associating resources with components on page 152](#).

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Click **Active projects > My projects > *project\_name*** to open the project that contains the test assets.

The **Overview** page of the project is displayed.

4. Click **System Model** on the left navigation pane.

The **System Model** page is displayed.

5. Click the component that you associated with the resources in the project repository.

The resources associated with the component are displayed under the resource type in the **Associate** tab.

6. Select the resource that you want to remove from the component by clicking the checkbox of the resource.

You can select any or all resources for removal.

7. Click the **Delete selected** icon  inline with the resource type.

The **Disassociate virtual services** dialog is displayed for the type of resource that you selected.

8. Click **Delete**.

For the changes to be reflected in the system model for all members of the project, you must publish the changes to the project repository.

9. Open the **Changes** page by clicking **Author > Changes**.
10. Verify the changes listed and then click **Publish changes**.
11. Enter a commit message in the **Description of change** field, and then click **Publish**.

## Results

You have removed resources that were associated with components in the system model.

## Publishing changes of associating resources with components

After you associate resources in a project with a component in the system model, you must publish the changes made to the branch in the project repository, if you want the associations to be visible to the other members in the project.

### Before you begin

You must have completed the following tasks:

- Created and published the system model. See [Creating a system model on page 141](#).
- Created components in the system model. See [Creating components on page 142](#).
- Associated resources in a project with components in the system model. See [Associating resources with components on page 152](#).

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.

The **Active projects** page is displayed.

3. Click **Active projects > My projects > *project\_name*** to open the project that contains the test assets.

The **Overview** page of the project is displayed.

4. Open the **Changes** page by clicking **Author > Changes**.

The **Changes** page is displayed. You can find the following information about the changes that you made to the system model when you associated resources with components:

- The resources that you associated with components are listed under the **Asset name** column.
  - The type of change is listed under the **Changes** column.
  - The name of the member who made the change is displayed under the **Last changed by** column.
  - The relative time when the change was made is displayed under the **Last updated** column.
  - The number of changes that the *Edit* branch is ahead of from the project repository branch is indicated by the **commits ahead** option. You can view the details by clicking the **commits ahead** option.
  - The number of changes that the *Edit* branch is behind from the project repository branch is indicated by the **commits behind** option. The *Edit* branch can be behind the project repository branch if another member has published or committed other changes in the system model to the same project repository branch. You can view the details by clicking the **commits behind** option.
5. Click the **Publish changes** option.



**Note:** If you do not want to commit the changes you made to the system model, you can select the **Discard changes** option.

6. Enter a commit message in the **Description of change** field, and then click **Publish**.

## Results

You have published the changes that you made in the system model to the repository in the project. Other members of the team space can now view and use the system model.

## Viewing the system model

You can view an existing system model or you can create a system model if a system model does not exist on the **System Model** page.

### Before you begin

You must be a licensed user.

1. Log in to Rational® Test Automation Server.
2. Click **System Model**.

The **System Model** page is displayed.

3. Perform any of the following actions:
  - Add a team space repository, if no repository is configured as the team space repository.
  - Create a system model, if no model is created or exists.

- View the system model that exists.
- Modify the existing system model.

### Results

You have viewed an existing system model from the **System Model** page.

## Deleting a system model



When you want to remove an existing system model to create a new system model, you can delete the existing system model.

### Before you begin

You must have ensured that a system model exists in the **Initial Team Space**.

1. Log in to Rational® Test Automation Server.
2. Click **System Model**.

The **System Model** page is displayed.

3. Click the **Open action menu** icon  in the right-pane.
4. Click the **Delete** icon .

The **Delete System Model** dialog is displayed.

5. Click **Delete**.

### Results

You have deleted the system model from the team space repository.

### What to do next

You must publish the changes to the team space repository. See [Publishing changes to the system model on page 151](#).

## Deleting a repository that is added to a team space

You can delete a repository that you added to the team space when you do not want to use a team space repository.


### Before you begin

You must have completed the following tasks:

- Ensured that you are assigned a role as a *Team Space Owner* or an *Architect* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Added a repository to the team space. See [Adding a repository to a team space on page 138](#).

1. Log in to Rational® Test Automation Server.
2. Open the team space to which a team space repository is added.


The **Active projects** page is displayed.

3. Click the **Settings** icon  from the left navigation pane, and then select **Manage team space**.

The **Details** page is displayed.

4. Click **Repository** on the left navigation pane.

The **Repository** page is displayed.

5. Click the **Open action menu** icon .
6. Click **Delete** in the action menu list.

The **Delete repository** dialog is displayed.

7. Select the **I understand...** checkbox, and then click **Delete**.

## Results

You have deleted the team space repository.



**Restriction:** When you delete the team space repository, the system model if created is also deleted, and you or other members of the team space cannot add a system model.

## Prerequisites to running tests

Before you can configure and run a test in a project on Rational® Test Automation Server, you must read the information about the different tests. You might want to add a remote static agent or a remote Docker host to the project as an alternate location to run the tests.

You can find the following information about the prerequisite tasks:

- [Test run considerations for AFT Suites on page 161](#)
- [Test run considerations for API Suites on page 162](#)
- [Test run considerations for schedules on page 165](#)
- [Considerations for using Jaeger traces in reports on page 166](#)
- [Management of agents on page 167](#)
  - [Test run considerations for running tests on remote agents on page 168](#)
- [Management of Docker hosts on page 174](#)
  - [Test run considerations for running tests on remote Docker hosts on page 174](#)

---

### Related information

Tests configurations and test runs



## Test run considerations for AFT Suites

Before you configure an AFT Suite run, you must read the considerations you must take into account.

When you want to run an AFT Suite from a project on Rational® Test Automation Server, you can check if the AFT Suite meets any of the following conditions:

If...	Then...
The AFT Suite uses the settings configured in an AFT XML file for a remote agent	<p>You must ensure that you have configured the location element in the AFT XML to point to a remote agent.</p> <p>For more information about setting the location element, refer to <a href="#">Using an XML file to run multiple Web UI tests and compound tests simultaneously</a>.</p>
You want to run an AFT Suite on a remote agent	<p>You must run the test on the remote agent before you commit the test asset to the remote repository.</p> <p>When you run the test on the remote agent, the following events occur:</p> <ul style="list-style-type: none"> <li>• The agent is added as the location in the AFT XML file, on which the test is to be run.</li> <li>• The agent is displayed as the agent on which the test is to be run, under the <b>Host</b> column within the <b>Location</b> tab in the <b>Execute test asset</b> dialog box.</li> </ul>
You commit the test asset to the remote repository without running the test on the remote agent	The agent is not displayed under the <b>Host</b> column within the <b>Location</b> tab in the <b>Execute test asset</b> dialog box.

Before you configure the run for an AFT Suite, you must complete the following tasks, if they are applicable:

- Add the remote agents, on which the test is to be run, to the project on Rational® Test Automation Server. See [Adding an agent to a project on page 170](#).
- After you add the agent, you can select the agent configured in the AFT XML file as the location for the test run or select the remote agents that you add to the project, when you configure a run for an AFT Suite.

The remote agents are shown as the agents available for selection under the **Override** column within the **Location** tab in the **Execute test asset** dialog box.

You can then select the remote agent as the location to run the AFT Suite when you are configuring the test run. Alternatively, you can enter the argument `-swaplocation <configured_agent_location>:<overriding_agent_location>` in the **Program Arguments** field in the **Advanced Setting** dialog box when you are configuring the test run.

For running an AFT Suite, see [Configuring an AFT Suite run on page 192](#).

---

Related information

Tests configurations and test runs

## Test run considerations for API Suites

Before you configure an API Suite run, you must read the considerations you must take into account.

You can find the following information about API Suites:

- [Important information about API Suites on page 162](#)
- [Important information about report configuration in API Suites on page 165](#)

### Important information about API Suites

When you want to run an API Suite from a project on Rational® Test Automation Server and the test suite in Rational® Integration Tester meets any of the following conditions:

- The test suite refers to local stubs that use a transport other than HTTP or MQ.
- The test suite refers to local stubs that use the HTTP transport.
- The transport used in the tests in the test suite is configured with the host name set to *localhost* for the HTTP/TCP proxy.
- The test suite has tests that use a transport and the transport requires third-party application `Jar` files for a successful run.

You must then refer to the following table for the next steps:

If...	Then...
The tests in an API Suite refer to local stubs that use a transport other than HTTP or MQ.	You must perform any of the following actions before you commit the test asset to the remote repository:

If...	Then...
	<ul style="list-style-type: none"> <li>• Remove the reference to the local stub from the test suite.</li> <li>• Publish the stubs to Rational® Test Control Panel.</li> </ul> <p>To publish and edit stubs, see <a href="#">Publishing stubs</a>.</p>
<p>The tests in an API Suite refer to local stubs that use the HTTP transport.</p>	<p>You must perform the following actions before you commit the test asset to the remote repository:</p> <ol style="list-style-type: none"> <li>1. Create a test suite that contains the stub and tests that run on the stub.</li> <li>2. Configure the physical HTTP transport with the following parameters in the <b>Client</b> tab in the <b>Physical View</b>: <ul style="list-style-type: none"> <li>◦ Set the <code>Host name</code> or <code>IP address</code> of the <code>HTTP Proxy server</code> in the <b>Proxy Host</b> field.</li> <li>◦ Set <code>3128</code> as the proxy server port in the <b>Proxy Port</b> field.</li> </ul> </li> <li>3. Set the reference to the stub for the tests in the test suite scenario from the <b>Scenario Editor</b> dialog box from the <b>Test Factory</b> view by selecting the <i>Live system</i> option in the <b>Satisfied by</b> column to run the stubs on the HTTP proxy registered with Rational® Test Automation Server.</li> <li>4. Save the project.</li> </ol>
<p>The transport used in the tests in an API Suite is configured with the host name set to <i>localhost</i> for the HTTP/TCP proxy.</p>	<p>You must replace the host name with <i>fully-qualified-domain-name</i> or <i>IPAddress</i> of the proxy host in the tests before you commit the test asset to the remote repository.</p>
<p>You plan to run the API Suite on the computer where Rational® Test Automation Server is installed and the API Suite contains tests that use a transport from any of the following third-party applications:</p> <ul style="list-style-type: none"> <li>• Camel</li> <li>• CentraSite</li> <li>• CICS</li> <li>• Coherence</li> <li>• Database</li> </ul>	<p>You must complete the following tasks:</p> <ol style="list-style-type: none"> <li>1. Identify the location of the third-party application <code>JAR</code> files. You can use Library Manager to know the location where the third-party application <code>JAR</code> files are saved.</li> <li>2. Copy the third-party application <code>JAR</code> files to the computer where Rational® Test Automation Server is installed.</li> </ol>

If...	Then...
<ul style="list-style-type: none"> <li>• IMS</li> <li>• Integra</li> <li>• JMS</li> <li>• SAP RFC</li> <li>• Software AG Universal Messaging</li> <li>• TIBCO EMS</li> <li>• TIBCO Rendezvous</li> <li>• TIBCO SmartSockets</li> <li>• WebSphere Application Server Service Integration Bus (SiBus)</li> <li>• WebLogic</li> <li>• Software AG webMethods</li> <li>• WebSphere MQ</li> </ul>	<p>See <a href="#">Copying third-party application Jars to Kubernetes on page 95</a>.</p>
<p>You plan to run the API Suite on a remote Docker host and the API Suite contains tests that use a transport from any of the following third-party applications:</p> <ul style="list-style-type: none"> <li>• Camel</li> <li>• CentraSite</li> <li>• CICS</li> <li>• Coherence</li> <li>• Database</li> <li>• IMS</li> <li>• Integra</li> <li>• JMS</li> <li>• SAP RFC</li> <li>• Software AG Universal Messaging</li> <li>• TIBCO EMS</li> <li>• TIBCO Rendezvous</li> <li>• TIBCO SmartSockets</li> <li>• WebSphere Application Server Service Integration Bus (SiBus)</li> <li>• WebLogic</li> <li>• Software AG webMethods</li> <li>• WebSphere MQ</li> </ul>	<p>You must complete the following tasks:</p> <ol style="list-style-type: none"> <li>1. Identify the location of the third-party application JAR files. You can use Library Manager to know the location where the third-party application JAR files are saved.</li> <li>2. Copy the third-party application JAR files to the computer where the remote Docker host is installed.</li> </ol> <p>See <a href="#">Copying third-party application Jars to a remote Docker host on page 179</a>.</p>

## Important information about report configuration in API Suites

You must configure test suites in Rational® Integration Tester to use a results database so that the details of the test results can be captured and displayed in the Rational® Test Automation Server API results reports. See [Configuring the project results database](#).

If your server projects use either a Microsoft SQL Server, MYSQL, or both as a project results database, you must copy the Microsoft SQL Server and MySQL database JAR files to the JDBC folder in the path `/data/JDBC` on IBM® Rational® Test Automation Server. See [Copying third-party application Jars to Kubernetes on page 95](#).

The database JAR files that you need are based on the version of Microsoft SQL Server or MSQL that you use with Rational® Integration Tester. See [Adding Microsoft SQL Server and MySQL drivers](#).

To run an API Suite, see [Configuring an API Suite run on page 202](#).

---

Related information

[Scenario reference setting](#)

Tests configurations and test runs

## Test run considerations for schedules

Before you configure a Rate Schedule or VU Schedule run, you must read the considerations that you must take into account.

### Important information about JMeter tests in schedules

When you want to run JMeter tests as part of the VU Schedule or Rate Schedule on Rational® Test Automation Server, you must have completed the following tasks:

- Installed the IBM® Rational® Performance Tester Agent on a computer.
- Installed the JMeter application on the computer where you have installed the IBM® Rational® Performance Tester Agent.
- Set the environment variable **JMETER\_HOME** that points to the JMeter installation directory.

### Important information about Resource Monitoring sources in schedules

When you want to run schedules on Rational® Test Automation Server, you must have completed the following tasks in Rational® Performance Tester:

- Created a performance schedule of **Rate** or **VU** type.
- Added Resource Monitoring sources, or the labels of Resource Monitoring sources to a schedule. Refer to [Adding resource monitoring sources to a performance schedule by using labels](#).


Before you configure a run of a Schedule, you must complete the following tasks in Rational® Test Automation Server:

- Add Resource Monitoring sources to your project in Rational® Test Automation Server. See [Monitoring an NGINX server on page 333](#).
- Enable Rational® Test Automation Server as Resource Monitoring service only if you want to replace Resource Monitoring labels set in Rational® Performance Tester with the labels that you created in Rational® Test Automation Server. See [Controlling resource monitoring sources in a schedule on page 362](#).
- Perform the following steps when you want to override the Resource Monitoring labels in the test asset with the Resource Monitoring labels that you create in Rational® Test Automation Server:
  1. Click the **Resource Monitoring** tab.



**Note:**

The **Resource Monitoring** tab displays only if you enabled the **Resource Monitoring from Service** option in Rational® Performance Tester when you created the test asset.

2. Click , and press the `Ctrl + Space bar` keys, or enter the initial letter of a label to select a label in the list.



**Note:**

You can select or add labels only if you added the labels in the **Resource Monitoring Sources** page in Rational® Test Automation Server.

For running a Rate Schedule or VU Schedule, see [Configuring a run of a Rate Schedule or VU Schedule on page 249](#).

---

Related information

Tests configurations and test runs

## Considerations for using Jaeger traces in reports

Before you can use Jaeger to report the test results in the supported tests, you must read the considerations that you must take into account.

When you want to enable Suites, Tests, or Schedules that are run from Rational® Test Automation Server to use Jaeger traces for reporting the test results, you must have completed the following tasks:

- Installed Jaeger at the time of installation of the server software. See [Prerequisites for installing the server software on Red Hat OpenShift on page 26](#) or [Prerequisites for installing the server software on Ubuntu on page 48](#).
- Verified that Jaeger is enabled and working.

After you install and verify that Jaeger is enabled, and when you want Jaeger to report the test results for the tests that you configure for a run, you must perform the following steps:

1. Click **Advanced**.
2. Enter `-history jaeger` in the **Program Arguments** field.

---

Related information

Tests configurations and test runs

## Management of agents

You can find information about managing the agents that you must install on remote computers and configure the agents to register with IBM® Rational® Test Automation Server. After the agents are registered, you can add them to your projects and then select them as locations to run tests.

When you plan to run any of the tests on a remote agent from a project on Rational® Test Automation Server, you must have completed the following tasks:

- Installed the agent of the same version as the version of Rational® Test Automation Server.
- Configured the agent with your offline user token so that the agent can connect and also register with Rational® Test Automation Server.



**Note:** When you configure the agent to connect to the server by using the offline user token that you generated on Rational® Test Automation Server, you become the owner of the agent.

- Verified that you have write permissions to the `majordomo.config` file so that certain transactions can be written by Rational® Test Automation Server to the `majordomo.config` file.



**Note:** You can verify if you have the *Read* and *Write* permissions by checking the properties of the `majordomo.config` file.

- Viewed the agents that are registered with Rational® Test Automation Server. See [Viewing agents that are registered with Rational Test Automation Server on page 169](#).
- Added the remote agents that are registered with Rational® Test Automation Server to your project on Rational® Test Automation Server. See [Adding an agent to a project on page 170](#).



**Note:** After you add the remote agents to your project, Rational® Test Automation Server determines the capabilities that are provided by the remote agent and displays the details and capabilities of the



agent on the **Infrastructure** page. You can also define the capabilities that you want to add, and then view, edit, or delete the capabilities that you defined for the agents in your project. See [Working with agent capabilities on page 172](#).

---

Related information

[Agent installation](#)

## Test run considerations for running tests on remote agents

Before you configure a test to run on a remote agent from IBM® Rational® Test Automation Server, you must read the considerations that you must take into account.

### Supported tests

You can run the following tests that are supported to be run on a remote agent:

- AFT Suite
- Compound Tests that contains performance tests
- Compound Tests that contains Web UI tests
- Compound Tests that contains traditional HTML tests
- Rate Schedule
- VU Schedule

### Prerequisite tasks

Before you can run any of the supported tests on a remote agent from a project on Rational® Test Automation Server, you must have completed the following tasks:

- Installed the agent on the remote computer. See [Management of agents on page 167](#).
- Configured the agent with your offline user token so that the agent can connect to Rational® Test Automation Server.
- Added the remote agents to your project on Rational® Test Automation Server. See [Adding an agent to a project on page 170](#).



**Note:** If you want to run an AFT Suite (that contains Web UI tests) on an agent, you must start the agent as a non-admin user so that certain browsers that are configured start correctly during the test run time.

Before you add the tests to the remote repository, you must have completed the following tasks:

- Associated the agents with the performance schedule in Rational® Performance Tester.
- Specified the host name of the remote workstation in the AFT XML file.

You can continue to configure a run for any of the following supported test types:



- [Configuring an AFT Suite run on page 192](#)
- [Configuring a run of a Compound Test that contains performance tests on page 240](#)
- [Configuring a run of a Compound Test that contains Web UI tests on page 221](#)
- [Configuring a run of a Compound Test that contains HTML tests on page 212](#)
- [Configuring a run of a Rate Schedule or VU Schedule on page 249](#)

## Viewing agents that are registered with Rational® Test Automation Server

After you install the remote agents and configure them with your offline user token, the agents register with Rational® Test Automation Server and you can view the registered agents on the **Agents and Intercepts** page.

### Before you begin

You must have completed the following tasks:

- Installed the agent of the same version as the version of Rational® Test Automation Server.
- Configured the agent with your offline user token so that the agent can register with Rational® Test Automation Server.



**Note:** When you configure the agent to connect to the server, you must specify the offline user token that you generated on Rational® Test Automation Server. This token defines your ownership over the agent.

1. Log in to Rational® Test Automation Server.
2. Click **Infrastructure > Agents and Intercepts** in the navigation pane.

The **Agents and Intercepts** page is displayed.

You can view the agents, intercepts or Dockers that are registered with Rational® Test Automation Server.

3. You can view the agents that you own in any of the following ways:
  - Search for the agent by entering the name of the agent in the **Search** field.



**Note:** You can enter either the full name or any text that is in the name. The search is enabled for case sensitive text that you can enter.

- Sort the **Type** column to sort the items and display the agents in the rows at the top of the table.
- Sort the **Agents** column and identify the agents by their names or by their owner.

You can view the following details about the agents that are registered with Rational® Test Automation Server:

- The projects to which the agent is added, are displayed in the **Projects** column.
- The status of the agent is displayed in the **Status** column.



**Note:** You can add agents that are in the `Ready` state to your project, and then use them as locations to run tests.

## Results

You have viewed the registered agents from the **Agents and Intercepts** page.

## What to do next

You can add the agents that you own to your project. See [Adding an agent to a project on page 170](#).

## Adding an agent to a project

If you have performance tests that distribute workload across different workstations or Accelerated Functional Testing (AFT) Suites that need to run on different platforms and browsers, you can add IBM® Rational® Performance Tester Agents to your projects to run tests on remote workstations.

## Before you begin

You must have completed the following tasks:

- Read about the considerations that you must take into account before you configure a test run to run on a remote agent. See [Test run considerations for running tests on remote agents on page 168](#).
- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Owner* or *Tester* role in the project to which you want to add the agent.
- Owned at least one agent that is not added to the project.

## About this task

Only you can add or remove this agent from the project. However, any member of your project with the permission to run the tests can initiate the run of the performance schedule and AFT Suites that are associated with the agent.

1. Log in to Rational® Test Automation Server and open the team space that contains your project.
2. Open your project, and then click **Manage > Infrastructure**.

The **Infrastructure** page is displayed.

3. Click **Add > Add agent**.

The agents that you configured with your user token are displayed.

4. Select the agents that you want to use and click **Add**.

The agents that you added are displayed.

5. Perform the following steps to view details and capabilities of the agents:

- a. Expand the agent to view the details panel.

You can find the following details of the agent displayed:

Parameter	Description
Version	The version of the installed agent.
Address	The IP address of the computer on which the agent is installed.
License type	The license type that is enabled for you to use the agent.
Load generation service	The status of the agent whether it can be used for load generation service.
Last contact	The time of the last contact with the agent by Rational® Test Automation Server.

- b. Expand the capabilities panel to view the system and application capabilities.

You can find the following capabilities of the agent displayed:

Capabilities		Description
System capabilities	Architecture	The architecture of the CPU processor of the computer on which the agent is installed.
	MAC Address	The MAC address of the computer on which the agent is installed.
	Operating system	The operating system of the computer on which the agent is installed.
	RAM	The memory that is allotted to RAM in the computer on which the agent is installed.
Application capabilities	Browser	The browsers along with their version that are installed on the computer on which the agent is installed.
User Defined capabilities	User Defined	The capabilities that you add for an agent. You can also tag an agent so that you can identify the agent to select as a location.

- c. Check for the status of the agent from the **Status** column.



**Note:** You can add agents that are in any state to the project.

## Results

You have added remote agents to your project and viewed the agent capabilities displayed for each agent that you own.

### What to do next

You can perform any of the following tasks:

- Run the tests on the agent that is added to the project from the **Execution** page. See [Test run configurations on page 190](#).
- Define the capabilities that you want to add, and then view, edit, or delete the capabilities that you defined for the agents in your project. See [Working with agent capabilities on page 172](#).

## Working with agent capabilities

When you installed static agents V10.1.2 or later, and added them to your project, you can view capabilities of the agents from the **Infrastructure** page. When you installed static agents V10.2.0 or later, you can add, view, edit, or delete properties and capabilities of agents from the **User Defined** panel of that agent.

### Before you begin

You must have completed the following tasks:

- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Owner* or *Tester* role in the project to which you want to add the agent.
- Owned at least one agent that is not added to the project.
- Installed the agent. See [Test run considerations for running tests on remote agents on page 168](#).
- Added agents to your project. See [Adding an agent to a project on page 170](#).

1. Log in to Rational® Test Automation Server and open the team space.
2. Open your project, and then click **Manage > Infrastructure**.

The agents that you added to your project are displayed on the **Infrastructure** page.

3. Expand the agent.






The **Details** and **Capabilities** tabs are displayed.


4. Click **Capabilities** to view the capabilities of the agent.
5. Click **User Defined**.

The **User Defined Capabilities** dialog box is displayed.

6. Complete the steps for the task that you want to perform as listed in the following table:

Task	Action
Adding capabilities	Perform the following actions: <ol style="list-style-type: none"> <li>a. Click <b>Add new</b>.</li> <li>b. Enter the name of the capability in the <b>Capability Name</b> field.</li> <li>c. Perform any of the following actions in the <b>User Defined Category</b> field:</li> </ol>

Task	Action
	<ul style="list-style-type: none"> <li>▪ Select an existing category from the list.</li> <li>▪ Enter a name of the category for the capability, if the category does not exist.</li> </ul> <p style="text-align: center;"> <b>Note:</b> You can also click <b>Add new</b> to add a category.</p> <p>The category for the capability is either selected or created and the fields for the property name and value are displayed.</p> <p style="text-align: center;"> <b>Note:</b> The property for a capability is a <i>name-value</i> pair.</p> <p>d. Enter a name for the property in the <b>Property Name</b> field and its corresponding value in the <b>Property Value</b> field for the capability.</p> <p style="text-align: center;"> <b>Note:</b> You can add multiple properties for the same capability under the same category or under different categories by clicking <b>Add new property</b>, and then by entering the name and value for the property.</p> <p>e. Click <b>Save</b>.</p> <p>The capabilities that you added are displayed.</p>
Viewing capabilities that you added	The <b>User Defined Capabilities</b> panel displays the capabilities that you added to the agent.
Editing capabilities that you added	<p>Perform the following actions:</p> <ol style="list-style-type: none"> <li>a. Click the <b>Edit</b> icon  in the row of the capability that you want to edit.</li> </ol> <p>The user-defined capability is enabled for editing. You can edit the name of the capability, or the property name or property value.</p> <ol style="list-style-type: none"> <li>b. Edit any of the items that you want for the user-defined capability.</li> <li>c. Click <b>Update</b>.</li> </ol> <p>The updated capability of the agent is displayed.</p>
Deleting capabilities that you added	<ol style="list-style-type: none"> <li>a. Click the <b>Delete</b> icon  in the row of the capability that you want to delete.</li> <li>b. Click <b>Delete</b>.</li> </ol> <p>The capability that you selected is deleted along with all the properties that you added for the capability.</p>

Task	Action
Deleting a property defined for a capability	<p>a. Click the <b>Edit</b> icon  in the row of the capability that you want to edit and remove a defined property.</p> <p>The user-defined capability is enabled for editing.</p> <p>b. Select and delete the contents in the <b>Property Name</b> field and its corresponding <b>Property Value</b> field.</p> <p>c. Click <b>Update</b>.</p> <p>The property is removed for the capability.</p>

### Results

You have added, viewed, edited, or deleted a property or the user-defined capability of an agent.

### What to do next

You can run the tests on the agent from the **Execution** page. See [Test run configurations on page 190](#).

## Management of Docker hosts

You can find information about the tasks that you can perform on remote Docker hosts. After you set up a remote Docker host, you can register the Docker host with IBM® Rational® Test Automation Server. You must then add the registered remote Docker host to your project before you can run tests on the remote Docker host location.

You can find the following information about managing Dockers:

- [Test run considerations for running tests on remote Docker hosts on page 174](#)
- [Setting up a remote Docker host computer on page 176](#)
- [Setting up a secure remote Docker host computer on page 178](#)
- [Copying third-party application Jars to a remote Docker host on page 179](#)
- [Registering a remote Docker host on page 181](#)
- [Viewing remote Docker hosts that are registered with IBM Rational Test Automation Server on page 183](#)
- [Adding a remote Docker host to the project for running tests on page 184](#)
- [Editing configurations of a remote Docker host on page 186](#)
- [Removing a remote Docker host from a project on page 188](#)
- [Unregistering a remote Docker host from IBM Rational Test Automation Server on page 189](#)

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## Test run considerations for running tests on remote Docker hosts

Before you can configure a test to run on a remote Docker host, you must read the considerations that you must take into account.

You can run all the tests that are supported on Rational® Test Automation Server on remote Docker hosts.



**Important:** You can run virtual services only in the **Default Cluster** location of Rational® Test Automation Server. You cannot run virtual services on a remote Docker host.

When you plan to run any of the tests on a remote Docker host from a project on Rational® Test Automation Server, you must complete the following tasks:

	Tasks	More information...
1.1	Set up non-secure remote Docker hosts.	<a href="#">Setting up a remote Docker host computer on page 176</a>
1.2	Set up secure remote Docker hosts.	<a href="#">Setting up a secure remote Docker host computer on page 178</a>
2	Register the remote Docker host on Rational® Test Automation Server.	<a href="#">Registering a remote Docker host on page 181</a>
3	View the registered Docker hosts.	<a href="#">Viewing remote Docker hosts that are registered with IBM Rational Test Automation Server on page 183</a>
4	Add a remote Docker host to the Rational® Test Automation Server project.	<a href="#">Adding a remote Docker host to the project for running tests on page 184</a>
5	<p>Configure a run for your test that you want to run on the remote Docker host by performing the following actions:</p> <ol style="list-style-type: none"> <li>1. Go to <a href="#">Test run configurations on page 190</a>.</li> <li>2. Check for the prerequisite tasks that you must perform before you configure a test run for the test.</li> <li>3. Select the task for the test that you want to configure for a run, and then follow the steps to run the test.</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="#">Test run configurations on page 190</a></li> <li>2. <a href="#">Prerequisites to running tests on page 160</a></li> <li>3. <a href="#">Test run configurations on page 190</a></li> </ol>

If you plan to run API Suites that use a transport and the transport requires third-party application `JAR` files for a successful run on a remote Docker host, then you must perform the following task:

- You must copy the third-party application `JAR` files to the third-party application folder on the computer where the remote Docker host is installed. See [Copying third-party application Jars to a remote Docker host on page 179](#).

After you set up and register the remote Docker host with Rational® Test Automation Server, you can add the remote Docker hosts to your project on Rational® Test Automation Server. See [Adding a remote Docker host to the project for running tests on page 184](#).

You can find information about the tasks that you can perform when you use remote Docker hosts that are set up and registered with Rational® Test Automation Server.

- When you configure a test run and in the step in which you select the remote Docker, if you encounter any of the following conditions because these were changed on the remote Docker host:
  - The host name or port of the remote Docker is not displayed correctly.
  - You want to change the mode of authentication with the remote Docker host.

You must edit the configuration settings for the remote Docker host. See [Editing configurations of a remote Docker host on page 186](#).

- When you want to delete a remote Docker host from your Rational® Test Automation Server project, see [Removing a remote Docker host from a project on page 188](#).
- When you want to remove or unregister a remote Docker host from Rational® Test Automation Server, see [Unregistering a remote Docker host from IBM Rational Test Automation Server on page 189](#).

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#### Related information

Tests configurations and test runs

[Management of Docker hosts on page 174](#)

## Setting up a remote Docker host computer

You must set up a computer to host the remote Docker host. You can set up the remote host with a non-secure mode of connection with IBM® Rational® Test Automation Server.

### Before you begin

You must have identified a remote computer or VM that has a minimum of 16 GB RAM. You must have installed Ubuntu V18.04 or later, on the remote computer.

You must have installed Docker Enterprise Edition for a non-secure mode of connection with IBM® Rational® Test Automation Server on the remote Docker host computer. Refer to [Get Docker Engine](#).

You must have the entitlement key that is required for you to connect to the IBM Docker images library to be able to pull in the software image to the remote Docker host.

### About this task

You must set up a remote computer or a Virtual Machine (VM) on which you want to set up the remote Docker host. You must be a system administrator or get the remote Docker host set up by a system administrator. You must ensure that the system administrator completes the following actions:



- Enables SSH.
- Creates user credentials for you with root permissions.
- Provides the name of the Docker container.
- Provides the IP address of the remote Docker host computer.

1. As a system administrator of the remote system, specify a port to access the Docker daemon in the `docker.service` file located in the directory `/lib/systemd/system`. You must add the configured port at the line in the file:

```
ExecStart=/usr/bin/dockerd -H fd:// -H tcp://0.0.0.0:PORT
```

For example, if the port configured is 4342, then the line must read as:

```
ExecStart=/usr/bin/dockerd -H fd:// -H tcp://0.0.0.0:4342
```

2. Restart the Docker service by using the following commands:

```
$ sudo systemctl daemon-reload
```

```
$ sudo systemctl restart docker
```

3. Perform the following steps as a user with root permissions or ask the system administrator to complete the following steps:

- a. Open a terminal and connect to the remote Docker host by using an SSH tool by running the following command:

```
ssh root@<IP_address_of_remote_host>
```

- b. Log in to IBM Docker images library by running the following command:

```
sudo docker login cp.icr.io -u <username> -p <password>
```



**Note:** You must provide the following username and password in the command to log in to the registry:

- Username as `cp`
- Password as `<entitlement_key>`

- c. Run the following commands to pull the product images from the registry on to the remote Docker host computer:



**Note:** You must pull in the images with the version which is the same as the version of IBM® Rational® Test Automation Server that you use to run the tests.

- `sudo docker pull cp.icr.io/cp/<ibm-rtw_docker_image>`
- `sudo docker pull cp.icr.io/cp/<ibm-rtvs_docker_image>`

## Results

You have set up the remote Docker host computer that can be accessed in a non-secure mode.

## What to do next

You can set up a secure remote Docker host computer optionally, that enables a secure connection with Rational® Test Automation Server. See [Setting up a secure remote Docker host computer on page 178](#).

You can register the remote Docker host on Rational® Test Automation Server. See [Registering a remote Docker host on page 181](#).

---

## Setting up a secure remote Docker host computer

You must set up a computer to host the remote Docker host. You can set up the remote host with a secure mode of connection with IBM® Rational® Test Automation Server by using certificates issued by the remote host computer that authenticate the connection.

### Before you begin

You must have identified a remote computer or VM that has a minimum of 16 GB RAM. You must have installed Ubuntu V18.04 or later, on the remote computer.

You must have installed Docker Community Edition V18.09 or later. For instructions, refer to [Get Docker Engine](#).



**Note:** For the remote Docker host to be reached in a safe manner through the network, you can enable *TLS* by specifying the **tlsverify** flag and by pointing the **tlscacert** flag of the remote Docker host to a trusted CA certificate. Refer to [Protect the Docker daemon socket](#).

You must have the entitlement key that is required for you to connect to the IBM Docker images library to be able to pull in the software image to the remote Docker host.

### About this task

You must set up a remote computer or a Virtual Machine (VM) on which you want to set up the remote Docker host. You must be a system administrator or get the remote Docker host set up by a system administrator. You must ensure that the system administrator completes the following actions:

- Enables SSH.
- Creates user credentials for you with root permissions.
- Provides the name of the Docker container.
- Provides the IP address of the remote Docker host computer.

Perform the following steps as a user with root permissions or ask the system administrator to complete the following steps:

- a. Open a terminal and connect to the remote Docker host by using an SSH tool by running the following command:

```
ssh root@<IP_address_of_remote_host>
```

- b. Log in to IBM Docker images library by running the following command:

```
sudo docker login cp.icr.io -u <username> -p <password>
```



**Note:** You must provide the following username and password in the command to log in to the registry:

- Username as cp
- Password as <entitlement\_key>

- c. Run the following commands to pull the product images from the registry on to the remote Docker host computer:



**Note:** You must pull in the images with the version which is the same as the version of IBM® Rational® Test Automation Server that you use to run the tests.

- `sudo docker pull cp.icr.io/cp/<ibm-rtw_docker_image>`
- `sudo docker pull cp.icr.io/cp/<ibm-rtvs_docker_image>`

## Results

You have set up the remote Docker host computer that can be accessed in a secure mode.

## What to do next

You can optionally, set up a non-secure remote Docker host. See [Setting up a remote Docker host computer on page 176](#).

You can register the remote Docker host on Rational® Test Automation Server. See [Registering a remote Docker host on page 181](#).

## Copying third-party application Jars to a remote Docker host

You can run API Suites in a project on Rational® Test Automation Server on a remote Docker host. If the API Suites use a transport and the transport requires third-party `JAR` files for a successful run, you must ensure that the third-party application `JAR` files are available at the test run time. To achieve this, you must copy the third-party application `JAR` files to the computer where you have set up the remote Docker host.

### Before you begin

If you want to copy the third-party application `Jar` files to the to the computer where Rational® Test Automation Server is installed on Kubernetes, see [Copying third-party application Jars to Kubernetes on page 95](#).

You must have server administrator privileges.

You must have completed the following tasks:

- Set up and configured the remote Docker host. See [Management of Docker hosts on page 174](#).
- Identified the third-party application `Jar` files that are required and copied the `Jar` files. See [Test run considerations for API Suites on page 162](#).
- Copied the `Jar` files of the third-party application jars to the directory or folder on the remote Docker host from where you can run the docker commands.

### About this task

You can copy the required third-party application `Jar` files to the folder that is specific for the application under the `/myFiles/Userlibs/<application_name>` folder. You need not extract the files.

You can perform this task any time after you have configured the remote Docker host and you plan to run an API Suite on the remote Docker host. The API Suite uses transports and the transports require third-party application `JAR` files to be available at the test run time.

You can get help on the docker commands by running the command: `$ docker help` from the docker command line. For more information about the docker commands, refer to the [Docker command line documentation](#).

1. Use the following table to find the name of the folder that corresponds to the specific third-party application for the transport used in the API Suite.



**Note:** You must provide the name of the folder listed for the third-party application as the `<application_name>` in the docker command.

**Table 4. Name of the folder for the application**

Application	Name of the folder to use
Camel	Camel
CentraSite	CentraSite
CICS	CICS
Coherence	Coherence
Database	JDBC
IMS	IMS
Integra	Integra
JMS	JMS

Application	Name of the folder to use
SAP RFC	SAP
Software AG Universal Messaging	SoftwareAGUM
TIBCO EMS	TIBCO
TIBCO Rendezvous	
TIBCO SmartSockets	
WebSphere Application Server Service Integration Bus (SiBus)	WAS
WebLogic	WebLogicJMX
Software AG webMethods	webMethods
WebSphere MQ	WMQ

- Run the following docker command to create or update the volume that contains the application `jar` files:

```
docker run --rm -v /<anyFolder>/UserLibs/<application_name>:/ulsrc -v userlibs/<application_name>:/uldest alpine:latest cp -r /ulsrc/. /uldest/UserLibs/<application_name>
```



**Attention:** You must run the docker command when no other tests are running in the Docker host to prevent concurrent access problems.

## Results

You have successfully copied the third-party application `jar` files to the folder in the remote Docker host.

## What to do next

- You can register the remote Docker host, if you have not already done so. See [Registering a remote Docker host on page 181](#).
- You can configure the API Suite run. See [Configuring an API Suite run on page 202](#).

## Registering a remote Docker host

You must register the remote Docker host with Rational® Test Automation Server before you add the remote Docker host to your project in a team space, which contains the test assets that you want to run on the remote Docker host.

### Before you begin

Depending on the mode of connection with Rational® Test Automation Server, you must have set up the remote Docker host computer either for a secured mode or for an unsecured mode of connection.

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Click **Infrastructure > Agents and Intercepts** in the navigation pane.

The **Agents and Intercepts** page is displayed.

You can view the agents, intercepts or Dockers that are registered with Rational® Test Automation Server.

3. Click **Add new > Add new docker host**.

The **New docker host** dialog box is displayed.

4. Enter the *host name* and the *port* of the remote Docker host in the format *<host name or IP\_address>:<port>* in the **Remote Docker Host** field.

If you do not provide the port that you configured for the remote Docker host, then the default port that is used is as follows:

- Port 2375 for the unsecured mode
  - Port 2376 for the secured mode
5. Choose from any of the following authentication modes to establish the connection between Rational® Test Automation Server and the remote Docker host computer:

- For the secured mode, which is the default mode and the checkbox is displayed as selected.

Perform the following steps:

- a. Select **Secure mode**, if it is not selected.
- b. Click the action labels to browse and select the `.pem` files that correspond to `ca_certificate.pem`, `client_certificate.pem`, and `client_key.pem`.



**Note:** You must have generated the `.pem` files on the remote Docker host computer and copied the files to your local drive.

- For the unsecured mode, the **Secure mode** checkbox must not be selected.


Perform the following step:

- a. Clear the **Secure mode** checkbox, if selected.

6. Click **Test connection** to test if a connection is established between Rational® Test Automation Server and the remote host computer.


Any of the following events occur when **Test connection** is clicked:

- On a successful connection, a message is displayed.
- On a failure to connect to the remote host computer, an error message is displayed. You must resolve the error and reattempt to establish a successful connection.

 **Important:** The remote Docker host computer must be connected successfully before you register the remote Docker host with Rational® Test Automation Server.

7. Click **Register**.

The remote Docker host that you registered is displayed.

 **Important:** The remote Docker host must be registered successfully with Rational® Test Automation Server in the team space before you add the remote Docker host to your project in that team space.

8. Click **Close** to exit.

## Results

You have registered the remote Docker host in your team space with Rational® Test Automation Server.

## What to do next

You can view the Docker hosts in your team space that are registered with Rational® Test Automation Server. See [Viewing remote Docker hosts that are registered with IBM Rational Test Automation Server on page 183](#).

You must add the registered remote Docker host to your project in your team space before you use the remote Docker host as a location to run tests in your project. See [Adding a remote Docker host to the project for running tests on page 184](#).

## Viewing remote Docker hosts that are registered with IBM® Rational® Test Automation Server

You must register the remote Docker host in your team space with Rational® Test Automation Server before you add the remote Docker host to your project in that team space, which contains the test assets that you want to run on the remote Docker host.

### Before you begin

Depending on the mode of connection with Rational® Test Automation Server, you must have set up the remote Docker host computer either for a secured mode or for an unsecured mode of connection. See [Setting up a remote Docker host computer on page 176](#) or [Setting up a secure remote Docker host computer on page 178](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Click **Infrastructure > Agents and Intercepts** in the navigation pane.

The **Agents and Intercepts** page is displayed.

You can view the agents, intercepts or Dockers that are registered with Rational® Test Automation Server in your team space.

3. You can view the Dockers that you own in any of the following ways:

- Search for the Docker by entering the name of the Docker host in the **Search** field.



**Note:** You can enter either the full name or any text that is in the name. The search is enabled for case sensitive text that you can enter.

- Sort the **Type** column to sort the items and then identify the Docker by the name displayed.
- Sort the **Agents** column to sort the items and identify the Docker by the owner.

You can view the following details about the Dockers that are registered with Rational® Test Automation Server in the team space:

- The projects in the team space to which the Docker host is added, are displayed in the **Projects** column.
- The status of the Docker host is displayed in the **Status** column.



**Note:** You can add Docker hosts that are in the `Ready` state to your project, and then use them as locations to run tests.

## Results

You have viewed the remote Docker hosts that are registered with Rational® Test Automation Server in your team space.

## What to do next

You must add the registered remote Docker host to your project in your team space before you use the remote Docker host as a location to run tests in your project. See [Adding a remote Docker host to the project for running tests on page 184](#).

## Adding a remote Docker host to the project for running tests

You can choose to run tests on Docker hosts that you have set up on remote host computers. You must register the Docker host with IBM® Rational® Test Automation Server and then add them to your project before you run tests on the remote Docker hosts.

## Before you begin

You must have completed the following tasks:



- Read about the considerations you must take into account before you configure a test run to run on a remote Docker host. See [Test run considerations for running tests on remote Docker hosts on page 174](#).
- Set up the remote Docker host system. See [Setting up a remote Docker host computer on page 176](#) or [Setting up a secure remote Docker host computer on page 178](#).
- Registered the remote Docker host with IBM® Rational® Test Automation Server. See [Registering a remote Docker host on page 181](#).

1. Log in to Rational® Test Automation Server.

2. Open your project.

The **Overview** page is displayed.

3. Click **Infrastructure > Agents and Intercepts**.

The **Agents and Intercepts** page is displayed.

4. Click **Add > Add docker**.

5. Select the Docker host that you want to add to the project from the list of Docker hosts, and then click **Add**.



**Note:** You can add the Docker hosts that you registered. You can add any number of Docker hosts to your project.

The Docker hosts that you added to the project are displayed.

You can view the details of the Docker host by clicking the **Expand** icon

proj1 • Agents

Q Search

Type	Agents
	10.121.104.38:80 Owned by me

Details	
Server:	Docker Engine - Community
Secure	No
Version:	19.03.2
Address:	10.121.104.38
Port:	80
Operating system:	linux
Architecture:	amd64
Api version:	1.40 (minimum version 1.12)
Go version:	go1.12.8
Git commit:	6a30dfc
Built:	Thursday, August 29, 2019 5:27 AM
Experimental:	false

### What to do next

You can select any of the remote Docker hosts as an alternate location to run the test asset in your project while configuring a test run from the **Execution** page.

---

Related information

Tests configurations and test runs

## Editing configurations of a remote Docker host

You can edit the host name or the port of the registered Docker host computer instead of registering it as a new remote host if any of the parameters are changed on the remote host computer. You can also change the mode of authentication of a registered remote Docker host.

### Before you begin

You must have completed the following tasks:

- Set up the remote Docker host computer. See [Setting up a remote Docker host computer on page 176](#) or [Setting up a secure remote Docker host computer on page 178](#).
- Registered the remote Docker host with IBM® Rational® Test Automation Server in your team space. See [Registering a remote Docker host on page 181](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Click **Infrastructure > Agents and Intercepts** in the navigation pane.

The **Agents and Intercepts** page is displayed.

You can view the agents, intercepts or Dockers that are registered with Rational® Test Automation Server in your team space.

3. You can view the Dockers that you own in any of the following ways:

- Search for the Docker by entering the name of the Docker host in the **Search** field.



**Note:** You can enter either the full name or any text that is in the name. The search is enabled for case sensitive text that you can enter.


- Sort the **Type** column to sort the items and then identify the Docker by the name displayed.
- Sort the **Agents** column to sort the items and identify the Docker by the owner.

You can view the following details about the Dockers that are registered with Rational® Test Automation Server in your team space:

- The projects in the team space to which the Docker host is added, are displayed in the **Projects** column.
- The status of the Docker host is displayed in the **Status** column.


4. Identify the Docker host that you want to modify the configuration, and then click the **Edit** icon



**Note:** The  icon is displayed in the **Actions** column in the row of the Docker only if you own the remote Docker host.

The **Update docker host** dialog box is displayed.

5. Change any of the configurations.

To change...	Do this...
Change the host name or the port of the remote Docker host.	Enter the changed value of the host name or the port in the <b>Remote hostname</b> field.
Change the mode of authentication from a non-secure mode to a secure mode.	<ol style="list-style-type: none"> <li>Select the <b>Secure mode</b> option.</li> <li>Click the action labels to browse and select the <code>.pem</code> files that correspond to <code>ca_certificate.pem</code>, <code>client_certificate.pem</code>, and <code>client_key.pem</code>.</li> </ol> <p> <b>Note:</b> You must have generated the <code>.pem</code> files on the remote host computer and copied the files to your local drive.</p>
Change the mode of authentication from a secure mode to a non-secure mode.	Clear the <b>Secure mode</b> option that is selected.

6. Click **Test connection** to test whether a connection is established between Rational® Test Automation Server and the remote host computer:

- On a successful connection, a message is displayed.
- On a failure to connect to the remote host computer, an error message is displayed. You must resolve the error and reattempt to establish a successful connection.

7. Click **Update**.

The remote Docker host with the updated details is displayed.

## Results

You have updated the registered remote Docker host with the changed parameters.

## What to do next

You can now add the updated Docker host to your project. See [Adding a remote Docker host to the project for running tests on page 184](#).

---

### Related information

[Setting up a remote Docker host computer on page 176](#)

[Registering a remote Docker host on page 181](#)

[Removing a remote Docker host from a project on page 188](#)

[Unregistering a remote Docker host from IBM Rational Test Automation Server on page 189](#)

## Removing a remote Docker host from a project

You can delete a remote Docker host that you added to your project in IBM® Rational® Test Automation Server when you no longer need it to run tests.

### Before you begin

You must have completed the following tasks:

1. Set up the remote Docker host computer. See [Setting up a remote Docker host computer on page 176](#) or [Setting up a secure remote Docker host computer on page 178](#).
2. Registered the remote Docker host with Rational® Test Automation Server in your team space. See [Registering a remote Docker host on page 181](#).
3. Added the registered Docker host to a project in your team space. See [Adding a remote Docker host to the project for running tests on page 184](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project in your team space from the **My Projects** page.

The **Overview** page is displayed.

3. Click **Infrastructure > Agents and Intercepts** in the navigation pane.

The **Agents and Intercepts** page is displayed.

You can view the agents, intercepts or Dockers that are added to your project.


4. You can view the Dockers that you own in any of the following ways:
  - Search for the Docker by entering the name of the Docker host in the **Search** field.




**Note:** You can enter either the full name or any text that is in the name. The search is enabled for case sensitive text that you can enter.

- Sort the **Type** column to sort the items and then identify the Docker by the name displayed.
- Sort the **Agents** column to sort the items and identify the Docker by the owner.

You can view the following details about the Dockers that are registered with Rational® Test Automation Server:

- The projects to which the Docker host is added, are displayed in the **Projects** column.
  - The status of the Docker host is displayed in the **Status** column.
5. Identify the Docker host that you want to remove from the project, and then click the **Remove docker host** icon .



**Note:** The  icon is displayed in the **Actions** column in the row of the Docker only if you own the remote Docker host.

A message is displayed that the Docker host is removed from the project successfully.

## Results

You have removed the remote Docker host from your project. The remote Docker host is no longer available as a location while configuring a test run in your project.

## What to do next

You might have to add a remote Docker host to your project to use the remote Docker host as a location to run tests.

---

### Related information

[Unregistering a remote Docker host from IBM Rational Test Automation Server on page 189](#)

[Editing configurations of a remote Docker host on page 186](#)

## Unregistering a remote Docker host from IBM® Rational® Test Automation Server

You can unregister a remote Docker host that is registered with Rational® Test Automation Server in a team space when you no longer require it.

### Before you begin

You must have completed the following tasks:

1. Set up the remote Docker host computer. See [Setting up a remote Docker host computer on page 176](#) or [Setting up a secure remote Docker host computer on page 178](#).
2. Registered the remote Docker host with Rational® Test Automation Server in a team space. See [Registering a remote Docker host on page 181](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.



2. Click **Infrastructure > Agents and Intercepts** in the navigation pane.

The **Agents and Intercepts** page is displayed.


You can view the agents, intercepts or Dockers that are registered with Rational® Test Automation Server in your team space.

3. Identify the Docker host that you want to unregister.



**Note:** The  and  icons are displayed in the **Actions** column in the row of the Docker only if you own the remote Docker host.

4. Unregister the Docker host by completing the following steps:

- a. Click the **Unregister docker host** icon .
- b. Click **Unregister** in the **Unregister docker host** dialog box.

A message is displayed that the Docker host is unregistered successfully.

## Results

You have unregistered the remote Docker host in a team space on Rational® Test Automation Server. You cannot run tests on this remote Docker host if it is added to your project. You might have to register it again with Rational® Test Automation Server, if you want to use the remote Docker host in your projects.

---

### Related information

[Editing configurations of a remote Docker host on page 186](#)

[Adding a remote Docker host to the project for running tests on page 184](#)

[Removing a remote Docker host from a project on page 188](#)

## Test run configurations

You can configure and run tests in IBM® Rational® Test Automation Server after you add the test resources to your project in your team space.

Before you configure a test run, you must have completed the following tasks:

- Created a project on Rational® Test Automation Server or you must have been granted access to a project with the *Tester* role assigned. See [Test assets and a server project on page 433](#).
- Created tests in the desktop clients and committed the test assets and test resources to a remote repository. You must have added the remote repository to the project.
- Read the considerations you must take into account for certain test types. See [Prerequisites to running tests on page 160](#).

You must be a project *Owner* or a member with the *Tester* role assigned to configure and run a test.

You can find information about how to configure and run the following types of tests:

## Configuring a test for a quick run

You can configure any type of test to be run on IBM® Rational® Test Automation Server when you want to quickly ensure that the test runs correctly. You might not want to set the different options for the test nor want to schedule the run.

### Before you begin

You must have completed the following tasks:

- Read and completed the tasks mentioned in [Prerequisites to running tests on page 160](#) if they apply to the test you want to configure for a run.
- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).


1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the test assets, and then click **Execution**.
3. Select the branch of the repository that contains the test assets.

The test assets that are contained in the selected branch of the repository are displayed in the following tabs on the **Execution** page:

Tab	Description
<b>SUITES</b>	Lists all Suites, compound tests, Rate Schedules, or VU Schedules that are in the selected branch of the repository.
<b>TESTS</b>	Lists all API tests, functional tests, and performance tests that are in the selected branch of the repository.
<b>ADVANCED</b>	Lists all assets that are displayed when custom filters are applied for assets in the selected branch of the repository.

4. Click the **Execute** icon  in the row of the identified test asset.

The **Execute test asset** dialog is displayed.



**Notes:**



- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

5. Select the version of the test resources that you want to run, if you want to run a different version other than the latest version.
6. No action is required if you want to initiate the test run immediately after you click **Execute**.
7. Enter a label for the test run that helps you to identify the test on the **Results** page.

After the test run completes, the label that you entered is displayed for the test under the **Labels** column on the **Results** page.


8. Click **Execute**.  
The test run is initiated.

## Results

You have started a test run.

## What to do next

You can choose to perform any of the following tasks:

- View all the states of the test asset by clicking the **Show in the Progress page** icon  for the test asset for which you started or scheduled the run. See [Viewing the state of test assets on page 259](#).
- View the progress of the test from the **Progress** page. See [Viewing the progress of running test assets on page 263](#).
- View the results, reports, and logs of the test from the **Results** page after the test completes the run. See [Test results on page 318](#).

---

### Related information

[Resetting the configuration settings for a test run on page 267](#)

[Viewing the progress of running test assets on page 263](#)

Monitoring a test run

[Stopping test runs on page 268](#)

[Canceling scheduled test runs on page 271](#)

## Configuring an AFT Suite run

After you added the test resources that you created in the desktop client to the project, you can configure an AFT Suite to be run on IBM® Rational® Test Automation Server.



## Before you begin

You must have completed the following tasks:

- Read and completed the tasks mentioned in [Prerequisites to running tests on page 160](#) if they apply to the test you want to configure for a run.
- Read [Test run considerations for AFT Suites on page 161](#) if you want to configure a run for an AFT Suite that has the agent location configured in the `AFT XML` file.
- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the test assets, and then click **Execution**.
3. Select the branch of the repository that contains the test assets.

The test assets that are contained in the selected branch of the repository are displayed in the following tabs on the **Execution** page:

Tab	Description
<b>SUITES</b>	Lists all Suites, compound tests, Rate Schedules, or VU Schedules that are in the selected branch of the repository.
<b>TESTS</b>	Lists all API tests, functional tests, and performance tests that are in the selected branch of the repository.
<b>ADVANCED</b>	Lists all assets that are displayed when custom filters are applied for assets in the selected branch of the repository.


4. Identify the test asset or resource that you want to run by performing any of the following actions:
  - Scroll through the list.



























**Tip:** You can hover over the icon in the **Type** column to know the type of the test asset.




**Note:** You can also identify the type of the asset from the icon that represents the test type as shown in the following table:




Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the ADVANCED tab
	API test			
	Functional test			
	Performance test			
	AFT Suite			
	API Suite			
	Compound Test			
	Rate Schedule			
	VU Schedule			

- Search for the test asset or resource by entering any text contained in the test asset or resource name in the **Search** field.

- Click the **Filter** icon  in the **SUITES** or **TESTS** tab to filter the displayed assets based on the asset type.

For example, select **API Suite** in the **SUITES** tab to display all API Suites or select **Functional Test** in the **TESTS** tab to display all functional tests in the selected branch of the repository.

- Click the **Filter** icon  in the **ADVANCED** tab, and then create a filter query by using the **New filter** option by performing the following steps:
  - Click **New filter**.
  - Enter a name for the filter.
  - Select an operator, and add a rule, or a group of rules.
  - Add or enter the relevant parameters and either select or enter the condition and the criteria for the condition.


You can select a parameter from the following list:

- Type
- Test Asset Name

- Test Asset Path
  - Last Result
  - Next Run
- e. Save the filter query to save and apply the filter query to filter the assets based on the query.

The test assets that match the filter criteria are displayed.

- Retrieve and apply a saved filter query, if you have saved filter queries previously by performing the following steps:


 **Note:** The filter query applied previously is selected and the assets based on that filter query are displayed. To apply a different filter query, you must have created and saved the filter query.

- a. Click the **Filter** icon  in the **ADVANCED** tab.

The filter queries that you created and saved are displayed.

- b. Click the filter that you want to apply.

The test assets that match the filter criteria are displayed.


5. Click the **Execute** icon  in the row of the identified test asset.

The **Execute test asset** dialog is displayed.

 **Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

6. Select the version of the test resources that you want to run by completing any of the following actions:

 **Note:** The test resources in the version can contain the test assets, datasets, AFT XML files, API environment tags, and other resources specific to projects created from any of the desktop clients.

- Expand the list in the **Version** field, find the version of the test resources, and then select the version.

Use the following details about the version of the test resources that are displayed to identify the version that you want:

- Commit message.
- Tags labeled by the user for the version committed.

- The user who committed the version to the repository.
- Relative time of the commit. For example, *2 hours ago* or *3 days ago*.

The list displays the versions of the test resources committed by all users to the branch in the repository. The versions are arranged with the latest version that is committed, and then followed by the versions committed previously.

- Expand the list in the **Version** field, and then search for the version that you want to select by entering a partial or the complete commit message of that version.

The version that matches the search criteria is displayed and it is selected for the test run.

The default value for the version selected for the run is the latest version in the selected branch of the repository. If you do not select any version, then the latest version is selected for the test run.



**Notes:**

- If you selected a version but you do not want to use that version in the test run, you can remove the selected version by clicking the ✕ icon. As a result, the default version is selected for the test run.
- If you repeated a test or ran the test again from the **Results** page, then the version of the test resources that you chose for the earlier run is shown as selected. You can either retain this version or select any other version from the list. You can also remove the previous version by clicking the ✕ icon.

7. Select the time for scheduling the test run from the following options:

- No action is required if you want to initiate the test run immediately after you click **Execute**.



**Important:** Click **Execute** only after you have configured the other settings in this dialog.



**Note:** The default time for scheduling a run is **Now**.

- Select **Later** and configure the date and time to schedule a test run.

The default time for scheduling a run is **Now**.



**Notes:**



- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

8. Enter a label for the test run that helps you to identify the test on the **Results** page.

After the test run completes, the label that you entered is displayed for the test under the **Labels** column on the **Results** page. After you have created a label, any member of the project can use that label.

The default value for the **Label** field is null or an empty field.



**Important:** The configuration that you set for the test run in the **Execute test asset** dialog is preserved when you run the same test again. Those changes are not visible when another user logs in to Rational® Test Automation Server. For example, if you created new variables on the server, those variables are available only for you when the same test is run again.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

If you are running an AFT Suite and the following conditions are true, then you must perform the next step:

- You do not want to run the test on the agent configured in the `AFT XML` file.
- You have not selected the agent from the **Override** column in the **Location** tab.

9. Click **Advanced** to make the following advanced configurations:

a. Add the following setting in the **Program Arguments** field:

```
-swaplocation <configured_agent_location>:<overriding_agent_location>
```

For example, if the configured agent location is `91.2.352.24` and the remote agent where you want to run the test is `100.35.117.164`, then the entry in the **Program Arguments** field is as follows:

```
-swaplocation 91.2.352.24:100.35.117.164
```

If the test that you want to configure supports the presentation of the test results data in different formats, then do the required tasks in the following scenarios:

If...	Then...
You want the test results data in different supported formats.	Enter <code>-history cisterna</code> in the <b>Program Arguments</b> field.
You want to obtain the test results as a Jaeger trace.	Enter <code>-history jaeger</code> in the <b>Program Arguments</b> field.

If...	Then...
You want the report as a test log and as a Jaeger trace.	Enter <code>-history jaeger, testlog</code> in the <b>Program Arguments</b> field.
Jaeger is already set as a program argument and you want to remove the Jaeger trace for your test.	Delete the <code>-history jaeger</code> entry in the <b>Program Arguments</b> field.



**Note:** The default report format is the *test log* format for the test reports.



**Note:** You must separate the arguments or variables with a white space when you enter them in the same line or start each argument or variable on a new line.

The default value for each of the fields for the advanced settings is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

10. Follow the instructions if you are running a test asset that contains datasets:

- a. Click the **DATA SOURCES** tab, if it is not already open.
- b. Consider the following information about datasets before you select a dataset:

The default value for the datasets in the **DATA SOURCES** tab is null if the test asset did not have an associated dataset. If the asset had an associated dataset, the default value is the associated dataset.

You can utilize the dataset stored as an Excel or CSV file to override the original dataset associated with the Suite, test, or schedule. For example, when you have associated a dataset in `.xlsx`, `.xls`, or `.csv` format with the test or schedule in desktop clients and if you have another set of data stored in an Excel or CSV file, then you can select that dataset from the **Override** list.



**Remember:** You must have uploaded the dataset as an Excel or CSV file into the Git repository, and ensured that both the original dataset (from the test asset) and new datasets (added to the project) have the same column names.

- c. Select the dataset that you want to use in the test run from any of the following options:

- Select the dataset that is displayed as the default dataset when the test asset contains a single dataset.



**Note:** If there is only one dataset in the test asset, then that dataset is displayed as the default dataset.

- Select the dataset from the list.



**Note:** If there are multiple datasets in the test asset, the datasets are listed in their increasing alphabetical order.

- Select the dataset from the **Override** list to override the dataset that was associated with the test in the desktop client.





**Important:** If the test contains an encrypted dataset, the Project Owner must classify it in the **DATA SECURITY** tab on the Project page before you can select it. You must have added datasets to your project from the **Dataset** page for the datasets to be displayed in the **Override** list.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

11. Follow the instructions if the test requires a variable that must be passed to the test at the test run time.

a. Click the **VARIABLES** tab, if it is not already open.

b. Choose one of the following methods to add the variables:

- To add new variables manually, click the **Add Variable** icon , enter the name, and value of the variable.
- To add new variables from your local computer or from the Git repository that is associated with your server project, click the **Upload** icon  and select the **Upload from local system** or **Browse from server** to select the variable file.



**Note:** You must have created a file with the variables before you can select the file.

The default value for the variables is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

12. Follow the instructions if you are running a test that has static agents configured:

- a. Click the **LOCATION** tab, if it is not already open.

The static agents that are configured in the test asset are listed under the **Host** column. The information about the availability of the agent is displayed.



**Note:** You must have added agents to your project from the **Infrastructure** page for the agents to be displayed under the **Override** column.

- b. Select the agent where you want to run the test asset in the following scenarios:

If...	Then...	Action
The agent that is specified in the test assets is available and no other agents are added to the project.	The agent that is specified in the test assets is displayed in the <b>Override</b> column.	Select the agent in the <b>Host</b> that is also displayed in the <b>Override</b> column as the location to run the test.
The agent that is specified in the test assets is not available and no other agents are added to the project.	There is no agent displayed for override in the <b>Override</b> column.	You cannot run the test on the agent.  You must wait until the agent is available to run the test on the agent.
The agent that is specified in the test assets is available and there are other agents that are added to the project.	Agents that have capabilities that match with the agent capabilities specified in the test assets are listed in the <b>Override</b> column as follows: <ul style="list-style-type: none"> <li>▪ Agents with capabilities that best match the capabilities in the agent in the asset are at the top of the list.</li> <li>▪ Agents with capabilities that do not match with the capabilities in the agent in the asset are listed subsequently.</li> </ul> You can find details of both agents for the matching capabilities when you hover over the agent in the <b>Override</b> column.	Perform any of the following actions: <ul style="list-style-type: none"> <li>▪ Select the agent in the <b>Host</b> that is also displayed in the <b>Override</b> column as the location to run the test.</li> <li>▪ Select an agent in the <b>Override</b> column as the location to run the test.</li> </ul>



- c. Click **Execute**.

The test run is initiated.

The default value for the agents is null or an empty field if no agents were configured in the test asset. If the test asset contains agents that are configured, then the default agent is the first item to be displayed on the list of agents listed in the increasing alphabetical order.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

13. Follow the instructions if you want to change the location for running the test:

- a. Click the **LOCATION** tab, if it is not already open.

The **Default Cluster** is the default location where the test runs, and it is listed under the **Host** column. The information about the availability of the default location is displayed.



**Important:** You must have added remote Docker hosts that are registered with Rational® Test Automation Server to your project from the **Infrastructure** page. The remote Docker hosts are then displayed under the **Override** column.



**Notes:**

- If remote Docker hosts are not added to your project, the option **No override options** is displayed as the default value and the test runs in the Kubernetes cluster of Rational® Test Automation Server.
- If remote Docker hosts are added to your project, the added Docker hosts are displayed along with their availability status and ownership information.

- b. Select the location where you want to run the test asset from the following options:

- Select the **Default Cluster** when no remote Docker hosts are available in your project.
- Select the remote Docker host from the list when a remote Docker host is available in your project.
- Select **No override options**, if you selected any remote Docker host and want to revert to the **Default Cluster** to run the test asset.

- c. Click **Execute**.

The test run is initiated.

14. Click **Execute**.


The test run is initiated.

## Results

You have configured and either started or scheduled a test run of an AFT Suite.

## What to do next

You can choose to perform any of the following tasks after you have initiated or scheduled a run:

- Stop the test run at any point after the test run is initiated from the **Execution** page. See [Stopping test runs on page 268](#).
- Cancel a scheduled test run from the **Execution** page. See [Canceling scheduled test runs on page 271](#).
- View all the states of the test asset by clicking the **Show in the Progress page** icon  for the test asset for which you started or scheduled the run. See [Viewing the state of test assets on page 259](#).
- View the progress of the test from the **Progress** page. See [Viewing the progress of running test assets on page 263](#).
- Monitor the test from the **Progress** page. See [Monitoring a test run](#).
- View the results, reports, and logs of the test from the **Results** page after the test completes the run. See [Test results on page 318](#).

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#### Related information

[Resetting the configuration settings for a test run on page 267](#)

#### Tests configurations and test runs

[Test run configurations on page 190](#)

## Configuring an API Suite run

After you added the test resources that you created in the desktop client to the project, you can configure an API Suite to be run on IBM® Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Read and completed the tasks mentioned in [Prerequisites to running tests on page 160](#) if they apply to the test you want to configure for a run.
- Completed the following tasks if you are running API Suites that use a transport and the transport requires third-party application `JAR` files for a successful run:
  - Read [Test run considerations for API Suites on page 162](#).
  - Copied the third-party application `JAR` files to the third-party application folder on the computer where Rational® Test Automation Server is installed, if you are running the API Suite in Kubernetes. See [Copying third-party application Jars to Kubernetes on page 95](#).
  - Copied the third-party application `JAR` files to the third-party application folder on the computer where the remote Docker host is installed, if you are running the API Suite on a remote Docker host. See [Copying third-party application Jars to a remote Docker host on page 179](#).
- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the test assets, and then click **Execution**.
3. Select the branch of the repository that contains the test assets.


The test assets that are contained in the selected branch of the repository are displayed in the following tabs on the **Execution** page:
















Tab	Description
<b>SUITES</b>	Lists all Suites, compound tests, Rate Schedules, or VU Schedules that are in the selected branch of the repository.
<b>TESTS</b>	Lists all API tests, functional tests, and performance tests that are in the selected branch of the repository.
<b>ADVANCED</b>	Lists all assets that are displayed when custom filters are applied for assets in the selected branch of the repository.


4. Identify the test asset or resource that you want to run by performing any of the following actions:










- Scroll through the list.


 **Tip:** You can hover over the icon in the **Type** column to know the type of the test asset.

 **Note:** You can also identify the type of the asset from the icon that represents the test type as shown in the following table:


Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	API test			
	Functional test			
	Performance test			
	AFT Suite			
	API Suite			



Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	Compound Test			
	Rate Schedule			
	VU Schedule			

- Search for the test asset or resource by entering any text contained in the test asset or resource name in the **Search** field.
- Click the **Filter** icon  in the **SUITES** or **TESTS** tab to filter the displayed assets based on the asset type.

For example, select **API Suite** in the **SUITES** tab to display all API Suites or select **Functional Test** in the **TESTS** tab to display all functional tests in the selected branch of the repository.


- Click the **Filter** icon  in the **ADVANCED** tab, and then create a filter query by using the **New filter** option by performing the following steps:
  - Click **New filter**.
  - Enter a name for the filter.
  - Select an operator, and add a rule, or a group of rules.
  - Add or enter the relevant parameters and either select or enter the condition and the criteria for the condition.

You can select a parameter from the following list:

- Type
  - Test Asset Name
  - Test Asset Path
  - Last Result
  - Next Run
- Save the filter query to save and apply the filter query to filter the assets based on the query.

The test assets that match the filter criteria are displayed.

- Retrieve and apply a saved filter query, if you have saved filter queries previously by performing the following steps:


 **Note:** The filter query applied previously is selected and the assets based on that filter query are displayed. To apply a different filter query, you must have created and saved the filter query.

- a. Click the **Filter** icon  in the **ADVANCED** tab.

The filter queries that you created and saved are displayed.

- b. Click the filter that you want to apply.

The test assets that match the filter criteria are displayed.


5. Click the **Execute** icon  in the row of the identified test asset.

The **Execute test asset** dialog is displayed.

 **Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

6. Select the version of the test resources that you want to run by completing any of the following actions:

 **Note:** The test resources in the version can contain the test assets, datasets, AFT XML files, API environment tags, and other resources specific to projects created from any of the desktop clients.

- Expand the list in the **Version** field, find the version of the test resources, and then select the version.

Use the following details about the version of the test resources that are displayed to identify the version that you want:

- Commit message.
- Tags labeled by the user for the version committed.
- The user who committed the version to the repository.
- Relative time of the commit. For example, *2 hours ago* or *3 days ago*.

The list displays the versions of the test resources committed by all users to the branch in the repository. The versions are arranged with the latest version that is committed, and then followed by the versions committed previously.

- Expand the list in the **Version** field, and then search for the version that you want to select by entering a partial or the complete commit message of that version.

The version that matches the search criteria is displayed and it is selected for the test run.

The default value for the version selected for the run is the latest version in the selected branch of the repository. If you do not select any version, then the latest version is selected for the test run.



**Notes:**

- If you selected a version but you do not want to use that version in the test run, you can remove the selected version by clicking the ✕ icon. As a result, the default version is selected for the test run.
- If you repeated a test or ran the test again from the **Results** page, then the version of the test resources that you chose for the earlier run is shown as selected. You can either retain this version or select any other version from the list. You can also remove the previous version by clicking the ✕ icon.

7. Select the time for scheduling the test run from the following options:

- No action is required if you want to initiate the test run immediately after you click **Execute**.



**Important:** Click **Execute** only after you have configured the other settings in this dialog.



**Note:** The default time for scheduling a run is **Now**.

- Select **Later** and configure the date and time to schedule a test run.

The default time for scheduling a run is **Now**.




**Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

8. Enter a label for the test run that helps you to identify the test on the **Results** page.

After the test run completes, the label that you entered is displayed for the test under the **Labels** column on the **Results** page. After you have created a label, any member of the project can use that label.

The default value for the **Label** field is null or an empty field.

 **Important:** The configuration that you set for the test run in the **Execute test asset** dialog is preserved when you run the same test again. Those changes are not visible when another user logs in to Rational® Test Automation Server. For example, if you created new variables on the server, those variables are available only for you when the same test is run again.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

9. Click **Advanced** to make the following advanced configurations:

- a. Enter any JVM arguments that must be passed to the test run at run time in the **JVM Arguments** field, if applicable for the test.

For example, you can set a maximum Java heap size.

- b. Enter program arguments that must be passed to the test run at run time in the **Program Arguments**, if applicable for the test.

Perform the following actions, if applicable for your test:

- Configuring Jaeger tracing.

If the test that you want to configure supports the presentation of the test results data in different formats, then do the required tasks in the following scenarios:

If...	Then...
You want the test results data in different supported formats.	Enter <code>-history cisterna</code> in the <b>Program Arguments</b> field.
You want to obtain the test results as a Jaeger trace.	Enter <code>-history jaeger</code> in the <b>Program Arguments</b> field.
You want the report as a test log and as a Jaeger trace.	Enter <code>-history jaeger, testlog</code> in the <b>Program Arguments</b> field.
Jaeger is already set as a program argument and you want to remove the Jaeger trace for your test.	Delete the <code>-history jaeger</code> entry in the <b>Program Arguments</b> field.




**Note:** The default report format is the *test log* format for the test reports.

- Overriding results database that is configured in the API Suite project.



**Note:** You can use any of the databases that are specified in the system requirements as supported databases in Rational® Integration Tester.

Enter the following arguments in the **Program Arguments** field, if you want to override the **Results Database**:

Program Arguments	Description
-resultDatabaseURL <database_URL>	Specifies the URL of the results database that overrides the results database that is configured for the project in Rational® Integration Tester.
-resultDatabaseDriver <driver_name>	Specifies the driver of the results database that overrides the results database that is configured for the project in Rational® Integration Tester. For example, the driver for a MySQL database is <i>com.mysql.cj.jdbc.Driver</i> .
-resultDatabaseUser- name <user_name>	Specifies the user name that is authorized to access the results database that overrides the results database that is configured for the project in Rational® Integration Tester.
-resultDatabasePa- ssword <encrypted_- password>	Specifies the password that is to be used to authenticate the user to access the results database that overrides the results database that is configured for the project in Rational® Integration Tester.   <b>Note:</b> You can encrypt the password by using the <b>Encrypt-Password</b> application that is available in the installation directory of Rational® Integration Tester.

For example, if you want to override the results database that is configured in the Rational® Integration Tester project with a different results database that has the following details:

- MySQL database as the results database with the URL as *jdbc:mysql://localhost:3306/myresultsdb*
- *com.mysql.cj.jdbc.Driver* as the driver for the MySQL database
- *tester* as the user name to access the MySQL database
- *#com.ghc.1!9a8521137E0A12994ACF4434E315A2B9* as the encrypted password to authenticate the user name *tester*

The entry in the **Program Arguments** field must be as follows:

```
-resultDatabaseURL jdbc:mysql://localhost:3306/myresultsdb
-resultDatabaseDriver com.mysql.cj.jdbc.Driver
```



```
-resultDatabaseUsername tester
-resultDatabasePassword #com.ghc.1!9a8521137E0A12994ACF4434E315A2B9
```



**Note:** You must separate entries in the field with white spaces or with a new-line character.

10. Follow the instructions if the API Suite has an environment or secrets configured:
  - a. Click the **ENVIRONMENT** tab, if it is not already open.
  - b. Select the API test environment from the list if there are multiple environments configured in the test asset.
  - c. Select the secrets collection that contains the secrets to be used for the test run.



**Notes:**

- The test asset that was created in the desktop client and added to the Git repository must have the environments defined as part of the API test project.
- If the test asset contained secrets, then you must create those secrets in secrets collections in the project.

The default value for the environment is the environment configured in the test asset. The default value for secrets is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

11. Follow the instructions if you are running a test asset that contains datasets:

- a. Click the **DATA SOURCES** tab, if it is not already open.
- b. Consider the following information about datasets before you select a dataset:

The default value for the datasets in the **DATA SOURCES** tab is null if the test asset did not have an associated dataset. If the asset had an associated dataset, the default value is the associated dataset.

You can utilize the dataset stored as an Excel or CSV file to override the original dataset associated with the Suite, test, or schedule. For example, when you have associated a dataset in `.xlsx`, `.xls`, or `.csv` format with the test or schedule in desktop clients and if you have another set of data stored in an Excel or CSV file, then you can select that dataset from the **Override** list.



**Remember:** You must have uploaded the dataset as an Excel or CSV file into the Git repository, and ensured that both the original dataset (from the test asset) and new datasets (added to the project) have the same column names.

- c. Select the dataset that you want to use in the test run from any of the following options:

- Select the dataset that is displayed as the default dataset when the test asset contains a single dataset.



**Note:** If there is only one dataset in the test asset, then that dataset is displayed as the default dataset.

- Select the dataset from the list.



**Note:** If there are multiple datasets in the test asset, the datasets are listed in their increasing alphabetical order.

- Select the dataset from the **Override** list to override the dataset that was associated with the test in the desktop client.





**Important:** If the test contains an encrypted dataset, the Project Owner must classify it in the **DATA SECURITY** tab on the Project page before you can select it. You must have added datasets to your project from the **Dataset** page for the datasets to be displayed in the **Override** list.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

12. Follow the instructions if the test requires a variable that must be passed to the test at the test run time.

a. Click the **VARIABLES** tab, if it is not already open.

b. Choose one of the following methods to add the variables:

- To add new variables manually, click the **Add Variable** icon , enter the name, and value of the variable.
- To add new variables from your local computer or from the Git repository that is associated with your server project, click the **Upload** icon  and select the **Upload from local system** or **Browse from server** to select the variable file.



**Note:** You must have created a file with the variables before you can select the file.


The default value for the variables is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

13. Follow the instructions if you want to change the location for running the test:

- a. Click the **LOCATION** tab, if it is not already open.

The **Default Cluster** is the default location where the test runs, and it is listed under the **Host** column. The information about the availability of the default location is displayed.

 **Important:** You must have added remote Docker hosts that are registered with Rational® Test Automation Server to your project from the **Infrastructure** page. The remote Docker hosts are then displayed under the **Override** column.



**Notes:**

- If remote Docker hosts are not added to your project, the option **No override options** is displayed as the default value and the test runs in the Kubernetes cluster of Rational® Test Automation Server.
- If remote Docker hosts are added to your project, the added Docker hosts are displayed along with their availability status and ownership information.

- b. Select the location where you want to run the test asset from the following options:

- Select the **Default Cluster** when no remote Docker hosts are available in your project.
- Select the remote Docker host from the list when a remote Docker host is available in your project.
- Select **No override options**, if you selected any remote Docker host and want to revert to the **Default Cluster** to run the test asset.

- c. Click **Execute**.

The test run is initiated.

14. Click **Execute**.


The test run is initiated.

## Results

You have configured and either started or scheduled a test run of an API Suite.

## What to do next

You can choose to perform any of the following tasks after you have initiated or scheduled a run:

- Stop the test run at any point after the test run is initiated from the **Execution** page. See [Stopping test runs on page 268](#).
- Cancel a scheduled test run from the **Execution** page. See [Canceling scheduled test runs on page 271](#).
- View all the states of the test asset by clicking the **Show in the Progress page** icon  for the test asset for which you started or scheduled the run. See [Viewing the state of test assets on page 259](#).

- View the progress of the test from the **Progress** page. See [Viewing the progress of running test assets on page 263](#).
- View the results, reports, and logs of the test from the **Results** page after the test completes the run. See [Test results on page 318](#).

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#### Related information

[Resetting the configuration settings for a test run on page 267](#)

#### Tests configurations and test runs

[Test run configurations on page 190](#)

## Configuring a run of a Compound Test that contains HTML tests

After you added the test resources that you created in the desktop client to the project, you can configure a Compound Test that contains HTML tests to be run on IBM® Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Authored a Compound Test in IBM® Rational® Functional Tester and must have completed the following tasks when you created the test assets:
  - Created a Compound Test under a Web UI project in your workspace.
  - Created a Functional HTML Test under a Compound Test in a Functional test project in the same workspace that contained the Web UI project.
  - Used the **startBrowser(Firefox,<URL>)** attribute with the browser value set to *Firefox* in the Functional test script.



**Restriction:** Functional test scripts that contain the **startApp()** or **callScript()** attributes are treated as non-HTML scripts and are not supported to be used in test scripts in the HTML tests.

- Ran the Compound Test that contains the HTML tests on IBM® Rational® Functional Tester.
- Committed the projects that include the Web UI project (with the Compound Test) and the Functional test (with the HTML tests in a Compound Test) to the remote repository.
- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.


2. Open the project that contains the test assets, and then click **Execution**.
3. Select the branch of the repository that contains the test assets.






















The test assets that are contained in the selected branch of the repository are displayed in the following tabs on the **Execution** page:


Tab	Description
<b>SUITES</b>	Lists all Suites, compound tests, Rate Schedules, or VU Schedules that are in the selected branch of the repository.
<b>TESTS</b>	Lists all API tests, functional tests, and performance tests that are in the selected branch of the repository.
<b>ADVANCED</b>	Lists all assets that are displayed when custom filters are applied for assets in the selected branch of the repository.


4. Identify the test asset or resource that you want to run by performing any of the following actions:
  - Scroll through the list.

 **Tip:** You can hover over the icon in the **Type** column to know the type of the test asset.


 **Note:** You can also identify the type of the asset from the icon that represents the test type as shown in the following table:

Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	API test			
	Functional test			
	Performance test			
	AFT Suite			
	API Suite			
	Compound Test			
	Rate Schedule			




Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	VU Schedule			

- Search for the test asset or resource by entering any text contained in the test asset or resource name in the **Search** field.

- Click the **Filter** icon  in the **SUITES** or **TESTS** tab to filter the displayed assets based on the asset type.

For example, select **API Suite** in the **SUITES** tab to display all API Suites or select **Functional Test** in the **TESTS** tab to display all functional tests in the selected branch of the repository.


- Click the **Filter** icon  in the **ADVANCED** tab, and then create a filter query by using the **New filter** option by performing the following steps:
  - Click **New filter**.
  - Enter a name for the filter.
  - Select an operator, and add a rule, or a group of rules.
  - Add or enter the relevant parameters and either select or enter the condition and the criteria for the condition.

You can select a parameter from the following list:

- Type
  - Test Asset Name
  - Test Asset Path
  - Last Result
  - Next Run
- Save the filter query to save and apply the filter query to filter the assets based on the query.

The test assets that match the filter criteria are displayed.

- Retrieve and apply a saved filter query, if you have saved filter queries previously by performing the following steps:


 **Note:** The filter query applied previously is selected and the assets based on that filter query are displayed. To apply a different filter query, you must have created and saved the filter query.

- a. Click the **Filter** icon  in the **ADVANCED** tab.

The filter queries that you created and saved are displayed.

- b. Click the filter that you want to apply.

The test assets that match the filter criteria are displayed.


5. Click the **Execute** icon  in the row of the identified test asset.

The **Execute test asset** dialog is displayed.

 **Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

6. Select the version of the test resources that you want to run by completing any of the following actions:

 **Note:** The test resources in the version can contain the test assets, datasets, AFT XML files, API environment tags, and other resources specific to projects created from any of the desktop clients.

- Expand the list in the **Version** field, find the version of the test resources, and then select the version.

Use the following details about the version of the test resources that are displayed to identify the version that you want:

- Commit message.
- Tags labeled by the user for the version committed.
- The user who committed the version to the repository.
- Relative time of the commit. For example, *2 hours ago* or *3 days ago*.

The list displays the versions of the test resources committed by all users to the branch in the repository. The versions are arranged with the latest version that is committed, and then followed by the versions committed previously.

- Expand the list in the **Version** field, and then search for the version that you want to select by entering a partial or the complete commit message of that version.

The version that matches the search criteria is displayed and it is selected for the test run.

The default value for the version selected for the run is the latest version in the selected branch of the repository. If you do not select any version, then the latest version is selected for the test run.



**Notes:**

- If you selected a version but you do not want to use that version in the test run, you can remove the selected version by clicking the ✕ icon. As a result, the default version is selected for the test run.
- If you repeated a test or ran the test again from the **Results** page, then the version of the test resources that you chose for the earlier run is shown as selected. You can either retain this version or select any other version from the list. You can also remove the previous version by clicking the ✕ icon.

7. Select the time for scheduling the test run from the following options:

- No action is required if you want to initiate the test run immediately after you click **Execute**.



**Important:** Click **Execute** only after you have configured the other settings in this dialog.



**Note:** The default time for scheduling a run is **Now**.

- Select **Later** and configure the date and time to schedule a test run.

The default time for scheduling a run is **Now**.



**Notes:**


- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

8. Enter a label for the test run that helps you to identify the test on the **Results** page.

After the test run completes, the label that you entered is displayed for the test under the **Labels** column on the **Results** page. After you have created a label, any member of the project can use that label.

The default value for the **Label** field is null or an empty field.



 **Important:** The configuration that you set for the test run in the **Execute test asset** dialog is preserved when you run the same test again. Those changes are not visible when another user logs in to Rational® Test Automation Server. For example, if you created new variables on the server, those variables are available only for you when the same test is run again.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

9. Click **Advanced** to make the following advanced configurations:

- a. Enter any JVM arguments that must be passed to the test run at run time in the **JVM Arguments** field, if applicable for the test.

For example, you can set a maximum Java heap size.

- b. Enter program arguments that must be passed to the test run at run time in the **Program Arguments**, if applicable for the test.

If the test that you want to configure supports the presentation of the test results data in different formats, then do the required tasks in the following scenarios:

If...	Then...
You want the test results data in different supported formats.	Enter <code>-history cisterna</code> in the <b>Program Arguments</b> field.
You want to obtain the test results as a Jaeger trace.	Enter <code>-history jaeger</code> in the <b>Program Arguments</b> field.
You want the report as a test log and as a Jaeger trace.	Enter <code>-history jaeger, testlog</code> in the <b>Program Arguments</b> field.
Jaeger is already set as a program argument and you want to remove the Jaeger trace for your test.	Delete the <code>-history jaeger</code> entry in the <b>Program Arguments</b> field.



**Note:** The default report format is the *test log* format for the test reports.

- c. Enter the environment variables that must be passed to the test run at run time in the **Environment Variables** field, if applicable for the test.

For example, enter the environment variables when the third-party libraries that are used in the test run refer to the environment variables for configuration.



**Note:** You must separate the arguments or variables with a white space when you enter them in the same line or start each argument or variable on a new line.

The default value for each of the fields for the advanced settings is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

10. Follow the instructions if you are running a test asset that contains datasets:

a. Click the **DATA SOURCES** tab, if it is not already open.

b. Consider the following information about datasets before you select a dataset:

The default value for the datasets in the **DATA SOURCES** tab is null if the test asset did not have an associated dataset. If the asset had an associated dataset, the default value is the associated dataset.

You can utilize the dataset stored as an Excel or CSV file to override the original dataset associated with the Suite, test, or schedule. For example, when you have associated a dataset in `.xlsx`, `.xls`, or `.csv` format with the test or schedule in desktop clients and if you have another set of data stored in an Excel or CSV file, then you can select that dataset from the **Override** list.



**Remember:** You must have uploaded the dataset as an Excel or CSV file into the Git repository, and ensured that both the original dataset (from the test asset) and new datasets (added to the project) have the same column names.

c. Select the dataset that you want to use in the test run from any of the following options:

- Select the dataset that is displayed as the default dataset when the test asset contains a single dataset.




**Note:** If there is only one dataset in the test asset, then that dataset is displayed as the default dataset.

- Select the dataset from the list.



**Note:** If there are multiple datasets in the test asset, the datasets are listed in their increasing alphabetical order.

- Select the dataset from the **Override** list to override the dataset that was associated with the test in the desktop client.

 **Important:** If the test contains an encrypted dataset, the Project Owner must classify it in the **DATA SECURITY** tab on the Project page before you can select it. You must have added datasets to your project from the **Dataset** page for the datasets to be displayed in the **Override** list.



If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

11. Follow the instructions in this step if the test requires a variable that must be passed to the test at the test run time.

You must configure the supported browser by using a variable if the test has a browser configured, which is different from the one that is supported by Rational® Test Automation Server.

a. Click the **VARIABLES** tab, if it is not already open.

b. Choose one of the following methods to add the variables:

- To add new variables manually, click the **Add Variable** icon , enter the name, and value of the variable.
  - i. Enter `RTW_WebUI_Browser_Selection` as the name.
  - ii. Enter `Firefox` as the value, if you want to use Firefox as the browser and override the browser that is specified in the HTML test.
- To add new variables from your local computer or from the Git repository that is associated with your server project, click the **Upload** icon  and select the **Upload from local system** or **Browse from server** to select the variable file.



**Note:** You must have created a file with the variables before you can select the file.


The default value for the variables is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

12. Follow the instructions if you want to change the location for running the test:

a. Click the **LOCATION** tab, if it is not already open.

The **Default Cluster** is the default location where the test runs, and it is listed under the **Host** column. The information about the availability of the default location is displayed.

 **Important:** You must have added remote Docker hosts that are registered with Rational® Test Automation Server to your project from the **Infrastructure** page. The remote Docker hosts are then displayed under the **Override** column.

 **Notes:**

- If remote Docker hosts are not added to your project, the option **No override options** is displayed as the default value and the test runs in the Kubernetes cluster of Rational® Test Automation Server.
- If remote Docker hosts are added to your project, the added Docker hosts are displayed along with their availability status and ownership information.

b. Select the location where you want to run the test asset from the following options:

- Select the **Default Cluster** when no remote Docker hosts are available in your project.
- Select the remote Docker host from the list when a remote Docker host is available in your project.
- Select **No override options**, if you selected any remote Docker host and want to revert to the **Default Cluster** to run the test asset.

c. Click **Execute**.

The test run is initiated.

13. Click **Execute**.


The test run is initiated.

## Results

You have configured and either started or scheduled a test run of a Compound Test that contains traditional HTML tests.

## What to do next

You can choose to perform any of the following tasks after you have initiated or scheduled a run:

- Stop the test run at any point after the test run is initiated from the **Execution** page. See [Stopping test runs on page 268](#).
- Cancel a scheduled test run from the **Execution** page. See [Canceling scheduled test runs on page 271](#).
- View all the states of the test asset by clicking the **Show in the Progress page** icon  for the test asset for which you started or scheduled the run. See [Viewing the state of test assets on page 259](#).
- View the progress of the test from the **Progress** page. See [Viewing the progress of running test assets on page 263](#).

- Monitor the test from the **Progress** page. See [Monitoring a test run](#).
- View the results, reports, and logs of the test from the **Results** page after the test completes the run. See [Test results on page 318](#).

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#### Related information

[Resetting the configuration settings for a test run on page 267](#)

#### Tests configurations and test runs

[Test run configurations on page 190](#)

## Configuring a run of a Compound Test that contains Web UI tests

After you added the test resources that you created in the desktop client to the project, you can configure a Compound Test that contains Web UI tests to be run on IBM® Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Read and completed the tasks mentioned in [Prerequisites to running tests on page 160](#) if they apply to the test you want to configure for a run.
- Read about the considerations that you must take into account before you configure a test run to run on a remote agent. See [Test run considerations for running tests on remote agents on page 168](#).
- Created Web UI tests in Rational® Functional Tester and added the test asset to the project repository on IBM® Rational® Test Automation Server.
- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the test assets, and then click **Execution**.
3. Select the branch of the repository that contains the test assets.

The test assets that are contained in the selected branch of the repository are displayed in the following tabs on the **Execution** page:


Tab	Description
<b>SUITES</b>	Lists all Suites, compound tests, Rate Schedules, or VU Schedules that are in the selected branch of the repository.

























Tab	Description
<b>TESTS</b>	Lists all API tests, functional tests, and performance tests that are in the selected branch of the repository.
<b>ADVANCED</b>	Lists all assets that are displayed when custom filters are applied for assets in the selected branch of the repository.

4. Identify the test asset or resource that you want to run by performing any of the following actions:


- Scroll through the list.

 **Tip:** You can hover over the icon in the **Type** column to know the type of the test asset.


 **Note:** You can also identify the type of the asset from the icon that represents the test type as shown in the following table:

Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	API test			
	Functional test			
	Performance test			
	AFT Suite			
	API Suite			
	Compound Test			
	Rate Schedule			
	VU Schedule			

- Search for the test asset or resource by entering any text contained in the test asset or resource name in the **Search** field.

- Click the **Filter** icon  in the **SUITES** or **TESTS** tab to filter the displayed assets based on the asset type.

For example, select **API Suite** in the **SUITES** tab to display all API Suites or select **Functional Test** in the **TESTS** tab to display all functional tests in the selected branch of the repository.

- Click the **Filter** icon  in the **ADVANCED** tab, and then create a filter query by using the **New filter** option by performing the following steps:
  - Click **New filter**.
  - Enter a name for the filter.
  - Select an operator, and add a rule, or a group of rules.
  - Add or enter the relevant parameters and either select or enter the condition and the criteria for the condition.

You can select a parameter from the following list:

- Type
  - Test Asset Name
  - Test Asset Path
  - Last Result
  - Next Run
- Save the filter query to save and apply the filter query to filter the assets based on the query.

The test assets that match the filter criteria are displayed.

- Retrieve and apply a saved filter query, if you have saved filter queries previously by performing the following steps:




**Note:** The filter query applied previously is selected and the assets based on that filter query are displayed. To apply a different filter query, you must have created and saved the filter query.

- Click the **Filter** icon  in the **ADVANCED** tab.

The filter queries that you created and saved are displayed.

- Click the filter that you want to apply.

The test assets that match the filter criteria are displayed.

5. Click the **Execute** icon  in the row of the identified test asset.

The **Execute test asset** dialog is displayed.



**Notes:**



- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

6. Select the version of the test resources that you want to run by completing any of the following actions:



**Note:** The test resources in the version can contain the test assets, datasets, AFT XML files, API environment tags, and other resources specific to projects created from any of the desktop clients.

- Expand the list in the **Version** field, find the version of the test resources, and then select the version.

Use the following details about the version of the test resources that are displayed to identify the version that you want:

- Commit message.
- Tags labeled by the user for the version committed.
- The user who committed the version to the repository.
- Relative time of the commit. For example, *2 hours ago* or *3 days ago*.

The list displays the versions of the test resources committed by all users to the branch in the repository. The versions are arranged with the latest version that is committed, and then followed by the versions committed previously.

- Expand the list in the **Version** field, and then search for the version that you want to select by entering a partial or the complete commit message of that version.

The version that matches the search criteria is displayed and it is selected for the test run.

The default value for the version selected for the run is the latest version in the selected branch of the repository. If you do not select any version, then the latest version is selected for the test run.



**Notes:**

- If you selected a version but you do not want to use that version in the test run, you can remove the selected version by clicking the ✕ icon. As a result, the default version is selected for the test run.
- If you repeated a test or ran the test again from the **Results** page, then the version of the test resources that you chose for the earlier run is shown as selected. You can either retain this version or select any other version from the list. You can also remove the previous version by clicking the ✕ icon.

7. Select the time for scheduling the test run from the following options:



- No action is required if you want to initiate the test run immediately after you click **Execute**.



**Important:** Click **Execute** only after you have configured the other settings in this dialog.



**Note:** The default time for scheduling a run is **Now**.

- Select **Later** and configure the date and time to schedule a test run.

The default time for scheduling a run is **Now**.



**Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

8. Enter a label for the test run that helps you to identify the test on the **Results** page.

After the test run completes, the label that you entered is displayed for the test under the **Labels** column on the **Results** page. After you have created a label, any member of the project can use that label.

The default value for the **Label** field is null or an empty field.



**Important:** The configuration that you set for the test run in the **Execute test asset** dialog is preserved when you run the same test again. Those changes are not visible when another user logs in to Rational® Test Automation Server. For example, if you created new variables on the server, those variables are available only for you when the same test is run again.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

9. Click **Advanced** to make the following advanced configurations:

- a. Enter any JVM arguments that must be passed to the test run at run time in the **JVM Arguments** field, if applicable for the test.

For example, you can set a maximum Java heap size.

- b. Enter program arguments that must be passed to the test run at run time in the **Program Arguments**, if applicable for the test.

If the test that you want to configure supports the presentation of the test results data in different formats, then do the required tasks in the following scenarios:

If...	Then...
You want the test results data in different supported formats.	Enter <code>-history cisterna</code> in the <b>Program Arguments</b> field.
You want to obtain the test results as a Jaeger trace.	Enter <code>-history jaeger</code> in the <b>Program Arguments</b> field.
You want the report as a test log and as a Jaeger trace.	Enter <code>-history jaeger, testlog</code> in the <b>Program Arguments</b> field.
Jaeger is already set as a program argument and you want to remove the Jaeger trace for your test.	Delete the <code>-history jaeger</code> entry in the <b>Program Arguments</b> field.



**Note:** The default report format is the *test log* format for the test reports.

- c. Enter the environment variables that must be passed to the test run at run time in the **Environment Variables** field, if applicable for the test.

For example, enter the environment variables when the third-party libraries that are used in the test run refer to the environment variables for configuration.



**Note:** You must separate the arguments or variables with a white space when you enter them in the same line or start each argument or variable on a new line.

The default value for each of the fields for the advanced settings is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

10. Follow the instructions if you are running a test asset that contains datasets:

- a. Click the **DATA SOURCES** tab, if it is not already open.
- b. Consider the following information about datasets before you select a dataset:

The default value for the datasets in the **DATA SOURCES** tab is null if the test asset did not have an associated dataset. If the asset had an associated dataset, the default value is the associated dataset.

You can utilize the dataset stored as an Excel or CSV file to override the original dataset associated with the Suite, test, or schedule. For example, when you have associated a dataset in `.xlsx`, `.xls`, or

.csv format with the test or schedule in desktop clients and if you have another set of data stored in an Excel or CSV file, then you can select that dataset from the **Override** list.



**Remember:** You must have uploaded the dataset as an Excel or CSV file into the Git repository, and ensured that both the original dataset (from the test asset) and new datasets (added to the project) have the same column names.

c. Select the dataset that you want to use in the test run from any of the following options:

- Select the dataset that is displayed as the default dataset when the test asset contains a single dataset.



**Note:** If there is only one dataset in the test asset, then that dataset is displayed as the default dataset.

- Select the dataset from the list.



**Note:** If there are multiple datasets in the test asset, the datasets are listed in their increasing alphabetical order.

- Select the dataset from the **Override** list to override the dataset that was associated with the test in the desktop client.





**Important:** If the test contains an encrypted dataset, the Project Owner must classify it in the **DATA SECURITY** tab on the Project page before you can select it. You must have added datasets to your project from the **Dataset** page for the datasets to be displayed in the **Override** list.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

11. Follow the instructions if the test requires a variable that must be passed to the test at the test run time.

- a. Click the **VARIABLES** tab, if it is not already open.
- b. Choose one of the following methods to add the variables:

- To add new variables manually, click the **Add Variable** icon , enter the name, and value of the variable.
- To add new variables from your local computer or from the Git repository that is associated with your server project, click the **Upload** icon  and select the **Upload from local system** or **Browse from server** to select the variable file.



**Note:** You must have created a file with the variables before you can select the file.

The default value for the variables is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

12. Follow the instructions if you are running a compound test that has static agents configured:

- a. Click the **LOCATION** tab, if it is not already open.

The static agents that are configured in the test asset are listed under the **Host** column. The information about the availability and capabilities of the agent are displayed.



**Note:** You must have added agents to your project from the **Infrastructure** page for the agents to be displayed under the **Override** column.

- b. Select the agent where you want to run the test asset in the following scenarios:

If...	Then...	Action
The agent that is specified in the test assets is available and no other agents are added to the project.	The agent that is specified in the test assets is displayed in the <b>Override</b> column.	Select the agent in the <b>Host</b> that is also displayed in the <b>Override</b> column as the location to run the test.
The agent that is specified in the test assets is not available and no other agents are added to the project.	There is no agent displayed for override in the <b>Override</b> column.	You cannot run the test on the agent.  You must wait until the agent is available to run the test on the agent.
The agent that is specified in the test assets is available and there are other agents that are added to the project.	Agents that have capabilities that match with the agent capabilities specified in the test assets are listed in the <b>Override</b> column as follows:	Perform any of the following actions: <ul style="list-style-type: none"> <li>▪ Select the agent in the <b>Host</b> that is also displayed in the <b>Override</b></li> </ul>

If...	Then...	Action
	<ul style="list-style-type: none"> <li>▪ Agents with capabilities that best match the capabilities in the agent in the asset are at the top of the list.</li> <li>▪ Agents with capabilities that do not match with the capabilities in the agent in the asset are listed subsequently.</li> </ul> <p>You can find details of both agents for the matching capabilities when you hover over the agent in the <b>Override</b> column.</p>	<p>column as the location to run the test.</p> <ul style="list-style-type: none"> <li>▪ Select an agent in the <b>Override</b> column as the location to run the test.</li> </ul>

- c. Click **Execute**.

The test run is initiated.

The default value for the agents is null or an empty field if no agents were configured in the test asset. If the test asset contains agents that are configured, then the default agent is the first item to be displayed on the list of agents listed in the increasing alphabetical order.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

13. Follow the instructions if you want to change the location for running the test:

- a. Click the **LOCATION** tab, if it is not already open.

The **Default Cluster** is the default location where the test runs, and it is listed under the **Host** column. The information about the availability of the default location is displayed.



**Important:** You must have added remote Docker hosts that are registered with Rational® Test Automation Server to your project from the **Infrastructure** page. The remote Docker hosts are then displayed under the **Override** column.



**Notes:**



- If remote Docker hosts are not added to your project, the option **No override options** is displayed as the default value and the test runs in the Kubernetes cluster of Rational® Test Automation Server.
- If remote Docker hosts are added to your project, the added Docker hosts are displayed along with their availability status and ownership information.

b. Select the location where you want to run the test asset from the following options:

- Select the **Default Cluster** when no remote Docker hosts are available in your project.
- Select the remote Docker host from the list when a remote Docker host is available in your project.
- Select **No override options**, if you selected any remote Docker host and want to revert to the **Default Cluster** to run the test asset.

c. Click **Execute**.

The test run is initiated.

14. Click **Execute**.


The test run is initiated.

## Results

You have configured and either started or scheduled a test run of a Compound Test that contains Web UI tests.

## What to do next

You can choose to perform any of the following tasks after you have initiated or scheduled a run:

- Stop the test run at any point after the test run is initiated from the **Execution** page. See [Stopping test runs on page 268](#).
- Cancel a scheduled test run from the **Execution** page. See [Canceling scheduled test runs on page 271](#).
- View all the states of the test asset by clicking the **Show in the Progress page** icon  for the test asset for which you started or scheduled the run. See [Viewing the state of test assets on page 259](#).
- View the progress of the test from the **Progress** page. See [Viewing the progress of running test assets on page 263](#).
- Monitor the test from the **Progress** page. See [Monitoring a test run](#).
- View the results, reports, and logs of the test from the **Results** page after the test completes the run. See [Test results on page 318](#).

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### Related information

[Resetting the configuration settings for a test run on page 267](#)

### Tests configurations and test runs

[Test run configurations on page 190](#)

## Configuring a run of a Compound Test that contains mobile tests

After you added the test resources that you created in the desktop client to the project, you can configure a Compound Test that contains mobile tests to be run on IBM® Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Created the mobile tests in Rational® Functional Tester and added the test asset to the project repository on IBM® Rational® Test Automation Server.
- Created a variable file if you want to import the variables file. The file must contain the details of the Appium server that is connected to the remote agent or the device cloud to which the mobile device is connected.
- Read [Considerations for using Jaeger traces in reports on page 166](#), if you want to configure a run and you want Jaeger to report the test results for the test.
- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).

### About this task

You can run the mobile tests that are contained in a Compound Test after you create the tests in Rational® Functional Tester, and then add them to your project on IBM® Rational® Test Automation Server. You can then run the mobile tests on the mobile devices that are connected to any of the following agents or clouds:

- Remote agents on which the Appium server is installed.
- The BitBar Cloud.
- The Perfecto Mobile cloud.

You must provide the details of the server or the mobile cloud to which the mobile devices are connected as variables in [Step 11 on page 239](#). You can either enter the variables or use the file in which you entered the variables. You must refer to the following tables for the variables that are required for a successful run:

**Table 5. Variables for the Appium server**

Name of the Variable	Action for the Value field
Mobile_Device_Selection	Specify the name of the mobile device that is connected to the Appium server.
appium.server.host	Specify the host name or IP address of the Appium server.

**Table 5. Variables for the Appium server (continued)**

Name of the Variable	Action for the Value field
appium.server.port	Specify the port on the Appium server that is configured to communicate with Rational® Test Automation Server.

**Table 6. Variables for the BitBar cloud**

Name of the Variable	Value
Mobile_Device_Selection	Specify the name of the mobile device that is connected to the BitBar Cloud.
bitbar.apikey	Specify the user token generated for your BitBar account to authenticate your connection with the BitBar Cloud.
bitbar.host	Specify the host name of the BitBar Cloud instance.
bitbar.project	Specify the name of the project that contains the recorded test.
bitbar.testrun	Specify a name for the test run that must be displayed in the BitBar dashboard for the test run.

**Table 7. Variables for the Perfecto mobile cloud**

Name of the Variable	Value
Mobile_Device_Selection	Specify the name of the mobile device that is connected to the Perfecto Mobile cloud.
perfecto.securitytoken	Specify the user token generated for your Perfecto account to authenticate your connection with the Perfecto Mobile cloud.
perfecto.host	Specify the host name of the Perfecto Mobile cloud instance.



1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the test assets, and then click **Execution**.
3. Select the branch of the repository that contains the test assets.


The test assets that are contained in the selected branch of the repository are displayed in the following tabs on the **Execution** page:
















Tab	Description
<b>SUITES</b>	Lists all Suites, compound tests, Rate Schedules, or VU Schedules that are in the selected branch of the repository.
<b>TESTS</b>	Lists all API tests, functional tests, and performance tests that are in the selected branch of the repository.
<b>ADVANCED</b>	Lists all assets that are displayed when custom filters are applied for assets in the selected branch of the repository.


4. Identify the test asset or resource that you want to run by performing any of the following actions:










- Scroll through the list.


 **Tip:** You can hover over the icon in the **Type** column to know the type of the test asset.

 **Note:** You can also identify the type of the asset from the icon that represents the test type as shown in the following table:


Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	API test			
	Functional test			
	Performance test			
	AFT Suite			
	API Suite			



Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	Compound Test			
	Rate Schedule			
	VU Schedule			

- Search for the test asset or resource by entering any text contained in the test asset or resource name in the **Search** field.
- Click the **Filter** icon  in the **SUITES** or **TESTS** tab to filter the displayed assets based on the asset type.

For example, select **API Suite** in the **SUITES** tab to display all API Suites or select **Functional Test** in the **TESTS** tab to display all functional tests in the selected branch of the repository.


- Click the **Filter** icon  in the **ADVANCED** tab, and then create a filter query by using the **New filter** option by performing the following steps:
  - Click **New filter**.
  - Enter a name for the filter.
  - Select an operator, and add a rule, or a group of rules.
  - Add or enter the relevant parameters and either select or enter the condition and the criteria for the condition.

You can select a parameter from the following list:

- Type
  - Test Asset Name
  - Test Asset Path
  - Last Result
  - Next Run
- Save the filter query to save and apply the filter query to filter the assets based on the query.

The test assets that match the filter criteria are displayed.

- Retrieve and apply a saved filter query, if you have saved filter queries previously by performing the following steps:


 **Note:** The filter query applied previously is selected and the assets based on that filter query are displayed. To apply a different filter query, you must have created and saved the filter query.

- a. Click the **Filter** icon  in the **ADVANCED** tab.

The filter queries that you created and saved are displayed.

- b. Click the filter that you want to apply.

The test assets that match the filter criteria are displayed.


5. Click the **Execute** icon  in the row of the identified test asset.

The **Execute test asset** dialog is displayed.

 **Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

6. Select the version of the test resources that you want to run by completing any of the following actions:

 **Note:** The test resources in the version can contain the test assets, datasets, AFT XML files, API environment tags, and other resources specific to projects created from any of the desktop clients.

- Expand the list in the **Version** field, find the version of the test resources, and then select the version.

Use the following details about the version of the test resources that are displayed to identify the version that you want:

- Commit message.
- Tags labeled by the user for the version committed.
- The user who committed the version to the repository.
- Relative time of the commit. For example, *2 hours ago* or *3 days ago*.

The list displays the versions of the test resources committed by all users to the branch in the repository. The versions are arranged with the latest version that is committed, and then followed by the versions committed previously.

- Expand the list in the **Version** field, and then search for the version that you want to select by entering a partial or the complete commit message of that version.

The version that matches the search criteria is displayed and it is selected for the test run.

The default value for the version selected for the run is the latest version in the selected branch of the repository. If you do not select any version, then the latest version is selected for the test run.



**Notes:**

- If you selected a version but you do not want to use that version in the test run, you can remove the selected version by clicking the ✕ icon. As a result, the default version is selected for the test run.
- If you repeated a test or ran the test again from the **Results** page, then the version of the test resources that you chose for the earlier run is shown as selected. You can either retain this version or select any other version from the list. You can also remove the previous version by clicking the ✕ icon.

7. Select the time for scheduling the test run from the following options:

- No action is required if you want to initiate the test run immediately after you click **Execute**.



**Important:** Click **Execute** only after you have configured the other settings in this dialog.



**Note:** The default time for scheduling a run is **Now**.

- Select **Later** and configure the date and time to schedule a test run.

The default time for scheduling a run is **Now**.




**Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

8. Enter a label for the test run that helps you to identify the test on the **Results** page.

After the test run completes, the label that you entered is displayed for the test under the **Labels** column on the **Results** page. After you have created a label, any member of the project can use that label.

The default value for the **Label** field is null or an empty field.

 **Important:** The configuration that you set for the test run in the **Execute test asset** dialog is preserved when you run the same test again. Those changes are not visible when another user logs in to Rational® Test Automation Server. For example, if you created new variables on the server, those variables are available only for you when the same test is run again.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

9. Click **Advanced** to make the following advanced configurations:

- a. Enter any JVM arguments that must be passed to the test run at run time in the **JVM Arguments** field, if applicable for the test.

For example, you can set a maximum Java heap size.

- b. Enter program arguments that must be passed to the test run at run time in the **Program Arguments**, if applicable for the test.

If the test that you want to configure supports the presentation of the test results data in different formats, then do the required tasks in the following scenarios:

If...	Then...
You want the test results data in different supported formats.	Enter <code>-history cisterna</code> in the <b>Program Arguments</b> field.
You want to obtain the test results as a Jaeger trace.	Enter <code>-history jaeger</code> in the <b>Program Arguments</b> field.
You want the report as a test log and as a Jaeger trace.	Enter <code>-history jaeger, testlog</code> in the <b>Program Arguments</b> field.
Jaeger is already set as a program argument and you want to remove the Jaeger trace for your test.	Delete the <code>-history jaeger</code> entry in the <b>Program Arguments</b> field.



**Note:** The default report format is the *test log* format for the test reports.

- c. Enter the environment variables that must be passed to the test run at run time in the **Environment Variables** field, if applicable for the test.

For example, enter the environment variables when the third-party libraries that are used in the test run refer to the environment variables for configuration.



**Note:** You must separate the arguments or variables with a white space when you enter them in the same line or start each argument or variable on a new line.

The default value for each of the fields for the advanced settings is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

10. Follow the instructions if you are running a test asset that contains datasets:

a. Click the **DATA SOURCES** tab, if it is not already open.

b. Consider the following information about datasets before you select a dataset:

The default value for the datasets in the **DATA SOURCES** tab is null if the test asset did not have an associated dataset. If the asset had an associated dataset, the default value is the associated dataset.

You can utilize the dataset stored as an Excel or CSV file to override the original dataset associated with the Suite, test, or schedule. For example, when you have associated a dataset in `.xlsx`, `.xls`, or `.csv` format with the test or schedule in desktop clients and if you have another set of data stored in an Excel or CSV file, then you can select that dataset from the **Override** list.



**Remember:** You must have uploaded the dataset as an Excel or CSV file into the Git repository, and ensured that both the original dataset (from the test asset) and new datasets (added to the project) have the same column names.

c. Select the dataset that you want to use in the test run from any of the following options:

- Select the dataset that is displayed as the default dataset when the test asset contains a single dataset.




**Note:** If there is only one dataset in the test asset, then that dataset is displayed as the default dataset.

- Select the dataset from the list.



**Note:** If there are multiple datasets in the test asset, the datasets are listed in their increasing alphabetical order.

- Select the dataset from the **Override** list to override the dataset that was associated with the test in the desktop client.



 **Important:** If the test contains an encrypted dataset, the Project Owner must classify it in the **DATA SECURITY** tab on the Project page before you can select it. You must have added datasets to your project from the **Dataset** page for the datasets to be displayed in the **Override** list.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

11. Perform the following steps to provide the variables that specify the server or cloud to which the mobile device is attached. You can either enter the variables that must be passed to the test at the test run time or import the file that contains the variables.

a. Click the **VARIABLES** tab, if it is not already open.

b. Choose one of the following methods to add the variables:

- To add new variables manually, click the **Add Variable** icon , enter the name, and value of the variable.
- To add new variables from your local computer or from the Git repository that is associated with your server project, click the **Upload** icon  and select the **Upload from local system** or **Browse from server** to select the variable file.



**Note:** You must have created a file with the variables before you can select the file.

12. Click **Execute**.


The test run is initiated.

## Results

You have configured and either started or scheduled a test run of a Compound Test that contains mobile tests.

## What to do next

You can choose to perform any of the following tasks after you have initiated or scheduled a run:

- Stop the test run at any point after the test run is initiated from the **Execution** page. See [Stopping test runs on page 268](#).
- Cancel a scheduled test run from the **Execution** page. See [Canceling scheduled test runs on page 271](#).
- View all the states of the test asset by clicking the **Show in the Progress page** icon  for the test asset for which you started or scheduled the run. See [Viewing the state of test assets on page 259](#).
- View the progress of the test from the **Progress** page. See [Viewing the progress of running test assets on page 263](#).
- Monitor the test from the **Progress** page. See [Monitoring a test run](#).
- View the results, reports, and logs of the test from the **Results** page after the test completes the run. See [Test results on page 318](#).

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 Related information

[Resetting the configuration settings for a test run on page 267](#)

Tests configurations and test runs

[Test run configurations on page 190](#)

## Configuring a run of a Compound Test that contains performance tests

After you added the test resources that you created in the desktop client to the project, you can configure a Compound Test that contains performance tests to be run on IBM® Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Created performance tests under a Compound Test in Rational® Performance Tester.
- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the test assets, and then click **Execution**.
3. Select the branch of the repository that contains the test assets.

The test assets that are contained in the selected branch of the repository are displayed in the following tabs on the **Execution** page:


Tab	Description
<b>SUITES</b>	Lists all Suites, compound tests, Rate Schedules, or VU Schedules that are in the selected branch of the repository.
<b>TESTS</b>	Lists all API tests, functional tests, and performance tests that are in the selected branch of the repository.
<b>ADVANCED</b>	Lists all assets that are displayed when custom filters are applied for assets in the selected branch of the repository.

























4. Identify the test asset or resource that you want to run by performing any of the following actions:




- Scroll through the list.


 **Tip:** You can hover over the icon in the **Type** column to know the type of the test asset.

 **Note:** You can also identify the type of the asset from the icon that represents the test type as shown in the following table:

Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	API test			
	Functional test			
	Performance test			
	AFT Suite			
	API Suite			
	Compound Test			
	Rate Schedule			
	VU Schedule			

- Search for the test asset or resource by entering any text contained in the test asset or resource name in the **Search** field.
- Click the **Filter** icon  in the **SUITES** or **TESTS** tab to filter the displayed assets based on the asset type.

For example, select **API Suite** in the **SUITES** tab to display all API Suites or select **Functional Test** in the **TESTS** tab to display all functional tests in the selected branch of the repository.

- Click the **Filter** icon  in the **ADVANCED** tab, and then create a filter query by using the **New filter** option by performing the following steps:
  - Click **New filter**.
  - Enter a name for the filter.

- c. Select an operator, and add a rule, or a group of rules.
- d. Add or enter the relevant parameters and either select or enter the condition and the criteria for the condition.

You can select a parameter from the following list:

- Type
  - Test Asset Name
  - Test Asset Path
  - Last Result
  - Next Run
- e. Save the filter query to save and apply the filter query to filter the assets based on the query.

The test assets that match the filter criteria are displayed.

- Retrieve and apply a saved filter query, if you have saved filter queries previously by performing the following steps:




**Note:** The filter query applied previously is selected and the assets based on that filter query are displayed. To apply a different filter query, you must have created and saved the filter query.

- a. Click the **Filter** icon  in the **ADVANCED** tab.

The filter queries that you created and saved are displayed.

- b. Click the filter that you want to apply.

The test assets that match the filter criteria are displayed.

- 5. Click the **Execute** icon  in the row of the identified test asset.

The **Execute test asset** dialog is displayed.



**Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

- 6. Select the version of the test resources that you want to run by completing any of the following actions:



**Note:** The test resources in the version can contain the test assets, datasets, AFT XML files, API environment tags, and other resources specific to projects created from any of the desktop clients.

- Expand the list in the **Version** field, find the version of the test resources, and then select the version.

Use the following details about the version of the test resources that are displayed to identify the version that you want:

- Commit message.
- Tags labeled by the user for the version committed.
- The user who committed the version to the repository.
- Relative time of the commit. For example, *2 hours ago* or *3 days ago*.

The list displays the versions of the test resources committed by all users to the branch in the repository. The versions are arranged with the latest version that is committed, and then followed by the versions committed previously.

- Expand the list in the **Version** field, and then search for the version that you want to select by entering a partial or the complete commit message of that version.

The version that matches the search criteria is displayed and it is selected for the test run.

The default value for the version selected for the run is the latest version in the selected branch of the repository. If you do not select any version, then the latest version is selected for the test run.



**Notes:**

- If you selected a version but you do not want to use that version in the test run, you can remove the selected version by clicking the ✕ icon. As a result, the default version is selected for the test run.
- If you repeated a test or ran the test again from the **Results** page, then the version of the test resources that you chose for the earlier run is shown as selected. You can either retain this version or select any other version from the list. You can also remove the previous version by clicking the ✕ icon.

7. Select the time for scheduling the test run from the following options:

- No action is required if you want to initiate the test run immediately after you click **Execute**.



**Important:** Click **Execute** only after you have configured the other settings in this dialog.



**Note:** The default time for scheduling a run is **Now**.

- Select **Later** and configure the date and time to schedule a test run.

The default time for scheduling a run is **Now**.



**Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

8. Enter a label for the test run that helps you to identify the test on the **Results** page.

After the test run completes, the label that you entered is displayed for the test under the **Labels** column on the **Results** page. After you have created a label, any member of the project can use that label.

The default value for the **Label** field is null or an empty field.



**Important:** The configuration that you set for the test run in the **Execute test asset** dialog is preserved when you run the same test again. Those changes are not visible when another user logs in to Rational® Test Automation Server. For example, if you created new variables on the server, those variables are available only for you when the same test is run again.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

9. Click **Advanced** to make the following advanced configurations:

- a. Enter any JVM arguments that must be passed to the test run at run time in the **JVM Arguments** field, if applicable for the test.

For example, you can set a maximum Java heap size.

- b. Enter program arguments that must be passed to the test run at run time in the **Program Arguments**, if applicable for the test.

If the test that you want to configure supports the presentation of the test results data in different formats, then do the required tasks in the following scenarios:

If...	Then...
You want the test results data in different supported formats.	Enter <code>-history cisterna</code> in the <b>Program Arguments</b> field.
You want to obtain the test results as a Jaeger trace.	Enter <code>-history jaeger</code> in the <b>Program Arguments</b> field.

If...	Then...
You want the report as a test log and as a Jaeger trace.	Enter <code>-history jaeger, testlog</code> in the <b>Program Arguments</b> field.
Jaeger is already set as a program argument and you want to remove the Jaeger trace for your test.	Delete the <code>-history jaeger</code> entry in the <b>Program Arguments</b> field.



**Note:** The default report format is the *test log* format for the test reports.

- c. Enter the environment variables that must be passed to the test run at run time in the **Environment Variables** field, if applicable for the test.

For example, enter the environment variables when the third-party libraries that are used in the test run refer to the environment variables for configuration.



**Note:** You must separate the arguments or variables with a white space when you enter them in the same line or start each argument or variable on a new line.

The default value for each of the fields for the advanced settings is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

10. Follow the instructions if you are running a test asset that contains datasets:

- a. Click the **DATA SOURCES** tab, if it is not already open.
- b. Consider the following information about datasets before you select a dataset:

The default value for the datasets in the **DATA SOURCES** tab is null if the test asset did not have an associated dataset. If the asset had an associated dataset, the default value is the associated dataset.

You can utilize the dataset stored as an Excel or CSV file to override the original dataset associated with the Suite, test, or schedule. For example, when you have associated a dataset in `.xlsx`, `.xls`, or `.csv` format with the test or schedule in desktop clients and if you have another set of data stored in an Excel or CSV file, then you can select that dataset from the **Override** list.



**Remember:** You must have uploaded the dataset as an Excel or CSV file into the Git repository, and ensured that both the original dataset (from the test asset) and new datasets (added to the project) have the same column names.

- c. Select the dataset that you want to use in the test run from any of the following options:

- Select the dataset that is displayed as the default dataset when the test asset contains a single dataset.



**Note:** If there is only one dataset in the test asset, then that dataset is displayed as the default dataset.

- Select the dataset from the list.



**Note:** If there are multiple datasets in the test asset, the datasets are listed in their increasing alphabetical order.

- Select the dataset from the **Override** list to override the dataset that was associated with the test in the desktop client.





**Important:** If the test contains an encrypted dataset, the Project Owner must classify it in the **DATA SECURITY** tab on the Project page before you can select it. You must have added datasets to your project from the **Dataset** page for the datasets to be displayed in the **Override** list.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

11. Follow the instructions if the test requires a variable that must be passed to the test at the test run time.

a. Click the **VARIABLES** tab, if it is not already open.

b. Choose one of the following methods to add the variables:

- To add new variables manually, click the **Add Variable** icon , enter the name, and value of the variable.
- To add new variables from your local computer or from the Git repository that is associated with your server project, click the **Upload** icon  and select the **Upload from local system** or **Browse from server** to select the variable file.



**Note:** You must have created a file with the variables before you can select the file.

The default value for the variables is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

12. Follow the instructions if you are running a test that has static agents configured:

- a. Click the **LOCATION** tab, if it is not already open.

The static agents that are configured in the test asset are listed under the **Host** column. The information about the availability of the agent is displayed.



**Note:** You must have added agents to your project from the **Infrastructure** page for the agents to be displayed under the **Override** column.

- b. Select the agent where you want to run the test asset in the following scenarios:

If...	Then...	Action
The agent that is specified in the test assets is available and no other agents are added to the project.	The agent that is specified in the test assets is displayed in the <b>Override</b> column.	Select the agent in the <b>Host</b> that is also displayed in the <b>Override</b> column as the location to run the test.
The agent that is specified in the test assets is not available and no other agents are added to the project.	There is no agent displayed for override in the <b>Override</b> column.	You cannot run the test on the agent.  You must wait until the agent is available to run the test on the agent.
The agent that is specified in the test assets is available and there are other agents that are added to the project.	Agents that have capabilities that match with the agent capabilities specified in the test assets are listed in the <b>Override</b> column as follows: <ul style="list-style-type: none"> <li>▪ Agents with capabilities that best match the capabilities in the agent in the asset are at the top of the list.</li> <li>▪ Agents with capabilities that do not match with the capabilities in the agent in the asset are listed subsequently.</li> </ul> You can find details of both agents for the matching capabilities when you hover over the agent in the <b>Override</b> column.	Perform any of the following actions: <ul style="list-style-type: none"> <li>▪ Select the agent in the <b>Host</b> that is also displayed in the <b>Override</b> column as the location to run the test.</li> <li>▪ Select an agent in the <b>Override</b> column as the location to run the test.</li> </ul>

c. Click **Execute**.

The test run is initiated.

The default value for the agents is null or an empty field if no agents were configured in the test asset. If the test asset contains agents that are configured, then the default agent is the first item to be displayed on the list of agents listed in the increasing alphabetical order.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

## 13. Follow the instructions if you want to change the location for running the test:

a. Click the **LOCATION** tab, if it is not already open.

The **Default Cluster** is the default location where the test runs, and it is listed under the **Host** column. The information about the availability of the default location is displayed.



**Important:** You must have added remote Docker hosts that are registered with Rational® Test Automation Server to your project from the **Infrastructure** page. The remote Docker hosts are then displayed under the **Override** column.

**Notes:**

- If remote Docker hosts are not added to your project, the option **No override options** is displayed as the default value and the test runs in the Kubernetes cluster of Rational® Test Automation Server.
- If remote Docker hosts are added to your project, the added Docker hosts are displayed along with their availability status and ownership information.

## b. Select the location where you want to run the test asset from the following options:

- Select the **Default Cluster** when no remote Docker hosts are available in your project.
- Select the remote Docker host from the list when a remote Docker host is available in your project.
- Select **No override options**, if you selected any remote Docker host and want to revert to the **Default Cluster** to run the test asset.

c. Click **Execute**.

The test run is initiated.

14. Click **Execute**.

The test run is initiated.


**Results**

You have configured and either started or scheduled a test run of a Compound Test that contains performance tests.

**What to do next**



You can choose to perform any of the following tasks after you have initiated or scheduled a run:

- Stop the test run at any point after the test run is initiated from the **Execution** page. See [Stopping test runs on page 268](#).
- Cancel a scheduled test run from the **Execution** page. See [Canceling scheduled test runs on page 271](#).
- View all the states of the test asset by clicking the **Show in the Progress page** icon  for the test asset for which you started or scheduled the run. See [Viewing the state of test assets on page 259](#).
- View the progress of the test from the **Progress** page. See [Viewing the progress of running test assets on page 263](#).
- Monitor the test from the **Progress** page. See [Monitoring a test run](#).
- View the results, reports, and logs of the test from the **Results** page after the test completes the run. See [Test results on page 318](#).

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#### Related information

[Resetting the configuration settings for a test run on page 267](#)

#### Tests configurations and test runs

[Test run configurations on page 190](#)

## Configuring a run of a Rate Schedule or VU Schedule

After you added the test resources that you created in the desktop client to the project, you can configure a Rate Schedule or VU Schedule to be run on IBM® Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Read and completed the tasks mentioned in [Prerequisites to running tests on page 160](#) if they apply to the test you want to configure for a run.
- Read about the considerations that you must take into account before you configure a test run to run on a remote agent. See [Test run considerations for running tests on remote agents on page 168](#).
- Read the following topics:
  - [Test run considerations for schedules on page 165](#) if you want to configure a run for Rate Schedules or VU Schedules that have Resource Monitoring sources configured.
  - [Considerations for using Jaeger traces in reports on page 166](#) if you want to configure a run and you want Jaeger to report the test results for the test.
- Created Schedules in Rational® Performance Tester and added the test asset to the project repository on IBM® Rational® Test Automation Server.
- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the test assets, and then click **Execution**.
3. Select the branch of the repository that contains the test assets.


The test assets that are contained in the selected branch of the repository are displayed in the following tabs on the **Execution** page:
















Tab	Description
<b>SUITES</b>	Lists all Suites, compound tests, Rate Schedules, or VU Schedules that are in the selected branch of the repository.
<b>TESTS</b>	Lists all API tests, functional tests, and performance tests that are in the selected branch of the repository.
<b>ADVANCED</b>	Lists all assets that are displayed when custom filters are applied for assets in the selected branch of the repository.


4. Identify the test asset or resource that you want to run by performing any of the following actions:










- Scroll through the list.


 **Tip:** You can hover over the icon in the **Type** column to know the type of the test asset.

 **Note:** You can also identify the type of the asset from the icon that represents the test type as shown in the following table:


Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	API test			
	Functional test			
	Performance test			
	AFT Suite			
	API Suite			



Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	Compound Test			
	Rate Schedule			
	VU Schedule			

- Search for the test asset or resource by entering any text contained in the test asset or resource name in the **Search** field.
- Click the **Filter** icon  in the **SUITES** or **TESTS** tab to filter the displayed assets based on the asset type.

For example, select **API Suite** in the **SUITES** tab to display all API Suites or select **Functional Test** in the **TESTS** tab to display all functional tests in the selected branch of the repository.


- Click the **Filter** icon  in the **ADVANCED** tab, and then create a filter query by using the **New filter** option by performing the following steps:
  - Click **New filter**.
  - Enter a name for the filter.
  - Select an operator, and add a rule, or a group of rules.
  - Add or enter the relevant parameters and either select or enter the condition and the criteria for the condition.

You can select a parameter from the following list:

- Type
  - Test Asset Name
  - Test Asset Path
  - Last Result
  - Next Run
- Save the filter query to save and apply the filter query to filter the assets based on the query.

The test assets that match the filter criteria are displayed.

- Retrieve and apply a saved filter query, if you have saved filter queries previously by performing the following steps:


 **Note:** The filter query applied previously is selected and the assets based on that filter query are displayed. To apply a different filter query, you must have created and saved the filter query.

- a. Click the **Filter** icon  in the **ADVANCED** tab.

The filter queries that you created and saved are displayed.

- b. Click the filter that you want to apply.

The test assets that match the filter criteria are displayed.


5. Click the **Execute** icon  in the row of the identified test asset.

The **Execute test asset** dialog is displayed.

 **Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

6. Select the version of the test resources that you want to run by completing any of the following actions:

 **Note:** The test resources in the version can contain the test assets, datasets, AFT XML files, API environment tags, and other resources specific to projects created from any of the desktop clients.

- Expand the list in the **Version** field, find the version of the test resources, and then select the version.

Use the following details about the version of the test resources that are displayed to identify the version that you want:

- Commit message.
- Tags labeled by the user for the version committed.
- The user who committed the version to the repository.
- Relative time of the commit. For example, *2 hours ago* or *3 days ago*.

The list displays the versions of the test resources committed by all users to the branch in the repository. The versions are arranged with the latest version that is committed, and then followed by the versions committed previously.

- Expand the list in the **Version** field, and then search for the version that you want to select by entering a partial or the complete commit message of that version.

The version that matches the search criteria is displayed and it is selected for the test run.

The default value for the version selected for the run is the latest version in the selected branch of the repository. If you do not select any version, then the latest version is selected for the test run.



**Notes:**

- If you selected a version but you do not want to use that version in the test run, you can remove the selected version by clicking the ✕ icon. As a result, the default version is selected for the test run.
- If you repeated a test or ran the test again from the **Results** page, then the version of the test resources that you chose for the earlier run is shown as selected. You can either retain this version or select any other version from the list. You can also remove the previous version by clicking the ✕ icon.

7. Select the time for scheduling the test run from the following options:

- No action is required if you want to initiate the test run immediately after you click **Execute**.



**Important:** Click **Execute** only after you have configured the other settings in this dialog.



**Note:** The default time for scheduling a run is **Now**.

- Select **Later** and configure the date and time to schedule a test run.

The default time for scheduling a run is **Now**.




**Notes:**

- If you have configured some or all of the settings for the current test run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a test run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.

8. Enter a label for the test run that helps you to identify the test on the **Results** page.

After the test run completes, the label that you entered is displayed for the test under the **Labels** column on the **Results** page. After you have created a label, any member of the project can use that label.

The default value for the **Label** field is null or an empty field.

 **Important:** The configuration that you set for the test run in the **Execute test asset** dialog is preserved when you run the same test again. Those changes are not visible when another user logs in to Rational® Test Automation Server. For example, if you created new variables on the server, those variables are available only for you when the same test is run again.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

9. Click **Advanced** to make the following advanced configurations:

- a. Enter any JVM arguments that must be passed to the test run at run time in the **JVM Arguments** field, if applicable for the test.

For example, you can set a maximum Java heap size.

- b. Enter program arguments that must be passed to the test run at run time in the **Program Arguments**, if applicable for the test.

If the test that you want to configure supports the presentation of the test results data in different formats, then do the required tasks in the following scenarios:

If...	Then...
You want the test results data in different supported formats.	Enter <code>-history cisterna</code> in the <b>Program Arguments</b> field.
You want to obtain the test results as a Jaeger trace.	Enter <code>-history jaeger</code> in the <b>Program Arguments</b> field.
You want the report as a test log and as a Jaeger trace.	Enter <code>-history jaeger, testlog</code> in the <b>Program Arguments</b> field.
Jaeger is already set as a program argument and you want to remove the Jaeger trace for your test.	Delete the <code>-history jaeger</code> entry in the <b>Program Arguments</b> field.



**Note:** The default report format is the *test log* format for the test reports.

- c. Enter the environment variables that must be passed to the test run at run time in the **Environment Variables** field, if applicable for the test.

For example, enter the environment variables when the third-party libraries that are used in the test run refer to the environment variables for configuration.



**Note:** You must separate the arguments or variables with a white space when you enter them in the same line or start each argument or variable on a new line.

The default value for each of the fields for the advanced settings is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

10. Follow the instructions if you are running a test asset that contains datasets:

a. Click the **DATA SOURCES** tab, if it is not already open.

b. Consider the following information about datasets before you select a dataset:

The default value for the datasets in the **DATA SOURCES** tab is null if the test asset did not have an associated dataset. If the asset had an associated dataset, the default value is the associated dataset.

You can utilize the dataset stored as an Excel or CSV file to override the original dataset associated with the Suite, test, or schedule. For example, when you have associated a dataset in `.xlsx`, `.xls`, or `.csv` format with the test or schedule in desktop clients and if you have another set of data stored in an Excel or CSV file, then you can select that dataset from the **Override** list.



**Remember:** You must have uploaded the dataset as an Excel or CSV file into the Git repository, and ensured that both the original dataset (from the test asset) and new datasets (added to the project) have the same column names.

c. Select the dataset that you want to use in the test run from any of the following options:

- Select the dataset that is displayed as the default dataset when the test asset contains a single dataset.




**Note:** If there is only one dataset in the test asset, then that dataset is displayed as the default dataset.

- Select the dataset from the list.



**Note:** If there are multiple datasets in the test asset, the datasets are listed in their increasing alphabetical order.

- Select the dataset from the **Override** list to override the dataset that was associated with the test in the desktop client.



 **Important:** If the test contains an encrypted dataset, the Project Owner must classify it in the **DATA SECURITY** tab on the Project page before you can select it. You must have added datasets to your project from the **Dataset** page for the datasets to be displayed in the **Override** list.


If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

11. Follow the instructions if the test requires a variable that must be passed to the test at the test run time.

a. Click the **VARIABLES** tab, if it is not already open.

b. Choose one of the following methods to add the variables:

- To add new variables manually, click the **Add Variable** icon , enter the name, and value of the variable.
- To add new variables from your local computer or from the Git repository that is associated with your server project, click the **Upload** icon  and select the **Upload from local system** or **Browse from server** to select the variable file.

 **Note:** You must have created a file with the variables before you can select the file.


The default value for the variables is null or an empty field.

If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

12. Follow the instructions if you are running a test that has static agents configured:

a. Click the **LOCATION** tab, if it is not already open.

The static agents that are configured in the test asset are listed under the **Host** column. The information about the availability of the agent is displayed.

 **Note:** You must have added agents to your project from the **Infrastructure** page for the agents to be displayed under the **Override** column.

b. Select the agent where you want to run the test asset in the following scenarios:

If...	Then...	Action
The agent that is specified in the test assets is available and no other agents are added to the project.	The agent that is specified in the test assets is displayed in the <b>Override</b> column.	Select the agent in the <b>Host</b> that is also displayed in the <b>Override</b> column as the location to run the test.



If...	Then...	Action
The agent that is specified in the test assets is not available and no other agents are added to the project.	There is no agent displayed for override in the <b>Override</b> column.	<p>You cannot run the test on the agent.</p> <p>You must wait until the agent is available to run the test on the agent.</p>
The agent that is specified in the test assets is available and there are other agents that are added to the project.	<p>Agents that have capabilities that match with the agent capabilities specified in the test assets are listed in the <b>Override</b> column as follows:</p> <ul style="list-style-type: none"> <li>▪ Agents with capabilities that best match the capabilities in the agent in the asset are at the top of the list.</li> <li>▪ Agents with capabilities that do not match with the capabilities in the agent in the asset are listed subsequently.</li> </ul> <p>You can find details of both agents for the matching capabilities when you hover over the agent in the <b>Override</b> column.</p>	<p>Perform any of the following actions:</p> <ul style="list-style-type: none"> <li>▪ Select the agent in the <b>Host</b> that is also displayed in the <b>Override</b> column as the location to run the test.</li> <li>▪ Select an agent in the <b>Override</b> column as the location to run the test.</li> </ul>

c. Click **Execute**.

The test run is initiated.

The default value for the agents is null or an empty field if no agents were configured in the test asset. If the test asset contains agents that are configured, then the default agent is the first item to be displayed on the list of agents listed in the increasing alphabetical order.


If you want to run the test immediately or at the scheduled time, click **Execute**, or continue with the next step.

13. Follow the instructions if you want to change the location for running the test:

a. Click the **LOCATION** tab, if it is not already open.

The **Default Cluster** is the default location where the test runs, and it is listed under the **Host** column.

The information about the availability of the default location is displayed.

 **Important:** You must have added remote Docker hosts that are registered with Rational® Test Automation Server to your project from the **Infrastructure** page. The remote Docker hosts are then displayed under the **Override** column.

 **Notes:**

- If remote Docker hosts are not added to your project, the option **No override options** is displayed as the default value and the test runs in the Kubernetes cluster of Rational® Test Automation Server.
- If remote Docker hosts are added to your project, the added Docker hosts are displayed along with their availability status and ownership information.

b. Select the location where you want to run the test asset from the following options:

- Select the **Default Cluster** when no remote Docker hosts are available in your project.
- Select the remote Docker host from the list when a remote Docker host is available in your project.
- Select **No override options**, if you selected any remote Docker host and want to revert to the **Default Cluster** to run the test asset.

c. Click **Execute**.


The test run is initiated.

14. Follow the instructions if you want to override the Resource Monitoring labels in the test asset with the Resource Monitoring labels that you created in Rational® Test Automation Server:

a. Click the **Resource Monitoring** tab.

 **Note:**

The **Resource Monitoring** tab displays only if you enabled the **Resource Monitoring from Service** option in Rational® Performance Tester when you created the test asset.

b. Click  , and press the `Ctrl + Space bar` keys, or enter the initial letter of a label to select a label in the list.

**Note:**

You can select or add labels only if you added the labels in the **Resource Monitoring Sources** page in Rational® Test Automation Server.

15. Click **Execute**.


The test run is initiated.

**Results**

You have configured and either started or scheduled a test run of a Rate Schedule or VU Schedule.

**What to do next**

You can choose to perform any of the following tasks after you have initiated or scheduled a run:

- Stop the test run at any point after the test run is initiated from the **Execution** page. See [Stopping test runs on page 268](#).
- Cancel a scheduled test run from the **Execution** page. See [Canceling scheduled test runs on page 271](#).
- View all the states of the test asset by clicking the **Show in the Progress page** icon  for the test asset for which you started or scheduled the run. See [Viewing the state of test assets on page 259](#).
- View the progress of the test from the **Progress** page. See [Viewing the progress of running test assets on page 263](#).
- Monitor the test from the **Progress** page. See [Monitoring a test run](#).
- View the results, reports, and logs of the test from the **Results** page after the test completes the run. See [Test results on page 318](#).

## Related information

[Resetting the configuration settings for a test run on page 267](#)


## Tests configurations and test runs

[Test run configurations on page 190](#)

## Management of running tests

Find information about the tasks that you can perform on a test that you configured for a run either while it runs or after it completes the run.



### Viewing the state of test assets

After you initiate or schedule a test run on the **Execution** page, you can view the state of the test assets on the **Progress** page by clicking the **Show in the Progress page** icon  that is enabled for that test asset on the **Execution**

page. You can view all the states of the test asset from the past hour such as *In transition*, *Running*, *Scheduled*, *Completed*, *Or Stopped*.


**Before you begin**






















You must have initiated runs of the test assets in your project from the **Execution** page.

 **Note:** The **Show in the Progress page** icon  is enabled for the test asset only if a run of the test asset is either started or scheduled.

1. Click **Execution**, if you are not already on the **Execution** page.
2. Identify the test asset or resource that you want to run by performing any of the following actions:
  - Scroll through the list.


 **Tip:** You can hover over the icon in the **Type** column to know the type of the test asset.

 **Note:** You can also identify the type of the asset from the icon that represents the test type as shown in the following table:


Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	API test			
	Functional test			
	Performance test			
	AFT Suite			
	API Suite			
	Compound Test			
	Rate Schedule			



Icon	Represents	Listed in the SUITES tab	Listed in the TESTS tab	Listed in the AD-VANCED tab
	VU Schedule			

- Search for the test asset or resource by entering any text contained in the test asset or resource name in the **Search** field.
- Click the **Filter** icon  in the **SUITES** or **TESTS** tab to filter the displayed assets based on the asset type.

For example, select **API Suite** in the **SUITES** tab to display all API Suites or select **Functional Test** in the **TESTS** tab to display all functional tests in the selected branch of the repository.

- Click the **Filter** icon  in the **ADVANCED** tab, and then create a filter query by using the **New filter** option by performing the following steps:
  - Click **New filter**.
  - Enter a name for the filter.
  - Select an operator, and add a rule, or a group of rules.
  - Add or enter the relevant parameters and either select or enter the condition and the criteria for the condition.

You can select a parameter from the following list:

- Type
  - Test Asset Name
  - Test Asset Path
  - Last Result
  - Next Run
- Save the filter query to save and apply the filter query to filter the assets based on the query.

The test assets that match the filter criteria are displayed.

- Retrieve and apply a saved filter query, if you have saved filter queries previously by performing the following steps:




**Note:** The filter query applied previously is selected and the assets based on that filter query are displayed. To apply a different filter query, you must have created and saved the filter query.

- a. Click the **Filter** icon  in the **ADVANCED** tab.

The filter queries that you created and saved are displayed.

- b. Click the filter that you want to apply.

The test assets that match the filter criteria are displayed.

3. Click the **Show in the Progress page** icon  in the **Actions** column of the test asset.

The **Progress** page is displayed with the following details:

- The different states of the test asset runs that were initiated or completed in the past hour are displayed as follows:
  - In transition
  - Running
  - Completed
  - Stopped by User
  - Canceled
- The ID of the selected test asset is applied as a filter and is displayed in the filter row.

The applied filter is removed along with the displayed items for this filter when you perform any of the following actions on the **Progress** page:


- You click **Hide inactive**, and then click **Show all**.
- You visit any other page in the Navigation pane and return to the **Progress** page.

## Results

You have viewed all the states of a specific test asset runs that were initiated during the past hour.

## What to do next

You can choose to perform any of the following tasks from the **Progress** page:

- Stop test assets that are running. See [Stopping test runs on page 268](#).
- Cancel scheduled runs. See [Canceling scheduled test runs on page 271](#).
- Monitor tests (such as the Schedules, Compound Test, and AFT Suites). See [Monitoring a test run](#).
- View the results or the execution log of the test asset from the **Actions** column by clicking the **Open action menu** icon . See [Checking logs on page 266](#).
- View the results, reports, and logs of the completed test run from the **Results** page. See [Test results on page 318](#).

## Viewing the progress of running test assets

After you initiate or schedule a test run on the **Execution** page, you can view the progress of the test assets that are running or scheduled to run, from the **Progress** page. You can also view the test assets that have completed their run, are stopped or canceled, during the past hour.

### Before you begin

You must have initiated runs of the test assets in your project from the **Execution** page.

1. Open your project and click **Progress**.

Any one of the following views is displayed:

- No test assets are displayed in the **Progress** page if there are no test assets that are running, scheduled to run, or have completed their run in the past hour.
- Test assets in your project that are in any of the following states are listed:
  - Running
  - Scheduled
  - Completed
  - Stopped
  - Canceled
- No test assets are displayed but the option **Show all** is enabled. You can click **Show all** to display the test assets that ran in the past hour. Test assets that were hidden from the display when **Hide inactive** was clicked are displayed.



**Note:** Test assets are automatically removed from the display after *60 minutes* of being added to the **Progress** page. You can hide the test assets from the display by clicking **Hide inactive**, so that you can view only the test assets that were added to the **Progress** page in the past hour. You cannot use the **Progress** page to view the history of test assets that were run from the **Execution** page.

2. Identify the test asset by performing any of the following actions:

- Identify the test asset or resource by scrolling through the list.
- Search for the test asset by entering any text contained in the test asset name in the **Search** text box.
- Create a filter query by using the **New filter** option by performing the following steps:
  - a. Click **New filter**.
  - b. Select an operator, and add a rule, or a group of rules.
  - c. Add or enter the relevant parameters and either select or enter the condition and the criteria for the condition.

You can select a parameter from the following list:

- Type
- Name
- Started by

- Started on
  - Finished on
  - Status
  - Verdict
- d. Apply the filter query to filter the assets based on the query.


The test assets that match the filter criteria are displayed.

- e. Save the filter query by performing the following steps, if you want to reuse the filter query later:

- i. Click **Save**.
  - ii. Enter a name for the filter query.
  - iii. Click **Save**.
- Retrieve a saved filter, if you have saved filter queries earlier by performing the following steps:



**Note:** To open the filter query, you must have created and saved a filter query.




- a. Click the **Open filters** icon .
- b. Select the saved filter in the **Filters** dialog box.
- c. Click **Apply** to apply the filter.

The test assets that match the filter criteria are displayed.

- Sort the test assets by the user who started the test by clicking the **Started by** column header, and find the test asset listed against your name.
- Sort the test assets by the type of the test assets by clicking the **Type** column header, and find the test asset type you ran or scheduled.
- Click **Hide inactive** to only display the test assets that are running or scheduled to run. This action removes all completed, canceled, stopped, or failed test assets from the display.



**Note:** The items in the rows are sorted in an ascending or descending order when the column header is clicked. The following icons show the status of sorting in a column:

-  items in the column are not sorted.
-  items in the column are sorted in the ascending order or with the earliest record on top.
-  items in the column are sorted in the descending order or with the latest record on top.

You can view the following details of the test assets on the **Progress** page:

Column header	Description
Type	Displays the icon for the type of the test asset.



Column header	Description
Name	Displays the name of the test asset added to the project from the Git repository.
Started by	Displays the name of the user who started the run of the test asset.
Started on	Displays the date and time when the test run was started.
Finished on	Displays the date and time when the test run completed the run.
Status	<p>Displays the state of the test asset progressively.</p> <p>For example, after the run is in the <code>Initiated</code> state, it moves on to the <code>Running</code> state and ends in its final state depending on the verdict of the test run as either <code>Completed</code>, <code>Failed</code>, or <code>Inconclusive</code>.</p> <p>If the test run is stopped or a scheduled run is canceled, the status displayed is <code>Stopped by User</code> for a stopped run or <code>Canceled</code> for a canceled test.</p>

From the **Actions** column, you can perform the following operations on your test asset:


- Stop a run.
- Cancel a scheduled run.
- Monitor a VU Schedule, Rate Schedule, Compound Test, or an AFT Suite.
- View the execution log.
- View the result of the test asset on the **Results** page.

## Results

You have viewed the progress of the test assets that you ran from the **Execution** page.

## What to do next

You can choose to perform any of the following tasks from the **Progress** page:

- Stop test assets that are running. See [Stopping test runs on page 268](#).
- Cancel scheduled runs. See [Canceling scheduled test runs on page 271](#).
- Monitor tests (such as the Schedules, Compound Test, and AFT Suites). See [Monitoring a test run](#).
- View the results or the execution log of the test asset from the **Actions** column by clicking the **Open action menu** icon . See [Checking logs on page 266](#).
- View the results, reports, and logs of the completed test run from the **Results** page. See [Test results on page 318](#).

## Checking logs

To verify how the test ran or to debug test run failure, you can check the `Test Log` and `Execution log`.

### About this task

The `Test Log` displays the interaction between Rational® Test Automation Server and the application or system under test. After the test run completes, the verdict of the run can be *Pass*, *Fail*, or *Inconclusive*. If the verdict of the run is *Pass*, the `Test Log` is available in the **Results** page.

The screenshot shows a test run summary for 'cmptest-1'. The test path is 'WebUIProjectCustomCode/CompoundTests/cmptest-1.testsuite', the user is 'uatester', and the duration is '00:02:28'. The status is 'Complete' with a green progress bar and a 'Pass' verdict. Below the summary, there are two panels: 'DETAILS' and 'Reports'. The 'DETAILS' panel shows Git information: 'Git Repo' is 'git@github.com:ibm-rational/ibm-rational-test-server-sample.git', 'Git Branch' is 'master', and 'Git Path' is 'WebUIProjectCustomCode/CompoundTests/cmptest-1.testsuite'. The 'Reports' panel contains three links: 'Statistics Report', 'Test Log', and 'Mobile and Web UI Report'.

The `Execution log` displays the console messages of the run time process that runs the test. This log is useful in determining the cause of the failure if the verdict of the run is *Fail* or *Inconclusive*. You can view the `Execution log` from the **Progress** page.

### Viewing the `Test Log`

1. Go to the **Results** page and identify the test that you ran.
2. Click the test so that the **Reports** panel is displayed.
3. Click the **Test Log** in the **Reports** panel.

The `Test Log` is displayed in a browser window.

### Viewing the `Execution log`

4. Go to the **Progress** page and identify the test that is in the *Running* state.
5. Click the **Open action menu** icon.
6. Click **Execution log**.

The `Execution log` is displayed in a browser window.

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#### Related information

[Test run configurations on page 190](#)

Monitoring a test run

## Resetting the configuration settings for a test run

When you are configuring a test run either as a first-run or when repeating the run, and you do not want to proceed with the settings configured or saved for the test run, you can reset the configuration settings. Resetting the configuration reverts all the settings to their default values for the test run.

### Before you begin

You must be a member of the project with the *Owner* or *Tester* role to run the tests.

You must ensure that you have the **Execute test asset** dialog box is displayed before you proceed with resetting the configuration settings for the test run.

### About this task

You can reset the configuration settings when you are configuring a test run either for its first run or when you are repeating the test run.

1. Click **Reset** in the **Execute test asset** dialog box at any point when you want to reset the configuration settings for the test run.



#### Notes:

- If you have configured some or all of the settings for the current test run and you do not want to continue with those settings, clicking **Reset** resets the settings to their default values.
- If you are repeating a test run and do not want to use the saved settings from a previous run, clicking **Reset** reverts all the saved settings to their default values.

The settings in the **Execute test asset** dialog box are reset to their default values.

2. Use the following table to find the default values for each of the settings in the **Execute test asset** dialog box:

Window or Tab	Field or Setting	Default value is
<b>Execute test asset</b>	Scheduling the test run	<b>Now</b> is selected.
<b>Execute test asset</b>	Label for settings	Null or empty field.
<b>Advanced</b>	<b>JVM Arguments</b>	Null or empty field.
	<b>Program Arguments</b>	Null or empty field.
	<b>Environment Variables</b>	Null or empty field.
<b>ENVIRONMENT</b> tab	API test environment	The environment configured in the test asset.
	Secrets collection	Null or empty field.
<b>DATA SOURCES</b> tab	<b>Override</b> list	Null or empty field if the asset has no dataset.

Window or Tab	Field or Setting	Default value is
		The dataset in the test asset if the asset has one dataset.
		The first dataset on the list of datasets, which are listed in the increasing alphabetical order, if the asset has multiple datasets.
<b>VARIABLES</b> tab		Null or empty field.
<b>LOCATION</b> tab	Agents	Null or empty field if the asset has no agents configured.
		The first agent on the list of agents, which are listed in the increasing alphabetical order, if the asset has multiple agents configured.
	Docker host	Internal Docker host if no remote Docker hosts are added.
		<b>No override options</b> if other Docker hosts are saved in previous runs.

### What to do next

You can complete configuring the settings that you want for the test run. See [Test run configurations on page 190](#).

## Stopping test runs

You might want to stop a test run or multiple tests that are running when you realized that you did not configure all the settings or you want to change a few settings for the test runs.

### Before you begin


You must have initiated a run for one or multiple test assets from the **Execution** page.

### About this task



You can stop either a running test or multiple running tests from the **Progress** page. You can stop the test if it is in either the *In transition* or *Running* state. You cannot stop the test run if the test has already completed its run.

1. Go to the **Progress** page and identify the tests in any of the following ways that you want to stop:

You can select the tests that satisfy the following conditions:

- The test must be either in the *In transition* or *Running* state.
- The **Stop execution** icon  in the **Actions** column must be enabled for the test.
- The checkbox must be enabled for the test.


2. Perform the actions in the following table:

If...	Action...
You want to stop any test that is running	Perform any of the following actions: <ul style="list-style-type: none"> <li>◦ Click the <b>Stop execution</b> icon  in the <b>Actions</b> column of the selected test.</li> <li>◦ Click the checkbox in the row of the selected test, and then click <b>Stop selected</b>.</li> </ul> The <b>Stop execution</b> dialog box is displayed.
You want to stop multiple tests that are running	Perform any of the following actions: <ul style="list-style-type: none"> <li>◦ Click the checkbox in the row of the selected tests, and then click <b>Stop selected</b>.</li> <li>◦ Click the <b>Select all</b> checkbox in the header row, and then click <b>Stop selected</b>.</li> </ul> <div style="text-align: center;">  <b>Note:</b> All running tests are selected when you click the <b>Select all</b> checkbox.         </div> The <b>Stop execution</b> dialog box is displayed.

3. Perform the following steps in the **Stop execution** dialog box that is displayed:

- a. Set the timeout period for stopping the test run. Enter a numeric value and select the unit from the options available as *Seconds*, *Minutes*, or *Hours*.

The time out period is the time during which the test run is allowed to stop on its own and after the timeout period, the test is forced to stop abruptly.

 **Important:** If the timeout period is not set, a value of *30 seconds* is considered as the default timeout period.

- b. Perform any of the following actions:

- Keep the **Capture results** option selected, if you want the results to be captured for the test.

The captured results for the test are available to view from the **Results** page.

- Clear this option if you do not want to capture the results.



**Note:** The **Capture results** option is selected as the default option.



**Important:** The results are always captured for API suites even if you clear the **Capture results** option.

c. Perform any of the following actions:

- Keep the **Execute 'finally-block', if present** option selected, if you want the *finally-block* code in the test script, if present, to be run before the test run is stopped.
- Clear this option if you do not want to run the *finally-block* code in the test script.



**Note:** The option **Execute 'finally-block', if present** is selected as the default option.



**Restriction:** The *tear-down* steps equivalent to the **'finally-block'** code, if present in API suites are not controllable at test runtime. The **Execute 'finally-block', if present** option has no impact on API suites.

d. Click **Stop execution**.

A notification is displayed that the running tests are stopped.




**Note:** If the test run completes before you can configure the options for stopping the test run, a notification is displayed in the **Stop execution** dialog box that the test asset has completed its run.

## Results

You have successfully stopped a running test or stopped multiple running tests. The stopped test runs are displayed on the **Progress** page with the status as *Stopped by User*. Stopped tests are not considered in the count of tests executed that are displayed on the **Overview** page.

## What to do next

You can re-initiate the test run from the **Execution** page or from the **Results** page by completing the configurations that you want for the test.

You can view the results or the execution log of the stopped test from the **Actions** column on the **Progress** page by clicking the **Open action menu** icon .

### Related information

[Test run configurations on page 190](#)

[Viewing the progress of running test assets on page 263](#)

[Canceling scheduled test runs on page 271](#)

## Canceling scheduled test runs

You might want to cancel a scheduled test run or multiple scheduled test runs when you realized that you did not configure all the settings for the runs, want to change a few settings, or do not want those tests to run.

### Before you begin


You must have scheduled runs for one or multiple test assets from the **Execution** page.


### About this task


You can cancel either one scheduled test or multiple scheduled tests from the **Progress** page.

1. Go to the **Progress** page and identify the tests in any of the following ways that you want to cancel:

You can select the tests that satisfy the following conditions:

- The test must be in the `scheduled` state.
  - The **Cancel** icon  in the **Actions** column must be enabled for the test.
  - The checkbox must be enabled for the test.
2. Perform the actions in the following table:

If...	Action...
You want to cancel any test run that is scheduled	Perform any of the following actions: <ul style="list-style-type: none"> <li>◦ Click the <b>Cancel</b> icon  in the <b>Actions</b> column of the selected test.</li> <li>◦ Click the checkbox in the row of the selected test, and then click <b>Stop selected</b>.</li> </ul> The <b>Cancel scheduled execution</b> dialog box is displayed.
You want to stop multiple test runs that are scheduled	Perform any of the following actions:

If...	Action...
	<ul style="list-style-type: none"> <li>◦ Click the checkbox in the row of the selected tests, and then click <b>Stop selected</b>.</li> <li>◦ Click the <b>Select all</b> checkbox in the header row, and then click <b>Stop selected</b>.</li> </ul> <p style="text-align: center;"> <b>Note:</b> All scheduled tests are selected when you click the <b>Select all</b> checkbox.</p> <p>The <b>Cancel scheduled execution</b> dialog box is displayed.</p>

3. Click **Yes** in the **Cancel scheduled execution** dialog box.

#### Result

.

A notification is displayed that the scheduled test runs are canceled.

#### Results

You have successfully canceled a scheduled test or multiple scheduled tests. The canceled test runs are displayed on the **Progress** page with the status as *Canceled*. The canceled test runs are not displayed on the **Results** page and are not considered in the count of tests executed that are displayed on the **Overview** page.

#### What to do next

You can re-initiate the test run from the **Execution** page by completing the configurations that you want for the test.

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#### Related information

[Test run configurations on page 190](#)

[Viewing the progress of running test assets on page 263](#)

[Stopping test runs on page 268](#)

## Management of virtualized services



**Disclaimer:** This release contains access to the Virtual services that virtualize the Istio based services feature in IBM® Rational® Test Automation Server as a Tech Preview. The Tech Preview is intended for you to view the capabilities for virtualized services offered by Rational® Test Automation Server, and to provide your feedback to the product team. You are permitted to use the information only for evaluation purposes and not





for use in a production environment. IBM provides the information without obligation of support and "as is" without warranty of any kind.

You can find information about the tasks that you can perform on and manage the virtualized services that run on Rational® Test Automation Server. You can start or stop the virtual services that are connected to Rational® Test Automation Server. You can view the routing rules and usage statistics of virtualized services, agents, or intercepts that are connected to Rational® Test Automation Server.

You must create stubs or virtual services in Rational® Integration Tester for the following types of services. You must commit the virtual service resources to a remote repository and then add the repository to your project on Rational® Test Automation Server before you can run the virtual services on Rational® Test Automation Server:

- Virtual services that utilize the WebSphere® MQ transport.
- Virtual services that utilize the HTTP transport.
- Virtual services that virtualize the Istio based services. You can run virtual services for the following types of requests received or sent by the Istio service mesh:
  - Requests received by services in the Istio service mesh.
  - Requests sent from namespaces in the Istio service mesh to external services that are not in the Istio service mesh.



**Important:** You can run virtual services only in the **Default Cluster** location of Rational® Test Automation Server. You cannot run virtual services on a remote Docker host.

The following are the considerations that decide how a container of the Rational® Test Automation Server cluster is selected to run virtual services:

- Before a container is selected to run a virtual service, it is checked for a previous failure to start a virtual service or for a low heap size, and other conditions. If the container was not found suitable, then it is not selected for running the virtual service.
- Multiple virtual services can be run in the same container if the following conditions are satisfied:
  - Subsequent virtual services are started by the same project member.
  - All virtual services are created and contained in the same Rational® Integration Tester project.
  - The requests to run the virtual services refer to the same version, meaning that the git commit IDs on which they are based are the same. If you use the UI, this means that the **Version** field in the **Execute virtual service** dialog box are the same.
  - The settings that you configure in the **Advanced** settings for the virtual services are the same.
  - The datasets selected for an override are the same, if datasets are used.

## Working with virtual services

You can perform the following tasks on virtual services on Rational® Test Automation Server:

- Read about the considerations before you configure a run of the virtual services. See [Prerequisites for running virtual services on page 274](#).
- Read about the considerations before you configure a run of the Istio based services that are virtualized. See [Prerequisites for running virtualized Istio based services in IBM Rational Test Automation Server on page 276](#).
- Set up the HTTP proxy, if you have configured stubs in the test assets to use an HTTP proxy to route requests. See [Setting up the HTTP proxy on page 278](#).
- View all intercepts that are registered with Rational® Test Automation Server including those that you have not configured. See [Viewing intercepts that are registered with a team space on IBM Rational Test Automation Server on page 280](#).
- View virtual service resources in the test assets that are in the repositories added to a project on Rational® Test Automation Server. [Viewing virtual service resources on page 281](#).
- Configure runs of virtual services. See [Configuring a run of a virtual service on page 284](#).
- Configure runs of HTTP virtual services to run without using proxies. See [Running HTTP virtual services without using proxies on page 296](#).
- Run Istio stubs that were created in Rational® Integration Tester to virtualize services in the Kubernetes cluster on which Rational® Test Automation Server is installed.
- View running instances of virtual services. See [Viewing running instances of virtual services on page 301](#).
- View configurations of a running virtual service instance. See [Viewing configurations of running instances of virtual services on page 306](#).
- Modify the configurations of a running virtual service instance. See [Modifying configurations of running instances of virtual services on page 311](#).
- View details of the usage statistics of the virtual services. See [Viewing usage statistics of virtual services on page 315](#).
- View routing rules of the intercepts. See [Viewing routing rules of the virtual services on page 313](#).
- Stop a running virtual service instance. See [Stopping virtual services on page 317](#).

## Prerequisites for running virtual services


You can find information about the prerequisite tasks that you must complete before you configure a run of the virtual services on IBM® Rational® Test Automation Server.

## Prerequisites for running HTTP virtual services

You can find information about the tasks that you must complete before you configure a run of the HTTP virtual services on IBM® Rational® Test Automation Server.

## Conditions for running of HTTP virtual services

Before you run the HTTP virtual services from Rational® Test Automation Server, you must check for the following conditions and perform the actions indicated:

If...	Then...
<p>You want to route the HTTP traffic via the HTTP proxy either to the virtual service or live systems, based on routing rules.</p>	<p>You must set up the HTTP proxy. See <a href="#">Setting up the HTTP proxy on page 278</a>.</p>
<p>You are working with Rational® Test Automation Server V10.1.3, which is installed on Ubuntu.</p>	<p>HTTP virtual services are exposed via host names are of the following form:</p> <pre>in-&lt;unique_id&gt;.&lt;INGRESS_DOMAIN&gt;</pre> <p> <b>Note:</b> The DNS used by a computer that runs a client application or the HTTP proxy that routes traffic to the virtual service needs to resolve such host names to the IP address of the ingress domain.</p> <p>You must perform the following actions that depend on the method you have used to set up the ingress domain:</p> <ul style="list-style-type: none"> <li>• If you used <code>nip.io</code> to form the ingress domain, then that virtual services host names are automatically resolved to the IP address of the ingress domain.</li> </ul> <p>For example, if you used <code>nip.io</code> to form the ingress domain as follows:</p> <pre>10.1.2.3.nip.io</pre> <p>The virtual services host names are resolved by <code>nip.io</code> to the IP address as <code>10.1.2.3</code>.</p> <ul style="list-style-type: none"> <li>• If your ingress domain does not use <code>nip.io</code> then you must ensure that the DNS in use by the client application or the HTTP proxy can resolve host names of the virtual services to the IP address of the ingress domain. For example, if the ingress domain is as follows:</li> </ul> <pre>myhost.mycom.com</pre> <p>The DNS must resolve <code>*.myhost.mycom.com</code> to the IP address of <code>myhost.mycom.com</code>.</p>

## HTTPS virtual service endpoints

When you want to run an HTTP virtual service where the HTTP transport settings have **Use SSL** enabled, the virtual service endpoint that is exposed for the virtual service instance expects an HTTPS request. The exposed endpoint is managed by the same ingress controller or the HAProxy that is used for the server endpoints. The SSL/TLS termination occurs at the endpoint before the request is routed to the virtual service instance and results in the following implications:

- The **Virtualization (Server) SSL** options that are specified in the HTTP transport have no effect.
- The certificate served by the exposed virtual service endpoint is the same as that of server.

## Collection of usage metrics

If you want Rational® Test Automation Server to display the usage statistics of the virtual service instances, you must install the Prometheus server at the time of server installation.

---

Related information

[Setting up the HTTP proxy on page 278](#)

[Running HTTP virtual services without using proxies on page 296](#)

## Prerequisites for running virtualized Istio based services in IBM® Rational® Test Automation Server



**Disclaimer:** This release contains access to the Virtual services that virtualize the Istio based services feature in IBM® Rational® Test Automation Server as a Tech Preview. The Tech Preview is intended for you to view the capabilities for virtualized services offered by Rational® Test Automation Server, and to provide your feedback to the product team. You are permitted to use the information only for evaluation purposes and not for use in a production environment. IBM provides the information without obligation of support and "as is" without warranty of any kind.

You can find information about the tasks that you must complete before you run virtualized Istio based services in Rational® Test Automation Server.

## Configuring virtualized Istio based services in Rational® Test Automation Server

When you intend to virtualize services in the Istio mesh in Rational® Test Automation Server, you can create stubs in Rational® Integration Tester.

When you create the Istio stubs in Rational® Integration Tester, you must ensure that you are aware of the fully qualified domain name (FQDN) or the short name of the service that you want to virtualize in the Kubernetes cluster that hosts Rational® Test Automation Server.

The FQDN of the service is as follows:

```
<service-name>.<namespace>.<svc>.<cluster-name>
```

The short name of the service is as follows:

```
<service-name>
```

For example, if you want to virtualize the HTTP traffic in the service named as *reviews* that runs in a namespace named as *bookinfo*, and in the resource named as *svc* in the Kubernetes cluster named as *mycluster*, then the FQDN of the service is as follows:

```
reviews.bookinfo.svc.mycluster
```

The short name of the service is as follows:

```
reviews
```

You must enter the host of the service that you want to virtualize, in the **Host** field of the physical transport in Rational® Test Automation Server. You can provide either the FQDN or the short name of the service.



**Note:** The pass-through action in the stubs is not supported.

### Considerations for running of stubs that virtualize Istio services

Before you run the stubs that virtualize services in namespaces contained in the Rational® Test Automation Server Kubernetes cluster, you must install Rational® Test Automation Server with the *demo* configuration.

When you install Rational® Test Automation Server by using the *demo* configuration, then Rational® Test Automation Server is preconfigured to use the **bookinfo** namespace as the virtualization namespace.



**Note:** You can change or add virtualization namespaces by adding the helm installation argument `execution.istio.namespaces` along with a list of namespaces in a helm command.

After you author the virtualized Istio based services, you must commit the virtual service resources to a repository and add the repository to the project on Rational® Test Automation Server. You can configure a run of the virtualized Istio service. See [Configuring a run of a virtual service on page 284](#).

### Collection of usage metrics

If you want Rational® Test Automation Server to display the usage statistics of the virtual service instances, you must install the Prometheus server at the time of server installation.

---

Related reference

[Installation of the server software on page 25](#)

## Setting up the HTTP proxy

When you want to run HTTP virtual services on IBM® Rational® Test Automation Server, you can set up an HTTP proxy to route requests to the virtual service. You must configure the HTTP proxy with the Rational® Test Automation Server URL and offline user token generated from Rational® Test Automation Server so that the HTTP proxy can register with Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Installed the proxy component from Rational® Test Control Panel of the same version as that of Rational® Test Automation Server.
- Read the following procedures:
  - Generating offline user tokens. See [Managing access to IBM Rational Test Automation Server on page 418](#).
  - Viewing the *Team Space ID* as the URL alias of the team space. See [Viewing the configuration of a team space on page 426](#).



### About this task

You must edit the `registration.xml` file that is located in the `<RTCP_install_directory>\httptcp` directory for the following attributes:

- **server base-url**
- **security-token**
- **team-space-id**

You must enter the Rational® Test Automation Server URL, offline user token, and the ID of the team space to which the proxies must register as the values for the attributes. After you restart the proxy, the HTTP proxy registers with the team space on Rational® Test Automation Server. You can view the registered intercepts from the **Infrastructure > Agents and Intercepts** page in your team space.

1. Perform the following steps in Rational® Test Automation Server:
  - a. Log in to Rational® Test Automation Server.

The **Team Space Dashboard** page is displayed.
  - b. Generate the offline user token by clicking the **User** icon  and then click **Create Token**.
  - c. Copy the offline user token to a text file.
  - d. Click the **Settings** icon  of the team space in the **My Team Spaces** page.

The **Team Space Configuration** page is displayed.

- a. Copy the text that is displayed under **URL alias** as the *Team Space ID*.
2. Perform the following steps to edit the `registration.xml` file that is located in the `<RTCP_install_directory>\httptcp` directory on the computer on which you have installed Rational® Test Control Panel:
    - a. Open the `registration.xml` file by using a text editor.
    - b. Enter the values for the following attributes:



**Note:** If an entry exists, you must either comment out that entry and add a new one or replace the contents with the values indicated.

Attribute	Value
<b>server base-url</b>	URL of Rational® Test Automation Server
<b>security-token</b>	Offline user token generated from Rational® Test Automation Server
<b>team-space-id</b>	ID of the team space to which the proxies must register

- c. Save and close the file.
  - d. Restart the HTTP proxy.
3. Perform the following steps in Rational® Test Automation Server to view the HTTP proxies that are registered in the team space:
    - a. Log in to Rational® Test Automation Server.
    - b. Click **Infrastructure > Agents and Intercepts** to view the registered intercepts.

The HTTP proxies that you configured with your offline user token and *Team Space ID* are displayed.

## Results

You have successfully configured the HTTP proxies and viewed that they are registered in the team space on Rational® Test Automation Server.

## What to do next

You can perform the following tasks:

- Read for the prerequisite tasks that you must perform before you can run the HTTP stubs. See [Prerequisites for running HTTP virtual services on page 274](#).
- Run the virtual service resource. See [Configuring a run of a virtual service on page 284](#).

- View the routing rules for the intercept. See [Viewing routing rules of the virtual services on page 313](#).
- View the routing rules for the intercept in a running instance of the virtual service. See [Viewing configurations of running instances of virtual services on page 306](#).

## Viewing intercepts that are registered with a team space on IBM® Rational® Test Automation Server

After you install the HTTP proxies and configure them with your offline user token, the proxies register with Rational® Test Automation Server in a team space as intercepts and you can view the registered intercepts on the **Agents and Intercepts** page for the team space.

### Before you begin

You must have completed the following tasks:

- Completed the prerequisite tasks before you configure a run of the HTTP virtual services. See [Prerequisites for running HTTP virtual services on page 274](#).
- Read the prerequisite information about virtualizing the Istio based services. See [Prerequisites for running virtualized Istio based services in IBM Rational Test Automation Server on page 276](#).
- Installed the HTTP proxies of the same version as the version of Rational® Test Automation Server.
- Configured the HTTP proxy with your offline user token so that the proxy can register as an intercept with Rational® Test Automation Server. See [Setting up the HTTP proxy on page 278](#).
- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Click **Infrastructure > Agents and Intercepts** in the navigation pane.

The **Agents and Intercepts** page is displayed.

You can view the agents, intercepts, or Docker hosts that are registered in the team space on Rational® Test Automation Server.

3. You can view the intercepts that you own in any of the following ways:

- Search for the intercept by entering the name of the intercept in the **Search** field.



**Note:** You can enter either the full name or any text that is in the name. The search is enabled for case-sensitive text that you can enter.

- Sort the **Type** column to show the items sorted with the intercepts in the rows at the top of the table.
- Sort the **Agents** column and identify the intercepts by their names or by their owner.



You can view the following details about the intercepts that are registered with Rational® Test Automation Server:

- `Any project` is displayed in the **Projects** column indicating that the intercept can be used by virtual services in any project.
- The status of the intercept is displayed in the **Status** column.

## Results

You have viewed the registered intercepts from the **Agents and Intercepts** page.

## What to do next

You can start the virtual services that use the registered intercepts. See [Configuring a run of a virtual service on page 284](#).

## Viewing virtual service resources

When project repositories contain virtual service resources and you want to view the resources so that you can start them, you can view the virtual services from the **Resources** page in your team space on Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- 
- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Viewer*, *Tester*, or *Owner* role in the project.

### About this task

After you have committed the test assets and resources to the remote repositories and added the repositories to projects in your team space on Rational® Test Automation Server, you can go to the **Resources** page and perform the following tasks:

- View the virtual service resources that are contained in any branch of the repositories that are added to your project.
- View the components in the System Model that are associated with the virtual service resources.
- Create or use saved filters for viewing virtual service resources.
- Run or start an instance of the virtual service resource.
- View the number of instances of the virtual service resources that are running.
- View all instances of a running virtual service on the **Instances** page by clicking the **Show in instances page**

icon .

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the virtual service resources in the test assets by clicking **Projects > My Projects > *project\_name***.





The **Overview** page is displayed.

3. Click **Virtualization > Resources** in the navigation pane.

The **Resources** page is displayed.

4. Complete the steps for the task that you want to perform as listed in the following table:

Task	Action
Viewing the virtual service resources that are contained in a branch of any of the repositories that are added to your project.	<p>Select the branch of the repository that contains the virtual services that you want to run from the list in the <b>Branch</b> field.</p> <p>All virtual services in the selected branch are displayed on the <b>Resources</b> page.</p>
Viewing the components that are associated with the virtual service resource.	<p>The components that are associated with the virtual service resource are displayed in the <b>Components</b> column.</p> <p>Click the component in the <b>Components</b> column to view the virtual resource on the <b>System Model</b> page.</p>
Creating or using saved filters for viewing specific instances of virtual service resources.	<p>To create a query, perform the following actions:</p> <ol style="list-style-type: none"> <li>a. Click <b>New filter</b>.</li> <li>b. Create a rule with an appropriate operator.</li> <li>c. Select criteria such as <i>Name, Path, Instance number, Instance state, or Components</i>.</li> <li>d. Select the condition, and then enter the value for the criteria.</li> <li>e. Apply the filter query.</li> </ol> <p>The virtual services that match the filter criteria are displayed.</p> <ol style="list-style-type: none"> <li>f. Save the filter query for retrieving it from the saved filters list.</li> </ol> <p>To use a saved filter query, perform the following actions:</p>

Task	Action
	<p> <b>Note:</b> To open the filter query, you must have created and saved a filter query.</p> <ol style="list-style-type: none"> <li>Click the <b>Open filters</b> icon .</li> <li>Select the saved filter.</li> <li>Apply the filter.</li> </ol> <p>The virtual services that match the filter criteria are displayed.</p>
Running an instance of the virtual service resource.	<p>After you identify the virtual service that you want to run, perform the following actions:</p> <ol style="list-style-type: none"> <li>Click the <b>Execute</b> icon  in the row of the identified virtual service.</li> </ol> <p>The <b>Execute virtual service</b> dialog box is displayed.</p> <ol style="list-style-type: none"> <li>Run the virtual service with the settings that are configured in the resource by clicking <b>Execute</b> or modify any of the settings, and then click <b>Execute</b>.</li> </ol> <p>An instance of the virtual service starts to run. The virtual service is displayed with the state as <code>Running</code> along with the number of instances that are running in the <b>Active instances</b> column.</p>
Viewing the number of instances of the virtual service resources that are running.	<p>If any of the virtual services in the project repositories are started by any project member with the <i>Tester</i> or <i>Owner</i> role, you can view the number of instances that are running or active from the <b>Resources</b> page.</p> <p>The virtual services are displayed with the state as <code>Running</code> along with the number of instances that are running, in the <b>Active instances</b> column.</p>
Viewing all instances of a running virtual service.	<p>Click the <b>Show in instances page</b> icon  in the row of the virtual service on the <b>Resources</b> page.</p> <p>The <b>Instances</b> page is displayed with all the running instances of a particular virtual service.</p> <p>You can also view the number of requests that are received by the virtual service. The number of requests is displayed as the number of hits when you hover the cursor over the text in the <b>Activity</b> column.</p>

## Results

You have viewed virtual services from the **Resources** page on Rational® Test Automation Server.

---

Related information

[Configuring a run of a virtual service on page 284](#)

## Configuring a run of a virtual service



**Disclaimer:** This release contains access to the Virtual services that virtualize the Istio based services feature in IBM® Rational® Test Automation Server as a Tech Preview. The Tech Preview is intended for you to view the capabilities for virtualized services offered by Rational® Test Automation Server, and to provide your feedback to the product team. You are permitted to use the information only for evaluation purposes and not for use in a production environment. IBM provides the information without obligation of support and "as is" without warranty of any kind.

When you have virtual service resources that are in the repositories added to your project, you must configure a run of the virtual service to start an instance of the virtual service on IBM® Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Tester* or *Owner* role in the project to run virtual services.
- 
- Completed the prerequisite tasks before you configure a run of the HTTP stubs. See [Prerequisites for running HTTP virtual services on page 274](#).
- Read the prerequisite information about virtualizing the Istio based services before you can run the virtualized service on Rational® Test Automation Server. See [Prerequisites for running virtualized Istio based services in IBM Rational Test Automation Server on page 276](#).

### About this task

You can start the following types of stubs contained in API Suites from the **Resources** page on Rational® Test Automation Server:

- Virtual services that utilize the WebSphere® MQ transport.
- Virtual services that utilize the HTTP transport.
- Virtual services that virtualize the Istio based services. You can run virtual services for the following types of requests received or sent by the Istio service mesh:

- Requests received by services in the Istio service mesh.
- Requests sent from namespaces in the Istio service mesh to external services that are not in the Istio service mesh.

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the virtual service resources in the test assets by clicking **Projects > My Projects > *project\_name***.

The **Overview** page is displayed.

3. Click **Virtualization > Resources** in the navigation pane.

The **Resources** page is displayed.

4. Select the branch of the repository that contains the virtual services that you want to run from the list in the **Branch** field.

All virtual services in the selected branch are displayed on the **Resources** page.

5. Identify the virtual service that you want to run by completing any of the following steps:

- Search for the virtual service by entering the name or the path of the virtual service in the repository in the **Search** field box.
- Create a filter query by using the **New filter** option and complete the following steps:
  - a. Create a rule with an appropriate operator.
  - b. Select criteria such as *Name*, *Path*, *Instance number*, or *Instance state*. Select the condition and enter the value for the criteria. Apply the filter query.

The virtual services that match the filter criteria are displayed.

c. Save the filter query for retrieving it from the saved filters list.


- Retrieve a saved filter by using the **Open filters** icon  by completing the following steps:



**Note:** To open the filter query, you must have created and saved a filter query.

- a. Select the saved filter.
- b. Apply the filter.

The virtual services that match the filter criteria in the filter that is applied are displayed.

6. Click the **Execute** icon  in the row of the identified virtual service.

The **Execute virtual service** dialog box is displayed.

7. Select the version of the virtual service that is in the repository that you want to start by performing any of the following actions:

- Expand the list in the **Version** field, find the version of the test resources, and then select the version.

Use the following details about the version of the test resources that are displayed to identify the version that you want:

- Commit message.
- Tags labeled for the version committed.
- The user who committed the version to the repository.
- Relative time of the commit. For example, *2 hours ago* or *3 days ago*.

The list displays the versions of the test resources committed by all users to the branch in the repository. The versions are arranged with the latest version committed followed by the versions committed previously.

- Expand the list in the **Version** field, and then search for the version that you want to select by entering a partial or the complete commit message of that version.

The version that matches the search criteria is displayed and it is selected for the test run.

8. Select the environment that was used to bind the physical and logical resource in the API project, in the **ENVIRONMENT** tab.



**Important:** The configuration that you set for the run in the **Execute virtual service** dialog box is preserved when you run the same virtual service again. The configurations that you set are not available to other members when they want to run the virtual service. For example, if you selected an environment, the same environment is selected when you run the virtual service again.

9. Enter a label, if required.

A label that you enter for the test run that helps you to identify the virtual service instance on the **Instances** page. The label that you entered is displayed for the virtual service under the **Labels** column on the **Instances** page. After you have created a label, any member of the project can use that label.

10. Follow the instructions if you want to modify the configurations for the behavior of the virtual service:

- a. Click the **BEHAVIOR** tab, if it is not already open.
- b. Configure or change the settings for the following options:



**Note:** The settings displayed are the settings that were configured for the virtual service when it was authored in Rational® Integration Tester.

Option	Description
Performance	The following settings are available for handling of requests by the virtual service:

Option	Description					
	<table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> </table>	Option	Description			
Option	Description					
	<b>Optimize performance</b>	<p>If enabled, attempts are made to reduce the amount of processing between the time the virtual service receives a request and the time it sends a response. Specific optimizations depend on the message contents, as in the following examples:</p> <ul style="list-style-type: none"> <li>▪ When the virtual service receives requests, all validations are disabled, and for all XML payloads, the store and filter actions are converted to use XPath expressions.</li> <li>▪ When the virtualization sends responses, any store actions set on a message are disabled, and any XML content is collapsed when the virtual service is compiled instead of being collapsed every time that a response is sent.</li> </ul> <p>The optimization is disabled as the default action for this setting and you can enable the performance optimization if you fully understand the implications of optimizing the performance.</p>				
	<b>Threads</b>	<p>The maximum number of threads used in processing requests received by the virtual service. The default number of threads is <i>10</i>.</p>				
Operation	Specifies an operation referenced by the virtual service.					
Response time	<p>Specifies the response time behavior for responses sent by the virtual service for the selected operation.</p> <p>You can modify the value by selecting a value from the following options:</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>No delay</td> <td>Select this option for a response with no delay.</td> </tr> </tbody> </table>		Option	Description	No delay	Select this option for a response with no delay.
Option	Description					
No delay	Select this option for a response with no delay.					

Option	Description							
	<table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> </table>	Option	Description					
Option	Description							
	Minimum delay	Select this option for a delay in the response by entering the required delay in milliseconds (ms).						
	Uniform distribution	Select this option for a uniformly distributed response time by specifying the minimum and maximum delay in milliseconds (ms).						
	Gaussian distribution	Select this option for a response time with Gaussian distribution by specifying the minimum and maximum delay in milliseconds (ms).						
Passthrough	<p>Specifies the pass through behavior for the selected operation when requests are not handled within the virtual service.</p> <p>You can modify the value by selecting a value from the following options:</p> <table border="1"> <tbody> <tr> <td>Discard</td> <td>This option stops the system under test from receiving the intercepted message. This option can disrupt the calling system. For example, the system might time out while it waits for a reply.</td> </tr> <tr> <td>Pass Through</td> <td>This option passes the intercepted message to the system under test, with an optional delay.</td> </tr> <tr> <td>Simulate Error</td> <td>This option returns an error to the calling system. The message is not passed to the system under test.</td> </tr> </tbody> </table>		Discard	This option stops the system under test from receiving the intercepted message. This option can disrupt the calling system. For example, the system might time out while it waits for a reply.	Pass Through	This option passes the intercepted message to the system under test, with an optional delay.	Simulate Error	This option returns an error to the calling system. The message is not passed to the system under test.
Discard	This option stops the system under test from receiving the intercepted message. This option can disrupt the calling system. For example, the system might time out while it waits for a reply.							
Pass Through	This option passes the intercepted message to the system under test, with an optional delay.							
Simulate Error	This option returns an error to the calling system. The message is not passed to the system under test.							



11. Follow the instructions, if the virtual service references datasets.

- You can use the dataset referenced in the asset.
- You can choose to override the dataset with another data source. If alternative data sources are available, select from the set of overrides available.

12. Follow the instructions if the virtual service requires a variable that must be passed at run time.

- a. Click the **VARIABLES** tab, if it is not already open.
- b. Choose one of the following methods to add the variables:



- To add new variables manually, click the **Add Variable** icon , enter the name, and value of the variable.
- To add new variables from your local computer or from the Git repository that is associated with your server project, click the **Upload** icon  and select the **Upload from local system** or **Browse from server** to select the variable file.



**Note:** You must have created a file with the variables before you can select the file.

13. Click **Advanced** to make the following advanced configurations:

- a. Enter any JVM arguments that must be passed at run time in the **JVM Arguments** field.



**Note:** Each JVM argument should be separated with white space.

For example, you can set a maximum Java heap size.

- b. Enter the environment variables that must be passed at run time in the **Environment Variables** field, if applicable.

For example, enter the environment variables when the third-party libraries that are used in the run refer to the environment variables for configuration.

- c. Select the stub logging level for the virtual service from the following options in the **Logging** list:

Option	Description
None	Specifies that the virtual service does not write log messages.
Normal	Specifies that the virtual service writes informational messages.
Debug	Specifies that the virtual service writes informational and debugging messages.

- d. Enter other configuration options as parameters and their values in the **Additional Configuration Parameters** fields, if applicable.

You can refer to the additional parameters that you can use for virtual services from the topic in the related links.

For example, if you want to start the virtual service to run in a new container, you can specify the following parameter and its value:

Parameter name	Value
<b>stub.dedicated.container</b>	<b>true</b>



**Note:** Click **Add** to add additional parameters.



**Note:** You must separate the arguments or variables with a white space when you enter them in the same line or start each argument or variable on a new line.

The default value for the fields for the advanced settings is null or an empty field.



**Notes:**

- If you have configured some or all of the settings for the current run, and you do not want to continue with those settings, you can reset the settings by clicking **Reset**.
- If you want to repeat a run and do not want to use the saved settings from a previous run, you can reset all the saved settings to their default values by clicking **Reset**.


14. Click **Execute**.

## Results

You have started a virtual service from the **Resources** page on Rational® Test Automation Server.

### What to do next

After you start a run of a virtual service, you can view the status of the virtual service in any of the following ways:

- On the **Resources** page, the virtual services are displayed with the state as `Running` along with the number of instances that are running in the **Active instances** column.
- On the **Resources** page, you must click the **Show in instances page** icon  in the row of the virtual service to view all the running instances of a particular virtual service on the **Instances** page.
- Go to the **Instances** page by clicking **Virtualization > Instances**. You can view instances of all the virtual services that are running and are displayed with the state as `Running` under the **State** column. You can also view the requests that are received by the virtual service. The number of requests is displayed as number of hits when you hover the cursor over the text in the **Activity** column.

You can view the details, configuration settings, routing rules, usage statistics, or logs of a specific running instance of the virtual service. See [Viewing configurations of running instances of virtual services on page 306](#).

You can modify the behavior or the logging level of a running instance of the virtual service that you started before running tests on them. See [Modifying configurations of running instances of virtual services on page 311](#).

When you have completed testing the virtual service, you must stop the running virtual service. See [Stopping virtual services on page 317](#).

Related reference

[Additional configuration parameters for virtual services on page 291](#)


## Additional configuration parameters for virtual services




You can find information about the additional configuration parameters that you can set when you want to run virtual services on Rational® Test Automation Server.

When you use the server UI to start the virtual service, some of the parameters are handled by fields in the **Execute virtual service** dialog box.




You can enter the other parameters as a *name-value* pair in the **Additional configuration parameters** field that is displayed in the **Advanced** settings panel of the **Execute virtual service** dialog box.


The following additional configuration parameters are supported when you configure a run for a virtual service.

Requirement	Configuration parameter name	Supported values	An example value	Result of using the example value
To specify a unique identifier for use in the generated host name	<code>stub.ingress.host.identifier</code>	Any <code>&lt;custom_id&gt;</code> that you specify.   <b>Note:</b> The <code>&lt;custom_id&gt;</code> must start and end with an alphanumeric character. The characters supported include a-z, 0-9, and a hyphen. No other characters can be used in the <code>&lt;custom_id&gt;</code> . The <code>&lt;custom_id&gt;</code> must not be	<i>mystub</i>	See <a href="#">Running HTTP virtual services without using proxies on page 296</a> , to know how the identifier you specified is used.

Requirement	Configuration parameter name	Supported values	An example value	Result of using the example value
		 longer than 32 characters.		
To specify whether a virtual service instance should be run in a dedicated container.	<code>stub.dedicated.container</code>	<ul style="list-style-type: none"> <li>• <i>true</i></li> <li>• <i>false</i></li> </ul>  <b>Note:</b> The default value is <i>false</i> .	<i>true</i>	A dedicated container is used to run a single virtual service instance.
To specify whether performance optimization is enabled for the virtual service instance. The value set overrides the setting from the stub definition.  This option can be set in the <b>Behavior</b> tab from the UI.	<code>stub.performance.optimize</code>	<ul style="list-style-type: none"> <li>• <i>true</i></li> <li>• <i>false</i></li> </ul>  <b>Note:</b> The default value is <i>false</i> .	<i>true</i>	The performance optimization is enabled for the virtual service.
To specify the number of threads to be used for processing requests for the virtual service instance. The value set overrides the setting from the stub definition.  This option can be set in the <b>Behavior</b> tab from the UI.	<code>stub.worker.thread-count</code>	Any number that you specify as number of threads to use.	15	15 threads are used for processing requests for the virtual service instance.

Requirement	Configuration parameter name	Supported values	An example value	Result of using the example value
<p>To specify the stub logging level for the virtual service instance. The value set overrides the setting from the stub definition.</p> <p>This option can be set in the <b>Advanced</b> settings from the UI.</p>	<code>stub.logging.level</code>	<ul style="list-style-type: none"> <li>• <i>none</i></li> <li>• <i>normal</i></li> <li>• <i>debug</i></li> </ul>	<i>debug</i>	The virtual service writes informational and debugging messages to the container log.
<p>To specify the pass-through behaviour type of the virtual service instance. The value set overrides the setting from the stub definition.</p> <p>This option can be set in the <b>Behavior</b> tab from the UI.</p>	<code>stub.pass.through.behavior</code>	<p>Valid values depend on the stub operation transport type but can be as follows:</p> <ul style="list-style-type: none"> <li>• <i>simulate_error</i></li> <li>• <i>discard</i></li> <li>• <i>pass_through</i></li> </ul>	<i>simulate_error</i>	This option returns an error to the calling system. The message is not passed to the system under test.
<p>To specify the delay in passing through from the virtual service instance. The value set overrides the setting from the stub definition.</p>	<code>stub.pass.through.delay.period</code>	Any number of seconds in milliseconds.	<i>10000</i>	A delay of 10 seconds in passing through from the virtual service instance.
<p>To specify the status code to use in the virtual service instance response when simulating an error. The value set overrides the setting from the stub definition.</p>	<code>stub.pass.through.status.code</code>	You must specify a valid HTTP status code as the value. For example, <i>503</i> .	<i>500</i>	The HTTP error code of <i>500</i> is sent in the response if the virtual service simulates an error when passing through.

Requirement	Configuration parameter name	Supported values	An example value	Result of using the example value
<p> <b>Note:</b> Applies to HTTP stubs.</p> <p>This option can be set in the <b>Behavior</b> tab from the UI.</p>				
<p>To specify the reason phrase to use in the virtual service instance response when simulating an error. The value set overrides the setting from the stub definition.</p> <p> <b>Note:</b> Applies to HTTP stubs.</p> <p>This option can be set in the <b>Behavior</b> tab from the UI.</p>	<pre>stub.pass.through- .reason.phrase</pre>	<p>You must specify the text of the status message as the value.</p>	<p><i>my custom error msg</i></p>	<p>The text that you specify is set as the HTTP reason phrase in the response if the virtual service simulates an error when passing through.</p>
<p>To specify the type of response-time behavior that is required for the virtual service instance. The value set overrides the setting from the stub definition.</p> <p>This option can be set in the <b>Behavior</b> tab from the UI.</p>	<pre>stub.response.time- .type</pre>	<ul style="list-style-type: none"> <li>• <i>no_delay</i></li> <li>• <i>minimum_delay</i></li> <li>• <i>gaussian</i></li> <li>• <i>uniform</i></li> <li>• <i>performance_profile</i></li> </ul> <p> <b>Note:</b> <i>performance_profile</i> is only valid if the stub</p>	<p><i>no_delay</i></p>	<p>The virtual service sends a response without any delay.</p>

Requirement	Configuration parameter name	Supported values	An example value	Result of using the example value
		 operation in the stub definition is defined to use a performance profile.		
To specify the minimum time for the response time behaviour required for the virtual service instance. The value set overrides the setting from the stub definition.  This option can be set in the <b>Behavior</b> tab from the UI.	<code>stub.response.time-.minimum</code>	Any number of seconds in milliseconds.	<i>5000</i>	The virtual service sends a response after a minimum delay of 5 seconds.
To specify the maximum time for the response time behaviour required for the virtual service instance. The value set overrides the setting from the stub definition.  This option can be set in the <b>Behavior</b> tab from the UI.	<code>stub.response.time-.maximum</code>	Any number of seconds in milliseconds.	<i>20000</i>	The virtual service must send a response after a maximum delay of 20 seconds.

### Virtual services where the stub definition refers to multiple operations

When a stub definition has two or more events that refer to different operations and each operation has a different behavior, you must specify the `<operation_id>` suffixed to the configuration parameter name in the **Additional configuration parameters** field.



**Note:** The `<operation_id>` is the internal ID of the operation that is found in the **Documentation** tab when you open the operation in Rational® Integration Tester.

When the stub definition refers to multiple operations and you want to start a run of a virtual service, you must append the `<operation_id>` to the `<parameter_name>` in the **Additional configuration parameters** field.

The configuration parameter names that you must use for the virtual service, which is associated with a particular operation are as follows:

- `stub.pass.through.behavior.<operation_id>`
- `stub.pass.through.delay.period.<operation_id>`
- `stub.pass.through.status.code.<operation_id>`
- `stub.pass.through.reason.phrase.<operation_id>`
- `stub.response.time.type.<operation_id>`
- `stub.response.time.<operation_id>`
- `stub.response.time.maximum.<operation_id>`

For example, if the `<operation_id>` is `7281b750:162483a09f1:-7e68`, the parameter name for the `stub.response.time.type` option that you must specify is `stub.response.time.type.7281b750:162483a09f1:-7e68`.

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#### Related information

[Configuring a run of a virtual service on page 284](#)

## Running HTTP virtual services without using proxies

When you run HTTP virtual services on Rational® Test Automation Server, the endpoint on which the virtual service is exposed externally uses a host name that includes a generated ID. If a client application is required to call the virtual service directly via its external host name and not via the HTTP proxy, then you might want to determine the host name to configure the client first before you start the virtual service.

### Before you begin

You must have completed the following tasks:

- Ensured that you are assigned a role as a *Member* or *Project Creator* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that you are assigned a role as a *Project Owner* or *Tester* in the project. See [Managing access to server projects on page 442](#).
- Created a project in a team space on Rational® Test Automation Server and added the repository that contains the HTTP virtual services.
- Completed the prerequisite tasks before you start HTTP virtual services. See [Prerequisites for running HTTP virtual services on page 274](#).
- Selected the branch of the Git repository to view test resources on the **Execution** page.



**About this task**

When you installed Rational® Test Automation Server on Ubuntu, the default HTTP virtual service endpoints are of the following form:

```
in-<unique_id>.<ingress_domain>
```

For example, with an ingress domain as **10.1.2.3.nip.io**, a virtual service endpoint might be as follows:

```
in-cd3a755635574c6fa7e264911301821a.10.1.2.3.nip.io
```

When you installed Rational® Test Automation Server on OpenShift, the default HTTP virtual service endpoints are of the following form:

```
<ingress_domain_first_label>-<unique_id>.<remainder_of_ingress_domain>
```

For example, with an ingress domain as **rtas.mycluster-123456-0000.region.containers.appdomain.cloud**, a virtual service endpoint might be as follows:

```
rtas-cd3a755635574c6fa7e264911301821a.mycluster-123456-0000.region.containers.appdomain.cloud
```

The **<unique\_id>** is generated when the virtual service is started. The full host name can be viewed in the **Routing to** field of the routing rule created for the virtual service on the **Intercept Rules** page. When traffic is routed to the virtual service via the HTTP proxy, a client application is unaware of this host name. If the client application is required to call the virtual services directly, it must be aware of the host name of the virtual service.

To allow a host name to be known before you start the virtual service, you can replace the generated ID with a user defined value that is specified as an additional configuration parameter when starting the stub. This value is referred to as **<custom\_id>**.

**Notes:**

- The value of the **<custom\_id>** that you specify is used as the **<unique\_id>** for the virtual service.
- The **<custom\_id>** must start and end with an alphanumeric character. The characters supported include a-z, 0-9, and a hyphen. No other characters can be used in the **<custom\_id>**. The **<custom\_id>** must not be longer than 32 characters.



**Restriction:** The **<custom\_id>** must be unique to a virtual service that is running. You must not assign the same **<custom\_id>** to another virtual service that is running simultaneously. Doing so might result in an undefined behavior of the virtual service.

For example, on Ubuntu, if you specify the value of the **<custom\_id>** for the virtual service as `stub123-test` and Rational® Test Automation Server has an ingress domain as **10.1.2.3.nip.io**. Then the host name of the virtual service endpoint is as follows:

```
in-stub123-test.10.1.2.3.nip.io
```

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the virtual service resources in the test assets by clicking **Projects > My Projects > *project\_name***.

The **Overview** page is displayed.


3. Click **Virtualization > Resources** in the navigation pane.

The **Resources** page is displayed.

4. Select the branch of the repository that contains the virtual services that you want to run from the list in the **Branch** field.

All virtual services in the selected branch are displayed on the **Resources** page.

5. Identify the virtual service that you want to run.

6. Click the **Execute** icon  in the row of the identified virtual service.

The **Execute virtual service** dialog box is displayed.

7. Select the version of the virtual service that is in the repository that you want to start by performing any of the following actions:

- Expand the list in the **Version** field, find the version of the test resources, and then select the version.

Use the following details about the version of the test resources that are displayed to identify the version that you want:

- Commit message.
- Tags labeled for the version committed.
- The user who committed the version to the repository.
- Relative time of the commit. For example, *2 hours ago* or *3 days ago*.

The list displays the versions of the test resources committed by all users to the branch in the repository. The versions are arranged with the latest version committed followed by the versions committed previously.


- Expand the list in the **Version** field, and then search for the version that you want to select by entering a partial or the complete commit message of that version.

The version that matches the search criteria is displayed and it is selected for the test run.

8. Select the environment that was used to bind the physical and logical resource in the API project, in the **ENVIRONMENT** tab.



**Important:** The configuration that you set for the run in the **Execute virtual service** dialog box is preserved when you run the same virtual service again. The configurations that you set are not

 available to other members when they want to run the virtual service. For example, if you selected an environment, the same environment is selected when you run the virtual service again.

9. Enter a label, if required.

A label that you enter for the test run that helps you to identify the virtual service instance on the **Instances** page. The label that you entered is displayed for the virtual service under the **Labels** column on the **Instances** page. After you have created a label, any member of the project can use that label.

10. Follow the instructions if you want to modify the configurations for the behavior of the virtual service:

- a. Click the **BEHAVIOR** tab, if it is not already open.
- b. Configure or change the settings for the following options:



**Note:** The settings displayed are the settings that were configured for the virtual service when it was authored in Rational® Integration Tester.

Option	Description	
Performance	The following settings are available for handling of requests by the virtual service:	
	Option	Description
	<b>Optimize performance</b>	<p>If enabled, attempts are made to reduce the amount of processing between the time the virtual service receives a request and the time it sends a response. Specific optimizations depend on the message contents, as in the following examples:</p> <ul style="list-style-type: none"> <li>▪ When the virtual service receives requests, all validations are disabled, and for all XML payloads, the store and filter actions are converted to use XPath expressions.</li> <li>▪ When the virtualization sends responses, any store actions set on a message are disabled, and any XML content is collapsed when the virtual service is compiled instead of being collapsed every time that a response is sent.</li> </ul>

Option	Description											
	<table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td></td> <td>The optimization is disabled as the default action for this setting and you can enable the performance optimization if you fully understand the implications of optimizing the performance.</td> </tr> <tr> <td><b>Threads</b></td> <td>The maximum number of threads used in processing requests received by the virtual service. The default number of threads is <i>10</i>.</td> </tr> </tbody> </table>	Option	Description		The optimization is disabled as the default action for this setting and you can enable the performance optimization if you fully understand the implications of optimizing the performance.	<b>Threads</b>	The maximum number of threads used in processing requests received by the virtual service. The default number of threads is <i>10</i> .					
	Option	Description										
		The optimization is disabled as the default action for this setting and you can enable the performance optimization if you fully understand the implications of optimizing the performance.										
<b>Threads</b>	The maximum number of threads used in processing requests received by the virtual service. The default number of threads is <i>10</i> .											
<b>Threads</b>												
Operation	Specifies an operation referenced by the virtual service.											
Response time	<p>Specifies the response time behavior for responses sent by the virtual service for the selected operation.</p> <p>You can modify the value by selecting a value from the following options:</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>No delay</td> <td>Select this option for a response with no delay.</td> </tr> <tr> <td>Minimum delay</td> <td>Select this option for a delay in the response by entering the required delay in milliseconds (ms).</td> </tr> <tr> <td>Uniform distribution</td> <td>Select this option for a uniformly distributed response time by specifying the minimum and maximum delay in milliseconds (ms).</td> </tr> <tr> <td>Gaussian distribution</td> <td>Select this option for a response time with Gaussian distribution by specifying the minimum and maximum delay in milliseconds (ms).</td> </tr> </tbody> </table>		Option	Description	No delay	Select this option for a response with no delay.	Minimum delay	Select this option for a delay in the response by entering the required delay in milliseconds (ms).	Uniform distribution	Select this option for a uniformly distributed response time by specifying the minimum and maximum delay in milliseconds (ms).	Gaussian distribution	Select this option for a response time with Gaussian distribution by specifying the minimum and maximum delay in milliseconds (ms).
Option	Description											
No delay	Select this option for a response with no delay.											
Minimum delay	Select this option for a delay in the response by entering the required delay in milliseconds (ms).											
Uniform distribution	Select this option for a uniformly distributed response time by specifying the minimum and maximum delay in milliseconds (ms).											
Gaussian distribution	Select this option for a response time with Gaussian distribution by specifying the minimum and maximum delay in milliseconds (ms).											
Passthrough	<p>Specifies the pass through behavior for the selected operation when requests are not handled within the virtual service.</p> <p>You can modify the value by selecting a value from the following options:</p>											

Option	Description	
	Discard	This option stops the system under test from receiving the intercepted message. This option can disrupt the calling system. For example, the system might time out while it waits for a reply.
	Pass Through	This option passes the intercepted message to the system under test, with an optional delay.
	Simulate Error	This option returns an error to the calling system. The message is not passed to the system under test.

11. Click **Advanced** to make the following advanced configurations:

- a. Enter the following configuration options as parameters and their values in the **Additional Configuration Parameters** fields.

Parameter name	Value
<code>stub.ingress.host.identifier</code>	<code>&lt;custom_id&gt;</code>


12. Click **Execute**.

### Results

You have started an HTTP virtual service that does not use a proxy. The virtual service exposes the host name that contains a custom ID that you specified.

### What to do next

After you start a run of a virtual service, you can view the status of the virtual service in any of the following ways:

- On the **Resources** page, the virtual services are displayed with the state as `Running` along with the number of instances that are running in the **Active instances** column.
- On the **Resources** page, you must click the **Show in instances page** icon  in the row of the virtual service to view all the running instances of a particular virtual service on the **Instances** page.
- Go to the **Instances** page by clicking **Virtualization > Instances**. You can view instances of all the virtual services that are running and are displayed with the state as `Running` under the **State** column. You can also view the requests that are received by the virtual service. The number of requests is displayed as number of hits when you hover the cursor over the text in the **Activity** column.

## Viewing running instances of virtual services

After you start virtual services from the **Resources** page, you can view the instances of the virtual services that are running from the **Instances** page in IBM® Rational® Test Automation Server. You can view the details, configuration settings, routing rules, usage statistics, or logs of a specific running instance of the virtual service. You can also stop the running instance.

## Before you begin

You must have completed the following tasks:

- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Viewer*, *Tester*, or *Owner* role in the project so that you can view the virtual services that are running.
- Started the virtual service resources as a *Tester* or *Owner* from the **Resources** page.

## About this task

After you started the virtual services from the **Resources** page on Rational® Test Automation Server, you can go to the **Instances** page and you can perform the following tasks:

- View all running instances of the virtual services that are contained in the project repositories.
- View the components in the system model that are associated with the virtual service instances.
- Search for a specific instance of the virtual service for which you want to view the details.
- Create or use saved filters for viewing specific running instances of the virtual service.
- View the details, configuration settings, routing rules, usage statistics, or logs of a specific running instance of the virtual service.
- Change the behavior or logging level of a running instance of the virtual service before you run tests on the virtual service.
- Stop a specific running instance of the virtual service.
- Stop multiple instances or all instances of the virtual service that are running.

### 1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

### 2. Open the project that contains the virtual service resources in the test assets by clicking **Projects > My Projects > *project\_name***.

The **Overview** page is displayed.

### 3. Click **Virtualization > Instances** in the navigation pane.

The **Instances** page is displayed.

Any one of the following views is displayed:

- No instances of virtual services are displayed if there are no instances that are running or were stopped in the past hour.
- All running instances of virtual services in your project are displayed.
- No running instances of virtual services are displayed but the option **Show all** is enabled. You can click **Show all** to display the instances that were stopped in the past hour. Instances that were hidden from the display when **Hide inactive** was clicked are displayed.



**Note:** All instances that were stopped are automatically removed from the display after 60 minutes of being stopped. You cannot use the **Instances** page to view the history of stopped instances. You can hide the stopped instances from the display by clicking **Hide inactive**, so that you can view only the running instances.


You can find the following information about the running instances that are displayed on the **Instances** page.




- The name and path of the virtual service in the project repository are displayed in the **Name** column.
- The tags or labels added to the instance when the run was configured is displayed in the **Labels** column.
- The name of the environment associated with the operation in which the virtual service was created in Rational® Integration Tester is displayed in the **Environment** column.
- The state of the running instance is displayed as `Running` in the **State** column.
- The activity of the running instance of the virtual service based on the number of requests received in the previous hour is displayed in the **Activity** column. The activities are classified and displayed as indicated in the following table:

Activity load	Activity displayed as
Received 0 requests	None
Received 1 - 10 requests	Low
Received 11 - 100 requests	Mid
Received 101 - 1000 requests	High
Received more than 1000 requests	Very High





- The **Stop** icon  is displayed in the **Actions** column and stops the running instance of the virtual service, when clicked.


4. Complete the steps for the task that you want to perform as listed in the following table:

Task	Action
Searching for a specific instance of the virtual service for which you want to view the details or want to stop the instance.	Enter either the complete text or part of the text in the name or the path of the virtual service that is in the repository in the <b>Search</b> field.  The instances of the virtual services that match the text searched are displayed.
Viewing the component associated with the running instance of the virtual service.	You can view the name of the associated component that is displayed on the <b>Instances</b> page in the <b>Filter</b> row only if you clicked the icon  on the <b>System Model</b> page to view all running instances of the virtual services .

Task	Action
<p>Creating or using saved filters for viewing specific instances of virtual service resources.</p>	<p>To create a query, perform the following actions:</p> <ol style="list-style-type: none"> <li>Click <b>New filter</b>.</li> <li>Create a rule with an appropriate operator.</li> <li>Select criteria such as <i>Name, Path, Labels, Environment, State, or Activity</i>.</li> <li>Select the condition, and then enter the value for the criteria.</li> <li>Apply the filter query.</li> </ol> <p>The virtual services that match the filter criteria are displayed.</p> <ol style="list-style-type: none"> <li>Save the filter query for retrieving it from the saved filters list.</li> </ol> <p>To use a saved filter query, perform the following actions:</p> <p> <b>Note:</b> To open the filter query, you must have created and saved a filter query.</p> <ol style="list-style-type: none"> <li>Click the <b>Open filters</b> icon .</li> <li>Select the saved filter.</li> <li>Apply the filter.</li> </ol> <p>The virtual services that match the filter criteria are displayed.</p>
<p>Viewing the details, configuration settings, routing rules, usage statistics, or logs of a specific running instance of the virtual service.</p>	<p>After you identify the virtual service instance for which you want to view the details, perform the following actions:</p> <ol style="list-style-type: none"> <li>Click the <b>Expand</b> icon  in the row of the identified instance of the virtual service.</li> </ol> <p>The <b>Details</b> panel of the instance is displayed. You can find the following details about the instance displayed:</p> <ul style="list-style-type: none"> <li>▪ Name</li> <li>▪ Path</li> <li>▪ Labels</li> <li>▪ API Environment</li> <li>▪ Version</li> <li>▪ Started at</li> <li>▪ Started by</li> <li>▪ Associated components</li> <li>▪ Documentation</li> </ul> <ol style="list-style-type: none"> <li>Click <b>Behavior</b> to expand the panel and view the behavior that was configured for the virtual service.</li> </ol>



Task	Action
	<ul style="list-style-type: none"> <li>c. Click <b>Routing Rules</b> to expand the panel and view the routing rules that were configured in the virtual service.</li> <li>d. Click <b>Statistics</b> to expand the panel and view the graphical representation of the activities performed by the virtual service.</li> <li>e. Click <b>Diagnostics</b> to expand the panel and view the logging configuration of the virtual service and the links to the logs.</li> </ul>
<p>Changing the behavior or logging level of a running instance of the virtual service.</p>	<p>After you identify the virtual service instance for which you want to view the details, perform the following actions:</p> <ul style="list-style-type: none"> <li>a. Click the <b>Expand</b> icon  in the row of the identified instance of the virtual service.</li> </ul> <p>The <b>Details</b> panel of the instance is displayed.</p> <p>Perform any of the following actions:</p> <ul style="list-style-type: none"> <li>◦ Click <b>Behavior</b> to expand the panel.</li> </ul> <p>Perform the following steps to change the behavior configurations:</p> <ul style="list-style-type: none"> <li>a. Click the <b>Edit</b> icon .</li> <li>b. Select a different operation for the virtual service, if available.</li> <li>c. Select a different response time and enter the values for the delay that you want to set.</li> <li>d. Click <b>apply</b>.</li> </ul> <ul style="list-style-type: none"> <li>◦ Click <b>Diagnostics</b> to expand the panel.</li> </ul> <p>Perform the following steps to change the logging level configuration:</p> <ul style="list-style-type: none"> <li>a. Click the <b>Edit</b> icon .</li> <li>b. Select a different logging level.</li> <li>c. Click <b>apply</b>.</li> </ul>
<p>Stopping a specific running instance of the virtual service.</p>	<ul style="list-style-type: none"> <li>a. Click the <b>Stop</b> icon  in the row of the virtual service instance.</li> <li>b. Click <b>Ok</b> in the <b>Stop virtual service instance</b> dialog box that is displayed.</li> </ul> <p>The running virtual service instance is stopped.</p>

Task	Action
Stopping multiple running instances or all the running instances of virtual services.	<p>a. Perform any of the following actions:</p> <ul style="list-style-type: none"> <li>▪ Select the checkbox in the row of the virtual service instances that you want to stop, and then click <b>Stop selected</b>.</li> <li>▪ Select the <b>Select all</b> checkbox in the header row, and then click <b>Stop selected</b>.</li> </ul> <p> <b>Note:</b> All running instances are selected when you click the <b>Select all</b> checkbox.</p> <p>b. Click <b>Ok</b> in the <b>Stop all selected virtual service instances</b> dialog box that is displayed.</p> <p>The running virtual service instances are stopped.</p>

## Results

You have viewed running instances of the virtual services from the **Instances** page on Rational® Test Automation Server.

## What to do next

You can perform the following tasks:

- View the configurations of a running instance of the virtual service. See [Viewing configurations of running instances of virtual services on page 306](#).
- Modify the behavior or logging level of a running instance of the virtual service before you run tests on the virtual service. See [Modifying configurations of running instances of virtual services on page 311](#).
- Stop a running instance or all running instances of the virtual services. See [Stopping virtual services on page 317](#).

---

## Viewing configurations of running instances of virtual services

After you start virtual services from the **Resources** page, you can view the details, configuration settings, routing rules, usage statistics, or logs of a specific running virtual service instance from the **Instances** page on IBM® Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Viewer*, *Tester*, or *Owner* role in the project so that you can view the virtual services that are running.
- Started the virtual service resources as a *Tester* or *Owner* from the **Resources** page.

### About this task

After you have started the virtual services from the **Resources** page on Rational® Test Automation Server, you can go to the **Instances** page and view the information about a specific running virtual service instance.

1. Log in to Rational® Test Automation Server.


The team space that contains your project is displayed.

2. Open the project that contains the virtual service resources in the test assets by clicking **Projects > My Projects > *project\_name***.

The **Overview** page is displayed.

3. Click **Virtualization > Instances** in the navigation pane.

The **Instances** page is displayed with all running instances of the virtual services that are in your project.

4. Identify the running instance of the virtual service of which you want to view the details, configuration settings, and other information.
5. Click the **Expand** icon  of the instance of the virtual service.

The **Details** panel of the instance is displayed with the following details about the virtual service instance:



**Note:** The information displayed pertains to the configuration settings that were configured in the virtual service at the time it was created or run.

Option	Information displayed
Name	Displays the name of the virtual service.
Path	Displays the path of the virtual service resource in the project repository.
Labels	Displays the labels or tags that were entered for the virtual service when a run of the virtual service was configured.
API Environment	Displays the name of the environment associated with the operation in which the virtual service was created in Rational® Integration Tester or the environment selected for the run.
Version	Displays the version of the virtual service resource that is in the project repository that was started as an instance.
Started at	Displays the date and time when the virtual service instance started.


Option	Information displayed
Started by	Displays the name of the project member who started the virtual service instance.
Associated components	Displays the components in the system model that are associated with the virtual service.
Documentation	Displays the text that was entered on the <b>Documentation</b> tab of the <b>Stub Editor</b> when the virtual service was created in Rational® Integration Tester.








The other panels that you can view are as follows:





- Behavior
- Routing Rules
- Statistics
- Diagnostics

6. Expand each panel by clicking the panel to view the information in that panel.

You can view the following information in the different panels:

Panel	Details										
Behavior	<p>The <b>Behavior</b> panel of the instance is displayed when expanded with the following details about the virtual service instance:</p> <p> <b>Note:</b> The information displayed pertains to the configuration settings that were configured in the virtual service at the time it was created or run.</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Information displayed</th> </tr> </thead> <tbody> <tr> <td>Performance</td> <td>Displays the optimization setting and the maximum number of threads in use by the virtual service.</td> </tr> <tr> <td>Operation</td> <td>Displays the operations referenced by the virtual service. You can select each operation to view the related response time and the pass through settings.</td> </tr> <tr> <td>Response time</td> <td>Displays the response time option that is in use for the selected operation within the virtual service.</td> </tr> <tr> <td>Passthrough</td> <td>Displays the pass through option that is in use for the selected operation within the virtual service.</td> </tr> </tbody> </table>	Option	Information displayed	Performance	Displays the optimization setting and the maximum number of threads in use by the virtual service.	Operation	Displays the operations referenced by the virtual service. You can select each operation to view the related response time and the pass through settings.	Response time	Displays the response time option that is in use for the selected operation within the virtual service.	Passthrough	Displays the pass through option that is in use for the selected operation within the virtual service.
Option	Information displayed										
Performance	Displays the optimization setting and the maximum number of threads in use by the virtual service.										
Operation	Displays the operations referenced by the virtual service. You can select each operation to view the related response time and the pass through settings.										
Response time	Displays the response time option that is in use for the selected operation within the virtual service.										
Passthrough	Displays the pass through option that is in use for the selected operation within the virtual service.										
Routing Rules	<p>The <b>Routing Rules</b> panel of the instance is displayed when expanded.</p> <p>The routing rules that relate to the virtual service are displayed.</p>										

Panel	Details											
	<b>Column</b>	<b>Description</b>										
	Activity	Indicates the routing type.										
	Target	Displays the endpoint of the target service for which requests are being routed.										
	Recipient	Displays the endpoint of the virtual service that receives the routed requests										
<p>You can expand the panel for each intercept by clicking on the expand icon . You can then find the following information:</p>												
	<b>Tab</b>	<b>Description</b>										
	Details	<p>The <b>Details</b> panel provides the following information:</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Information displayed</th> </tr> </thead> <tbody> <tr> <td>Condition</td> <td> <p>Lists the condition that causes the traffic to be routed to a virtual service.</p> <p>You can view the detailed condition of the rule defined for the intercept by clicking the <b>View</b> icon .</p> <p>The detailed condition of the rule is displayed in the <b>Full condition</b> window.</p> <p> <b>Note:</b> You can copy the detailed condition if you intend to use it elsewhere.</p> </td> </tr> <tr> <td>Routing to</td> <td>Lists the virtual service to which traffic is routed.</td> </tr> <tr> <td>Created by</td> <td>Lists the user who created the rule.</td> </tr> <tr> <td>Created at</td> <td>Lists the date and time when the rule was created.</td> </tr> </tbody> </table>	Option	Information displayed	Condition	<p>Lists the condition that causes the traffic to be routed to a virtual service.</p> <p>You can view the detailed condition of the rule defined for the intercept by clicking the <b>View</b> icon .</p> <p>The detailed condition of the rule is displayed in the <b>Full condition</b> window.</p> <p> <b>Note:</b> You can copy the detailed condition if you intend to use it elsewhere.</p>	Routing to	Lists the virtual service to which traffic is routed.	Created by	Lists the user who created the rule.	Created at	Lists the date and time when the rule was created.
Option	Information displayed											
Condition	<p>Lists the condition that causes the traffic to be routed to a virtual service.</p> <p>You can view the detailed condition of the rule defined for the intercept by clicking the <b>View</b> icon .</p> <p>The detailed condition of the rule is displayed in the <b>Full condition</b> window.</p> <p> <b>Note:</b> You can copy the detailed condition if you intend to use it elsewhere.</p>											
Routing to	Lists the virtual service to which traffic is routed.											
Created by	Lists the user who created the rule.											
Created at	Lists the date and time when the rule was created.											

Panel	Details									
	<b>Tab</b>	<b>Description</b>								
	Activity	The <b>Activity</b> panel lists the log of the activities performed in relation to the routing rule. This panel also displays the details of the activity, date and time, and message for that activity.								
Statistics	<p>The <b>Statistics</b> panel of the instance is displayed when expanded.</p> <p>The requests received by the instance of the virtual service in the previous hour are displayed as a graph. The total requests received is indicated in the <b>Total hits</b> field and the activity load in the previous hour are displayed in the <b>Activity</b> field.</p> <p>The view can be refreshed by clicking the <b>Refresh</b> icon .</p>									
Diagnostics	<p>The <b>Diagnostics</b> panel of the instance is displayed when expanded with the following details:</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Logging</td> <td>Displays the logging level that was configured for the virtual service.</td> </tr> <tr> <td>Init container log</td> <td>           Displays the link to the log of the Init container.               <b>Note:</b> This logs contains messages that relate to configuring the container which is ready to run the virtual service.         </td> </tr> <tr> <td>Main container log</td> <td>Displays the link to the log of the main container. This log contains messages logged by the virtual service based on the selected logging level.</td> </tr> </tbody> </table>		Option	Description	Logging	Displays the logging level that was configured for the virtual service.	Init container log	Displays the link to the log of the Init container.   <b>Note:</b> This logs contains messages that relate to configuring the container which is ready to run the virtual service.	Main container log	Displays the link to the log of the main container. This log contains messages logged by the virtual service based on the selected logging level.
Option	Description									
Logging	Displays the logging level that was configured for the virtual service.									
Init container log	Displays the link to the log of the Init container.   <b>Note:</b> This logs contains messages that relate to configuring the container which is ready to run the virtual service.									
Main container log	Displays the link to the log of the main container. This log contains messages logged by the virtual service based on the selected logging level.									

## Results

You have viewed the information about the configuration, routing rules, usage, or logs of the virtual service instance.

## What to do next

You can modify the behavior or logging level configurations of the running virtual service instance before you run tests on the instance. See [Modifying configurations of running instances of virtual services on page 311](#).

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### Related information

[Configuring a run of a virtual service on page 284](#)

## Modifying configurations of running instances of virtual services

After you start virtual services from the **Resources** page and before you run tests on the virtual service, you might want to modify the configurations for the behavior or the logging level of the running instance.

### Before you begin

You must have completed the following tasks:

- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Viewer*, *Tester*, or *Owner* role in the project so that you can view the virtual services that are running.
- Started the virtual service resources as a *Tester* or *Owner* from the **Resources** page.

### About this task

After you have started the virtual services from the **Resources** page on IBM® Rational® Test Automation Server, you can go to the **Instances** page and identify the running instance of the virtual service for which you want to modify the configurations. You can modify the configurations for the behavior or logging levels of the running instance of the virtual service.

1. Log in to Rational® Test Automation Server.


The team space that contains your project is displayed.

2. Open the project that contains the virtual service resources in the test assets by clicking **Projects > My Projects > *project\_name***.

The **Overview** page is displayed.

3. Click **Virtualization > Instances** in the navigation pane.

The **Instances** page is displayed with all running instances of the virtual services that are in your project.

4. Identify the running instance of the virtual service for which you want to modify the configurations.
5. Click the **Expand** icon  of the instance that you want to modify the configurations.

The **Details** panel of the instance is displayed.

6. Click **Behavior** to expand the panel and perform the following steps to change the configurations:

- a. Click the **Edit** icon .

The options that you can modify are enabled for editing.

- b. Select a different operation for the virtual service, if available, from the list for the **Operation** option.
- c. Select a different response time from the list for the **Response time** option, and then enter the values for the delay that you want to set.

You can modify the value by selecting a value from the following options:

Option	Description
No delay	Select this option for a response with no delay.
Minimum delay	Select this option for a delay in the response by entering the required delay in milliseconds (ms).
Uniform distribution	Select this option for a uniformly distributed response time by specifying the minimum and maximum delay in milliseconds (ms).
Gaussian distribution	Select this option for a response time with Gaussian distribution by specifying the minimum and maximum delay in milliseconds (ms).

d. Click **apply** to apply the modified settings.

7. Click **Diagnostics** to expand the panel and perform the following steps to change the logging level that is configured:

a. Click the **Edit** icon .

The **Logging level** option is enabled for editing.

b. Select a different logging level from the following options.

Option	Description
None	Specifies that the virtual service does not write log messages.
Normal	Specifies that the virtual service writes informational messages.
Debug	Specifies that the virtual service writes informational and debugging messages.

c. Click **apply** to apply the modified settings.

## Results

You have viewed and modified the configurations of a running virtual service instance from the **Instances** page on Rational® Test Automation Server.

## What to do next

You can run tests that are in an API Suite in your project, which then run on the virtual service instance. See [Configuring an API Suite run on page 202](#).



## Viewing routing rules of the virtual services

When you run virtual services that are created to run on proxies or intercepts and have routing rules defined, you can view the proxies or intercepts and the routing rules from the **Intercept Rules** page.

### Before you begin

You must have completed the following tasks:

- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Viewer*, *Tester*, or *Owner* role so that you can view the routing rules defined for the virtual services from the **Intercept Rules** page.
- Started the virtual service resources as a *Tester* or *Owner* from the **Resources** page.

### About this task

After you run the virtual service resources that are in your project on Rational® Test Automation Server, you can view the routing rules for the running instances of the virtual service resources, from the **Intercept Rules** page.

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the virtual service resources in the test assets by clicking **Projects > My Projects > *project\_name***.

The **Overview** page is displayed.


3. Click **Virtualization > Intercept Rules** in the navigation pane.

The **Intercept Rules** page is displayed.

The agents, proxies, or intercepts that are configured in the virtual service resources that are in your project are displayed.







You can find the following information that is displayed on the **Intercept Rules** page.

Column	Description
Activity	Lists the agent or proxy.
Target	Lists a summary view of the endpoint that was recorded or virtualized.
Recipient	Lists the destination where messages sent to are captured.

4. Expand the proxy or intercept panel by clicking the **Expand** icon .

The details of the proxy or intercept are displayed in the **Details** tab in the expanded panel.

5. Click each tab to view the following information:

Tab	Description										
Details	<p>The <b>Details</b> panel provides the following information:</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Condition</td> <td> <p>Lists the condition that causes the traffic to be recorded or routed to a virtual service.</p> <p>You can view the detailed condition of the rule defined for the proxy or intercept by clicking the <b>View</b> icon .</p> <p>The detailed condition of the rule is displayed in the <b>Full condition</b> window.</p> <p> <b>Note:</b> You can copy the detailed condition if you intend to use it elsewhere.</p> </td> </tr> <tr> <td>Routing to</td> <td>Lists the virtual service to which traffic is routed.</td> </tr> <tr> <td>Created by</td> <td>Lists the user who created the rule.</td> </tr> <tr> <td>Created at</td> <td>Lists the date and time when the rule was created.</td> </tr> </tbody> </table>	Option	Description	Condition	<p>Lists the condition that causes the traffic to be recorded or routed to a virtual service.</p> <p>You can view the detailed condition of the rule defined for the proxy or intercept by clicking the <b>View</b> icon .</p> <p>The detailed condition of the rule is displayed in the <b>Full condition</b> window.</p> <p> <b>Note:</b> You can copy the detailed condition if you intend to use it elsewhere.</p>	Routing to	Lists the virtual service to which traffic is routed.	Created by	Lists the user who created the rule.	Created at	Lists the date and time when the rule was created.
Option	Description										
Condition	<p>Lists the condition that causes the traffic to be recorded or routed to a virtual service.</p> <p>You can view the detailed condition of the rule defined for the proxy or intercept by clicking the <b>View</b> icon .</p> <p>The detailed condition of the rule is displayed in the <b>Full condition</b> window.</p> <p> <b>Note:</b> You can copy the detailed condition if you intend to use it elsewhere.</p>										
Routing to	Lists the virtual service to which traffic is routed.										
Created by	Lists the user who created the rule.										
Created at	Lists the date and time when the rule was created.										
Activity	<p>The <b>Activity</b> panel lists the log of the activities performed by the proxy or intercept. This panel also displays the details of the activity, date and time, and message for that activity.</p>										

## Results

You have viewed the routing rules for the virtual service, proxy, or intercept that are running or connected to Rational® Test Automation Server.

## What to do next

You can perform any of the following tasks:

- You can view the usage statistics of the virtual services that are running. See [Viewing usage statistics of virtual services on page 315](#).
- You can stop the running instances of the virtual services. See [Stopping virtual services on page 317](#).

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### Related information

[Management of virtualized services on page 272](#)

## Viewing usage statistics of virtual services

After you start virtual service resources that are in the project repositories, and then run tests on the virtual service, you can view the usage statistics of the virtual services from the **Usage** page on IBM® Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Completed the prerequisite tasks before you configure a run of the HTTP virtual services. See [Prerequisites for running HTTP virtual services on page 274](#).
- Read the prerequisite information about virtualizing the Istio based services. See [Prerequisites for running virtualized Istio based services in IBM Rational Test Automation Server on page 276](#).
- Been assigned a *Member* or *Project Creator* role in a team space.
- Started the virtual service resources as a *Tester* or *Owner* from the **Resources** page.
- Been assigned the *Viewer*, *Tester*, or *Owner* role in the project so that you can view the usage details of virtual services.
- Ran API Suites with tests that run on the virtual service resources that are configured.

### About this task

After you run the virtual services that are in a project, you can view details of the usage statistics of the virtual services from the **Usage** page on Rational® Test Automation Server.



**Important:** The settings such as the **Period**, or **From** and **To** that you configure to view the usage details are retained for you during your ongoing session and the settings are retained even when you perform the following activities:

- Log out of the server and log in again.
- Log in after a server restart.

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Open the project that contains the virtual service resources in the test assets by clicking **Projects > My Projects > *project\_name***.

The **Overview** page is displayed.

3. Click **Virtualization > Usage** in the navigation pane.

The **Virtual Service Usage** page is displayed.


The total requests that were received by all virtual services on the server are displayed as a graph.

The default view displays the usage data of the virtual services that are gathered during the previous week and grouped in an hourly interval. The total requests received from when the virtual service was started are displayed.

The metric data that is reported is for the number of requests that are received by a virtual service. The requests can be requests, messages, or other calls that are received by the virtual service.

4. Change the default settings to view the graph for the period for which you want to view the usage.

You can change the default view by selecting an option from the following options:

Option	Description
<i>1 Hour</i>	Displays the usage data of the virtual service that are gathered during the previous hour and grouped in a 20-second interval.
<i>1 Day</i>	Displays the usage data of the virtual service that are gathered during the previous day and grouped in an eight-minute interval.
<i>1 Week</i>	Displays the usage data of the virtual service that are gathered during the previous week and grouped in an hourly interval.   <b>Note:</b> This is the default view.
<i>Range</i>	Displays the usage data of the virtual service that are gathered during the date range specified in the <b>From</b> and <b>To</b> fields. You can select the date and time for both the <b>From</b> and <b>To</b> fields. The data is dynamically grouped in intervals that depend on the range selected.



**Note:** You can refresh the view at any time to present the graph for the latest data by clicking **Refresh**.

5. View details of the virtual service by hovering the mouse over any of the data-points to view the details at that point.

The following details about the virtual service are displayed when you hover the mouse over the data-point:

- The date and time of the request received.
- The number of requests received.

## Results

You have viewed the usage details of the virtual services in your project that ran on Rational® Test Automation Server.

## What to do next

You can perform any of the following tasks:

- You can view the routing rules defined in the virtual service, agent, proxy, or intercept. See [Viewing routing rules of the virtual services on page 313](#).
- You can stop the virtual service instances that are running. See [Stopping virtual services on page 317](#).

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#### Related information

[Management of virtualized services on page 272](#)

## Stopping virtual services

After you started instances of the virtual services from the **Resources** page, you must stop the running instance from the **Instances** page when you do not want to use the instance. You can stop a single instance, multiple, or all running instances.

### Before you begin

You must have started the virtual service from the **Resources** page. See [Configuring a run of a virtual service on page 284](#).

1. Log in to Rational® Test Automation Server.


The team space that contains your project is displayed.

2. Open the project that contains the virtual service resources in the test assets by clicking **Projects > My Projects > *project\_name***.


The **Overview** page is displayed.


3. Go to the **Instances** page and identify the instance of the virtual service that you want to stop.

You can select the virtual service instances that satisfy the following conditions:

- The virtual service instance must be either in the **In transition** or **Running** state.
- The **Stop** icon  in the **Actions** column must be enabled for the virtual service instance.
- The checkbox icon  must be enabled for selection for the virtual service instance.

4. Perform the actions indicated in the following table:

If...	Action...
You want to stop any virtual service instance that is running	Perform any of the following actions: <ul style="list-style-type: none"> <li>◦ Click the <b>Stop</b> icon  in the <b>Actions</b> column of the virtual service instance.</li> </ul> The <b>Stop virtual service instance</b> dialog box is displayed.

If...	Action...
	<ul style="list-style-type: none"> <li>◦ Select the checkbox in the row of the virtual service instance, and then click <b>Stop selected</b>.</li> </ul> <p>The <b>Stop all selected virtual service instances</b> dialog box is displayed.</p>
You want to stop multiple virtual service instances that are running	<p>Perform any of the following actions:</p> <ul style="list-style-type: none"> <li>◦ Select the checkbox in the row of the virtual service instance, and then click <b>Stop selected</b>.</li> <li>◦ Select the <b>Select all</b> checkbox in the header row, and then click <b>Stop selected</b>.</li> </ul> <p> <b>Note:</b> All running instances are selected when you select the <b>Select all</b> checkbox.</p> <p>The <b>Stop all selected virtual service instances</b> dialog box is displayed.</p>

5. Click **Ok**.

A notification is displayed that the running virtual service instances are stopped.

## Results

You have stopped a single instance, multiple, or all running virtual service instances. The stopped virtual service instance on the **Instances** page is displayed with the status as *Stopped by User* in the **State** column.

## What to do next

You can restart the virtual service by completing the configurations that you want from the **Resources** page.

You can open and view the `Main container log` of the stopped virtual service.

## Test results

After the tests or schedules are run and completed, you can view the results and reports in IBM® Rational® Test Automation Server to analyze the verdict, the performance, and statistics. You can also re-execute tests and schedules from the **Result** page with the same commit id.

From the Results page, you can perform the following tasks:

- Searching for test results. You can filter test results by using any of the following ways:
  - By using the **Search** field to search for results by name.
  - By selecting predefined time interval from the **Selection interval** drop-down list.
  - By selecting **To** and **From date** from the **Date Interval** option.

- By clicking verdict from the **Verdict summary** slider (*Pass, Fail, Inconclusive, or Error*).
- By creating filter queries.
- Adding labels if you have a tester or an owner role.
- Locking test results: Locked results can be unlocked by the project owner or the project member who locked the results.
- Deleting test results.
- Comparing performance reports.
- Viewing trending reports.
- Viewing multiple reports depending on the test types: Statistics reports, Mobile and Web UI reports, Functional reports, Unified Reports.
- Re-executing tests with the same commit id.

For more details, see the links in the next section of this page.

## Test results and reports overview

Rational® Test Automation Server is a single location for hosting the results and reports of all tests run on different desktop clients and for tests run from the server.

### Test results list

Type...	Test	Started by	Started on	Duration	Components	Labels	Actions
<input type="checkbox"/>	draco remoteagentproj/draco.testsuite	nm	2 days ago	00:01:48.037			+ ⚙ ⋮
<input type="checkbox"/>	Simple test for addition Sample Integration Project/Logic...	nm	23 days ago	00:00:15.085			+ ⚙ ⋮


When you expand the results, the results details and reports cards are displayed.

Results, reports, and logs are generated for tests run from Rational® Test Automation Server, or from desktop clients such as Rational® Performance Tester, Rational® Functional Tester, or Rational® Integration Tester.

You must have configured the desktop clients to publish reports of tests that are run from the desktop client to the Rational® Test Automation Server. For more information about the publishing procedure, refer to the links at the end of this page.

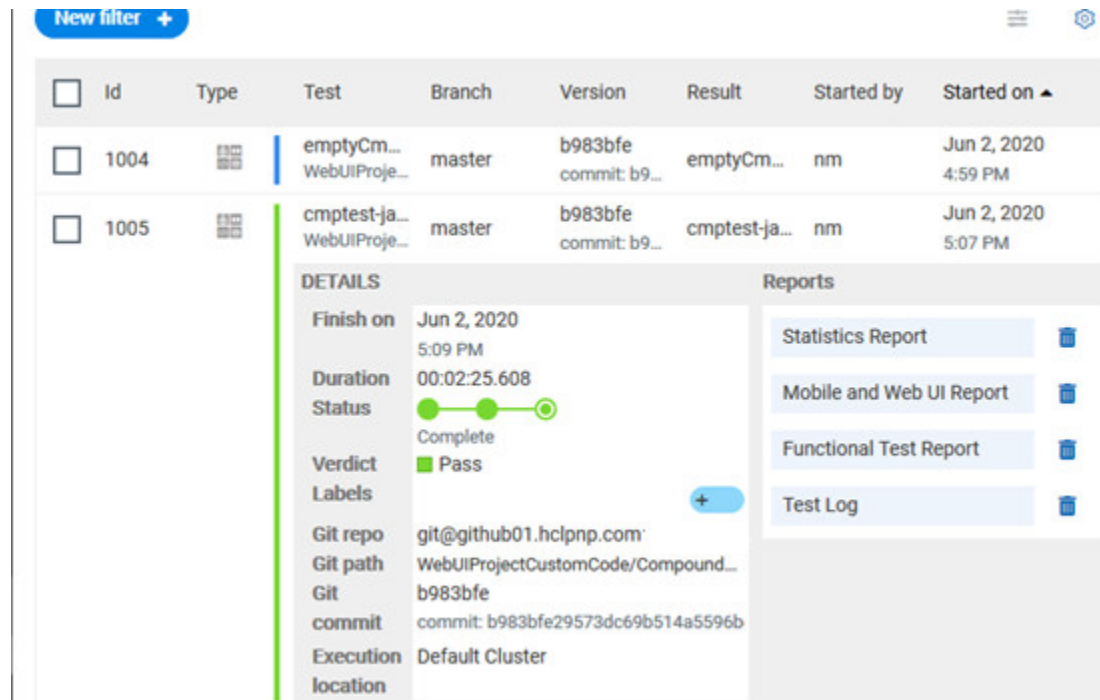
### Test result details

By using the default settings, you can view the following details about the test assets used in the test run in the Details card:

You can configure the information displayed in the **Details** card and the **Results** columns from the **View Settings** window. You access this window by clicking the **Settings** icon .

Depending on the attribute you cleared in the **View Settings** window, the Details card displays additional information about the test results.

The selected attributes are displayed in columns of the Result view.



## Reports

The Reports card contains the links to the test reports and the logs that are displayed in a web browser.

As a default configuration, test logs are delivered in a traditional format for the executed compound tests and schedules. You can still set the `-history jaeger` Program Argument to produce Jaeger traces when you run the tests.

The reports are generated for Compound Tests, Schedules, and Test Suites, or for other tests. They can be run from a desktop client or from Rational® Test Automation Server.

The following table lists the reports that are generated for each type of test and the links to help pages.

**Table 8. Analyzing Reports**

Report	Tests type	Product	More information
Functional Test Report	API Suite	IBM® Rational® Integration Tester	<a href="#">Viewing reports</a>



**Table 8. Analyzing Reports (continued)**

Report	Tests type	Product	More information
	Compound Test	IBM® Rational® Functional Tester	
	AFT Suite		<a href="#">Unified Report</a>
	Functional test (For Web UI tests)		
Mobile and Web UI Report	Compound Test	IBM® Rational® Functional Tester and IBM® Rational® Performance Tester	<a href="#">Mobile and web UI test result reports</a>
	AFT Suite	IBM® Rational® Functional Tester	<a href="#">Unified Report</a>
	Compound Test	IBM® Rational® Functional Tester and IBM® Rational® Performance Tester	<a href="#">Reports and counters</a>
	AFT Suite	IBM® Rational® Functional Tester	<a href="#">Service Performance report</a>
Statistics Report	VU Schedule	IBM® Rational® Performance Tester	From the Statistic reports, you can add counters. Refer to <a href="#">Adding additional counters on a separate page</a> .
	Rate Schedule		You can also display the statistics of counters on graphs. Refer to <a href="#">Displaying counter data in tables or as graphs</a> .
	Functional test (For Web UI tests)		
	Compound Test	IBM® Rational® Functional Tester and IBM® Rational® Performance Tester	
	AFT Suite	IBM® Rational® Functional Tester	
Test Log	Functional Test (Web UI)	IBM® Rational® Functional Tester	
	VU Schedule	IBM® Rational® Performance Tester	
	Rate Schedule		

---

### Related information

[Publishing test results to the server from Rational Integration Tester](#)

[Publishing test results to the server from Rational Performance Tester](#)

[Publishing test results to the server from Rational Functional Tester](#)

[Controlling resource monitoring sources in a schedule on page 362](#)

[Test run configurations on page 190](#)

## Creating search queries to filter test results

To filter the test results list, you can create a search query that you apply as a filter in IBM® Rational® Test Automation Server.

### About this task

You can use rules and group of rules in your query. This procedure explains how to create a query that contains two rules and a group of rules as an example, and how to select other filters.

1. Click **New filter** on the Result page.

Follow these steps to add a rule in your query:

2. Select **Add a rule** in your query, and enter or select the required attribute in the fields to define the rule:

- a. Select the first attribute that you want to query in the drop-down list.

**Example**

Select **Verdict**.

- b. Select the condition as *equal to (=)* or *not equal to (!=)*, *Contain* or *Not contain*.

**Example**

Select **=**.

- c. Select a value for the first attribute you selected.

The content of this field depends on the option you selected as first attribute. Enter a value for the **id**, **TypeTest**, **Version**, **Result**, **Labels**, **Branch**, **Test path**, and **Text** attributes. For the other attributes, select a value in the drop-down list.

**Example**

Select **Fail**.

- d. Select either the **AND** or the **OR** operator in the first field to add a condition to compare the first rule with another rule.

- e. Select **Add rule** in the drop-down list.

- f. Select an attribute, a condition, and select or enter a value.

**Example**

Select **Test** as an attribute, select = as a condition operator, and enter *mytest* as a value.

Follow these steps to add a group in your query:

3. Select **Add group** in the drop-down list.



**Note:** A group is a collection of rules and can also contain other groups within a query. You can add a rule or a group within this group.

4. Select a condition operator.

**Example**

Select **Or**.

5. Select **Add rule** in the drop-down list to add a rule in the group.
6. Select the required an attribute, an operator, and enter a value for the rule.

**Example**

Select the **Type** attribute, = as an operator, and **Compound Test** as a value.

7. Select **Add rule** to add another rule in the group.
8. Select and enter the appropriate parameters as you did for the other rules.

**Example**

Select **Type** as an attribute, = as a condition, and **VU Schedule** as a value.

9. Click **Apply** if you want to apply the filter now.

You can cancel the query or save the query when the results are found.

The screenshot shows a query builder interface with the following structure:

- Outer Group: **And**
  - Rule 1: Verdict = Fail
  - Rule 2: Test = mytest
    - Inner Group: **Or**
      - Rule 3: Type = Compound Test
      - Rule 4: Type = VU Schedule

Buttons at the bottom: Cancel, Apply, Save.

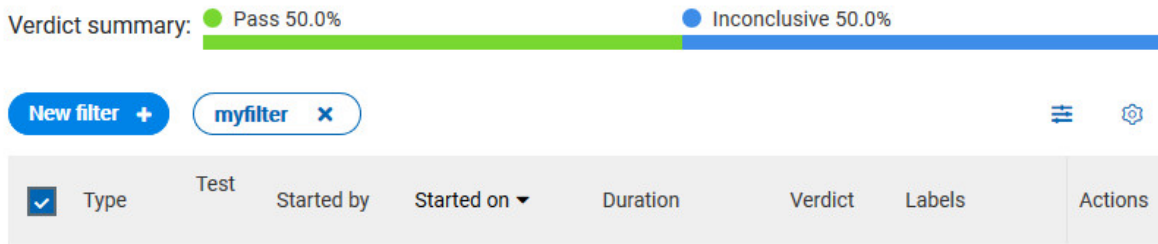
10. Click **Save**.


Proceed as follows to select your filters:

11. Enter a name for the filter and save in the dialog box that is displayed.

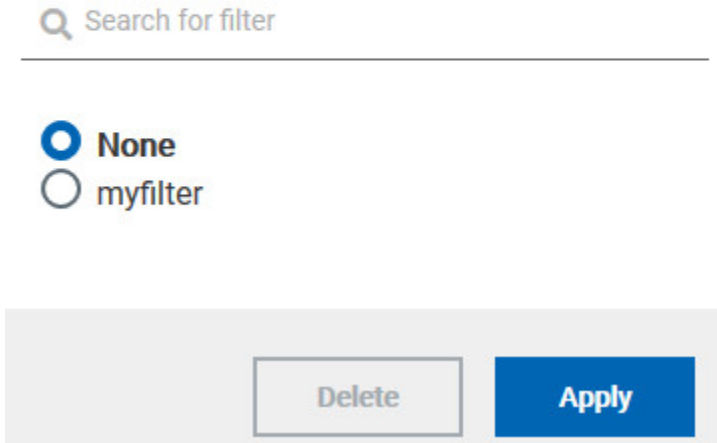
**Result**

The filter is displayed as a favorite filter.




12. Click the icon  to select the filters you created from the list of saved filters.

## Filters



13. Click a filter in the list of saved filters. If a filter does not display in the list, enter the name of a filter in the search field and select it.

 **Note:** You can delete a filter from the list or disable filters by selecting **none** in the list.

14. Apply the selected filter.

**Result**


The filter is displayed as a new favorite filter in the **Results** page.

## Comparing test reports

After you run performance tests, you can analyze the difference between two or multiple test results in IBM® Rational® Test Automation Server. For example, you can compare the performance of an application at different time slots or different milestone builds between two test results.

**About this task**

You can compare the test runs for performance tests that are in the same project or in different projects.

1. Select results in the **Results** page by checking the boxes in the first column.
2. Click the  icon



**Note:** When comparing multiple runs, you cannot compare multiple time-ranges or stages.



## Result


The two or multiple test results are displayed in a browser window in the same report.

## Viewing trending reports

When the performance test runs are complete, you can view the trend of response time for an application over a period of time in IBM® Rational® Test Automation Server from trending reports. In addition to the response time, you can view the trend for the loops, transactions, and performance requirements for the application.

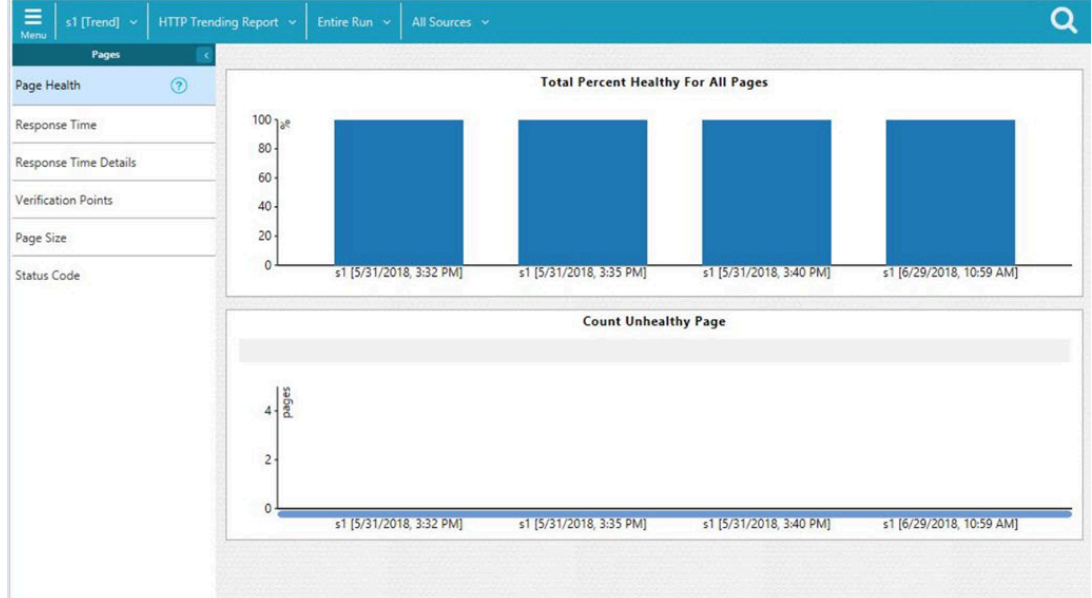
### About this task

The trending reports are available for performance tests only.

1. Select results in the first column in the **Results** page.
2. Click the  icon to view the trending reports.



**Note:** When comparing multiple runs, you cannot compare multiple time-ranges or stages.



## Results

You can analyze the trend information for multiple test results in the same report from a browser window.

## Re-executing tests from results

You can re-execute a test, a schedule, a collection of tests or schedules from IBM® Rational® Test Automation Server if you want to keep the same commit id.

### Before you begin

You must have executed a test or multiple tests from the **Execution** page in IBM® Rational® Test Automation Server.

Re-executing a test from the **Results** view requires a Tester or an Owner role.

### About this task

The following procedure describes how to re-execute a single test or multiple tests at a time.

Perform all the following steps from the Results page.

- Proceed as follows to re-execute one test at a time:
  1. Identify the test that you want to re-execute and click the **Re-execute** button in the Actions column.

### Result

The **Execute test asset** dialog box displays the same parameters as the ones that were set to execute the initial test from the **Execution** page.

2. Select another **Version** of the test.



**Note:** If you select another version of the test, the settings configured in the dialog box and in the **Environment**, **Data Sources** and **Locations** tabs might change.

3. Modify the **Schedule** parameters.




**Note:** If you don't want to execute the test now, schedule the time when you want the test to be re-executed.

4. Click the **Environment** tab and select another **API test environment** if multiple environments were initially set for a test that is running an API Suite.
5. Click the **Data Sources** tab and select an override option if multiple data sources were defined for the initial test run.
6. Click the **Variables** tab and add a new variable if you want to re-execute a test asset with a different variable from the one configured in the asset.
7. Click the **Location** tab to override the default cluster location if the test asset has a docker host or static agents configured.
8. Click **Advanced** to modify the advanced parameters that were set for the initial test run.
9. Enter a new **Program Argument** if applicable to the test.



**Note:** If Jaeger is installed with IBM® Rational® Test Automation Server, you can enter the `-history jaeger` Program Argument to produce Jaeger traces when you run the tests.

10. Enter a new instance of **Java arguments** if applicable to the test.
11. Enter the environment variables that must be passed to the test run at runtime in the **Environment Variables** field.
12. In the **Resource Monitoring** tab, click the  , and press the Ctrl + Space keys, or enter the initial letter of a label to select a label in the list and override the current sources in the schedule.




**Note:** The **Resource Monitoring** tab is displayed for performance schedules and only if you have enabled the **Resource Monitoring from Service** option from Rational® Performance Tester.

The label field is grayed if you don't have any label entered in your current project. To collect data during the test execution, you must first enter labels in the Resource Monitoring sources page from IBM® Rational® Test Automation Server.



For more details about controlling Resource Monitoring sources and labels, see the links at the end of this page.

13. Click the **Re-execute**  icon to re-execute the test now or at a scheduled time.

- Proceed as follows to re-execute multiple tests at a time:

1. Click the checkboxes for the tests that you want to re-execute.

You can select them one by one or select all of them.

**Result**

A toolbar is displayed.

2. Click the **Re-execute** icon  in the toolbar.

**Result**

A message indicates the number of selected tests and the number of tests to be re-executed. The tests are re-executed with the same initial commit ids and parameters.

3. Click **Execute**.

**Result**

You can view the results, logs, and reports of the re-executed tests in the **Results** page.

---

Related information

[Adding a project on page 436](#)

[Test results and reports overview on page 319](#)

[Controlling resource monitoring sources in a schedule on page 362](#)

Tests configurations and test runs

## Resource monitoring service

When you apply load to a system under test, the amount of resources consumed by your system is increasing. If the capacity of the resources does not match the load, you can see performance issues in the results. The resource monitoring service in Rational® Test Automation Server helps you monitoring the resources of a system and establish the performance metrics of the system. Thus, you can observe the health of these resources while a schedule is running.

You can use the resource monitoring service while running a schedule to capture data, such as processor or memory usage, or to monitor the availability of hosts and services by using counters. The resource monitoring service can provide a comprehensive view of a system under test to help determine problems. Hosts and services can be servers, virtual machines, or any local host or network services. You can also monitor remote hosts and services with agents.



### Monitoring a local host and service

You can use the resource monitoring service to monitor any local host and network service. In this case, the resources of the hosts are locally monitored. This method is used for host targets that the service can reach directly. With Rational® Test Automation Server, you can also monitor performance metrics that are collected and stored by a monitoring system that is monitoring a host. You can use a Prometheus server or a data collector through an exporter, OpenMetrics exporter, for example.

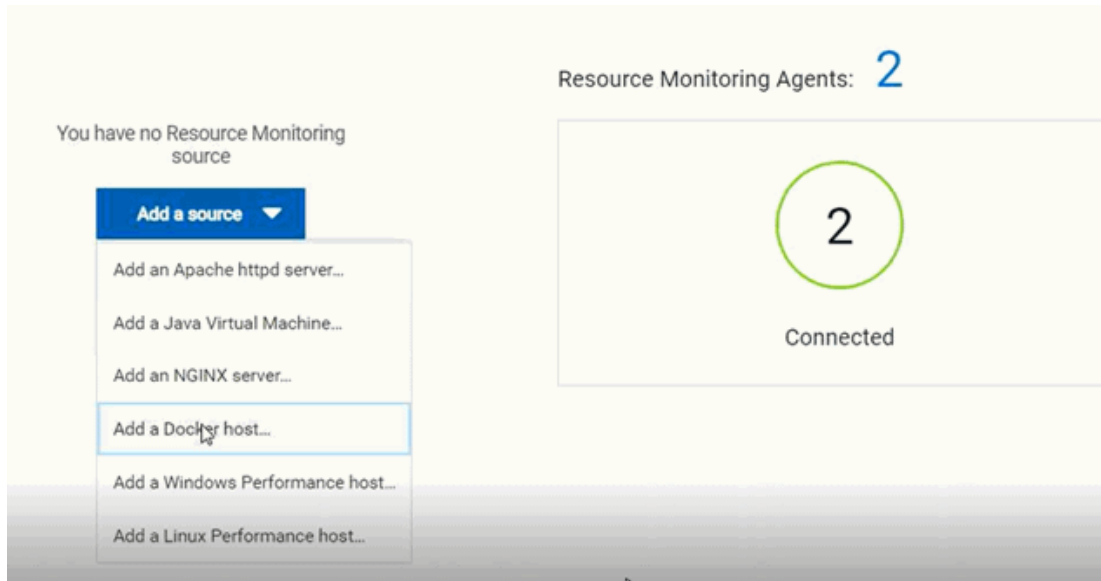
To monitor resources on a local system, you must add the source of the resource monitoring data from the resource monitoring page. Then you have to enter some connection settings and select the performance counters to monitor the sources. The metrics are exposed in a graph for each selected counter.

### Monitoring a remote host with monitoring agents

You can use the resource monitoring service to monitor remote hosts and services with agents through wider sets of data collectors, computers, and networks. The purpose is to capture CPU load, disk space, memory, and the running process for example.

Agent-based monitoring is useful when remote services are not directly accessible through the network. Agents are closer to the target that you want to monitor. You can set up the agent on an authorized host, for example, when access to an **Apache httpd** or **NGINX** server status page or a **JVM JMX** port is restricted to one or few client hosts only. The configuration task is simplified, and no security changes are required.

To monitor a host across monitoring agents, you must first set up the resource monitoring agents on the target host for which you want to collect the performance statistics. The agents establish a connection with the resource monitoring service. When the connection is set, the agent is showing up in the list of sources on the resource monitoring main page. You can select it, choose performance counters, and view the metrics statistics in a graph for each selected counter.



### Resource monitoring sources

With Rational® Test Automation Server, you can monitor resources for the following sources:

- **Apache httpd server**
- **NGINX and NGINX Plus**
- **Java Virtual Machine:** You can monitor JVM resources from a local or a remote system. Some parameters must be set in the command before running the Java Virtual Machine. For more details, see the link to the page about starting a Java Virtual Machine on this page.
- **Windows Performance host:** To monitor the performance of a Windows host, you must have installed an agent on the target Windows host.

If IBM® Rational® Test Automation Server is installed on a Linux system, and you want to check the performance of the Windows host, you must have installed an agent on the target Windows host to start monitoring its performance.

- **Linux Performance host:** To monitor the performance of a Linux host, you must have installed an agent on the target Linux host.

If IBM® Rational® Test Automation Server is installed on a Windows system and you want to check the performance of the Linux host, you must have installed the resource monitoring agent on the Linux system.

- **Docker host:** A resource monitoring agent is mandatory to get a Docker Data Collector. The Docker host source is added to the list of resource monitoring sources when the agent is installed.
- **Prometheus server:** You can monitor metrics of a host under test that are collected by a Prometheus server. Prometheus collects metrics from monitored targets by regularly requesting appropriate HTTP endpoints on these targets (called *scraping*).

The metrics data are collected through data collectors sets (groups of performance counters) that are tracking the system performance. The performance data results are stored under a Prometheus REST API so that they can be consumed by external systems.

With the resource monitoring service in Rational® Test Automation Server, you can query these performance metrics collected by Prometheus servers. 'PromQL' is the language for querying Prometheus metric data.

In the resource monitoring service, you can select default queries, or create additional ones.

A Prometheus server is required and it must be configured to scrap a set of exporters, every 15 seconds by default. Pushgateway, service discovery, and Alertmanager are optional.

- **OpenMetrics exporter:**

You can monitor the metrics of a host under test that are collected and exposed through an OpenMetrics format or a Prometheus exporter format.

The resource monitoring service in Rational® Test Automation Server is given the ability to scrap metrics exposed by an OpenMetrics or Prometheus exporter through metric counters. No Prometheus server installation is required, you only need to set up one or multiple OpenMetrics, or Prometheus exporters that fit your software or host target. Refer to the link at the end of this page to see the list of exporters.



**Note:**

- You must be a *Team Space Owner* to create, modify and remove resource monitoring sources in a team space. Any team space *Member* (not owner) can only view resource monitoring sources.
- You must be a project *Owner* to create, modify and remove resource monitoring sources in a project. Any project *Member* (not the owner) can only view resource monitoring sources.

Click the links in the next section of this page for more details on the resource monitoring tasks that you can perform in Rational® Test Automation Server.

---

Related information

[Exporters and Integrations](#)

[Starting a Java Virtual Machine on page 360](#)

## Resource monitoring capabilities

With Rational® Test Automation Server, you can monitor a host or a service that you add to a project as a source. You can select the statistics counters that are used to collect metrics and the resource usage data throughout the

monitoring system. You can visualize metrics and data that are gathered during the monitoring process in Rational® Test Automation Server.

**Requirements:**

- You must be a *Team Space Owner* to create, modify and remove resource monitoring sources in a team space. Any team space *Member* (not owner) can only view resource monitoring sources.
- You must be a project *Owner* to create, modify and remove resource monitoring sources in a project. Any project *Member* (not the owner) can only view resource monitoring sources.

**Supported sources**

With IBM® Rational® Test Automation Server, you can monitor resources for the following sources:

- **Apache httpd server:** You can optionally use agents.
- **NGINX and NGINX Plus:** You can optionally use agents.
- **Java Virtual Machine:** You can optionally use agents.

You can monitor JVM resources from a local or a remote system. Some parameters must be set in the command before running the Java Virtual Machine. For more details, see the link to the page about starting a Java Virtual Machine on this page.

- **Windows Performance host:**

To monitor the performance of a Windows host, you must have installed an agent on the target Windows host

or on a Windows host that is configured to access the performance data of the Windows host target.

- **Linux Performance host:**

To monitor the performance of a Linux host, you must have installed an agent on the target Linux host.

- **Docker host:**

A resource monitoring agent is mandatory to get a Docker data collector. The Docker host source is added to the list of resource monitoring data collectors when the agent is installed.

- **Prometheus server:**

You can monitor metrics of a host under test that are collected by a Prometheus server. Prometheus collects metrics from monitored targets by regularly requesting appropriate HTTP endpoints on these targets (called *scraping*).

The metrics data are collected through data collectors sets (groups of monitoring counters) that are tracking the system performance. The performance data results are stored in the Prometheus database so that they can be consumed by external systems through a REST API.

In Rational® Test Automation Server, you can query these performance metrics collected by Prometheus servers. 'PromQL' is the language for querying Prometheus metric data. Refer to Prometheus PromQL documentation for information about this query language.

You can select default queries, or create additional ones.

A Prometheus server is required. It must be configured to scrap a set of exporters, every 15 seconds by default. Pushgateway, service discovery, and Alertmanager are optional.

If Rational® Test Automation Server cannot directly reach the Prometheus server, you can consider setting up an agent on an authorized host or on the same host that is running Prometheus.

- **OpenMetrics exporter:**

You can monitor the metrics of a host under test that are collected and exposed through an OpenMetrics format or a Prometheus exporter format.

Rational® Test Automation Server can scrap metrics exposed by an OpenMetrics or Prometheus exporter through metric counters. No Prometheus server installation is required, you only need to set up one or multiple OpenMetrics, or Prometheus exporters that fit your software or host target.

If Rational® Test Automation Server cannot directly reach the Prometheus server, you can consider setting up an agent on an authorized host or on the same host that is running Prometheus.

## Monitoring an NGINX server

To monitor an NGINX server, you must add the NGINX server source to Rational® Test Automation Server. To use, enter connection settings and select the counters that are used to capture the monitoring usage data.

### Before you begin

You must have logged in Rational® Test Automation Server and be the owner of an existing new project.

If you monitor a remote host, it must be connected with the computer that you use to access resource monitoring. See [Resource monitoring agents on page 348](#).

You can optionally use agents.

### About this task

This task applies to NGINX and NGINX Plus.

If you use an agent to connect

1. Click **Infrastructure > Resource Monitoring**.

The resource monitoring page opens.

2. In the resource monitoring page, click **Add a Source** and select **Add an NGINX server...**

3. Fill in the following connection settings in the **New server** dialog box:

- a. In **Target host**, enter the IP address or host name and port number of the host where the server to monitor is installed.



**Note:** For hosts that are already connected to Rational® Test Automation Server through an agent, you have only the **Access target from** field enabled. Move directly to step 4.

- b. In **Server edition**, select the appropriate server from the drop-down list.

- c. In **Path to the status page of the server**, enter the name of the page to view the status of the server.



**Note:** If you select NGINX Plus (with API version 3) as a source, you must specify the name of the path to view the API root of the NGINX Plus server.

- d. In **Security**, select the following options:

**Secured with TLS/SSL**

If the application server is secured with TLS/SSL.

**Trust self-signed certificate**

To accept the server certificate.

**Do not verify host name**

To ignore verification of the host name in the certificate.

**Require credentials**

If the server requires log-in credentials, enter a **User name** and **Password**.

- e. Click **Add**.

The **Choose Data Counters** dialog opens.

4. Select and save the statistics counters to monitor the source. You can select them from the list where they follow the server logical organization.

For a faster selection, select the counters from the built-in sets drop-down list where they are organized by theme and save your selection.

HTTP Server Zones (8/8)
HTTP Server Zones Errors (2/2)
▼

Connections and Request

HTTP Server Zones

HTTP Server Zones Errors

---

Stream Server Zones

---

Stream Server Zones Errors

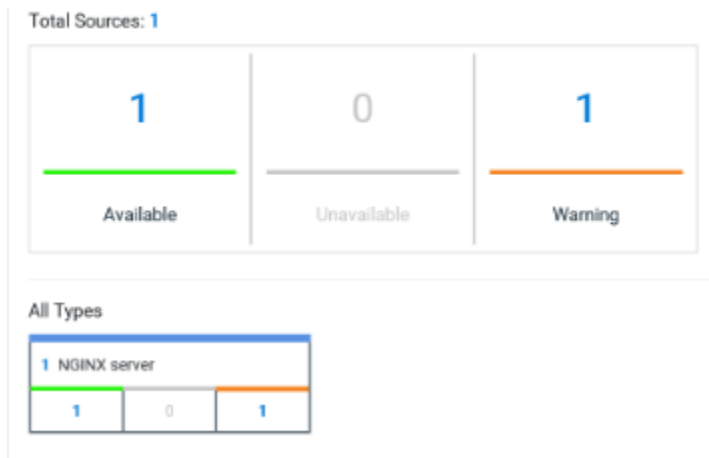
**Note:**

For Docker host, you can select different sets of counters.

- The first level of counters: Generic counters that are related to a Docker Image and all its running Docker Containers (in an exit, running or paused, created, restarted, removing, dead or transitive state).
- The second level of counters: Specific counters that are related to the existing Docker Containers.

**Results**

When the selected counters are saved, two tables are displayed in the resource monitoring main page. They contain the total number of sources you have added and the number of sources ordered by type.

**What to do next**

You can click the links in the tables to view the performance metrics of your monitored system.

---

Related information

Viewing the performance metrics

## Monitoring an Apache httpd server

To monitor an Apache httpd server, you must add the Apache httpd server source to Rational® Test Automation Server, enter connection settings and select the counters that are used to capture the monitoring usage data.

### Before you begin

You must be logged in Rational® Test Automation Server and be the owner of an existing new project.

You can optionally use agents. See [Resource monitoring agents on page 348](#).

1. Click **Infrastructure > Resource Monitoring**.

The resource monitoring page opens. See [Resource monitoring agents on page 348](#).

2. In the resource monitoring page, click **Add a Source** and select **Add an Apache httpd server...**
3. Fill in the following connection settings in the **New server** dialog box:



**Note:** For hosts that are already connected to Rational® Test Automation Server through an agent, you have only the **Access target from** field enabled. Move directly to step 4.

- a. In **Target host**, enter the IP address or host name and port number of the host where the server to monitor is installed.
- b. In **Server edition**, select the appropriate server from the drop-down list.
- c. In **Path to the status page of the server**, enter the name of the page to view the status of the server.
- d. In **Security**, select the following options:

**Secured with TLS/SSL**

If the application server is secured with TLS/SSL.

**Trust self-signed certificate**

To accept the server certificate.

**Do not verify host name**

To ignore verification of the host name in the certificate.

**Require credentials**

If the server requires log-in credentials, enter a **User name** and **Password**.

4. Click **Add**.

The **Choose Data Counters** dialog opens.



5. Select and save the statistics counters to monitor the source. You can select them from the list where they follow the server logical organization.

For a faster selection, select the counters from the built-in sets drop-down list where they are organized by theme and save your selection.

## Results

When the selected counters are saved, two tables are displayed in the resource monitoring main page. They contain the total number of sources you have added and the number of sources ordered by type.

## What to do next

You can click the links in the tables to view the performance metrics and resource monitoring usage data for the monitored server.

---

Related information

[Resource monitoring service on page 328](#)

Viewing the performance metrics

## Monitoring metrics collected by a Prometheus server

You can monitor your system resources by using metrics data that are collected by a Prometheus server while executing a schedule.

### Before you begin

You must have created a project in Rational® Test Automation Server.

You must have installed and configured a Prometheus server.

Read the concept information about resource monitoring and monitoring Prometheus server source. See [Resource monitoring service on page 328](#)

### About this task

The following procedure describes how to select and create Prometheus queries in Rational® Test Automation Server. You must set a connection between Rational® Test Automation Server and the Prometheus server first to access to the Prometheus queries.

Enter the connection settings, then select queries.

1. Click **Add a source** and select **Add a Prometheus Server**.
2. Enter the connection settings in the **New server** dialog box.

- a. In **Target host**, enter the IP address or host name and port number of the host where the Prometheus server is installed.
- b. Enter the **Path to the API root of Prometheus** to point to the Prometheus API where the monitoring data are saved.
- c. Enter the security parameters if required. For information about this section, see related links.
- d. Click **Add** to close the dialog box.

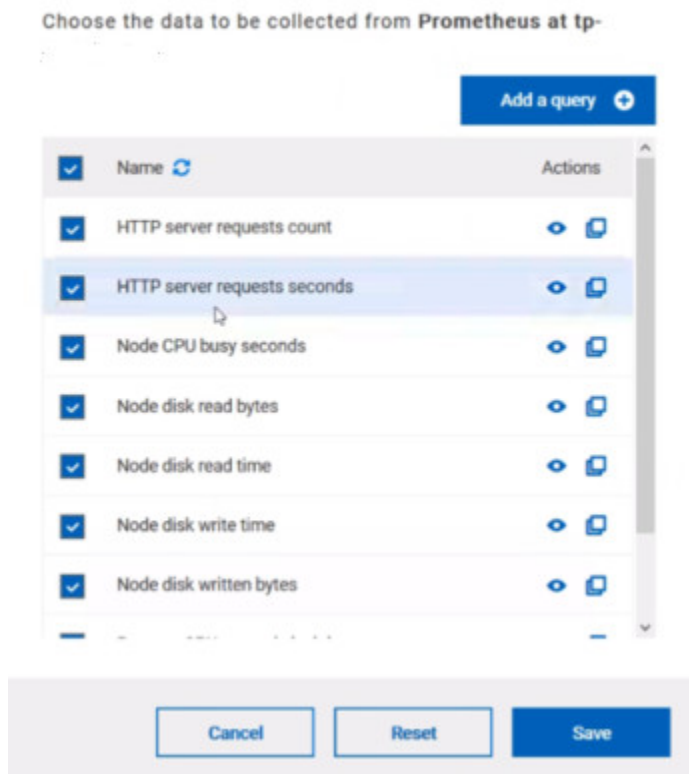
**Result**

The Prometheus server source is created successfully in the background and a dialog box opens to select the Prometheus data queries.

3. In the **Select Prometheus queries** dialog box, select queries that are available in the list to collect Prometheus metrics data by clicking the checkboxes.

You can reset the selection.

### Select Prometheus queries



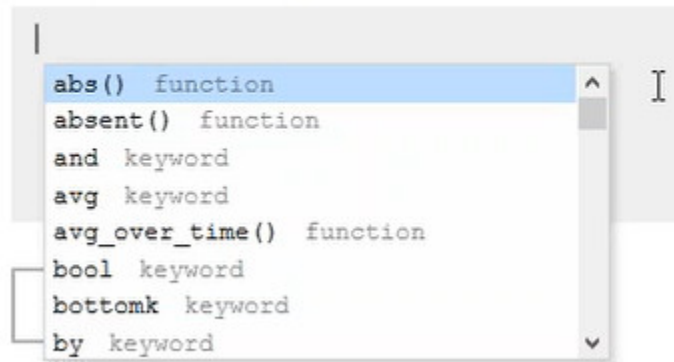
4. Follow these steps to create a query:

- a. Click **Add a query**.
- b. Enter a name for the new query in the **Create a Prometheus query** dialog box.
- c. Enter a PromQL query.any keyword and press Ctrl+Space in the **Type and test your PromQL query**.

**Result**

All the possible combinations of keywords and metrics related to your searched keyword are listed.

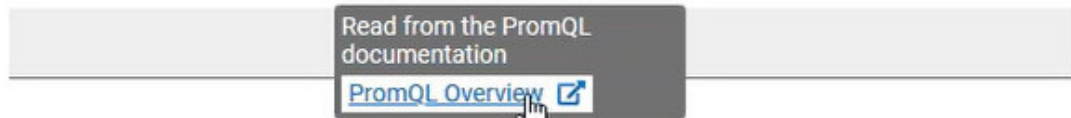
Type and test your PromQL query ⓘ



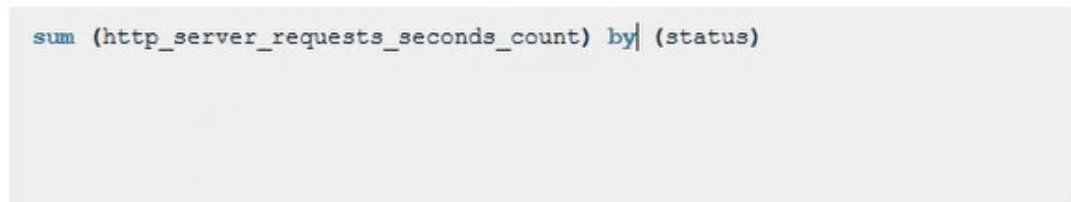
d. Select a query in the list.

e. Click the link that points to the 'Querying Prometheus documentation' page in the information tool tip to find other examples of queries in a web page that you can use as samples.

Name



Type and test your PromQL query ⓘ




f. Click **Test query**.

If the test is successful, a green check is displayed, otherwise you get a red check with an error message.

g. Click **Create**.

5. Proceed as follows to duplicate a query:

- a. Click the **Duplicate** icon  to duplicate a standard query.
- b. Rename the duplicated query in the **View the Prometheus query** dialog box. Make sure that the name you give to the query is not already used.
- c. Modify the query type.

- d. Test the query .
- e. Click **Create**.



**Note:** You can click Create or Duplicate only if the test of the query is successful and the name of the query is not already in use.

## Create a Prometheus query

Name

JVM Memory

Type and test your PromQL query ?

```
jvm_memory_committed_bytes
```

✔

6. Proceed as follows to modify a query:
  - a. Click the **Modify** icon .
  - b. Modify the name and type of the query.
  - c. Test the query.
  - d. Click **Update**.
  - e. Delete duplicated or created queries.
  - f. Click **Save** to close the **Select Prometheus queries** dialog box.
7. Click Save and close the **Select Prometheus queries** dialog box.

### Results

The resource monitoring page displays the total number of sources you have added to your project and the number of sources ordered by type in cards.

### What to do next

Click the links in the cards to go to the sources page and see the performance metrics for each source you added to your project. For more details, see [Viewing the performance metrics](#)

---

Related information

[Resource monitoring service on page 328](#)

[Monitoring an NGINX server on page 333](#)

Viewing the performance metrics

## Monitoring metrics exposed by an OpenMetrics exporter

With Rational® Test Automation Server, you can monitor your system resources by using metrics data that are exposed by an OpenMetrics or a Prometheus exporter through metric counters while executing a schedule.

### Before you begin

You must have at least one exporter or software to expose monitoring metrics with an OpenMetrics or Prometheus format.

You must have created a project in Rational® Test Automation Server.

### About this task

The following procedure describes how to select and create OpenMetrics counters in Rational® Test Automation Server. You must set a connection between Rational® Test Automation Server and the OpenMetrics exporter to select counters.

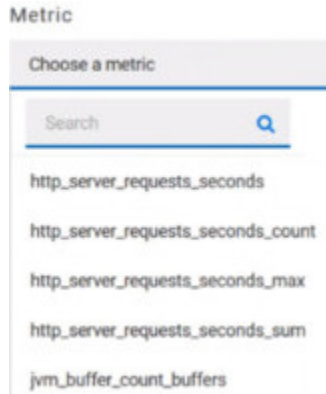
1. Click **Add a source** and select **Add an OpenMetrics exporter**.
2. In the **New OpenMetrics exporter** dialog box that opens, enter the OpenMetrics exporter details to access its exposition endpoint as follows:
  - a. In **Target host**, enter the IP address or host name and port number of the host where the server is installed.
  - b. Enter the **Path to the exposition endpoint** to point to the application where the data performance results must be stored. As the path depends on the type of exporter used, refer to the exporter's documentation and configuration to indicate the right path.
  - c. In **Security**, enter the security parameters if required.
  - d. Click **Add** to close the dialog box.

#### Result

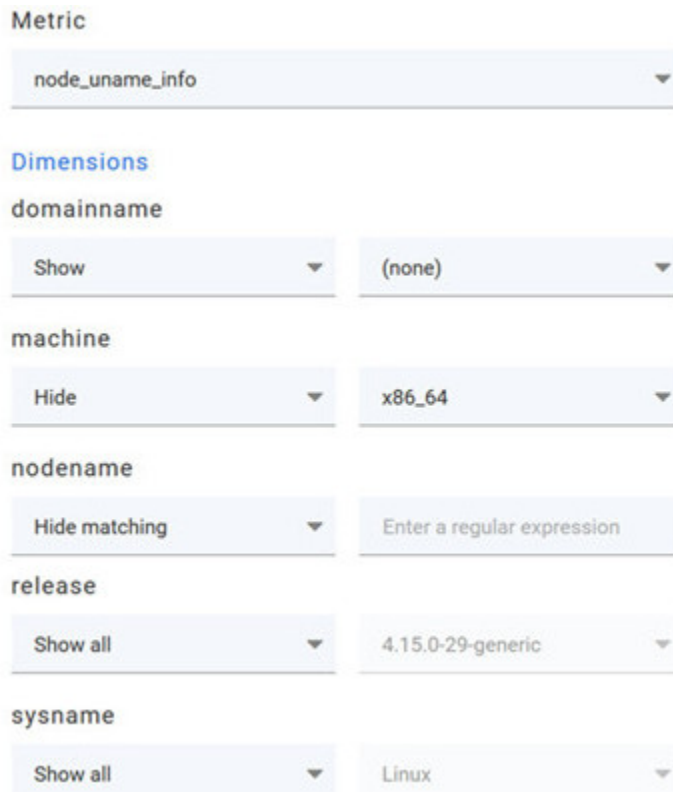
The source is created successfully in the background. A dialog box opens to select the OpenMetrics counters.

3. Click the checkboxes to select counters in the **Select OpenMetrics counters** dialog box.
4. Follow these steps to create a counter:

- a. Click **Add a counter**.
- b. Enter a name for the new counter, in the **OpenMetrics counter**.
- c. Select metrics in the drop-down list or enter a keyword in the **Dimensions** field to enable the dynamic input help. You can also use the search field that appears in the list of metrics.



- d. Select **Dimensions** from the dynamic fields when they are required.



- e. Select the appropriate OpenMetrics counter that you are looking for.
- f. Click **Create**.

## Create an OpenMetrics counter

Name

JVM Memory

Metric

jvm\_memory\_used\_bytes

Dimensions


area


Show all heap,nonheap

id


Show all 6 items selected

Cancel Create

5. Follow these steps to duplicate a counter:
  - a. Select a counter in the list, and click the **Duplicate** icon .
  - b. Modify the name of the counter and the Dimensions.
  - c. Click **Create**.
6. Proceed as follows to modify a new counter:
  - a. Click the **Modify** icon.
  - b. Modify the name, Metrics, and Dimensions of the counter in the **Modify the OpenMetrics counter**.
  - c. Click **Update**.

 **Note:** You can create, duplicate, or update a counter only if the name of the counter is not already used.

7. Click **Save** and close the **Select OpenMetrics counters** dialog box.

 **Note:** You can delete counters, but only the ones that you created or duplicated.

### Results

The resource monitoring page displays the total number of sources you have added to your project and the number of sources ordered by type in cards.

### What to do next

Click the links in the cards to go to the sources page and see the performance metrics for each source you added to your project. For more details, see [Viewing the performance metrics](#).

---

Related information

[Resource monitoring service on page 328](#)

## Monitoring a Java Virtual Machine

To monitor a Java Virtual Machine, you must add the Java Virtual Machine source to the project in Rational® Test Automation Server and select the counters that are used to capture the monitoring metrics.

### Before you begin

You must have completed the following tasks:

- Configured and started the Java Virtual Machine from a command to connect it Rational® Test Automation Server.

See [Starting a Java Virtual Machine on page 360](#).

- Logged in Rational® Test Automation Server. You must be the owner of an existing new project.
- You can optionally use agents. See [Resource monitoring agents on page 348](#).

### About this task

The Java Virtual Machine source is added to the list of resource monitoring sources when the agent is installed.

1. Click **Infrastructure > Resource Monitoring**.  
The resource monitoring page opens.
2. In the resource monitoring page, click **Add a Source** and select **add a Java Virtual Machine**.
3. Fill in the following connection settings in the **New server** dialog box:



**Note:** For hosts that are already connected to Rational® Test Automation Server through an agent, you have only the **Access target from** field enabled. Move directly to step 4.

- a. In **Target host**, enter the IP address or host name and port number of the host where the server to monitor is installed.
- b. In **Server edition**, select the appropriate server from the drop-down list.
- c. In **Path to the status page of the server**, enter the name of the page to view the status of the server.



d. In **Security**, select the following options:

**Secured with TLS/SSL**

If the application server is secured with TLS/SSL.

**Trust self-signed certificate**

To accept the server certificate.

**Do not verify host name**

To ignore verification of the host name in the certificate.

**Require credentials**

If the server requires log-in credentials, enter a **User name** and **Password**.

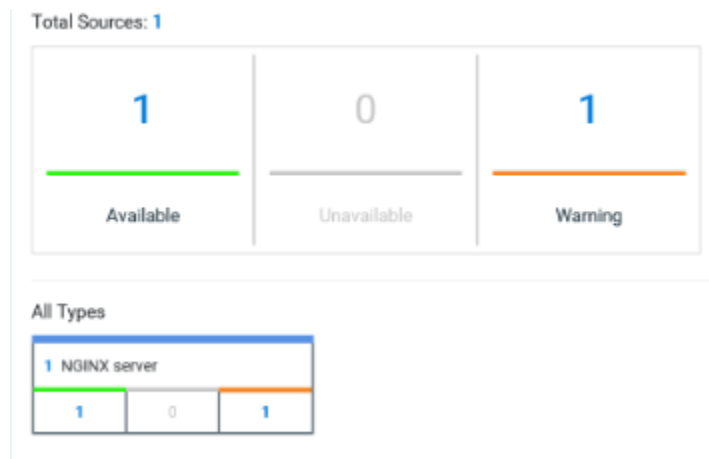
4. Click **Add**.

5. Select and save the statistics counters to monitor the source. You can select them from the list where they follow the server logical organization.

For a faster selection, select the counters from the built-in sets drop-down list where they are organized by theme and save your selection.

**Result**

When the selected counters are saved, two tables are displayed in the resource monitoring main page. They contain the total number of sources you have added and the number of sources ordered by type.



**What to do next**

You can click the links in the tables to view the performance metrics and usage data in a graph for the monitored Java Virtual Machine.

Related information

[Resource monitoring service on page 328](#)

Viewing the performance metrics

## Monitoring a Windows Performance host

To monitor a Windows Performance host, you must add the Windows Performance host source to the project in Rational® Test Automation Server and select the counters that are used to capture the monitoring usage data.

### Before you begin

You must have completed the following tasks:

- Installed and started an agent. See [Resource monitoring agents on page 348](#).
- Logged in to Rational® Test Automation Server. You must be the owner of an existing new project.

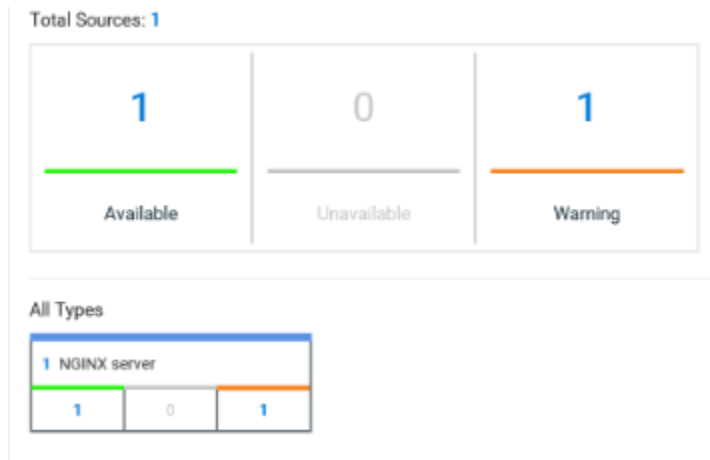
### About this task

The Windows Performance host source is added to the list of resource monitoring sources when the agent is installed.

1. Click **Infrastructure > Resource Monitoring**.  
The resource monitoring page opens.
2. In the resource monitoring page, click **Add a Source** and select **add a Windows Performance host**.
3. Select an address to connect to the target host in **Access target from**.
4. Click **Add**.  
The **Choose Data Counters** dialog opens.
5. Select and save the statistics counters to monitor the source. You can select them from the list where they follow the server logical organization.  
For a faster selection, select the counters from the built-in sets drop-down list where they are organized by theme and save your selection.

### Result

When the selected counters are saved, two tables are displayed in the resource monitoring main page. They contain the total number of sources you have added and the number of sources ordered by type.



### What to do next

You can click the links in the tables to view the performance metrics and usage data in a graph for the monitored Windows Performance host.

---

#### Related information

[Resource monitoring service on page 328](#)

[Viewing the performance metrics](#)

## Monitoring a Linux Performance host

To monitor a Linux Performance host, you must add the Linux Performance host source to the project in Rational® Test Automation Server and select the counters that are used to capture the monitoring usage data.

### Before you begin

You must have completed the following tasks:

- Installed and started an agent. See [Resource monitoring agents on page 348](#).
- Logged in to Rational® Test Automation Server. You must be the owner of an existing new project.

### About this task

The Linux Performance host source is added to the list of resource monitoring sources when the agent is installed.

1. Click **Infrastructure > Resource Monitoring**.  
The resource monitoring page opens.
2. In the resource monitoring page, click **Add a Source** and select **add a Linux Performance host**.
3. Select an address to connect to the target host in **Access target from**.

4. Click **Add**.

The **Choose Data Counters** dialog opens.

## 5. Select and save the statistics counters to monitor the source. You can select them from the list where they follow the server logical organization.

For a faster selection, select the counters from the built-in sets drop-down list where they are organized by theme and save your selection.

**Result**

When the selected counters are saved, two tables are displayed in the resource monitoring main page. They contain the total number of sources you have added and the number of sources ordered by type.

**What to do next**

You can click the links in the tables to view the performance metrics and usage data in a graph for the monitored Linux Performance host.

## Related information

[Resource monitoring service on page 328](#)

[Viewing the performance metrics](#)

## Resource monitoring agents

You can connect agents to the resource monitoring service from other hosts to monitor a larger set of data collectors, computers, servers, or systems, or if a server to monitor requires authorization access. To monitor these remote servers, you must configure and run the agents so that a connection is set between IBM® Rational® Test Automation Server resource monitoring service and the agents.

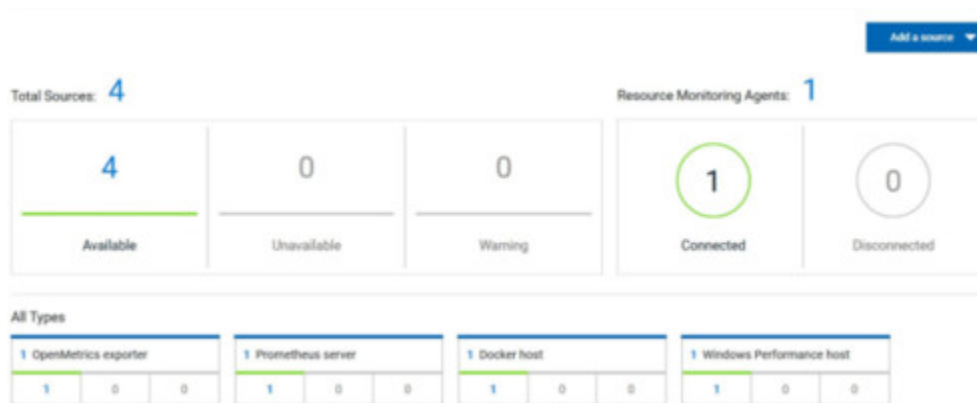
For testing, you would need many hosts. For example, you might have one host with the application server, another host with the database server, and some hosts to apply the user load. Due to network or firewall issues, sometimes, it becomes difficult for multiple hosts to connect to each other. resource monitoring agents are installed on the

target hosts so that they can establish a connection with IBM® Rational® Test Automation Server to gather resource statistics of the target host.

The agents always try to connect with the server through the HTTPS protocol. You must install the agent and start it. From the resource monitoring service page in IBM® Rational® Test Automation Server, you can copy the command lines to download files and run the agents. When you stop the agent, the monitoring sources that you have already added persist but the live data will not be available.

You can configure your resource monitoring agent as a service so that the agent automatically runs when the host is restarted. For details, see the documentation pages about starting resource monitoring agents on Windows or Linux.

When the agent is connected to IBM® Rational® Test Automation Server, it is added to the main page of the resource monitoring service.



To monitor your host across the agent, you must add the agent as a monitoring source and select performance counters to monitor as described in the monitoring host resources help page.



**Note:**

- To connect resource monitoring agents to IBM® Rational® Test Automation Server in a team space, you must be a *Team Space Owner*. Any other team space *Member* (not owner) can only view the resource monitoring agents.
- To connect resource monitoring agents to IBM® Rational® Test Automation Server in a project, you must be a project *Owner*. Any project *Member* (not the owner) can only view the resource monitoring agents.

---

Related information

[Resource monitoring service on page 328](#)

[Monitoring an NGINX server on page 333](#)

[Starting a resource monitoring agent as a service on Windows on page 354](#)

[Starting a resource monitoring agent as a service on Linux on page 357](#)

## Installing resource monitoring agents on remote hosts

You must install the resource monitoring agents on the target host for which you want to monitor the performance statistics. You need to run the agents to establish a connection with the resource monitoring service.

### Before you begin

- The resource monitoring service does not require access to the agent host but the agent must have reached the service host over HTTPS.
- The Java agent must have been launched from a jar file and requires a Java 8 virtual machine.
- The Docker agent must have been launched in a Docker container and requires Docker 19.03.

### About this task

This task applies to Java and Docker agents. However, the commands used to install agents are different from Java and Docker agents. You can find the commands and instructions in IBM® Rational® Test Automation Server in the resource monitoring agents page.

Before you start the Docker agents, you must build a Docker image.

1. Click **Set up Agents to extend Resource Monitoring service** link in IBM® Rational® Test Automation Server to access the agents page where you can find the instructions and commands that are to be used to install and run the agents.

The screenshot displays the 'Resource Monitoring Agents' page. At the top right, there is a blue button labeled 'Add a source'. Below this, a summary section shows 'Total Sources: 1'. This is followed by three columns representing agent status: 'Available' with a value of 1, 'Unavailable' with a value of 0, and 'Warning' with a value of 0. To the right of these columns is a large grey circle containing the text 'No agents are connected to this project' and a link 'Set up agents to extend Resource Monitoring service'. Below the summary, there is a section titled 'All Types' which contains a table with one row: '1 OpenMetrics exporter'. This row has a sub-table with three columns containing the values 1, 0, and 0.

All Types		
1	0	0

Extend the Resource Monitoring service with agents

- ▶ Context
- ▶ Configure the Java agent
- ▼ **Configure the Docker agent**

1. Install the Docker agent
  - [Download Dockerfile](#)
  - Alternatively, you can use one of the following commands to download the Dockerfile resource:

```
curl -O -J https://tp-cicd6.nonprod.hclpnp.com:/rm/agent-Dockerfile
```

  - Or:

```
wget --content-disposition https://tp-cicd6.nonprod.hclpnp.com:/rm/agent-Dockerfile
```
2. Build the Docker image
  - Once you have downloaded the Dockerfile on your host system, launch the following command to build a dedicated Resource Monitoring Docker image:

```
docker build --network=host --rm -t rmagent .
```
3. Run the Docker container

2. Expand **Configure the Java agent** and click **Download jar file** to download the Java agent, or expand **Configure the Docker agent** and click **Download Docker file** to download a Docker agent. You can also use the `curl` and `wget` commands to download the agent without accessing the resource monitoring web UI. For more facility, use the code snippets to copy and fill in the commands with the valid offline token and the jar or docker file name.

```
curl -O -J https://hostName/rm/Agent-jar
wget --content-disposition https://hostName/rm/Agent-jar
```

3. Copy the build command that is under **Build the Docker image**, paste it in your console and run it to build a resource monitoring Docker image.

```
docker build --network=host --rm -t rmagent
```



**Note:** This step applies to Docker agents only.

4. Configure the command as follows to run your agent:
  - a. Copy the appropriate command for Windows or Linux with the code snippets.
  - b. Enter the path to the directory that contains the agent .jar file, and paste the command.

#### Example

On Windows:

```
set RTCP_OFFLINE_TOKEN=(Enter your offline token here)
java -jar (Enter the name of the downloaded jar file here) --ServiceUrl=https://hostName/rm
--projectId=<project_id>
```

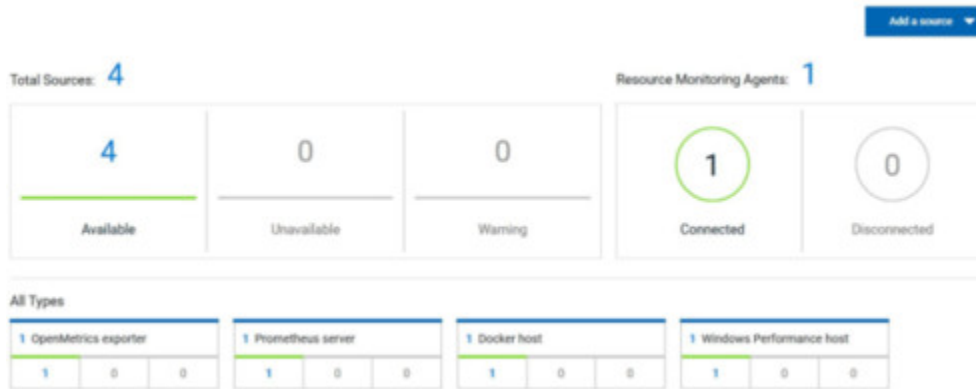
#### Example

On Linux:

```
sudo RTCP_OFFLINE_TOKEN=(Enter your offline token here) java -jar (Enter the name of the
downloaded jar file here) --ServiceUrl=portNumber/rm --projectId=<project_id>
```

## Results

When the agent is started, the agent is connected to IBM® Rational® Test Automation Server. The agent is displayed in the list of connected resource monitoring agents with the host name and status of the agent. The agent is also added to the main page of the resource monitoring service in IBM® Rational® Test Automation Server.



### What to do next

You can add a new resource monitoring source. It can be collected from a service or from the named agents, depending on the capabilities supported by the environment.

## Installing and running a Java agent on a remote host

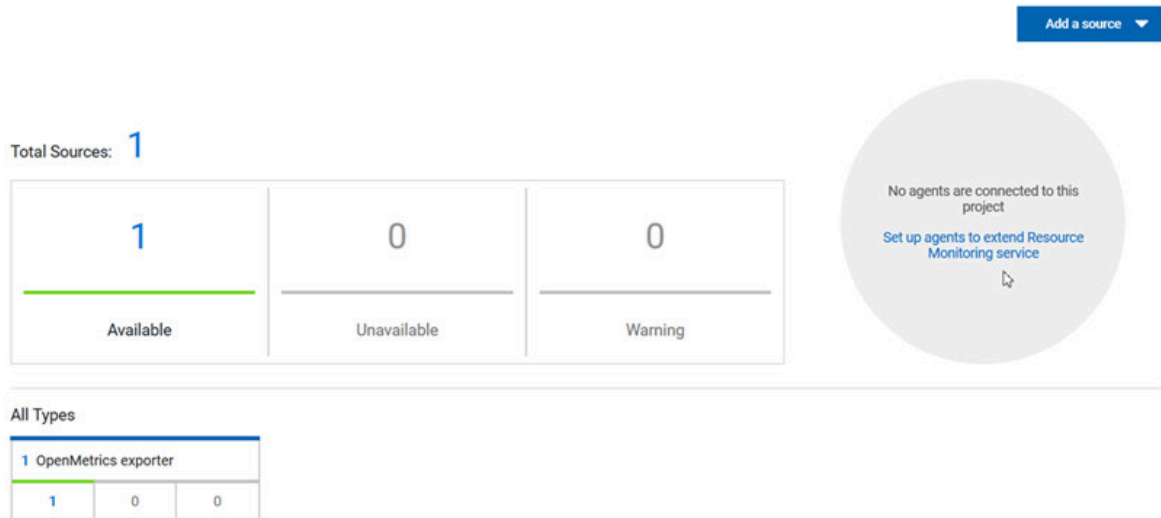
You must install the resource monitoring java agent on the target host for which you want to monitor the resources and collect the metrics. You need to run the agent to establish a connection with Rational® Test Automation Server.

### Before you begin

- The resource monitoring service does not require access to the agent host but the agent must have reached the service host over HTTPS.
- The Java agent must have been launched from a jar file and requires a Java 8 virtual machine.

1. Click **Set up Agents to extend Resource Monitoring service** link in IBM® Rational® Test Automation Server to access the agents page where you can find the instructions and commands that you can use to install and run the agents.





- Expand **Configure the Java agent** and click **Download jar file** to download the Java agent.

You can also use the `curl` and `wget` commands to download the agent without accessing the resource monitoring web UI. For more facility, use the code snippets to copy and fill in the commands with the valid offline token and the jar file name.

For Windows:

```
curl -O -J https://hostName/rm/Agent-jar
```

For Linux:

```
wget --content-disposition https://hostName/rm/Agent-jar
```

- Configure the command as follows to run your agent:
  - Copy the appropriate command for Windows or Linux with the code snippets.
  - Enter the path to the directory that contains the agent .jar file, and paste the command.

#### Example

On Windows:

```
set RTCP_OFFLINE_TOKEN=(Enter your offline token here)
    java -jar (Enter the name of the downloaded jar file here)
--ServiceUrl=https://hostName/rm --projectId=<project_id>
```

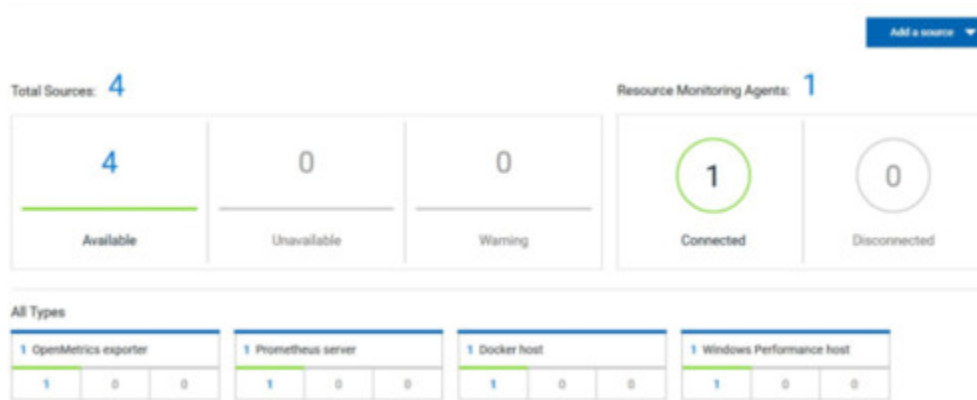
#### Example

On Linux:

```
sudo RTCP_OFFLINE_TOKEN=(Enter your offline token here) java -jar (Enter the name of the
downloaded jar file here) --ServiceUrl=portNumber/rm --projectId=<project_id>
```

## Results

When the agent is started, the agent is connected to IBM® Rational® Test Automation Server. The agent is displayed in the list of connected resource monitoring agents with the host name and status of the agent. The agent is also added to the main page of the resource monitoring service in IBM® Rational® Test Automation Server.



### What to do next

You can use another method to start an agent. See [Starting a resource monitoring agent as a service on Windows on page 354](#) or [Starting a resource monitoring agent as a service on Linux on page 357](#). You can then add a new resource monitoring source. Resource monitoring metrics can be collected from a service or from the named agents, depending on the capabilities supported by the environment.

---

#### Related information

[Resource monitoring capabilities on page 331](#)

## Starting a resource monitoring agent as a service on Windows

To ensure that the resource monitoring agent starts by itself when the host is running, you can set up the environment in such a way that the resource monitoring agent can be started as a service.

### Before you begin

You must have completed the following tasks:

- Installed Java 8 on the host.
- Added IBM® Rational® Test Automation Server to the PATH environment variable.
- Created an offline token to connect the agent securely with appropriate permissions.



**Note:** You can create an offline token from the User menu of the resource monitoring page or you can re-use your active offline token. The token expires if it is not used for a month.

To allow remote access to the performance data on Windows 10, you must have considered the following information:

- The user name and password are the same on the local and remote servers. Otherwise you must have provided remote server credentials.
- The remote user must be a member of the Performance Monitor Users group (start `lusrmgr.msc` and add the user to this group).
- The Remote Registry service must be running on the remote host (start `services.msc`) and must have verified the Remote Registry status).
- File and printer sharing must be enabled on the Network Interface of the remote host that is implied in the communication with the local host.
- You must have activated the following Windows Firewall rules so that the remote firewall does not block the access:
  - File and Printer Sharing (NB-Name-In)
  - File and Printer Sharing (NB-Session-In)
  - File and Printer Sharing (\*)

1. Download the latest release of `winsw`.

You can choose to download `WinSW.Net2.exe` or `WinSW.Net4.exe` depending on the version of .Net framework that you already have on the host Windows.

2. Create a folder on your local hard drive like `RMAgent-winservice`.
3. Copy the downloaded executable to this new folder and rename the file to `RMAgent-winservice.exe`.
4. Create a new text file in the same folder and name it `RMAgent-winservice.xml`.
5. Copy and adapt the following content to this new `RMAgent-winservice.xml` file to set up the offline token:

```
<service>
  <id>RMAgent-winservice</id>
  <name>Resource monitoring agent</name>
  <description>This service runs the resource monitoring agent.</description>
  <executable>java</executable>
  <env name="RTCP_OFFLINE_TOKEN" value="(Enter your offline token here)"/>
  <arguments>-jar %BASE%\RMAgent.jar --serviceUrl=https://<service-host>/rm
  --projectId=<projct-id>
  --autoUpgradeDownloadThen=execute:cmd,/c,start,%BASE%\auto-upgrade.bat</arguments>
  <onfailure action="restart" delay="10 sec"/>
  <logmode>rotate</logmode>
</service>
```



**Notes:**

- Replace `<service-host>` by the host name of the host that runs IBM® Rational® Test Automation Server.
- Replace `<project-id>` which is the number that you find after `/projects/` in the browser's URL when you browse to this project.

6. Create a new text file in the same folder and name it `auto-upgrade.bat`.

7. Copy the following content to this new file to upgrade the agent `.jar` file automatically:

```
@echo off
for /f "tokens=*" %%a in ('dir /b /od %BASE%\com.ibm.test.rm.agent-*.jar') do set newest=%%a
%BASE%\RMAgent-winservice.exe stop
```

```
del %BASE%\RMAgent.jar
mklink %BASE%\RMAgent.jar %BASE%\%newest%
%BASE%\RMAgent-winservice.exe start
```

8. Start the command prompt as an administrator and change the directory to the newly created directory: `RMAgent-winservice`.
9. Download the agent .jar file that is available from the agents page in the resource monitoring service, under the **Extend the Resource Monitoring service with agents** section and save it to the same directory.
10. Enter the following command in the command prompt to create a symbolic link named `RMAgent.jar` to the agent jar file:

```
mklink RMAgent.jar com.ibm.ibm.rm.agent-<version-and-datetime>.jar
```

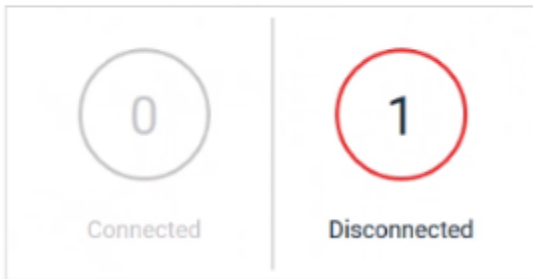
11. Enter the following commands:

```
RMAgent-winservice install
```

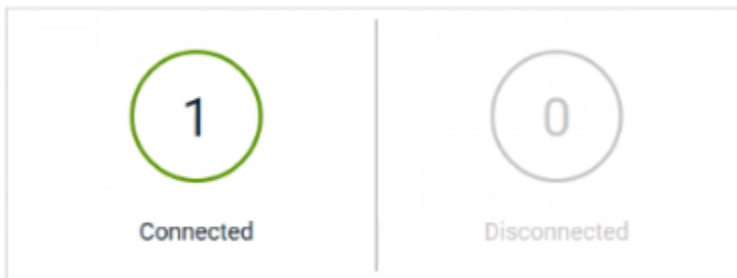
```
RMAgent-winservice start
```

Add a source ▾

Resource Monitoring Agents: 1



Resource Monitoring Agents: 1



 Notes:



In the Services Windows application, you can check whether the service is up and running. You can see in the resource monitoring page whether the resource monitoring agent is disconnected or connected.

The resource monitoring agents write the logs to the same folder in files named `RMAgent-winservice.out.log`, `RMAgent-winservice.err.log` and `RMAgent-winservice.wrapper.log`. If the Windows service for the agent is not started or if it is not connected to the resource monitoring service, verify the log files.

## Results

The Windows agent is added to the main page of the resource monitoring service in IBM® Rational® Test Automation Server.

## What to do next

You can monitor the Windows agent by selecting counters. See [Monitoring an NGINX server on page 333](#).

---

Related information

[Other commands](#)

[winsw file](#)

## Starting a resource monitoring agent as a service on Linux

To ensure that the resource monitoring agent starts by itself when the host is restarted, you can set up the environment in such a way that the resource monitoring agent can be started as a service.

### Before you begin

You must have completed the following tasks:

- Installed Java 8 on the host.
- Added IBM® Rational® Test Automation Server to the PATH environment variable.
- Created an offline token to connect the agent securely with appropriate permissions.



**Note:** You can create an offline token from the User menu of the resource monitoring page or you can re-use your active offline token. The token expires if it is not used for a month.

### About this task

This topic relies on systemd services that are the default on most modern Linux distributions. Other ways may require adaptations of the instructions but the provided script will be a good basis in most cases.

1. Create a folder on your local hard drive like `/opt/RMAgent-linuxservice`.
2. Download the agent .jar file that is available from the Agents page in the resource monitoring service, below the **Extend the Resource Monitoring service with agents** section and save it to the same directory.
3. Create a new file `/etc/systemd/system/RMAgent-linuxservice.service`.
4. Add the following content to this new file:

```
[Unit]
Description = Resource monitoring agent
After = network.target

[Service]
Type = forking
ExecStart = /opt/RMAgent-linuxservice/RMAgent-linuxservice.sh start
ExecStop = /opt/RMAgent-linuxservice/RMAgent-linuxservice.sh stop
Restart = on-failure
RestartSec = 10

[Install]
WantedBy = multi-user.target
```

5. Create another file `/opt/RMAgent-linuxservice/RMAgent-linuxservice.sh`.

```
#!/bin/sh

# Update the 3 following variables with the Server's host name, project id and offline token:
SERVICE_URL=https://<hostname>/rm
PROJECT_ID=<project-id>
export RTCP_OFFLINE_TOKEN=<offline-token>

ARGS="--serviceUrl=$SERVICE_URL --projectId=$PROJECT_ID --autoUpgradeDownloadThen=exitFailure"

SCRIPT=$(readlink -f "$0")
RMAGENT_HOME=$(dirname "$SCRIPT")

# Ensure we're using the latest downloaded jar file
PATH_TO_JAR=`ls -t $RMAGENT_HOME/com.hcl.test.rm.agent-*.jar | head -1`
if [ -z "$PATH_TO_JAR" ]
then
  cd $RMAGENT_HOME && { curl -k -O -J $SERVICE_URL/agent-jar; cd -; }
  PATH_TO_JAR=`ls -t $RMAGENT_HOME/com.hcl.test.rm.agent-*.jar | head -1`
  if [ -z "$PATH_TO_JAR" ]
  then
    echo "Start the server at $SERVICE_URL to allow download of the latest agent jar file"
    echo "Exiting..."
    exit 1
  fi
fi

SERVICE_NAME="Resource Monitoring Agent"
#Pid file will reside in this script's folder
PATH_TO_PID=$RMAGENT_HOME/RMAgent-pid
#Log file will reside in this script's folder
PATH_TO_LOG=$RMAGENT_HOME/RMAgent.log

case $1 in
  start)
    echo "Starting $SERVICE_NAME ..."
```

```

if [ ! -f $PATH_TO_PID ]; then
    nohup java -jar $PATH_TO_JAR $ARGS >> $PATH_TO_LOG 2>&1 &
    echo $! > $PATH_TO_PID
    echo "$SERVICE_NAME started ..."
else
    echo "$SERVICE_NAME is already running ..."
fi
;;
stop)
if [ -f $PATH_TO_PID ]; then
    PID=$(cat $PATH_TO_PID);
    echo "$SERVICE_NAME stopping ..."
    kill $PID;
    echo "$SERVICE_NAME stopped ..."
    rm $PATH_TO_PID
else
    echo "$SERVICE_NAME is not running ..."
fi
;;
restart)
if [ -f $PATH_TO_PID ]; then
    PID=$(cat $PATH_TO_PID);
    echo "$SERVICE_NAME stopping ...";
    kill $PID;
    echo "$SERVICE_NAME stopped ...";
    rm $PATH_TO_PID
    echo "$SERVICE_NAME starting ..."
    nohup java -jar $PATH_TO_JAR $ARGS >> $PATH_TO_LOG 2>&1 &
    echo $! > $PATH_TO_PID
    echo "$SERVICE_NAME started ..."
else
    echo "$SERVICE_NAME is not running ..."
fi
;;
esac

```

**Notes:**

- Replace `<service-hostname>` by the host name of the host that runs IBM® Rational® Test Automation Server.
- Replace `<project-id>` which is the number you'll find after `/projects/` in the browser's URL when browsing to this project.

**Results**

The resource monitoring agent starts automatically when the host restarts. The Linux agent is added to the main page of the resource monitoring service in IBM® Rational® Test Automation Server.

**What to do next**

You can monitor the Linux Performance host source by adding counters. See [Monitoring an NGINX server on page 333](#).

---

Related information

[systemd services](#)

## Starting a Java Virtual Machine

To monitor the resource monitoring data from a Java Virtual Machine (JVM), you must first start the JVM. You must enter the IP address of the JVM, the IP port, and the security parameters in the command before running the Java Virtual Machine.

1. Enter The IP address of the JVM (local or remote host) and the IP port in the command that is used to run the Java Virtual Machine.
2. **Optional:** You can use the authentication security data to start the virtual machine. In this case, you must enter the name of the password file. You can also enter the name of an access file that might be needed if user privileges are required.

### Exemple

#### Parameters used to launch a JVM without security:

```
java
-Dcom.sun.management.jmxremote
-Dcom.sun.management.jmxremote.port=9010
-Dcom.sun.management.jmxremote.local.only=false
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
-jar MyapplicationFile.jar
```

#### Parameters used to launch a JVM with authentication security:

```
java
-Dcom.sun.management.jmxremote
-Dcom.sun.management.jmxremote.port=9010
-Dcom.sun.management.jmxremote.local.only=false
-Dcom.sun.management.jmxremote.authenticate=true
-Dcom.sun.management.jmxremote.ssl=false
-Dcom.sun.management.jmxremote.password.file=jmxremote.password
-Dcom.sun.management.jmxremote.access.file=jmxremote.access (this command is optional)
-jar MyapplicationFile.jar
```

---

Related information

[Resource monitoring agents on page 348](#)

[Monitoring an NGINX server on page 333](#)

## Managing sources

After you add and connect monitoring sources to your project, you might want to modify the sources in you project and the configuration of the sources.







**Before you begin**

You must be a project owner or team space owner to add or delete sources.

**About this task**

In the page where you can view the resource monitoring usage data and metrics, you can also manage your sources. You can modify or delete a source, add or change statistic counters, add labels to identify the sources and use them when you execute a test to collect resource monitoring results.

1. Click **Infrastructure > Resource Monitoring** in the navigation pane.  
If you have sources and agents in your project, you can see the cards with the number of available sources and agents in your project.
2. Click a link in the card of available sources to open a list of sources.
3. Perform any of the following actions for a monitoring source:
  - Click the **Delete** icon  to delete the monitoring source and click **Delete** to confirm the deletion in the dialog box.  
  
The source is removed from the list of sources.
  - Click the **Edit** icon  to change the target host settings.  
  
You can change the target host address, the port, the path to the server status page and the security parameters.
  - Click the **Selection** icon  to select additional counters or change the selected counters for other ones. The changes are reflected in the resource monitoring usage data graph.
  - Click  to add a label to identify the source.
  - Click **Add a source** to add a source to your project from the list of sources.

---

**Related information**

[Resource monitoring capabilities on page 331](#)

Viewing the performance metrics

**Creating labels**


After you connect a host or service to a project, you can add monitoring labels to identify the monitoring sources that are used when you execute a schedule from Rational® Test Automation Server. You can also use labels in any test to collect resource monitoring usage data during a test run for a defined period of time.

**Before you begin**

You must have connected sources to your project in Rational® Test Automation Server. See [Resource monitoring capabilities on page 331](#).

**About this task**

You must be a project owner to add labels to the resource monitoring sources in a project and you must be a team space owner to add labels in a team space.

1. Click a source that is available in your project, either in the **Total Sources** cards or in the **All Types** cards from the resource monitoring page.
2. Click  under the **Labels** column of a resource monitoring source to add a label.
3. Enter a name for the label and press the Enter key.



**Note:** You can add one label or multiple labels for the same resource monitoring source. A label can contain a maximum of 200 characters.



**Tip:** You can create the same label for different sources that belong to the same logical group to monitor the whole group with only one label.

## Results

The host source is identified by a label.

## What to do next

You can use the created labels in tests to collect resource monitoring results or persistent usage data. See [Controlling resource monitoring sources in a schedule on page 362](#).

## Controlling resource monitoring sources in a schedule

In Rational® Test Automation Server, you can control the resource monitoring sources that are collected in a performance schedule and override them with the labeled resource monitoring sources that are available in your current Server project.

### Before you begin

- You must have performed the following tasks in Rational® Performance Tester:
  - Created a performance schedule of **Rate** or **VU** type.
  - Added resource monitoring sources, or the labels of resource monitoring sources to a schedule. For more information about the procedure, refer to [Adding resource monitoring sources to a performance schedule by using labels](#).
  - Enabled Rational® Test Automation Server as resource monitoring service only if you want to replace resource monitoring labels set in Rational® Performance Tester with the labels that you created in Rational® Test Automation Server.
- You must have created a project and added resource monitoring sources to your project in Rational® Test Automation Server. For more information about the procedure, see [Monitoring an NGINX server on page 333](#).

### About this task

This procedure describes how to create resource monitoring labels in Rational® Test Automation Server and how to use them to override the source or label settings related to resource monitoring in a performance schedule. The procedure applies to the following use cases:


- To replace the resource monitoring labels that were initially set in a schedule from Rational® Performance Tester with the labels that you create in Rational® Test Automation Server.
- To enable resource monitoring sources that were not enabled from Rational® Performance Tester. In that case, you can enable resource monitoring sources from the **Execution** dialog box in Rational® Test Automation Server.
- To ignore resource monitoring sources that were set in the schedule and to change them for labels that match sources that are available in the Rational® Test Automation Server project.



**Notes:** You must be a project owner to add labels to the resource monitoring sources in a project and you must be a team space owner to add labels in a team space. You must have a project owner or a tester role access to add labels to a performance schedule in a project.

1. Click a source that is available in your project, either in the **Total Sources** cards or in the **All Types** cards from the resource monitoring page.



2. Click  under the **Labels** column of a resource monitoring source to add a label.


The screenshot shows the Sources table with the following data:


← Sources    All Types ▾    Any Status ▾


Name	Status	Added	Observed	Labels
>   OpenMetrics at to- [redacted]	available	7 hours ago	6 hours ago	SUTv2 +
>   Prometheus at [redacted]	available	7 hours ago	29 minutes ago	SUTv2 +

3. Enter a name for the label and press the Enter key.


**Example:** Enter 'SUTv2' in three different resource monitoring sources.

 **Note:** You can add one label or multiple labels for the same resource monitoring source. A label can contain a maximum of 200 characters.

 **Tip:** You can create the same label for different sources that belong to the same logical group to monitor the whole group with only one label.

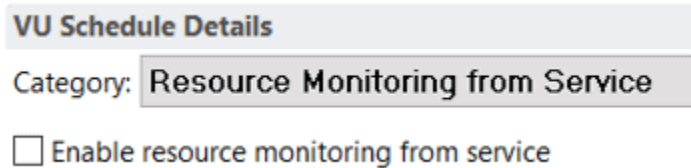
4. Navigate to the **Execute** view and click  on a performance schedule in the list of tests to execute a schedule.

5. Click the **Resource Monitoring** tab in the **Execute Test Asset** dialog box.

 **Note:** There are different use case scenarios:

- If the **Resource Monitoring from Service** option was not enabled in Rational® Performance Tester (see Figure 1), no source is available in Rational® Test Automation Server project.

Figure 1:



A message indicates in the **Resource Monitoring** tab that Resource Monitoring was not enabled. You can run the schedule with the resource monitoring sources that are created and labeled in Rational® Test Automation Server (steps 1 to 6 in this procedure) by selecting labels that are in your Rational® Test Automation Server project (step 6).

- If the **Resource Monitoring from Service** option was enabled in Rational® Performance Tester, and data is collected from the sources you added to the performance schedule in Rational® Performance Tester (see Figure 2), the **Resource Monitoring** tab displays the list of these sources that are available in your Rational® Test Automation Server project.

Figure 2:



**VU Schedule Details**

Category: **Resource Monitoring from Service**

Enable resource monitoring from service

Collect from the following sources

Collect from sources matching at least one of the following labels

Title	Polling Time
<input type="checkbox"/> OpenMetrics exporter <ul style="list-style-type: none"> <li><input type="checkbox"/> OpenMetrics a [redacted]</li> </ul>	5 Seconds
<input type="checkbox"/> Prometheus server <ul style="list-style-type: none"> <li><input type="checkbox"/> Prometheus at [redacted]</li> </ul>	5 Seconds

To override the initial sources with the sources that you created in Rational® Test Automation Server, select the labels that are in your Rational® Test Automation Server project and that match the Server sources (step 6 in this procedure).

- If you added sources to your performance schedule by using labels in Rational® Performance Tester (see Figure 3), the **Resource Monitoring** tab displays the list of labels that are available in your Rational® Test Automation Server project.

Figure 3:

**VU Schedule Details**

Category: **Resource Monitoring from Service**

Enable resource monitoring from service

Collect from the following sources

Collect from sources matching at least one of the following labels

OpenM	<input type="button" value="Add..."/> <input type="button" value="Edit..."/> <input type="button" value="Remove"/>
Prom	
SUTv2	


To select resource monitoring labels from your schedule, follow step 6 in this procedure.



In the list of sources or labels that is displayed in the **Resource Monitoring** tab:

- Green icons identify either labels that match the sources or sources that are found in the current project.
- Red icons indicate that the sources are not running,
- Yellow icons identify either labels that do not match the sources, or sources that are not found in the current project.

Data is collected for the sources that match labels only.

6. Click the , and press the Ctrl + Space keys, or enter the initial letter of a label to select a label in the list.

**Example:** Select 'SUTv3'.

You can see all the labels that you added to the resource monitoring sources in Rational® Test Automation Server.



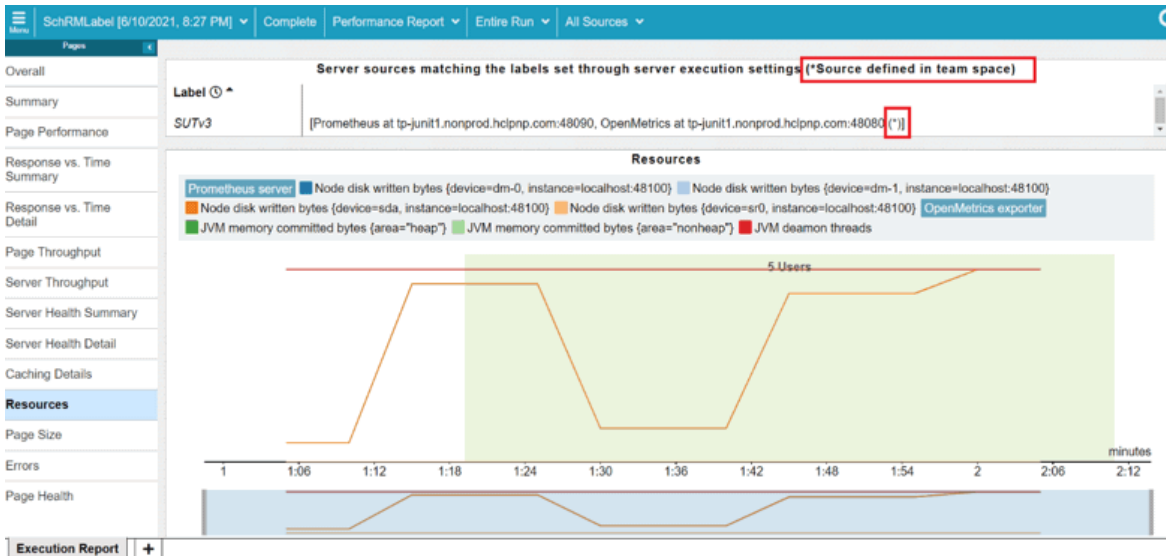
**Note:** You can select labels matching resource monitoring sources that are created in a team space in addition to the ones that are created in a project.

7. Select the labels that match the sources.
8. Click **Execute** to execute the performance schedule.
9. Click the **Result** view in the navigation bar of Rational® Test Automation Server when the schedule is complete.
10. Expand the performance schedule result to see the resource monitoring label name in the **Details** card.

The **Details** card displays the resource monitoring labels that are used in the schedule to override the initial labels and collect resource monitoring sources (in the example, the 'SUTv3' label). For other details about the **Results** page, see the link at the end of this page.

In the **Report** card, you find the link to the Statistics Report that is generated. In the **Resource** tab of the Statistics Report, you can view the information related to the Server sources matching the labels set in the schedule.

- Click the **Statistics Report** link in the **Reports** card to see the performance metrics of the monitoring sources matching the selected labels.



Example: You can see the statistics for the sources tagged with the 'SUTv3' label.



**Note:** In the Resources report, each resource name followed by an asterisk identifies a resource monitoring source that is defined in a team space.

---

Related information

[Test results and reports overview on page 319](#)

## Configuration of a change management system

When you use any application to create and track defects (bugs), issues, or other work items, you can configure the application as a change management system on Rational® Test Automation Server. You can then create defects (bugs), issues, or other work items without the need to open your application.

You use Rational® Test Automation Server to run tests for the software that you develop and view their results. When you discover that you might want to raise defects (bugs), issues, or other types of work items for these tests, you are required to open the application that you use. You can only then, create defects (bugs), issues, or other work items in your application.

When you configure your application as a change management system on Rational® Test Automation Server, you can create defects (bugs), issues, or other work items without the need to open your application.

You can find details in the following table about the usage of the applications that you can configure as a change management system on Rational® Test Automation Server.


Issue tracking application	Usage as a change management system	Go to...
Atlassian Jira Software	You can create stories, defects, or tasks as issues in your project in Jira from Rational® Test Automation Server and also launch your project in Jira from Rational® Test Automation Server to track and manage these issues.	<a href="#">Configuration of Jira as a change management system on page 368</a>

### Configuration of Jira as a change management system

You can integrate Rational® Test Automation Server with Jira to manage and create defects after the test run is complete.

You can create multiple defects for a test result from the **Results** page of Rational® Test Automation Server, if required. After you create a defect, you can track the defect from the **Change Management System** card on the **Results** page.



When you do not configure the Jira server in your project and if you click the **Open action menu** icon  from the **Actions** column in the **Results** page, the following message is displayed:

The change management system is not configured for the project. You must contact your project owner to configure Jira for the project. If you are a project owner click here.

If you are a project *Owner*, you can click the link provided in the message to open the **CHANGE MANAGEMENT SYSTEM** tab. You can then configure the Jira server for your project.

The following topics provide more details about integrating Rational® Test Automation Server with Jira and creating defects.

## Generating public and consumer keys

You must first generate a public key and a consumer key for your project that is available on IBM® Rational® Test Automation Server to configure Jira.

### Before you begin

You must have completed the following tasks:

- You must have installed Jira on your computer. For more information about installing Jira, refer to [Installing Jira software](#).
- You must be able to access the Jira server from Rational® Test Automation Server.

### About this task

After you add the URL of the Jira server to your project, you can generate both the public key and the consumer key from Rational® Test Automation Server. You can then share both the keys with the administrator of Jira server.

1. Log in to Rational® Test Automation Server, if you are not already logged in.
2. Open your project.
3. Expand **Configure**, and then click **Project**.
4. Click the **Change Management System** tab, and then click **New System**.

#### Result

The **Configure Change Management System** page is displayed.

5. Enter the URL of Jira server in the **Change Management System** link field, and then click **Add**.

#### Result

A public key and a consumer key are generated and displayed on the **Configure Tracking System** page.

### Results

You have successfully generated both the public and consumer keys.

### What to do next

You can then click **Copy** to copy both the keys and save the keys in your local file. You can then share both the keys with the administrator of the Jira server to setup an application link in Jira.

The administrator of the Jira server then sets up the application link in Jira by using both the keys that you shared. After the application link set up is complete, you can then configure the Jira server for your project on IBM® Rational® Test Automation Server. See [Configuring the Jira server on page 371](#).

## Setting up an application link in the Jira server

You must set up an application link in the Jira server to establish a connection between the Jira server and Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Been assigned as an administrator of the Jira server.
- Generated a public key and consumer key for the project in Rational® Test Automation Server. See [Generating public and consumer keys on page 369](#).
- Copied the URL of Rational® Test Automation Server.

1. Log in to the Jira server.
2. Perform the following steps based on the method that you used to host the Jira server:

Methods	Actions
Cloud	Click <b>Settings &gt; Products</b> .
On Premise	Click <b>Settings &gt; Applications</b>

3. Click **Application links** from the left side of the menu items.

#### Result

The **Configure Application Links** page is displayed.

4. Enter the URL of Rational® Test Automation Server in the field, and then click **Create new link**.
5. Verify the URL on the **Configure Application URL** window, and then click **Continue**.

#### Result

The **Link applications** dialog box is displayed.

6. Perform the following steps to provide the information about Rational® Test Automation Server:

- a. Enter a name for Rational® Test Automation Server in the **Application Name** field.

You must provide a unique name to Rational® Test Automation Server. For example, `rtas`.

- b. Select **General Application** as **Application Type** from the drop-down list.
- c. Select the **Create incoming link** checkbox to set up a one-way incoming link from Rational® Test Automation Server to the Jira server.
- d. Click **Continue**.

- e. Enter the consumer key shared by the user of Rational® Test Automation Server in the **Consumer Key** field.
- f. Enter a name in the **Consumer Name** field.  
For example, `IBM`.
- g. Enter the public key shared by the user of Rational® Test Automation Server in the **Public Key** field.

7. Click **Continue**.

### Results

You have set up the application link on the Jira server.

### What to do next

You can configure the Jira server in your project on Rational® Test Automation Server. See [Configuring the Jira server on page 371](#).

## Configuring the Jira server

After the administrator of the Jira server sets up the application link in Jira by using both the public and consumer keys, you can configure the Jira server for your project on IBM® Rational® Test Automation Server where the tests are available.

### Before you begin

You must have completed the following tasks:

- Generated a public key and a consumer key on Rational® Test Automation Server. See [Generating public and consumer keys on page 369](#).
- Shared both the keys with the administrator of the Jira server to set up an application link in Jira.

### About this task

When you share both the keys with the administrator of the Jira server, the administrator of the Jira server sets up the application link in Jira.

After the completion of setting up of the application link by the administrator of the Jira server, you can then open the **Change Management System** tab of your project and complete the authorization process to configure the Jira server for your project on Rational® Test Automation Server.

### Tasks performed by the administrator of the Jira server

As an administrator of the Jira server, you must perform the following actions to set up an application link on the Jira server:

1. Log in to the Jira server and open the **Configure Application Links** page.
2. Enter the URL of the application, and then click **Create new link**.

3. Verify the URL on the **Configure Application URL** page, and then click **Continue** to open the **Link applications** page.

4. Enter the information for the fields specified as follows on the **Link applications** page, and then click **Continue**:

- **Application Name**: Enter an application name. The application name must be unique. For example, `IBM`.
- **Application Type**: Select the type of application from the **Application Type** drop-down list. The default selection is **General Application**.
- Select the **Create incoming link** checkbox.



**Note:** You need not set other fields when you set up an application link to establish a connection between the Jira server and Rational® Test Automation Server.

5. Enter the information on the **Link applications** page for the fields specified as follows, and then click **Continue** to set up the application link:

- **Consumer Key**: Enter the consumer key shared by the administrator of Rational® Test Automation Server.
- **Consumer Name**: Enter an application name. For example, `IBM_1`.
- **Public Key**: Enter the public key shared by the administrator of Rational® Test Automation Server.

You have successfully set up the application link on the Jira server to establish a connection between the Jira server and Rational® Test Automation Server.

To know more about the application link, refer to the [Configuring the client application as a consumer in Jira](#) section.

1. Open your project.
2. Expand **Configure**, and then click **Project**.
3. Open the **Change Management System** tab.
4. Click the **Open action menu** button from **Jira Integration Details**, and then click **Configure**.

#### **Result**

The **Authorize User** page is displayed.

5. Complete the authorization process on the **Authorize User** page by performing the following actions:

- a. Click the authorization URL of the Jira server to open the **Jira authorization** page.
- b. Log in to your Jira server account with your valid credentials.
- c. Click **Allow** to authorize the Jira server account to generate an access token.

#### **Result**

The authorization is successful.

The **Access Approved** page is displayed with a verification code.

- d. Copy the verification code, and then paste the verification code in the **Enter Verification Code** field on the **Authorize User** page.
- e. Click **Save**.

### Result

The **Configure Change Management System** page is displayed.


6. Select a Jira server project that is available from the **Project** drop-down list, and then click **Update**.



**Note:** The change management system name and the change management system link are already displayed on the **Configure Change Management System** page.

### Results

You have successfully configured the Jira server for your project on Rational® Test Automation Server.

You can see a tick icon  next to the URL of the Jira server on the successful configuration. You can also expand the **Jira Integration Details** section to see the project name of the Jira that you selected.



**Note:** You can delete the URL of the Jira server that you no longer require in your test environment.

### What to do next

You can create defects for the tests available in your project and track the defects from the **Results** page on Rational® Test Automation Server after the test run is complete. See [Creating Jira defects on page 373](#).

## Creating Jira defects

You can create a Jira defect for a test available in your project and track the defect from IBM® Rational® Test Automation Server after the test run is complete.

### Before you begin

You must have completed the following tasks:

- Been a member of the project with the *Owner* or *Tester* role to create a defect for a test.
- Configured Jira in Rational® Test Automation Server for your project. See [Configuration of Jira as a change management system on page 368](#).



**Note:** You must have the project *Owner* access to configure Jira.


- Initiated a test run of a test available in your branch from the **Execution** page.

### About this task

After you configure Jira for your project on Rational® Test Automation Server, you can create a Jira defect for a test available in your project and track the defect from the **Results** page after the test run is complete.



**Note:** You can create a Jira defect for a test result from the **Results** page only if you have executed the test on Rational® Test Automation Server.

1. Open your project on Rational® Test Automation Server.
2. Run a test from the **Execution** page.
3. Click **Results** from the left pane to open the **Results** page.
4. Select the test result from the **Results** page.
5. Click the **Jira: Raise Defect** icon  from **Actions**.



**Important:** You can create a Jira defect for a test result only if Jira is configured to your server project. If Jira is not configured with your server project and you click the **Open action menu** button from **Actions** on the **Results** page for a test result, you can see a message is displayed on the **Results** page that states that there is no change management system configured for the project. You must then contact your project *Owner* to configure Jira for the project. Your project *Owner* can then click the link provided in the message to open the project to configure Jira for your project.

#### Result

The **Raise defect in Jira** page is displayed with the fields available for your project.

6. Enter the information required for all the fields, and then click **Create**.



**Important:** You can create a story, defect, or task. Creating other issue types are not supported.

#### Result

A Jira defect is created.

7. Expand the test result to see the Jira tracking ID details from the **Results** page.



**Note:** You can raise multiple defects for a test, if required.

### Results

You have created a defect for a test result from the **Results** page on Rational® Test Automation Server.

#### What to do next

You can now click the Jira tracking ID from the **Results** page to open the defect and view the details. The **Reporter** field on the Jira server page displays the name of the person who has created the defect. To know more about Jira server defects and how it works, refer to the [documentation](#).

Related information

[Configuration of Jira as a change management system on page 368](#)

## Viewing details of the Jira issues

After you create Jira issues in Rational® Test Automation Server, you can view and track the details of the Jira issues in Jira.

### Before you begin

You must have completed the following tasks:

- Completed a test run and the test results are available on the **Results** page.
- Created Jira issues against the test results. See [Creating Jira defects on page 373](#).

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Click **Active projects > My projects > project\_name** to open the project that contains the test assets.

The **Overview** page of the project is displayed.

3. Open the **Results** page by clicking **Analyze > Results**.

The test assets that ran are displayed in the following tabs on the **Results** page:

Tab	Description
<b>SUITES</b>	Lists all Suites, compound tests, Rate Schedules, or VU Schedules that are in the selected branch of the repository.
<b>TESTS</b>	Lists all API tests, functional tests, and performance tests that are in the selected branch of the repository.
<b>ADVANCED</b>	Lists all assets that are displayed when custom filters are applied for assets in the selected branch of the repository.

You can click the relevant **Tab** to view the tests that you ran.

4. Click the test that is listed under the **Test** column.
5. Click the **Report** tab in the **Results** panel, if it is not already displayed.
6. Click the Jira issue link under **Defect tracking**.

The Jira log-in page is displayed, if you are not already logged into Jira.

7. Enter your username and password.
8. Click **Login**.

The issue details are displayed in Jira.



**Note:** The **Description** field of the Jira issue in Azure DevOps provides additional details of the test that ran in Rational® Test Automation Server such as the name of the test, the person who ran the test, the verdict of the test result, the date and time of the test run, the links to the test report that is generated in Rational® Test Automation Server, and the link to the query that is created.

## Results

You have viewed the details in Jira of the Jira issue that you created in Rational® Test Automation Server.

## Managing the Jira server configuration

You can manage the Jira server configuration that you set in Rational® Test Automation Server when you want to modify the project configured in Jira or when you want to delete the existing Jira configuration.

### Before you begin

You must have completed the following tasks:

- Ensured that you are assigned a role of a *Project Owner* in the project. See [Managing access to server projects on page 442](#).
- Ensured that you obtained the access and authentication details to Jira from the Jira administrator.

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.


2. Click **Active projects > My projects > *project\_name*** to open the project that contains the test assets.

The **Overview** page of the project is displayed.

3. Click **Manage > Integration** in the navigation pane.

The **Integration** page is displayed.

4. Click the **CHANGE MANAGEMENT SYSTEM** tab.

5. Click the **Open action menu** icon  for the Jira server that you want to manage.

The **Configure** and **Delete** options are displayed in the list.

6. Perform any of the following actions when you want to modify or delete the Jira server configuration:
  - To modify the project in Jira that was set previously in the Jira server configuration. Go to [Step 7 on page 376](#).
  - To delete the Jira server configuration. Go to [Step 8 on page 377](#).
7. Perform the following steps to modify the project in Jira:

- a. Select **Configure** as the option from the list.

The **Select project in Jira** dialog is displayed.



- b. Select the project that you want from the list displayed in the **Project** field.
  - c. Click **Update** to save the updated project in the Jira server configuration.
8. Perform the following steps to delete the existing Jira server configuration:
- a. Select **Delete** as the option from the list.  
The **Delete Jira configuration** dialog is displayed.
  - b. Click **Delete**.  
The Jira server configuration is deleted and a confirmation message is displayed.



**Note:** The links to the issues that you created for the tests that ran are not deleted from the results panel in Rational® Test Automation Server even after you delete the Jira server configuration.

## Results

You achieved the following results:

- Updated the project in Jira and saved the Jira server configuration.
- Deleted the Jira server configuration.

## Integrating with other applications

You can integrate certain applications with IBM® Rational® Test Automation Server to run tests, view the test results, and create defects.

### Integration plugin compatibility matrix

You can find information about the versions of the integration plugin that are compatible with IBM® Rational® Test Automation Server.

The following table lists the versions of the integration plugin that are required to integrate IBM® Engineering Test Management, Jenkins, and UrbanCode™ Deploy with Rational® Test Automation Server.



**Note:** You must download the required version of the integration plugin from the [IBM WebSphere, Liberty & DevOps Community](#) portal based on the existing version of Rational® Test Automation Server. You can then



integrate Engineering Test Management, Jenkins, and UrbanCode™ Deploy with Rational® Test Automation Server.

Rational® Test Automation Server	10.1.0	10.1.1	10.1.2	10.1.3	10.2	10.2.1
Engineering Test Management plugin	NA	NA	NA	NA	NA	IBM_RTAS_v10.2.1_ETM_ADAPTER_1.0.0
Jenkins plugin	RTAS-Jenkins-2.0	RTAS-Jenkins-3.0	RTAS-Jenkins-4.0	RTAS-Jenkins-4.0	RTAS-Jenkins-5.0	RTAS-Jenkins-5.0
UrbanCode™ Deploy plugin	RTAS-UCD-1.0	RTAS-UCD-1.0	RTAS-UCD-2.0	RTAS-UCD-2.0	RTAS-UCD-3.0	RTAS-UCD-3.0

## Integration with Azure DevOps

When you use Azure DevOps for continuous integration and continuous development of your application, you can run tests created for your application and available in a project on IBM® Rational® Test Automation Server, in Azure DevOps pipelines by using the *IBM Rational Test Workbench* extension.

### Overview

You can use the *IBM Rational Test Workbench* extension to integrate Rational® Test Automation Server with Azure DevOps.

The *IBM Rational Test Workbench* extension enables you to select any type of test available for your project in Rational® Test Automation Server that you can add to your task for the job in the Azure DevOps pipelines.

You must have created the tests in the desktop clients and committed the test assets and test resources to a remote repository. The remote repository must be added to the project.

Depending on the type of tests you want to perform on your application, you must have created any or all of the following types of tests in the desktop clients for the application you are testing:

Type of test	Desktop client
<ul style="list-style-type: none"> <li>Accelerated Functional Testing suites</li> <li>Compound tests</li> </ul>	IBM® Rational® Functional Tester

Type of test	Desktop client
<ul style="list-style-type: none"> <li>• Test Suite</li> </ul>	IBM® Rational® Integration Tester
<ul style="list-style-type: none"> <li>• Compound tests</li> <li>• VU Schedule</li> <li>• Rate Schedule</li> </ul>	IBM® Rational® Performance Tester

You can now follow the tasks listed in the task flow table to integrate Rational® Test Automation Server with Azure DevOps. See [Task flow for integrating Azure DevOps on page 379](#).

## Task flow for integrating IBM® Rational® Test Automation Server with Azure DevOps

The table shows the task flow for integrating Rational® Test Automation Server with Azure DevOps by using the *IBM Rational Test Workbench* extension. You must perform these tasks in sequence as listed in the following table. The table also provides you the links to the information about the tasks.

	Tasks	More information
1	Install Rational® Test Automation Server.	<a href="#">Installation of the server software on page 25</a>
2	Create tests in the desktop clients for the application you are testing.	<ul style="list-style-type: none"> <li>• <a href="#">Rational® Performance Tester documentation</a></li> <li>• <a href="#">Rational® Functional Tester documentation</a></li> <li>• <a href="#">Rational® Integration Tester documentation</a></li> </ul>
3	Create a project on Rational® Test Automation Server and add the test assets that are created in the desktop clients to your project.	<a href="#">Test assets and a server project on page 433</a>
4	Create an organization and a project in Azure DevOps for running jobs in Azure DevOps pipelines.	<a href="#">Creating an organization</a>
5	Access the <b>Visual Studio Marketplace</b> portal and search for the latest version of the <i>IBM Rational Test Workbench</i> extension.	<a href="#">Visual Studio Marketplace</a>
6	Install the latest version of the <i>IBM Rational Test Workbench</i> extension.	<a href="#">Installing the IBM Rational Test Workbench extension on page 380</a>

	Tasks	More information
7	Extend the trust certificate if you have used an internal CA certificate.	<a href="#">Certificate authority: Importing and extending lists on page 92</a>
8	Run tests in an Azure DevOps pipeline.	<a href="#">Running tests in an Azure DevOps Pipeline on page 381</a>

Related information

[Integration with Azure DevOps on page 378](#)

## Installing the *IBM Rational Test Workbench* extension

You must install the latest version of the *IBM Rational Test Workbench* extension in your Azure DevOps organization before you can use the extension for running your application tests in an Azure DevOps pipeline.

### Before you begin

You must have access to the **Visual Studio Marketplace** portal to install the latest version of the *IBM Rational Test Workbench* extension.

### About this task

After you install the latest version of the *IBM Rational Test Workbench* extension from the **Visual Studio Marketplace** portal in your Azure DevOps organization, you can select the tests that you want to run for your application in an Azure DevOps pipeline by using the *IBM Rational Test Workbench* extension.

1. Log in to the **Visual Studio Marketplace** portal, if you are not already logged in.
2. Click the **Azure DevOps** tab.
3. Search for the *IBM Rational Test Workbench* extension.
4. Click the *IBM Rational Test Workbench* extension.
5. Click **Get it free**.

#### Result

The **Visual Studio Marketplace** portal for the *IBM Rational Test Workbench* extension is displayed.

6. Select the organization where you want to run your test from the **Select an Azure DevOps Organization** list.
7. Click **Install**.

#### Result

The installation is completed.

8. Click **Proceed to organization**.

#### Result

The **Organization** page in Azure DevOps is displayed.

9. Click **Organization settings > Extensions**.

## Result

The *IBM Rational Test Workbench* extension is displayed as an installed extension.

## Results

You have installed the *IBM Rational Test Workbench* extension in your Azure DevOps organization.

## What to do next

You can run tests that are available in Rational® Test Automation Server as a job in an Azure DevOps pipeline. See [Running tests in an Azure DevOps Pipeline on page 381](#).

## Running IBM® Rational® Test Automation Server tests in an Azure DevOps Pipeline

After you install the *IBM Rational Test Workbench* extension in your organization, you can run tests that are available in IBM® Rational® Test Automation Server as a job in Azure DevOps pipelines.

### Before you begin

You must have completed the following tasks:

- Added the tests that you created in the desktop clients for your application to the project on Rational® Test Automation Server.
- Installed the latest version of the *IBM Rational Test Workbench* extension in your organization. See [Installing the IBM Rational Test Workbench extension on page 380](#).
- Installed an agent in your pipeline. See [Azure Pipelines agents](#).
- Generated an offline user token from Rational® Test Automation Server. See [Generating an offline token on page 418](#).

### About this task

After you add the *IBM Rational Test Workbench* extension in your Azure DevOps organization, you can use an existing pipeline or create a new one to add Rational® Test Automation Server test tasks. You can install an agent or use the one that you installed in your default agent pool. You can add Rational® Test Automation Server tests as tasks to your agent job, configure the task, and then run the task in the Azure DevOps pipeline.

1. Open your **Organization** page in Azure DevOps and perform the following steps:
  - a. Click the project you want to use.
  - b. Initialize the repository by performing the following steps:
    - i. Click **Repos** from the left pane.
    - ii. Click **Initialize** from the **Initialize with a README or gitignore** section.



**Note:** Select the **Add a README** checkbox if it is not selected.

- c. Click **Pipelines** from the left pane.

- d. Click **Create Pipeline**.
- e. Click **Use the classic editor** to create a pipeline without YAML.
- f. Verify the project, repository, and branch for manual and scheduled builds, and then click **Continue**.
- g. Click **Empty job**.

2. Select **Pipeline** and complete the following steps:

- a. Change the name for the build pipeline if required.
- b. Select the **Agent pool** for your build pipeline.

You can use the agent from the default agent pool or use the one you have installed.

- c. Select the **Agent Specification** for the agent if required.

3. Add a task to the agent job by completing the following steps:

- a. Click the **Add Task** icon  for the agent job.

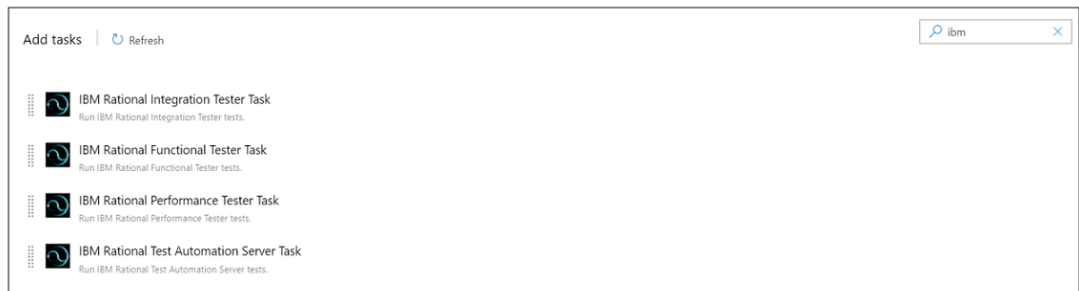
**Result**

The **Add tasks** pane is displayed.

- b. Search for the IBM tasks defined in the *IBM Rational Test Workbench* extension.

**Result**

The tasks that you can select are displayed.



- c. Select the **IBM® Rational® Test Automation Server Task**, and then click **Add** to add the task to the agent job.

**Result**

The selected task is added to the agent job and it is displayed with a warning that some settings require attention. You must configure the settings mentioned in [step 4 on page 383](#).


You can also remove the tasks that are not required in your job. Select the tasks in the list that you want to remove. You can then right-click the tasks, and click **Remove selected task(s)** to remove them.




## 4. Configure the settings by performing the following steps:

- a. Select the task version from the list if required.
- b. Follow the action for the task by referring to the following table:




**Note:** All mandatory fields are marked with an asterisk (\*) in the UI.

Field	Action
Display name	Enter a name of the task.
IBM® Rational® Test Automation Server service connection	<p>Select the service connection from the drop-down list.</p> <p>If you are selecting the IBM® Rational® Test Automation Server service connection for the first time, you must click <b>New</b> to add the following details to add an IBM® Rational® Test Automation Server service connection, and then save the connection details:</p> <ul style="list-style-type: none"> <li>▪ <b>Server URL</b> - Enter the URL of Rational® Test Automation Server. The format of the URL is as follows: <code>https://hostname</code>.</li> <li>▪ <b>Offline Token</b> - Enter the offline token that you generated from Rational® Test Automation Server.</li> <li>▪ <b>Service connection name</b> - Enter a service connection name.</li> <li>▪ <b>Description (optional)</b> - Enter the details of the service connection if required.</li> <li>▪ Optionally, select the <b>Grant access permission to all pipelines</b> checkbox if required.</li> </ul> <p>You can save the service connection details. The service connection is available for selection from the <b>IBM® Rational® Test Automation Server service connection</b> drop-down list.</p> <p> <b>Note:</b></p> <p>You can edit or delete the service connection that you added if required. Click <b>Manage</b>, and then select the service connection from the <b>Service connections</b> list to open the service connection. You can click <b>Edit</b> to edit the service connection details. If you want to delete an existing service connection details, click the <b>Vertical ellipsis</b> icon, and then click <b>Delete</b> to delete the service connection details.</p> <p>Optionally, you can also create, edit, and delete a service connection from your Azure DevOps project dashboard. Open your project, click <b>Project settings &gt; Service connections</b>, and then perform any of the following tasks:</p> <ul style="list-style-type: none"> <li>▪ Create a new service connection.</li> <li>▪ Edit or delete an existing service connection that you already added.</li> </ul>

Field	Action
Team Space Name	Enter the name of the team space that contains the project.   <b>Note:</b> The license on the team space must be configured and you must be a member of that team space.
Project	Enter the name of the project from the available names in the team space.   <b>Note:</b> You must be an Owner or a Tester of the project that is available in the team spaces to run the tests from the Azure DevOps pipeline.
Branch	Enter the branch where the test assets are stored.
Repository Link	Enter the repository path that is configured for the project that contains the test to run.
File Path	Enter the path of the test in Rational® Test Automation Server that you want to run.
API Test Environment	Enter the name of the environment that is configured in the test asset for the test created in Rational® Integration Tester.   <b>Note:</b> This setting is applicable only if you are running an API suite test.

- c. Expand **Control Options** and configure the settings for your task if required.
  - d. Expand **Output Variables** and configure the settings for your task if required.
5. Select from the following options:
- a. Click **Save** to save the configured settings for the task.

 **Note:** The task is not queued for a run.

You can save the task to a build pipeline and opt to run the build at a later time.

- b. Click **Save & queue** to save the configurations and queue the run in the pipeline.

#### Result

The **Run pipeline** dialog box is displayed.

6. Complete the following steps:



- a. Enter a comment for the test in the **Save comment** field.
- b. Select the agent that you configured for the test from the **Agent pool** list.
- c. Select the agent specification from the **Agent Specification** list if required.
- d. Select the branch from the **Branch/tag** list.
- e. Add the variables and demands for the task run from the **Advanced Options** pane if required.
- f. Select the **Enable system diagnostics** checkbox for a detailed log view.
- g. Click **Save and run**.

#### **Result**

The `pipeline summary` page displays the progress of the job run.

#### **Results**

You have run the tests for the application you are testing, in the Azure DevOps pipeline.

#### **What to do next**

You can open the job to view the task logs from the `pipeline summary` page.

You must click the task to open the **Task** page to view the test results. The **Reports information** section on the **Task** page displays the names of the report along with its corresponding URLs. The report URLs are the Rational® Test Automation Server URLs where the reports are stored. You can access the report URLs to view the test execution information at any point of time.

You can also view the test reports and logs of the test that was run on the Azure DevOps from the **Results** page on Rational® Test Automation Server. See [Test results and reports overview on page 319](#).

## Integration with IBM® Engineering Test Management

As a *Project Owner*, you can integrate IBM® Engineering Test Management as a quality management solution with IBM® Rational® Test Automation Server. You can run test assets that are available in a project from Engineering Test Management.

The following topics provides more information about the integration of IBM® Rational® Test Automation Server with Engineering Test Management.

### Task flow for integration of IBM® Engineering Test Management

You must perform the following tasks in sequence to integrate IBM® Rational® Test Automation Server with IBM® Engineering Test Management. For more information about the tasks, refer to the links provided in the table.

Sl. No	Tasks	More information
1	Create a project in Rational® Test Automation Server.	<a href="#">Adding a project on page 436</a>
2	Install the required version of Engineering Test Management from the <a href="#">Jazz</a> portal on your computer.	<a href="#">Engineering Lifecycle Management Documentation</a>
3	Download the Engineering Test Management adapter <code>IBM_RTAS_v10.2.1_ETM_ADAPTER_1.0.0</code> from <a href="#">IBM WebSphere, Liberty &amp; DevOps Community</a> portal, and then extract the contents of a compressed file.	The name of the adapter in the Community portal is as follows:  <code>IBM_RTAS_v10.2.1_ETM_ADAPTER_1.0.0.zip</code>
4	Add the adapter files that you downloaded to the installation directory of Engineering Test Management.	<a href="#">Adding the adapter files to IBM Engineering Test Management on page 386</a>
5	Configure the details of Engineering Test Management on Rational® Test Automation Server.	<a href="#">Configuring IBM Engineering Test Management on Rational Test Automation Server on page 388</a>
6	Create a test script and a test case on Engineering Test Management to run the test assets.	<a href="#">Preparing test cases in IBM Engineering Test Management on page 389</a>
7	Run the test assets from Engineering Test Management.	<a href="#">Running tests from IBM Engineering Test Management on page 390</a>

## Adding the adapter files to IBM® Engineering Test Management

You must add the adapter files to the installation directory to run test assets of Rational® Test Automation Server from IBM® Engineering Test Management.

### Before you begin

You must have completed the following tasks:

- Installed the latest version of Engineering Test Management from the [Jazz](#) portal on your computer. See [System Requirements on page 10](#).
- Downloaded the adapter (a compressed file) `IBM_RTAS_v10.2.1_ETM_ADAPTER_1.0.0` for Engineering Test Management from the [IBM WebSphere, Liberty & DevOps Community](#) portal .

### About this task

You must add the adapter files to the location where you installed Engineering Test Management to run test assets of Rational® Test Automation Server.

1. Extract the compressed file that you downloaded from the Test Workbench Resource Community portal.
2. Copy the `etm-adapter-updatesite` folder.
3. Go to the location where you installed Engineering Test Management on your computer.
4. Place the `etm-adapter-updatesite` folder in the `sites` folder of the installation directory of Engineering Test Management.

For example, `D:\ELM\JazzTeamServer\server\conf\qm\sites`.

5. Copy the `rtas-profile.ini` file from the `provision_profiles` folder that is available in the extracted zip file.
6. Place the `rtas-profile.ini` file in the `provision_profiles` folder of the installation directory of Engineering Test Management.

For example, `D:\ELM\JazzTeamServer\server\conf\qm\provision_profiles`

## Results

You have added the adapter files to Engineering Test Management.

## What to do next

You must perform the following tasks:

- You must reset the Engineering Test Management server from the web console by using the **Request Server Reset** option.

If you have administrator privileges, then you can access the **Request Server Reset** option from the following URL:

```
https://<hostname>:<portnumber>/qm/admin?
internal#action=com.ibm.team.repository.admin.serverReset
```



**Note:** You must replace the following values with the actual values in the URL:

- `<hostname>` with the hostname that you used when you installed Engineering Test Management.
  - `<portnumber>` with the port number that is associated with an IP address of the hostname.
- Restart the Engineering Test Management server.
  - Configure the details of Engineering Test Management on Rational® Test Automation Server to establish a connection between the two products. See [Configuring IBM Engineering Test Management on Rational Test Automation Server on page 388](#).

## Configuring IBM® Engineering Test Management on Rational® Test Automation Server

You must configure IBM® Engineering Test Management on Rational® Test Automation Server to establish a connection between the two products.

### Before you begin

You must have completed the following tasks:

- Granted sufficient privileges to access **Project area** on Engineering Test Management.
- Created a project area in Engineering Test Management.
- Created a project in Rational® Test Automation Server.

### About this task

If you have multiple instances of Engineering Test Management, then you can configure all those instances on Rational® Test Automation Server. If you have only one instance of Engineering Test Management, you can configure the same instance multiple times. However, you must choose a different **Project area** during the configuration of Engineering Test Management.

1. Log in to Rational® Test Automation Server, if you are not already logged in.
2. Open a project from the team space.
3. Click **Manage > Integration**.
4. Click the **TEST MANAGEMENT** tab, and then click **Add IBM ETM adapter**.
5. Enter the following information on the **Add IBM ETM adapter** dialog box:

Fields	Actions
<b>Server URL</b>	Enter the URL of Engineering Test Management.  For example, <code>https://&lt;hostname&gt;:&lt;portnumber&gt;/qm</code>
<b>Authentication Type</b>	Select <b>UserName and Password</b> from the list.
<b>Username</b>	Enter the username associated with Engineering Test Management.
<b>Password</b>	Enter the password associated with the username of Engineering Test Management.

6. Click **Validate**.
7. Select the project name that you created in Engineering Test Management from the **Project area** drop-down list.
8. Enter a name for the Engineering Test Management adapter in the **Adapter name** field.



**Note:** You cannot provide an adapter name that already exists for the **Project area**.

9. Click **Save**.

### Results

You have configured the details of Engineering Test Management on Rational® Test Automation Server.

### What to do next

You must create a test script and test case on Engineering Test Management to run the test assets of Rational® Test Automation Server. See [Preparing test cases in IBM Engineering Test Management on page 389](#).

## Preparing test cases in IBM® Engineering Test Management

You must create a test script and a test case on IBM® Engineering Test Management to run the test assets.



### Before you begin

You must have completed the following tasks:

- Added the adapter files to the installation directory of Engineering Test Management. See [Adding the adapter files to IBM Engineering Test Management on page 386](#).
- Configured the details of Engineering Test Management on Rational® Test Automation Server. See [Configuring IBM Engineering Test Management on Rational Test Automation Server on page 388](#).
- Generated an offline user token from Rational® Test Automation Server. See [Generating an offline token on page 418](#).
- Copied the following values to be used during the preparation of a test script and a test case:
  - Branch name of the Git repository
  - Asset ID of the test that you want to run
  - **Optional:** Name of the environment if you want to run the API test suite.

1. Log in to Engineering Test Management, if you are not already logged in.
2. Open your project area from where you want to run the test assets.
3. Click **Construction**, and then click **Test Script** from the drop-down list.
4. Enter a name for the test script in the **Test Script** field.
5. Select **Rational Test Automation Server** from the **Type** drop-down list.
6. Enter the following test information:

Fields	Actions
Offline Token	Enter the offline token that you generated from Rational® Test Automation Server.

Fields	Actions
Branch	Enter the name of the branch where your test assets are stored.
Asset ID	Enter an asset ID of the test asset that is available on the <b>Execution</b> page of Rational® Test Automation Server.   <b>Tip:</b> You can hover over the name of the test asset to view and copy the asset ID.
Environment	Enter a name of the API test environment.   <b>Remember:</b> You must use this field only if you want to run the API test suites.

7. Click **Save**.
8. Perform the following steps to add a test script to a test case:

- a. Click **Construction > Test Case**.

**Result**

The **Test Cases** page is displayed.

- b. Enter a name for the test case in the **Test Case** field.
- c. Click **Test Scripts** from the left navigation pane.
- d. Click the **Plus** icon from the **Test Scripts** panel.

**Result**

The **Add Test Scripts** dialog box is displayed.

- e. Select the checkbox to add the test script that you created to the test case, and then click **Add and Close**.
- f. Click **Save**.

## Results

You have prepared Engineering Test Management.

## What to do next

You can run the test assets of Rational® Test Automation Server from Engineering Test Management. See [Running tests from IBM Engineering Test Management on page 390](#).

## Running tests from IBM® Engineering Test Management

After you create a test case in IBM® Engineering Test Management, you can run the test. The test case includes the test scripts that contains test assets of Rational® Test Automation Server.

## Before you begin

You must have performed the following tasks:

- Prepared Engineering Test Management to run test assets of Rational® Test Automation Server. See [Preparing test cases in IBM Engineering Test Management on page 389](#).

- Configured the details of Engineering Test Management on Rational® Test Automation Server. See [Configuring IBM Engineering Test Management on Rational Test Automation Server on page 388](#).

1. Log in to Engineering Test Management.
2. Open the test case that you created in Engineering Test Management.

3. Click the **Play** icon  , and then click **Run**.

**Result**

The **Run Test Case** dialog box is displayed.

4. Click the **ChangeMachine** icon  next to the **Machine** field to select the adapter that you configured on Rational® Test Automation Server.

5. Select the required adapter name from the list, and then click **OK**.

6. Click **Finish** to start the test run.

The Engineering Test Management dashboard displays the progress of the test case run.

## Results

You have run the test assets of Rational® Test Automation Server from Engineering Test Management.

## What to do next

You can perform the following tasks:

- Click **Show Result** to view information about the test results from Engineering Test Management when the test run is complete.
- Click **Link to Result** from **Results details** to view the test results from the **Results** page of Rational® Test Automation Server. See [Test results and reports overview on page 319](#).

## Deleting an IBM® Engineering Test Management adapter

You might want to delete an IBM® Engineering Test Management adapter when it is no longer needed.

### Before you begin


You must have completed the following tasks:

- Been assigned the role of *Owner* of a project or *Owner* of the project in Rational® Test Automation Server.
- Configured the details of Engineering Test Management on Rational® Test Automation Server. See [Configuring IBM Engineering Test Management on Rational Test Automation Server on page 388](#).

1. Log in to Rational® Test Automation Server and open the team space that contains your project.
2. Click **Manage > Integration**.

3. Click the **TEST MANAGEMENT** tab.

You can view the Engineering Test Management adapters that are configured with the project on Rational® Test Automation Server.

4. Identify the Engineering Test Management adapter that you want to delete, and then click the **Menu icon** .
5. Click **Delete**.



**Note:** If any of the test runs are in progress on Engineering Test Management, then those runs are aborted.

6. Click **Confirm** to delete the Engineering Test Management adapter from the project.

## Results

You have deleted the Engineering Test Management adapter from the project on Rational® Test Automation Server.

## Integration with Jenkins

When you integrate IBM® Rational® Test Automation Server with Jenkins, you can run tests created for your application and available in a project on Rational® Test Automation Server from a Jenkins server by using the Rational® Test Automation Server Jenkins plugin.

## Prerequisites

You must have installed Jenkins on your computer. For more information about installing Jenkins, refer to [Installing Jenkins](#).

You can then run the following command to start the Jenkins server to support UTF-8 character sets:

```
java -Dfile.encoding=UTF8 -jar jenkins.war
```

## Overview

You can use the Rational® Test Automation Server Jenkins plugin to integrate Rational® Test Automation Server with Jenkins.

You must have created the tests in the desktop clients and committed the test assets and test resources to a remote repository. The remote repository must be added to the project.

Depending on the type of tests you want to perform on your application, you must have created any or all of the following types of tests in the desktop clients for the application you are testing:



Type of test	Desktop client
<ul style="list-style-type: none"> <li>Accelerated Functional Testing suites</li> <li>Compound tests</li> </ul>	IBM® Rational® Functional Tester
<ul style="list-style-type: none"> <li>Test Suite</li> </ul>	IBM® Rational® Integration Tester
<ul style="list-style-type: none"> <li>Compound tests</li> <li>VU Schedule</li> <li>Rate Schedule</li> </ul>	IBM® Rational® Performance Tester

You can now follow the tasks listed in the task flow table to integrate Rational® Test Automation Server with Jenkins. See Task flow for integrating Jenkins.

## Task flows for running test assets from Jenkins

You can perform certain tasks to run test assets from the Jenkins **Freestyle** project.

The following table lists the task flows for running test assets from the Jenkins **Freestyle** project:

Tasks	More information
Install the Rational® Test Automation Server Jenkins plugin.	<a href="#">Installing the Rational Test Automation Server Jenkins Plugin on page 393</a>
Import the CA certificate to your custom trust store.	<a href="#">Using a custom trust store on page 394</a>
Configure the <b>Freestyle</b> project.	<a href="#">Configuring the Freestyle project on page 396</a>
Run Rational® Test Automation Server test assets on Jenkins.	<a href="#">Running IBM Rational Test Automation Server tests on the Jenkins server on page 399</a>

## Installing the Rational® Test Automation Server Jenkins Plugin

You must install the latest version of the Rational® Test Automation Server plugin on the Jenkins server before you can use the plugin for running tests that are available in your IBM® Rational® Test Automation Server project on the Jenkins server.

### Before you begin

You must have downloaded the Rational® Test Automation Server Jenkins plugin `RTAS-Jenkins-5.0` from the [IBM WebSphere, Liberty & DevOps Community portal](#).

1. Open the Jenkins dashboard.
2. Click **Manage Jenkins > Manage Plugins**.
3. Click **Advanced**.
4. Click **Choose File** to locate and **Open** the Rational® Test Automation Server Jenkins plugin file from the **Upload Plugin** section.
5. Click **Upload**.

#### **Result**

The Rational® Test Automation Server Jenkins plugin is displayed in the **Installed** tab.

#### **What to do next**

You can run the tests that are available in Rational® Test Automation Server on the Jenkins server. See [Running Rational® Test Automation Server tests on the Jenkins server on page 399](#).

## Using a custom trust store

You can use a custom trust store in the Jenkins build step of a Rational® Test Automation Server Jenkins plugin to establish a trusted and secure connection between the Jenkins server and Rational® Test Automation Server.

#### **Before you begin**

You must have configured the certificate that is used by Rational® Test Automation Server as a trusted CA, and then install Rational® Test Automation Server. See [Installation of the server software on page 25](#).

#### **About this task**

If the SSL certificate assigned to Rational® Test Automation Server is signed by an internal Certified Authority (CA), then you must download and import the CA certificate to a custom trust store. You can then use the custom trust store in the Jenkins plugin build step to establish a trusted and secure connection between the Jenkins server and Rational® Test Automation Server.




**Note:** If the internal CA certificate is already imported to the default trust store that is used by the Jenkins server, you need not use a custom trust store.



#### **Restriction:**

When you use Red Hat Enterprise Linux (RHEL) operating systems for Jenkins, you must run the Jenkins service with a user who has access to the custom trust store path to utilize the custom trust store feature. To change the Jenkins user, you must open the `/etc/sysconfig/jenkins` file and set the `JENKINS_USER` to the user who has access to the custom trust store path.

-  You can then run the following commands to set JENKINS\_USER to another user who has access to the path of the custom trust store:

```
$JENKINS_USER= <username>
```

For example, `$JENKINS_USER= <user1>`



**Note:** You must ensure that the user account is available in the `/etc/passwd` file.

You can then run the following commands to change the ownership of the Jenkins folder:

```
chown -R username:username /var/lib/jenkins
```

```
chown -R username:username /var/cache/jenkins
```

```
chown -R username:username /var/log/jenkins
```

For example,

```
chown -R user1:user1 /var/lib/jenkins
```

```
chown -R user1:user1 /var/cache/jenkins
```

```
chown -R user1:user1 /var/log/jenkins
```

After the change of ownership is complete, run the following command to restart the Jenkins server:

```
/etc/init.d/jenkins restart
```

1. Locate the default trust store file (`cacerts` file) in your JRE directory from your computer, and then copy the file to a location of your choice on your computer.
2. Run the following command from the command prompt or terminal to import the CA certificate to your custom trust store:

```
keytool -import -trustcacerts -file <path to the downloaded CA certificate with the file extension> -alias <custom label for the certificate> -keystore <path to the trust store>
```

For example,

```
keytool -import -trustcacerts -file C:\Users\ca file.crt -alias alias1 -keystore D:\cert\cacerts
```



**Note:** The default password of the trust store is *changeit*. It remains the same for the custom trust store. If you want to change the password, you can run the following command, and then enter the new password:



```
keytool -storepasswd -keystore <path to the trust store>
```

For example, `keytool -storepasswd -keystore D:\cert\cacerts`

## Results

You have successfully imported the downloaded CA certificate to the custom trust store.

## What to do next

You can add the Rational® Test Automation Server tests to the Jenkins build step, and then run the tests from the Jenkins server.

## Configuring the Freestyle project

You must configure a **Freestyle** project to add a build step, and then run tests that are available in your Rational® Test Automation Server project from Jenkins.




### Before you begin




You must have completed the following tasks:


- Installed the Rational® Test Automation Server Jenkins plugin on the Jenkins server. See [Installing the Rational Test Automation Server Jenkins Plugin on page 393](#).
- Created a Jenkins **Freestyle** project.
- Generated an offline user token from Rational® Test Automation Server. See [Managing access to IBM Rational Test Automation Server on page 418](#).

1. Click the **Build** tab, and then click **Add build step**.
2. Select the **Run IBM Rational Test Automation Server test** option from the drop-down list.
3. Provide the details about the test run for the fields in the following table:

Field	Description
Name	Enter a name for the Jenkins build step.
Use Custom Trust Store	<p>Select the <b>Use Custom Trust Store</b> checkbox if you have used an internal CA certificate and have imported the certificate to the custom trust store. You can then enter the file path of your trust store followed by the file name in the <b>Custom Trust Store Path</b> field.</p> <p>Select the <b>Use Custom Password for the Trust Store</b> checkbox if you have modified the trust store password, and then enter the new password in the <b>Custom Trust Store Password</b> field.</p>

Field	Description
	 <b>Note:</b> If you have not modified the trust store password, you must clear the <b>Use Custom Password for the Trust Store</b> checkbox.
Server URL	Enter the URL of Rational® Test Automation Server.  The format of the URL is as follows: <i>https://hostname</i> .
Offline Token	Enter the offline user token that you generated from Rational® Test Automation Server.
Team Space	Select the name of the team space from the drop-down list.  The <b>Team Space</b> drop-down list displays the names of the team spaces if you are an <i>Owner</i> or a <i>member</i> of the team space.
Project	Select a project from the drop-down list.  The <b>Project</b> drop-down list displays the projects that are available in the corresponding team space of Rational® Test Automation Server.   <b>Note:</b> The <b>Project</b> drop-down list displays the projects where you are an <i>Owner</i> or a <i>member</i> of Rational® Test Automation Server. You must be an <i>Owner</i> or a <i>Tester</i> of the project that is available in the team spaces to run the tests from the Jenkins server.
Branch	Select the branch from the drop-down list.  The <b>Branch</b> drop-down list displays the branches available in the corresponding project of Rational® Test Automation Server.   <b>Note:</b> After you select the branch from the <b>Branch</b> drop-down list, if you want to change the URL, offline user token, or the project in the <b>Build</b> , then you must close the build step. Then you must click <b>Add build step</b> , select <b>Run IBM® Rational® Test Automation Server test</b> , and then enter the details.
Asset Type	Select the test asset type that you want to run from the <b>Asset Type</b> drop-down list.  The available options for the <b>Asset Type</b> field are as follows: <ul style="list-style-type: none"> <li>◦ AFT Suite</li> <li>◦ API Suite</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>◦ Compound Test</li> <li>◦ Rate Schedule</li> <li>◦ VU Schedule</li> </ul> <p> <b>Notes:</b></p> <ul style="list-style-type: none"> <li>◦ You cannot run the following test assets from the Jenkins server: <ul style="list-style-type: none"> <li>▪ API test</li> <li>▪ Functional test</li> <li>▪ Performance test</li> </ul> </li> <li>◦ The <b>Test Environment</b> field is mandatory if you select <b>APISUITE</b> as an asset type to run an API suite.</li> </ul>
Test	<p>Select the required test from the drop-down list.</p> <p>The <b>Tests</b> drop-down list displays the available test assets from the corresponding branch in the following format:</p> <pre>Project_name [Path: the path of the test assets] [Repo: URL of the Git repository that the test belongs to]</pre> <p> <b>Note:</b> After you select the test details from the <b>Tests</b> drop-down list if you want to change the URL, offline user token, or the project in the <b>Build step</b>, then you must close the build step. You must then click <b>Add build step</b>, select <b>Run IBM® Rational® Test Automation Server test</b>, and then enter the details.</p>
Test Environment	<p>This field is mandatory only if you select <b>Asset Type</b> as <b>APISUITE</b>.</p> <p>The <b>Test Environment</b> list displays the available test environments from Rational® Test Automation Server.</p> <p> <b>Note:</b> The following message is displayed when you select any other asset type apart from <b>APISUITE</b> in the <b>Asset Type</b> field:</p>

Field	Description
	 You can select Test Environment only if you are running tests of type APISUITE.



**Note:** You can run multiple tests sequentially in the same job by adding multiple build steps and providing details for the tests that you want to run.

- Click **Save** to save the build step.

### Results

You have configured the **Freestyle** project by adding the build step.

### What to do next

You can run test assets from the Jenkins server. See [Running IBM Rational Test Automation Server tests on the Jenkins server on page 399](#).

## Running IBM® Rational® Test Automation Server tests on the Jenkins server

After you install the Rational® Test Automation Server Jenkins plugin on the Jenkins server, you can run tests that are available in your IBM® Rational® Test Automation Server project on the Jenkins server.

### Before you begin

You must have completed the following tasks:




- Added the tests that you created in the desktop clients for your application to the project on Rational® Test Automation Server.
- Installed the latest version of the Rational® Test Automation Server Jenkins plugin on the Jenkins server. See [Installing the IBM® Rational® Test Automation Server Jenkins Plugin on page 393](#).
- Generated an offline user token from Rational® Test Automation Server. See [Generating an offline token on page 418](#).
- Created a Jenkins free-style software project. See [Building a software project in Jenkins](#).

1. Login to the Jenkins server, if you are not already logged in.
2. Open your Jenkins free-style software project.
3. Click **Configure**.
4. Click the **Build** tab.
5. Click **Add build step**, and then click **Run IBM® Rational® Test Automation Server test**.





### Result

The **Run IBM® Rational® Test Automation Server test** pane is displayed.

a. Provide details about the test run by referring to the following table.

Field	Description
Name	Enter a name for the Jenkins build step.
Use Custom Trust Store	<p>Select the <b>Use Custom Trust Store</b> checkbox if you have used an internal CA certificate and have imported the certificate to the custom trust store.</p> <p>You can then enter the file path of your trust store followed by the file name in the <b>Custom Trust Store Path</b> field.</p> <p>You can select the <b>Use Custom Password for the Trust Store</b> checkbox if you have modified the trust store password. Enter the new password.</p> <p> <b>Note:</b> If you have not modified the trust store password, you can keep the <b>Use Custom Password for the Trust Store</b> checkbox unselected.</p>
Server URL	Enter the URL of Rational® Test Automation Server. The format of the URL is as follows: <i>https://hostname.</i>
Offline Token	Enter the offline user token that you generated from Rational® Test Automation Server.
Team Space	Select the name of the team space from the <b>Team Space</b> drop-down list. The <b>Team Space</b> drop-down list displays the names of the team spaces if you are an Owner or a member of the team space.
Project	<p>Select a project from the <b>Project</b> drop-down list. The <b>Project</b> drop-down list displays the projects that are available in the corresponding team space of Rational® Test Automation Server.</p> <p> <b>Note:</b> The <b>Project</b> drop-down list displays the projects where you are an Owner or a member of Rational® Test Automation Server. You must be an Owner or a Tester of the project that is available in the team spaces to run the tests from the Jenkins server.</p>
Branch	<p>Select the branch from the <b>Branch</b> drop-down list. The <b>Branch</b> drop-down list displays the branches available in the corresponding project of Rational® Test Automation Server.</p> <p> <b>Note:</b> After you select the branch from the <b>Branch</b> drop-down list, if you want to change the URL, offline user token, or the project in the <b>Build</b>, then you must</p>



Field	Description
	 close the build step. Then you must click <b>Add build step</b> , select <b>Run IBM® Rational® Test Automation Server test</b> , and then enter the details.
Asset Type	Select the test asset type of the test that you want to run from the <b>Asset Type</b> drop-down list. The available asset types are as follows: <ul style="list-style-type: none"> <li>▪ AFTSUITE</li> <li>▪ COMPOUND</li> <li>▪ VUSCHEDULE</li> <li>▪ RATESCHEDULE</li> <li>▪ APISUITE</li> </ul>  <b>Note:</b> The test environment is mandatory if you select <b>APISUITE</b> as an asset type to run an API suite.
Test	Select the required test from the <b>Tests</b> drop-down list. The <b>Tests</b> drop-down list displays the available test assets from the corresponding branch in the selected project, test asset path, and the repository (that the test belongs to) from Rational® Test Automation Server based on the type of the test asset you selected from the <b>Asset Type</b> drop-down list.   <b>Note:</b> After you select the test details from the <b>Tests</b> drop-down list, if you want to change the URL, offline user token, or the project in the <b>Build</b> , then you must close the build step. You must then click <b>Add build step</b> , select <b>Run IBM® Rational® Test Automation Server test</b> , and then enter the details.
Test Environment	This field is mandatory only if you are running an API suite test. Based on the asset type as <b>APISUITE</b> and test from the <b>Tests</b> list that you select, the <b>Test Environment</b> list displays the available test environments from Rational® Test Automation Server.   <b>Note:</b> The following message is displayed when you select any other asset type apart from <b>APISUITE</b> in the <b>Asset Type</b> field: <code>You can select Test Environment only if you are running tests of type APISUITE.</code>

- b. Click **Save** to save the build step.
  - c. Optionally, you can run multiple tests sequentially in the same job by adding multiple build steps and provide details for the tests that you want to run.
6. Click **Build Now** from the left pane to run the test on the Jenkins server.

## Results

The Jenkins dashboard shows the progress of the test run.

**What to do next**

After the Jenkins build completes, you can view the test results. You can click the build number from the **Build History** pane on the Jenkins dashboard. You can then click **Console Output** to view a detailed log of the build from the console output.

The `Test Result` displays the status of the completed test that you ran.



**Note:** If you add multiple build steps to run multiple tests, multiple `Test Result` instances are displayed.

The **Reports information** section displays the names of the report along with its corresponding URLs. The report URLs are the Rational® Test Automation Server URLs where the reports are stored. You can access the report URLs to view the test execution information at any point of time.

You can also view the test reports and logs of the test that was run on the Jenkins server from the **Results** page on IBM® Rational® Test Automation Server. See [Test results and reports overview on page 319](#).

## Integration with UrbanCode™ Deploy

You can integrate IBM® Rational® Test Automation Server with IBM® UrbanCode™ Deploy to run test assets as a **Process** from UrbanCode™ Deploy.

When you use UrbanCode™ Deploy for automating the deployments of your applications to an environment during the development cycle, you can create test assets for your application in desktop clients. After you configure the project in Rational® Test Automation Server, you can then run those tests assets from UrbanCode™ Deploy.

You must use the Rational® Test Automation Server UCD plugin to integrate Rational® Test Automation Server with UrbanCode™ Deploy. Integrating Rational® Test Automation Server with UrbanCode™ Deploy automates the process of test runs. If you have many tests to run at regular intervals, you can use UrbanCode™ Deploy to initiate test runs automatically.

The following table lists the tasks that you must perform to run performance test assets from UrbanCode™ Deploy:

Tasks	Go to...
Create any or all the following types of test assets in desktop clients to test your application: <ul style="list-style-type: none"> <li>• API test assets</li> <li>• Functional test assets</li> <li>• Performance test assets</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Rational Functional Tester Documentation</a></li> <li>• <a href="#">Rational Integration Tester Documentation</a></li> <li>• <a href="#">Rational Performance Tester Documentation</a></li> </ul>
Create a project, and then configure the repository in Rational® Test Automation Server.	<a href="#">Working with projects in a team space on page 433</a>

Tasks	Go to...
Install UrbanCode™ Deploy with at least one agent.	<a href="#">IBM UrbanCode™ Deploy documentation.</a> <a href="#">System Requirements on page 14</a> for information about specific versions of UrbanCode™ Deploy requirements.
Install the Rational® Test Automation Server UCD plugin on UrbanCode™ Deploy.	<a href="#">Installing the plugin on UrbanCode Deploy on page 403.</a>
Create a <b>Component</b> in UrbanCode™ Deploy.	<a href="#">Creating a component in UrbanCode Deploy on page 405.</a>
Create a <b>Process</b> for the component in UrbanCode™ Deploy.	<a href="#">Creating a process in UrbanCode Deploy on page 406.</a>
Configure the <b>Process</b> that you created for the component in UrbanCode™ Deploy.	<a href="#">Configuring the process on page 407.</a>
Create a <b>Resource</b> in UrbanCode™ Deploy.	<a href="#">Creating a resource in UrbanCode Deploy on page 412.</a>
Configure the <b>Resource</b> .	<a href="#">Configuring the resource on page 413.</a>
Create an <b>Application</b> in UrbanCode™ Deploy.	<a href="#">Creating an application in UrbanCode Deploy on page 414.</a>
Configure the <b>Application</b> that you want to use to run test assets from UrbanCode™ Deploy.	<a href="#">Configuring the application on page 415.</a>
Run the test assets from UrbanCode™ Deploy.	<a href="#">Running tests from UrbanCode Deploy on page 417.</a>

## Installing the plugin on UrbanCode™ Deploy

You must install the Rational® Test Automation Server UCD plugin to run test assets from UrbanCode™ Deploy.

### Before you begin

- You must be familiar with working with UrbanCode™ Deploy.
- You must have performed the following tasks:
  - Installed UrbanCode™ Deploy. For more information about the installation, refer to the [IBM Urban Code documentation](#).
  - Been granted access to UrbanCode™ Deploy.
  - Downloaded the IBM® Rational® Test Automation Server UCD plugin from the [IBM WebSphere, Liberty & DevOps Community portal](#).

For more information about specific versions of plugin, see [Integration plugin compatibility matrix on page 377](#).

1. Log in to UrbanCode™ Deploy, if you are not already logged in.

**Result**

The UrbanCode™ Deploy dashboard is displayed.

2. Click **Settings**.
3. Click **Automation Plugins** from the **Automation** pane.
4. Click **Load Plugin**.
5. Click **Choose File** to locate and open the compressed Rational® Test Automation Server UCD plugin file.



**Remember:** You must not extract the Rational® Test Automation Server UCD plugin compressed file contents.

6. Click **Submit**.

**Result**

The installed plugin is displayed on the **Automation Plugins** tab.

**Results**

You have installed the Rational® Test Automation Server UCD plugin on UrbanCode™ Deploy.

**What to do next**

You must create a **Component** in UrbanCode™ Deploy. See [Creating a component in UrbanCode Deploy on page 405](#).

## Using a custom trust store

You can use a custom trust store in the IBM® Rational® Test Automation Server UCD plugin file to establish a trusted and secure connection between the UCD server and Rational® Test Automation Server.

**Before you begin**

You must have configured the certificate that is used by Rational® Test Automation Server as a trusted CA, and then install Rational® Test Automation Server. See [Installation of the server software on page 25](#).

**About this task**

If the SSL certificate assigned to Rational® Test Automation Server is signed by an internal Certified Authority (CA), then you must download and import the CA certificate to a custom trust store. You can then use the custom trust store in the **IBM® Rational® Test Automation Server test** process step to establish a trusted and secure connection between the UCD server and Rational® Test Automation Server.



**Note:** If the internal CA certificate is already imported to the default trust store that is used by the UCD server, you need not use a custom trust store.

1. Locate the default trust store file (`cacerts` file) in your JRE directory from your computer, and then copy the file to a location of your choice on your computer.
2. Run the following command from the command prompt or terminal to import the CA certificate to your custom trust store:

```
keytool -import -trustcacerts -file <path to the downloaded CA certificate with the file extension> -alias <custom label for the certificate> -keystore <path to the trust store>
```

For example,

```
keytool -import -trustcacerts -file C:\Users\ca file.crt -alias alias1 -keystore D:\cert\cacerts
```



**Note:** The default password of the trust store is *changeit*. It remains the same for the custom trust store. If you want to change the password, you can run the following command, and then enter the new password:

```
keytool -storepasswd -keystore <path to the trust store>
```

For example, `keytool -storepasswd -keystore D:\cert\cacerts`

## Results

You have successfully imported the downloaded CA certificate to the custom trust store.

## What to do next

You can then run the tests that are available in your Rational® Test Automation Server project from the UCD server.

## Creating a component in UrbanCode™ Deploy

You must create a component to include artifacts and processes. The artifacts include runnable files, images, databases, configuration instructions. Whereas the processes define the activities that components can perform.

### Before you begin

- You must be familiar with working with UrbanCode™ Deploy.
- You must have been granted access to UrbanCode™ Deploy.

1. Log in to UrbanCode™ Deploy, if you are not already logged in.

#### Result

The UrbanCode™ Deploy dashboard is displayed.

2. Click **Components**, and then click **Create Component**.
3. Enter a name for the component in the **Name** field.
4. Enter the details in the other optional fields based on your requirement, and then click **Save**.

### Result

The component that you created is displayed.

### Results

You have created the component in UrbanCode™ Deploy.

### What to do next

You must create a process for the component in UrbanCode™ Deploy. See [Creating a process in UrbanCode Deploy on page 406](#).

---

#### Related information

[IBM UrbanCode Deploy Documentation](#)

## Creating a process in UrbanCode™ Deploy

You must create a process for the component to include step properties for the test that you want to run from UrbanCode™ Deploy.

### Before you begin

- You must be familiar with working with UrbanCode™ Deploy.
- You must have performed the following tasks:
  - Been granted access to UrbanCode™ Deploy.
  - Created a component in UrbanCode™ Deploy. See [Creating a component in UrbanCode Deploy on page 405](#).

1. Log in to UrbanCode™ Deploy, if you are not already logged in.

#### Result

The UrbanCode™ Deploy dashboard is displayed.

2. Click **Components**.

#### Result

A list of components that are available in UrbanCode™ Deploy is displayed.

3. Select the component from the list for which you want to create a process.
4. Click the **Processes** tab, and then click **Create Process**.

#### Result

The **Create Process** dialog is displayed.

5. Enter a name for the process in the **Name** field.
6. Select **Operational (No Version Needed)** from **Process Type** drop-down list.
7. Verify the **Default Working Directory** field.

The **Default Working Directory** field defines the location that the agent uses to run the process. The default value is `${p:resource/work.dir}/${p:component.name}`.

Where `${p:resource/work.dir}` is the default working directory for the agent and `${p:component.name}` is the name of the component.

8. Click **Save**.

#### Result

The process that you created is listed in the **Processes** tab and the **Design** tab for the process is displayed.

#### Results

You have created the process for the component in UrbanCode™ Deploy.

#### What to do next

You must configure the process in UrbanCode™ Deploy. See [Configuring the process on page 407](#).

---

Related information

[IBM UrbanCode Deploy Documentation](#)

## Configuring the process

You must configure the process that you created for the component to organize the steps in the process, specify the properties of the steps, and connect them.

#### Before you begin

- You must be familiar with working with UrbanCode™ Deploy.
- You must have performed the following tasks:
  - Been granted access to UrbanCode™ Deploy.
  - Created a component in UrbanCode™ Deploy. See [Creating a component in UrbanCode Deploy on page 405](#).
  - Created a process for the component in UrbanCode™ Deploy. See [Creating a process in UrbanCode Deploy on page 406](#).
  - Generated an offline user token from Rational® Test Automation Server. See [Generating an offline token on page 418](#).
  - Added the tests assets to the project on Rational® Test Automation Server.

#### About this task

When you open any process to configure, the process is displayed in the process editor. The process editor lists the plugins and steps. The required **Start** and **Finish** steps represent the beginning and the end of the process and steps are automatically placed on the design area.

1. Log in to UrbanCode™ Deploy, if you are not already logged in.

**Result**

The UrbanCode™ Deploy dashboard is displayed.

2. Click **Components**.

**Result**

A list of components that are available in UrbanCode™ Deploy is displayed.

3. Select the component from the list in which you created the process.

4. Click the **Processes** tab.

**Result**

A list of processes that are available for the component is displayed.

5. Select the process from the list that you want to configure.

**Result**

The **Design** tab for the process is displayed.

6. Click **IBM Rational Test Workbench**, and then **IBM Rational Test Automation Server** from the left menu.

7. Drag the **Run IBM Rational Test Automation Server test** step, and then drop it into the design area.



**Note:** The selected test must be placed between **Start** and **Finish** steps.

8. Specify the properties for the selected test by performing the following steps:

- a. Click the **Edit** icon.

**Result**


The **Edit Properties for Run IBM Rational Test Automation Server test** dialog is displayed.

- b. Specify the properties for the selected test step by referring to the following tables:


The following table lists the required fields that you must provide to run the test from UrbanCode™ Deploy:


Fields	Action
<b>Name</b>	Enter the name for the test step.
<b>IBM Rational Test Automation Server URL</b>	Enter the URL of Rational® Test Automation Server.
<b>Offline Token</b>	Enter the offline token that you generated from Rational® Test Automation Server.




Fields	Action
<b>Team Space Name</b>	<p>Enter the name of the team space that contains the project.</p> <p> <b>Note:</b> The license for the team space must be configured and you must be a member of that team space.</p>
<b>Project Name</b>	Enter the name of the project that are available in the team space.
<b>Repository Link</b>	Enter the URL of the Git repository that you added to your project in Rational® Test Automation Server.
<b>File Path</b>	<p>Enter the path of the test assets that you want to run.</p> <p>You can find the path of the test assets from the <b>Execution</b> page in Rational® Test Automation Server</p>

The following table lists the optional fields that you can provide to run the test from UrbanCode™ Deploy:

Fields	Description
<b>Branch Name</b>	Use this field to enter the name of the branch in the Git repository where you stored test assets.
<b>Custom Trust Store Password</b>	<p>Use this field to enter the trust store password if you have modified the password while creating the custom trust store.</p> <p> <b>Note:</b> If you have not modified the trust store password, you can retain the <b>Custom Trust Store Password</b> field blank.</p>
<b>Custom Trust Store Path</b>	Use this field to enter the file path of your trust store followed by the file name if Rational® Test Automation Server uses an internal CA certificate and you have imported the certificate to a custom trust store.
<b>Datasets</b>	Use this field to enter the path to the dataset if you want to replace the values of the dataset during a test run.

Fields	Description
	<p>You must ensure that both original and new datasets are in the same workspace and have the same column names. When you enter a value for the <b>Datasets</b> field, you must also include the path to the dataset. The path must be in the following format:</p> <pre>/project_name/ds_path/original_ds.csv:/project_name/ds_path/new_ds.csv</pre> <p> <b>Note:</b> You can override multiple datasets that are saved in a different project by adding multiple paths to the dataset separated by a semicolon.</p>
<b>Environment</b>	<p>Use this field to enter the environment details for the following types of test assets:</p> <ul style="list-style-type: none"> <li>▪ APISUITE</li> <li>▪ APITEST</li> <li>▪ APISTUB</li> </ul>
<b>Labels</b>	<p>Use this field to add labels to test results when the test run is complete.</p> <p>You can add multiple labels to a test result separated by a comma.</p> <p>For example, <i>label1, label2</i></p> <p>After the test run is complete, then the values provided in the <b>Labels</b> field are displayed on the <b>Results</b> page of Rational® Test Automation Server.</p>
<b>Secrets Collection Name</b>	<p>Use this field to enter the name of the Secret if you created secrets collections for your project and to use Secrets at test run time.</p> <p>This field is mandatory only if you want to run the following types of test assets:</p> <ul style="list-style-type: none"> <li>▪ APISUITE</li> <li>▪ APITEST</li> <li>▪ APISTUB</li> </ul>
<b>Show Hidden Properties</b>	<p>Select this checkbox if you want to use an HTTP Proxy to connect to Rational® Test Automation Server.</p> <p>After you select the <b>Show Hidden Properties</b> checkbox, you can configure the HTTP Proxy by using the following fields:</p>

Fields	Description
	<ul style="list-style-type: none"> <li>▪ <b>HTTP Proxy Host:</b> Use this field to enter the hostname of the HTTP proxy that you want to connect to Rational® Test Automation Server.</li> <li>▪ <b>HTTP Proxy Port:</b> Use this field to enter the port number where the HTTP proxy is used to listen to both HTTP and HTTPS traffic.</li> <li>▪ <b>HTTP Proxy User name:</b> Use this field to provide the username for the HTTP proxy.</li> <li>▪ <b>HTTP Proxy Password:</b> Use this field to enter a valid password for the user that you specified in the <b>HTTP Proxy User name</b> field.</li> </ul> <p> <b>Note:</b> You can use the <b>Show Hidden Properties</b> field only when you want to run the following types of test assets:</p> <ul style="list-style-type: none"> <li>▪ APISUITE</li> <li>▪ APITEST</li> <li>▪ APISTUB</li> </ul>
<b>Start Date</b>	<p>Use this field to enter the date and time in the following format for running tests at the scheduled date and time:</p> <p><code>yyyy/MM/dd/HH:mm</code></p> <p>When you enter a value in the <b>Start date</b> field, the status of the test displays as <code>Scheduled</code> on the <b>Overview</b> and <b>Progress</b> pages of Rational® Test Automation Server.</p>
<b>Variables</b>	<p>Use this field to enter the name of the variable and its value if your test requires variables during the test run time.</p> <p>You must enter the variables in the following format:</p> <p><code>name_of_the_variable=value_of_the_varibale</code></p> <p>You can add multiple variables to the test run separated by a semicolon.</p> <p>For example, <code>varname1=value1;varname2=value2</code></p>



**Note:** In addition to optional fields, you can also use the following fields from UrbanCode™

Deploy to configure your test run:

- **Working Directory**
- **Precondition**



- **Post Processing Script**
- **Use Impersonation**
- **Auth Token Restriction**

You can accept the default values or change the values based on your requirements. For more information about these fields, see the related links.

c. Click **OK** to save the properties for the test.

9. Click **Save** in the design area.

## Results

You have configured the process for the component in UrbanCode™ Deploy.

## What to do next

You must create a resource in UrbanCode™ Deploy. See [Creating a resource in UrbanCode Deploy on page 412](#).

---

Related information

[IBM UrbanCode Deploy Documentation](#)

[Process step preconditions](#)

[Post-processing scripts](#)

[User impersonation for process steps](#)

[Restricting authentication tokens](#)

## Creating a resource in UrbanCode™ Deploy

You must create a resource to associate agents with components that you created in UrbanCode™ Deploy.

### Before you begin

- You must be familiar with working with UrbanCode™ Deploy.
- You must have been granted access to UrbanCode™ Deploy.

1. Log in to UrbanCode™ Deploy, if you are not already logged in.

#### Result

The UrbanCode™ Deploy dashboard is displayed.

2. Click **Resources**, and then click **Create Top-Level Group**.

#### Result

The **Create Resource** dialog is displayed.

3. Enter a name for the resource in the **Name** field.

4. Click **Save**.

## Results

You have created the resource in UrbanCode™ Deploy.

### What to do next

You must configure the resource. See [Configuring the resource on page 413](#).

---

Related information

[IBM UrbanCode Deploy Documentation](#)

## Configuring the resource

You must configure the resource to add an agent and associate the agent with the component.

### Before you begin

- You must be familiar with working with UrbanCode™ Deploy.
- You must have performed the following tasks:
  - Been granted access to UrbanCode™ Deploy.
  - Created a component in UrbanCode™ Deploy. See [Creating a component in UrbanCode Deploy on page 405](#).
  - Created a resource in UrbanCode™ Deploy. See [Creating a resource in UrbanCode Deploy on page 412](#).

1. Log in to UrbanCode™ Deploy, if you are not already logged in.

#### Result

The UrbanCode™ Deploy dashboard is displayed.

2. Click **Resources**.

#### Result

A list of resources that are available in UrbanCode™ Deploy is displayed.

3. Perform the following steps to add an agent to the resource:

- a. Click the resource from the list for which you want to add an agent.
- b. Click the **Actions** icon from the last column, and then click **Add Agent**.
- c. Select the agent from the drop-down list.



**Note:** The **Name** field is auto populated with the name of the agent.

- d. Click **Save**.

### Result

The selected agent is added to the resource and you can view the status of the agent in the **Status** column.

4. Perform the following steps to add a component to the agent:
  - a. Click the agent from the list for which you want to add a component.
  - b. Click the **Actions** icon from the last column, and then click **Add Component**.
  - c. Select the component from the drop-down list.



**Note:** The **Name** field is auto populated with the name of the component.

- d. Click **Save**.

### Result

The selected component is added to the agent.

## Results

You have configured the resource in UrbanCode™ Deploy.

## What to do next

You must create an application. See [Creating an application in UrbanCode Deploy on page 414](#).

---

Related information

[IBM UrbanCode Deploy Documentation](#)

## Creating an application in UrbanCode™ Deploy

You must create an application to fetch all the components together that you want to deploy.

### Before you begin

- You must be familiar with working with UrbanCode™ Deploy.
  - You must have been granted access to UrbanCode™ Deploy.
1. Log in to UrbanCode™ Deploy, if you are not already logged in.

### Result

The UrbanCode™ Deploy dashboard is displayed.

2. Click **Applications**.
3. Click **Create Applications**, and then **New Applications**.
4. Enter a name for the application in the **Name** field.

### Result

The **Environments** page for the application that you created is displayed.

**Results**

You have created the application in UrbanCode™ Deploy.

**What to do next**

You must configure the application. See [Configuring the application on page 415](#).

Related information

[IBM UrbanCode Deploy Documentation](#)

## Configuring the application

You must configure the application to associate resources with environments and define processes to run test assets.

**Before you begin**

- You must be familiar with working with UrbanCode™ Deploy.
- You must have performed the following tasks:
  - Been granted access to UrbanCode™ Deploy.
  - Created a component in UrbanCode™ Deploy. See [Creating a component in UrbanCode Deploy on page 405](#).
  - Created a process for the component in UrbanCode™ Deploy. See [Creating a process in UrbanCode Deploy on page 406](#).
  - Configure the process for the component in UrbanCode™ Deploy. See [Configuring the process on page 407](#).
  - Created a resource in UrbanCode™ Deploy. See [Creating a resource in UrbanCode Deploy on page 412](#).
  - Configured the resource in UrbanCode™ Deploy. See [Configuring the resource on page 413](#).
  - Created an application in UrbanCode™ Deploy. See [Creating an application in UrbanCode Deploy on page 414](#).

1. Log in to UrbanCode™ Deploy, if you are not already logged in.

**Result**

The UrbanCode™ Deploy dashboard is displayed.

2. Click **Applications**.

**Result**

A list of applications that are available in UrbanCode™ Deploy is displayed.

3. Click the application that you want to configure from the **Name** column.

### Result

The **Environments** page for the selected application is displayed.

4. Perform the following steps to create an environment for the application that you selected:
  - a. Click **Create Environment**.
  - b. Enter a name for the environment in the **Name** field.
  - c. Click **Save**.
5. Perform the following steps to configure resources to the environment:
  - a. Click the environment that you created.
  - b. Click **Add Base Resources**.

### Result

A list of resources that are available in UrbanCode™ Deploy is displayed.

- c. Select the checkbox to add resources to the environment.
- d. Click **Save**.

### Result

You can view the corresponding agent and the component that you added for the resource by using the **Expand** icon.

6. Perform the following steps to add the component to the application:
  - a. Click **Applications**, and then select your application from the list.
  - b. Click the **Components** tab, and then **Add Components**.
  - c. Select the checkbox from the drop-down list to add components to the application.
  - d. Click **Save**.
7. Perform the following steps to create a process for the application:
  - a. Click the **Processes** tab, and then **Create Process**.
  - b. Enter a name for the process in the **Name** field.
  - c. Click **Save**.

### Result

The **Design** tab for the process that you created is displayed.

8. Drag the component process listed under the **Component Process Steps** option from the left navigation pane and drop it into the design area.
9. Select the component process from the drop-down list in the **Operational (No Version Needed) Process** field.
10. Click **Save**.
11. Click the **Edit** icon, and then change the name of the properties.
12. Click **OK**, and then click **Save**.

### Results

You have configured the application to run test assets from UrbanCode™ Deploy.



**What to do next**

You can run test assets from UrbanCode™ Deploy. See [Running tests from UrbanCode Deploy on page 417](#).

---

Related information

[IBM UrbanCode Deploy Documentation](#)

**Running tests from UrbanCode™ Deploy**

You can run test assets from UrbanCode™ Deploy as a **Process** to test your application under test.

**Before you begin**

- You must be familiar with working with UrbanCode™ Deploy.
- You must have performed the following tasks:
  - Been granted access to UrbanCode™ Deploy.
  - Created a component in UrbanCode™ Deploy. See [Creating a component in UrbanCode Deploy on page 405](#).
  - Created a process for the component in UrbanCode™ Deploy. See [Creating a process in UrbanCode Deploy on page 406](#).
  - Configure the process for the component in UrbanCode™ Deploy. See [Configuring the process on page 407](#).
  - Created a resource in UrbanCode™ Deploy. See [Creating a resource in UrbanCode Deploy on page 412](#).
  - Configured the resource in UrbanCode™ Deploy. See [Configuring the resource on page 413](#).
  - Created an application in UrbanCode™ Deploy. See [Creating an application in UrbanCode Deploy on page 414](#).
  - Configured the application in UrbanCode™ Deploy. See [Configuring the application on page 415](#).
  - Started the UrbanCode™ Deploy agent. For more information, refer to the [IBM UrbanCode Deployment documentation](#).

1. Log in to UrbanCode™ Deploy, if you are not already logged in.

**Result**

The UrbanCode™ Deploy dashboard is displayed.

2. Click **Applications**.

**Result**

A list of applications that are available in UrbanCode™ Deploy is displayed.

3. Click the application that you configured for the test run.
4. Click the **Request Process** icon.

**Result**

The **Run Application Process** page is displayed.

5. Select the process that you created for the application which contains the test assets from the **Process** drop-down list.
6. Click **Submit**.

**Result**

The UrbanCode™ Deploy dashboard shows the progress of the process request.

## Results

You have run the performance test assets as **Process** from UrbanCode™ Deploy.

### What to do next

After the process completes, you can view the status of the process displayed as follows:

- **Success:** When the test run is successful
- **Failed:** When the test run is failed

You can view the details of the test run in the **Execution Log** section. The **Reports information** section on the `Log` file displays the names of the report along with its corresponding URLs.

## Managing access to IBM® Rational® Test Automation Server

Desktop clients and third-party integrations use offline user tokens to connect to Rational® Test Automation Server.

You can configure the desktop clients and third-party integrations to access Rational® Test Automation Server by using the offline user tokens created from the server.

Offline user tokens are used in the following cases:

- To retrieve secrets configured on the server to be used in certain tests in Rational® Integration Tester.
- To enable publishing of test results and reports from desktop clients to Rational® Test Automation Server.
- To enable the Resource Monitoring Service in Rational® Performance Tester to monitor a data source during a run on Rational® Test Automation Server.
- To enable agents to connect with Rational® Test Automation Server.
- To enable HTTP proxies to connect with Rational® Test Automation Server.
- To enable third-party integrations.


### About this task

From Rational® Test Automation Server, you can create an offline user token, copy it, and then use that token to enable connections to be authenticated by Rational® Test Automation Server.

You can also delete all the tokens, when you no longer need access or you want to prevent access to the server.

## Creating a token

- Follow these steps:

1. Click the **User** icon  from the menu bar, and then select **Create Token**.

The Create Offline User Token dialog box is displayed.



**Note:** This token is not accessible after you copy it as the dialog box closes.

2. Copy the token and paste it into a private location for ongoing reference.

The dialog box closes.

3. Paste the token into the desktop client UI or in the application where this token is required.


See the following table for a list of where you can use the tokens and where you can find more information.

**Table 9. Using the offline user tokens to access Rational® Test Automation Server**

Use the offline user token in the following places	More information
Rational® Integration Tester	See <a href="#">Rational® Integration Tester and Rational® Test Automation Server</a> .
Rational® Performance Tester	See <a href="#">Publishing test results to the server</a> . See <a href="#">Enablement of Resource Monitoring services for a schedule</a> .
Rational® Functional Tester	See <a href="#">Publishing test results to the server</a> .
Third-party integrations	See <a href="#">Integrating with other applications on page 377</a> .

## Deleting tokens

- Follow these steps:

1. Click the **User** icon  from the menu bar and select **Delete Tokens**.

The Delete All Offline User Tokens dialog box is displayed.

2. Inform the desktop client users that the tokens were deleted. Fix any test automation scripts that used tokens.

# Chapter 7. Test Manager Guide

This guide describes how to manage and track your overall test effort. This guide is intended for test managers.

---

Related information

[Managing access to server projects on page 442](#)

## Team space management

You might want to become a team space member, add members to your team space, change a user role in a team space, modify the team space, or delete a team space.

Each team space is associated with at least one *Team Space Owner*. You can assign multiple owners to your team space. Any user who becomes a member of a team space and is assigned the role of a *Member*, *Project Creator*, *Architect*, or *Team Space Owner* of a team space, can access the team space.

As an owner of a team space, after you create a team space, you must configure the team space license. You can then add members to the team space and can assign different roles to each member of the team space. You can update or delete a team space. You can also add a repository to a team space to store a system model and edit the repository settings. Apart from adding a repository, you can add, update, or delete the Resource Monitoring agent if no longer required.

As an *Architect* of a team space, you can manage a team space repository and design a system model.

As a *Project Creator* of a team space, you can create a project in the team space.

As a licensed user who is assigned with a *Member*, *Project Creator*, *Architect*, or *Team Space Owner* role of a team space, you can add a Docker host to your team space. You can view the configured Docker, agents, or intercepts of your team space. You can edit only those Docker hosts that you created.

## Viewing team spaces

After you log in to IBM® Rational® Test Automation Server, you can view all the existing team spaces on the **Team Space Dashboard** page.

### About this task

As a member of a team space, you can view your team spaces under **My Team Spaces**. You can also view the team spaces that are created by other users as the public team space and the Permissive team spaces under **Other Team Spaces**.

If the initial team space does not exist, then you can view the **Team Space Dashboard** without any navigation pane.

You as a member of a team space, when you want to use that team space immediately after you log in to Rational® Test Automation Server, you can suffix the alias in the application URL.

For example, if the alias of the team space is `first`, then you must use the following Rational® Test Automation Server URL in the address bar:

```
<server url>/#/first
```

1. Log in to Rational® Test Automation Server.

**Result**

The **Projects** page of the initial team space is displayed.

2. Click the **Settings** icon  from the left navigation pane, and then click **Join another team space**.

**Result**

The **Team Space Dashboard** is displayed.

You can view the team spaces in the following panels:

- **My Team Spaces:** You can view all the team spaces that you created. You can also view the team spaces in which you are a member.
- **Other Team Spaces:** You can view all the team spaces that are created by others.



**Note:** You cannot view the Restrictive private type team spaces.

## Results

You have viewed the team spaces that are created by you and other users on the **Team Space Dashboard**.

## What to do next

You can select a team space and can send a request to become a member of that team space. See [Becoming a team space member on page 428](#).

## Adding members to a team space

When you create a team space to manage projects, you must add users to your team space so that they can create and access the projects.

### Before you begin

- As an administrator, you are assigned the default role of a *Team Space Owner*. If you log in to Rational® Test Automation Server as another user, then you must have been assigned the role of a *Team Space Owner*.
- As an owner of a team space, you must have completed the following tasks:
  - Created a team space. See [Creating a team space on page 103](#).
  - Configured a license for the team space. See [Configuring licenses for team spaces on page 113](#).

You must have been assigned a role as a *Team Space Owner*. If you are a server administrator, then you are assigned with the default role of a *Team Space Owner*.

### About this task

As an owner of a team space, you can add multiple users to your **Permissive** or **Restrictive** team space.

1. Log in to Rational® Test Automation Server.

**Result**

The **Projects** page of the initial team space is displayed.

2. Click the **Settings** icon  from the left navigation pane.



**Note:** If the initial team space does not exist, then you can view the **Team Space Dashboard** page without any navigation pane.

3. Identify the team space for which you want to add a member.

You can either use the same team space where you choose to work or switch to any other team space.

4. Click **Add member** to add members in the initial team space.

Alternatively, you can select the team space, and then click **Settings > Add member**.

**Result**

The **Add Member** page is displayed.

5. Enter a user name in the **Add People** field to add users.

Alternatively, you can find the user name by using type search.

**Result**

The list of users is displayed.

6. Select the user.

7. Assign a role to the selected user.




**Note:** All members are assigned the default roles of a *Project Creator* and *Architect*.

You can choose the role for the user based on its associated actions:

Roles	Responsibilities
<i>Team Space Owner</i>	<ul style="list-style-type: none"> <li>◦ Create a team space.</li> <li>◦ Update and delete a team space.</li> <li>◦ Add members to a team space.</li> <li>◦ Remove members from the team space.</li> <li>◦ Assign the roles to the members.</li> <li>◦ Modify the roles of the members.</li> <li>◦ Create and modify a project.</li> <li>◦ Add or update the system model.</li> <li>◦ Add a repository to store a system model.</li> <li>◦ Update and delete a repository in a team space.</li> <li>◦ Add, update, or delete Docker.</li> </ul>

Roles	Responsibilities
	<ul style="list-style-type: none"> <li>◦ Configure or update agent and intercepts.</li> <li>◦ Register, update, delete, and list Resource Monitoring sources in a team space.</li> </ul>
<i>Project Creator</i>	<ul style="list-style-type: none"> <li>◦ Create, update, and view a project</li> <li>◦ Add, update, or delete Docker.</li> <li>◦ Configure or update agent and intercepts.</li> </ul>
<i>Architect</i>	<ul style="list-style-type: none"> <li>◦ Create, update, delete, and view a repository in a team space.</li> <li>◦ Create, update, and delete components in the system model.</li> <li>◦ Add, update, or delete Docker.</li> <li>◦ Configure or update agent and intercepts.</li> </ul>
<i>Member</i>	<ul style="list-style-type: none"> <li>◦ View the list of team spaces in the <b>Team Space Dashboard</b>.</li> <li>◦ View the configuration of the team space.</li> <li>◦ Add, update, or delete Docker.</li> <li>◦ Configure or update agent and intercepts.</li> <li>◦ View the registered Dockers, agents, or intercepts.</li> <li>◦ View the Resource Monitoring agents in a team space.</li> <li>◦ View the registered Resource Monitoring agents.</li> <li>◦ View components in the system model.</li> </ul>

**Notes:**

- The members with the assigned role of a *Team Space Owner*, *Project Creator*, *Architect*, or *Member* of a team space can be assigned with any of the following project roles:
  - *Project Owner*
  - *Tester*
  - *Viewer*
- You can add or remove the role of a member by using the **Menu** icon  next to each user in the **Members** list.

8. Repeat the applicable steps to add another user.

**Results**

You have added members with assigned roles to your team space. You can view the list of all added users on the **Team Space Configuration** page.

**What to do next**

You can reassign or remove the roles of users to one or more team spaces that you own. See [Managing members and their roles in a team space on page 429](#).

All users can request to be a member of another team space. See [Becoming a team space member on page 428](#).

Users added as members to the team space can view the team space in **My Team Spaces**.

## Modifying the configuration of a team space

After you create a team space, if you want to modify the details of the team space, add a repository to your team space, add or remove members of a team space or delete a team space, then you can perform these tasks on the **Team Space Configuration** page.

### Before you begin

You must have been assigned the role of a *Team Space Owner*.

### About this task

The **Team Space Configuration** page displays details of the team space.

As an owner of a team space, you can modify details of the team space, add members to your team space, and assign roles to the members of the team space on the **Team Space Configuration** page.

The *Team Space Owner* and *Architect* can add or remove a repository from the team space.

If the team space is no longer required, then the *Team Space Owner* can also delete that team space.


As a *Member*, *Project Creator*, or *Architect*, you can only view the configuration details of a team space on the **Details** tab of the **Team Space Configuration** page.

As a *Member*, and *Project Creator* you can only view the configuration details of a team space on the **Repository** tab of the **Team Space Configuration** page.

1. Log in to Rational® Test Automation Server.

#### Result

The **Projects** page of the initial team space is displayed.

2. Click the **Settings** icon  from the left navigation pane.
3. Identify the team space for which you want to modify the configuration.

You can either use the same team space where you are working or switch to any other team space.

4. Click **Manage team space**.



#### Result

The **Details** page is displayed.

5. Perform the modifications on the following details of the **Details** tabs of the team space:

Fields	More information
Name	Displays the name of the team space.



Fields	More information
URL alias	Displays an alias of the team space. You must suffix this alias in the application URL to access a specific team space after you log in to the application.
Available at	<p>Displays the application URL by using an alias. You can copy this URL and use it when you want to access the team space immediately after you log in to the application.</p> <p> <b>Note:</b> You cannot modify the URL.</p>
Member Access	<p>Displays the type of team space that defines the permissions to access the team space. A team space can be of the following types:</p> <ul style="list-style-type: none"> <li>◦ <b>Permissive:</b> All licensed users can access this team space without the approvals of a <i>Team Space Owner</i>.</li> <li>◦ <b>Restrictive:</b> All licensed users must get approvals from the <i>Team Space Owner</i> to access this team space.</li> </ul>
Visibility	<p>The visibility mode of a team space can be of the following types:</p> <ul style="list-style-type: none"> <li>◦ <b>Public:</b> The team spaces are visible to all licensed users in the <b>Other Team Spaces</b> panel.</li> <li>◦ <b>Private:</b> The team spaces are not visible to all the licensed users in the <b>Other Team Spaces</b> panel.</li> </ul> <p> <b>Note:</b> The visibility mode is available only when the <b>Restrictive</b> type of team space is selected.</p>
Description	Brief description of the team space. This is an optional field.
Add People	List of members in a team space.

6. Click the **Repository** tab to modify the details of the repository of the team space.

**Results**

You have modified the configuration details of the selected team space.

**What to do next**

You can add members and assign roles to each member of your team space.

---

 Related information

[Adding members to a team space on page 421](#)

[Managing members and their roles in a team space on page 429](#)

[Adding repositories to a server project on page 437](#)

**Viewing the configuration of a team space**

You can view the configuration of a team space as a member of any team space. You can view the configuration details on the **Team Space Configuration** page.


**Before you begin**

You must be a member of a team space.

**About this task**

The **Team Space Configuration** page displays the configuration details of the team space.

As a member of a team space, if you want to access your team space immediately after logging into IBM® Rational® Test Automation Server, then you must suffix the alias in the application URL. You can find details of the alias on the **Team Space Configuration** page. You can also view the list of members and their roles in that team space on the **Team Space Configuration** page.


1. Log in to Rational® Test Automation Server.
2. Click the **Settings** icon  from the left navigation pane.
3. Identify the team space for which you want to view the configuration.  
You can either use the same team space where you are working or switch to any other team space.
4. Click **Manage team space**.


**Result**

The **Details** page is displayed.

You can view the following details about the team space:

Fields	Tabs	More information
Name	<b>Details</b>	Displays the name of the team space.
URL alias	<b>Details</b>	Displays an alias of the team space. You must suffix this alias

Fields	Tabs	More information
		in the application URL to access a specific team space after you log in to the application.
Available at	<b>Details</b>	Displays the application URL by using an alias. You can copy this URL and use it when you want to access the team space immediately after you log in to the application.
Member Access	<b>Details</b>	<p>Displays the type of team space that defines the permissions to access the team space. A team space can be of the following types:</p> <ul style="list-style-type: none"> <li>◦ <b>Permissive:</b> All licensed users can access this team space without the approvals of a <i>Team Space Owner</i>.</li> <li>◦ <b>Restrictive:</b> All licensed users must get approvals from the <i>Team Space Owner</i> to access this team space.</li> </ul>
Visibility	<b>Details</b>	<p>The visibility mode of a team space can be of the following types:</p> <ul style="list-style-type: none"> <li>◦ <b>Public:</b> The team spaces are visible to all licensed users in the <b>Other Team Spaces</b> panel.</li> <li>◦ <b>Private:</b> The team spaces are not visible to all the licensed users in the <b>Other Team Spaces</b> panel.</li> </ul> <p> <b>Note:</b> The visibility mode is available only when the</p>

Fields	Tabs	More information
		 <b>Restrictive</b> type of team space is selected.
Members	<b>Details</b>	Displays a list of members of the team space.
Repository	<b>Repository</b>	Displays the repository details that host the system model.

## Results

You have viewed the configuration details of the selected team space.

## Becoming a team space member

After logging into IBM® Rational® Test Automation Server, the licensed users must be a member of any team space to perform test activities in a project. As a licensed user, if you are not assigned the role of a member in any team space, then you can request the *Team Space Owner* to become a member of any existing team space.

### Before you begin

You must be a licensed user.

### About this task

If you want to become a member of a **Restrictive** team space, then only the owner of that team space can grant you the role of a member of a team space. If you request to become a member of a **Permissive** team space, then you automatically become a member of that team space.



**Note:** The server administrator can join any team space automatically without any approval and is assigned with a default role of *Team Space Owner*.

1. Log in to Rational® Test Automation Server.

#### Result

The **Projects** page of the initial team space is displayed.

2. Click the **Settings** icon  from the left navigation pane, and then **Join another team space**.

#### Result


The **Team Space Dashboard** is displayed.

You can view the team spaces in the following panels:

- **My Team Spaces:** You can view all the team spaces that you created. You can also view the team spaces in which you are a member.
- **Other Team Spaces:** You can view all the team spaces that are created by others.

**Note:**

You can view only the public type of **Restrictive** team spaces and the **Permissive** team spaces. You cannot view the **Restrictive** private type team spaces.

3. Select the team space that you want to join from the list of other team spaces in the **Team Space Dashboard**.
4. Click the **Key** icon  of the selected team space.
5. Confirm your request when prompted.

If you agree, then the *Team Space Owner* sees a notification about the request.

After opening the notification, the *Team Space Owner* can view the user who is requesting the access and can accept or decline the request. If the *Team Space Owner* accepts your request, you are added and assigned a *Member* role.

**Notes:**

- You can become a member of any team space only when the license of the selected team space is configured.
- If you are a server administrator, then the *Team Space Owner* role is the default role assigned.
- If you are a licensed user, then the *Member* role is the default role assigned and is restricted to specific actions.

You can then see the team space under **My Team Spaces** on the **Team Space Dashboard** page.

You might want to follow up with the *Team Space Owner* if your request is pending for some time.

**Results**

You have become a member of another team space.

**What to do next**

You can view the actions that you can perform based on your assigned role. See [Adding members to a team space on page 421](#).

## Managing members and their roles in a team space

After you assign roles to the members of a team space, as a *Team Space Owner*, you might want to remove a member from the team space or reassign the role to the existing members of your team space.

**Before you begin**

You must have been assigned the role of a *Team Space Owner*.

**About this task**


As a licensed user, you are assigned a role of a *Member* in any team space after the approval of the *Team Space Owner*.

As an owner of a team space, you can remove or reassign any member of your team space with the roles of a *Team Space Owner*, *Project Creator*, or *Architect*. You can also remove any member from the list of members of the team space.

1. Log in to Rational® Test Automation Server.

**Result**

The **Projects** page of the initial team space is displayed.

2. Click the **Settings** icon  from the left navigation pane.
3. Identify the team space for which you want to reassign the roles of the members or remove a member from the list of members.


You can either use the same team space where you are working or switch to any other team space.

4. Click **Add member** if you want to reassign the roles of the members or remove a member from the list of members of the initial team space.

Alternatively, you can select the team space, and then click **Settings > Add member**.

**Result**

The **Add member** page is displayed.

5. Identify the member from the list of **Members**.
6. Click the **Menu** icon  next to the selected member.
7. Perform any one of the following operations to the identified member of the team space:

**Choose from:**

- Click **Remove Member** to remove the identified member from the team space.
- Select the role that you want to assign or remove the assigned role for the identified member.

You can choose multiple roles for the members based on the associated actions:

Roles	Actions
<i>Team Space Owner</i>	<ul style="list-style-type: none"> <li>▪ Create a team space.</li> <li>▪ Update and delete a team space.</li> <li>▪ Add members to a team space.</li> <li>▪ Remove members from the team space.</li> <li>▪ Assign the roles to the members.</li> <li>▪ Modify the roles of the members.</li> <li>▪ Create and modify a project.</li> <li>▪ Add or update the system model.</li> <li>▪ Add a repository to store a system model.</li> <li>▪ Update and delete a repository in a team space.</li> <li>▪ Add, update, or delete Docker.</li> </ul>

Roles	Actions
	<ul style="list-style-type: none"> <li>▪ Configure or update agent and intercepts.</li> <li>▪ Register, update, delete, and list Resource Monitoring sources in a team space.</li> </ul>
<i>Project Creator</i>	<ul style="list-style-type: none"> <li>▪ Create, update, and view a project.</li> <li>▪ Add, update, or delete Docker.</li> <li>▪ Configure or update agent and intercepts.</li> </ul>
<i>Architect</i>	<ul style="list-style-type: none"> <li>▪ Create, update, delete, and view a repository in a team space.</li> <li>▪ Create, update, and delete components in the system model.</li> <li>▪ Add, update, or delete Docker.</li> <li>▪ Configure or update agent and intercepts.</li> </ul>
<i>Member</i>	<ul style="list-style-type: none"> <li>▪ View the list of team spaces in the <b>Team Space Dashboard</b>.</li> <li>▪ View the configuration of the team space.</li> <li>▪ Add, update, or delete Docker.</li> <li>▪ Configure or update agent and intercepts.</li> <li>▪ View the registered Dockers, agents, or intercepts.</li> <li>▪ View the Resource Monitoring agents in a team space.</li> <li>▪ View the registered Resource Monitoring agents.</li> <li>▪ View components in the system model.</li> </ul>



**Note:** The *Team Space Owner*, *Project Creator*, *Architect*, or *Member* of a team space can be assigned with any of the following project roles:

- *Project Owner*
- *Tester*
- *Viewer*

Similarly, you can remove the assigned role of any member of your team space.

## Results

You have completed any of the following tasks in your team space:

- Reassigned the role of the members.
- Removed the assigned role of the members.
- Removed the members.

Related information

[Adding members to a team space on page 421](#)

## Deleting a team space

You might want to delete a team space when it is no longer needed.

### Before you begin

You must have been assigned the role of a *Team Space Owner* of IBM® Rational® Test Automation Server.

### About this task

As a *Team Space Owner*, you can delete a team space that you do not need. When you delete a team space, it is a permanent deletion. You cannot undo the delete action on a team space.


If you delete the initial team space, then you can only view the **Team Space Dashboard** page without any navigation pane.

After you delete the team space, you can use the name of the team space again.

1. Log in to Rational® Test Automation Server.

#### Result

The **Projects** page of the initial team space is displayed.

2. Click the **Settings** icon  from the left navigation pane.
3. Identify the team space that you want to delete.

You can either use the same team space where you are working or switch to any other team space.

4. Click **Manage team space**.

#### Result

The **Details** page is displayed.

5. Click **Delete Team Space**.
6. Confirm that you want to delete the team space when prompted.

If you proceed, the team space is deleted including all of its projects and members.

### Results

You have deleted the selected team space.

### What to do next

You can view the available team spaces on the **Team Space Dashboard** page. See [Viewing team spaces on page 420](#).

After you delete a team space, the license that is used for that team space is released and is available to configure the other team spaces, if required. See [Configuring licenses for team spaces on page 113](#).



## Test assets and a server project

Rational® Test Automation Server projects manage access to your test assets, which are stored in a Git repository. Projects are maintained in a team space. Projects are either public by default or private. Private projects are not discoverable by other users. You can either add your own project or you can request to be a member of another public project.

All the licensed users are assigned with a default role of a *Project Creator*. As a *Project Creator*, when you create a project immediately after logging in the application, the project is created in the initial team space. If you want to create a project in any specific team space, then you must become a member of that team space. When you add your own project, you can configure it now or later. Configuring the project includes adding details about the project, adding one or more Git repositories, optionally adding secrets, classifying encrypted datasets, and adding a change management system. To run test assets that are associated with an encrypted dataset, you must categorize the encrypted datasets by creating a classification. You can also add users to your project to access your test assets only if the users are the members of that team space. To use Jira to create defects for the tests available in your project, you must configure the Jira server for your project on Rational® Test Automation Server.

---

### Related information

[Team space overview on page 100](#)

[Becoming a team space member on page 428](#)

[Becoming a project member on page 441](#)

[Managing access to server projects on page 442](#)

[Managing repositories on page 447](#)

[Protecting API test assets by using secrets on page 454](#)

[Managing an encrypted dataset on page 460](#)

[Default user administration on page 80](#)

[Configuration of Jira as a change management system on page 368](#)

## Working with projects in a team space

After you log in to IBM® Rational® Test Automation Server, you must have a project to perform the test activities. To work with projects, you must create and configure projects.

### Before you begin

You must have logged into Rational® Test Automation Server.

### About this task

You must be assigned with the role of an *Owner*, *Tester*, or *Viewer* of a project.

1. Go to the **Projects** page from the **Initial Team Space** Home page. See [Viewing active projects on page 439](#).
2. Add a project. See [Adding a project on page 436](#).
3. Add a repository. See [Adding repositories to a server project on page 437](#).
4. Add secrets in secrets collections. See [Secrets configuration on page 438](#).
5. Encrypt the data set resources. See [Data security](#).
6. Configure a change management system. See [Configuration of a change management system on page 368](#).
7. Add members to a project and configure their roles. See [Adding users to a project on page 438](#).
8. Select a global branch in a project to view the test assets or resources maintained in the repositories. See [Selecting the global branch in a project on page 452](#)
9. Perform the following tasks based on the type of test assets or resources that you want to run:
  - a. Add agents to your project, if you are using remote agents as a location to run certain tests. See [Adding an agent to a project on page 170](#).
  - b. Add remote Dockers, if you are using a remote Docker host as a location to run tests. See [Adding a remote Docker host to the project for running tests on page 184](#).
  - c. Read the considerations that you must take into account before you configure a run or start a virtual service. See [Prerequisites for running virtual services on page 274](#).
  - d. Read the considerations that you must take into account before you configure a test run. See [Prerequisites to running tests on page 160](#).
10. Configure a run of the test asset or resource. See [Test run configurations on page 190](#).
11. View the progress of a test run. See [Viewing the progress of running test assets on page 263](#).
12. Manage a running test. See [Management of running tests on page 259](#).
13. View the results of a test run after the run is completed. See [Test results on page 318](#).
14. Review the test results and create defects for test runs from the Results page. See [Creating Jira defects on page 373](#).

## Results

You have performed all the tasks with the projects.

## Repository considerations for a server project

To collaborate with other project stakeholders, you can open test assets from a local clone of the Git repository, pull project test assets from a Git repository, and push changes made to your local test assets to a Git repository. Before you add a project and add a repository to that project, you must consider some information about repositories.

Consider the following sections about using Git repositories with IBM® Rational® Test Automation Server. For more information about installing, setting up, and using Git, see the [Git documentation](#).

## Git

You must install Git or upgrade the version if you already have installed Git.

## Repositories and user identities

After you install Git, you must set up your Git repository and set up access for members. You must ensure that the repository contains your test assets.

Optionally, you can use a command line utility or Git tool to access the repository, upload your test assets, fetch or pull from the repository, push to the repository, clone the repository, and other operations you want to perform in Git.

## Local and shared repositories

After you create a remote or shared repository in Git, you can create a local version of the repository by cloning the remote repository. You must ensure that your test assets are available in the remote repository and are also cloned to the local repository.

Alternatively, if your test assets are on your local system, you can set up a Git repository in the bare mode, add the project files to the local repository, and then commit and push from the local repository to the remote repository in Git by using your preferred method.



**Note:** While copying the test assets from your local system to the repository, you must ensure that you copy the entire project that contains the test assets.

## User authentication for the Git repository

The administrator can set up different types of authentication for accessing the Git repository. Rational® Test Automation Server supports the following authentication types:

- HTTP with user name and password
- HTTP without user name and password
- HTTPS with user name and password
- HTTPS without user name and password
- SSH with SSH key and passphrase
- SSH with SSH key and without a passphrase

Based on the authentication type that is set for a repository, you must provide the same authentication values in Rational® Test Automation Server when you add a repository.

## Test assets

You must complete the following tasks in the desktop client where you are authoring your test before you check in and commit the test assets to the Git repository.

Test type	Task	More information
API suite in Rational® Integration Tester	Change the local stub to a remote stub.	See <a href="#">Test run considerations for API Suites</a> on page 162.
	Add the library files.	

## Adding a project

The first step is to add a project and provide some details about it.

### Before you begin

To add one or more projects to manage access to your test assets, you must log in to IBM® Rational® Test Automation Server by providing the application URL in a browser.

If you are a new user, and LDAP and Active Directory are not configured, then you must first sign up by completing a form that specifies user information such as an email, user name, and password. You can then log in by using that information.

You must be a member of any licensed team space.

### About this task

As a licensed user, you are by default assigned as both *Project Creator* and *Architect* role for the initial team space. You must select a team space to create a project.


You can view all the team spaces in the **Team Space Dashboard**. To create a project in any team space, you must be a member of that team space and assigned a *Team Space Owner* or *Project Creator* role in that team space.


After you select a team space from the **Team Space Dashboard**, you can add a project and give it a name and description.

1. Log in to Rational® Test Automation Server.

#### Result

The **Projects** page of the initial team space is displayed.

2. Click **New project** or  icon from the navigation pane to create a project in the team space where you are working.

Alternatively, if you want to create a project in any other team space, then switch to another team space from the **Settings** icon  in the navigation pane, and then create a project.

#### Result

The **Details** page is displayed.

### Results

You have successfully created a project.

**What to do next**

You can modify your project configuration. You can also add a repository to your project.

---

**Related information**

[Default user administration on page 80](#)

[Changing the visibility configuration of a project on page 440](#)

[Adding repositories to a server project on page 437](#)

**Adding repositories to a server project**

You can add repositories to a server project to access assets and resources available in the respective repository.

**Before you begin**

You must have completed the following tasks:

- Added a project on IBM® Rational® Test Automation Server.
- Been granted permission to access the repository.

**About this task**

As a project owner or a tester, you can add one or more repositories to your project. When you add a repository, the Git repository is cloned to your project. While adding a repository, you must provide the necessary authentication credentials that are set for the Git repository that you want to add to your project. For example, if the authentication type is SSH, then you must provide the Git URL, a deploy key, and a passphrase.

1. Log in to Rational® Test Automation Server and open the team space that contains your project.
2. Open your project either from the left navigation pane or from the **My Projects** page.
3. Click **Manage** from the left navigation pane.

The **Repositories** page of the project is displayed.

4. Click the **Add repository** button.

The **Add Repository** dialog box is displayed.

5. Enter the URL of the Git repository that you want to add to your project in the **Git Repository** field.
6. Enter the required credentials based on any of the following authentication methods configured in the repository.

To gain access to the repository, you must use any one of the authentication methods:

Authentication method	Credentials required
SSH	<ul style="list-style-type: none"> <li>◦ Deploy key</li> <li>◦ Passphrase</li> </ul>

Authentication method	Credentials required
HTTPS	<ul style="list-style-type: none"> <li>◦ User name</li> <li>◦ Password</li> </ul>
HTTP	<ul style="list-style-type: none"> <li>◦ User name</li> <li>◦ Password</li> </ul>

**Notes:**

- You must have defined the authentication type and set the authentication credentials in the Git repository.
- If you use SSH to connect to your remote repository and Rational® Test Automation Server displays an `Auth Fail` exception while using the deliver changes option, you can resolve this exception error by regenerating your SSH keys by using the `-m PEM` option.

7. Click **Add**.

The Git repository is added to your project in the team space.



**Note:** Depending on the size of the repository that you are cloning, it can take a few to several minutes to clone the repository.

8. **Optional:** Repeat the steps to add another repository.**What to do next**

You can perform the following actions on the repository that you added:

- Update the authentication credentials if they are changed in the Git repository configuration.
- Delete a repository if it is no longer required.
- Refresh a repository to fetch and synchronize changes from the remote repository.
- Configure a webhook to notify the server when there is a push event in the remote repository.

## Secrets configuration

If you are working with an API suite and the project test asset contains environment variables that are required for the test runs, you must configure the environment variables as secrets in a secrets collection by using the **Secrets** tab. Configuring secrets enable the API suite to run correctly on Rational® Test Automation Server.

---

Related information

[Protecting API test assets by using secrets on page 454](#)

## Adding users to a project

You can add users to your server project so they can access your test assets.

**Before you begin**

- You own a project.
- The users you want to add to your project must be the members of the team space of that project.


**About this task**

As a project owner, you can add other users to your public or private project. For example, if you have a large number of test assets that must be run, you might want your test team to help run them, and see the results.

1. Log in to Rational® Test Automation Server.

**Result**

The **Projects** page of the Initial Team Space is displayed.

2. Select the project for which you want to add the users.
3. Click the **Settings** icon  on the Project card.
4. Add users by entering the user name of the user you want to add. You can add a partial name and then press the **Enter** key to see the user that you want to add.
5. Select that user and then assign a role.
6. Click **Viewer**, **Tester**, or **Owner**. When you add a user, the default role is *Viewer*.

The added user after logging in can see the owner's project in their list of **My Projects**.

7. Repeat the applicable steps to add another user.

**Results**

You have successfully added users to your project.

**What to do next**

You can add or remove roles to one or more projects that you own. All users can request to be a member of another public project.

---

 Related information

[Becoming a project member on page 441](#)

[Managing access to server projects on page 442](#)

**Viewing active projects**

After you log in to IBM® Rational® Test Automation Server, you can view both active and archived projects in the **Initial team space**.

**About this task**

As a project owner, you can view your projects under the **My Projects** panel, and the projects that are created by other users as public projects are displayed under the **Other Projects** panel. You can view a list of all active projects that you created under **My Projects**. You can view a list of all archived projects under **Archived Projects**.

Log in to Rational® Test Automation Server.

The **Projects** page is displayed.

You can view the following projects:

- The active projects that you created or added to as a member with either the *Tester* or *Viewer* role are displayed under the **My Projects** panel.
- The active projects that are created by others as public projects are displayed under the **Other Projects** panel.

## Results

You have viewed the active projects that are created by you and other users in the team space.

## What to do next

You can perform any of the following tasks:

- Create a project. See [Adding details to a server project on page 436](#).
- Request to become a member of a project that is displayed under the **Other Projects** panel. See [Becoming a project member on page 441](#).
- View the other pages in the team space and perform tasks on those pages. See [Tasks in a team space on page 105](#).

---

### Related information

[Archiving or unarchiving server projects on page 444](#)

## Changing the visibility configuration of a project

After you create a project, you might want to change the visibility configuration of the project from the public, which is the default, to private.

### Before you begin

You must have created a project.

1. Log in to Rational® Test Automation Server.

#### Result

The **Projects** page of the initial team space is displayed.

2. Select the project from the left navigation pane.

#### Result

The project page is displayed.



3. Click **Manage > Configuration >** .

Alternatively, select a project, and then click the **Configure project** icon  on the project card.

#### **Result**

The **Details** page is displayed.

4. Select **Private** as the visibility mode of the project.
5. Click **Save**.

#### **Results**

You have successfully changed the visibility configuration of a project.

#### **What to do next**

You can add a repository to your project.

---

Related information

[Default user administration on page 80](#)

## Becoming a project member


You might want to request to be a member of another project. New users without any projects might also want to be a member of an existing project.

#### **About this task**

As a project owner, you can add users to your public or private projects. All users can request to become a member of a public project.



**Note:** You can add a licensed user as a member of your project only if that user is the member of your team space.

1. Request to be a member of another project. Search for the project that you want to join in the list of other projects from the project Home page. Click that Project card or the **Key** icon  . Only public projects are visible in the list of projects.
2. Confirm your request when prompted. If you agree, the project owner is notified. The project owner sees a pending request **Notification** icon on their Project card.

### My Projects

myproj

No description.

Owner: [user55](#)  1

Created: [a month ago](#)

Branch: **master**

Test Suites: **59**    Individual Tests: **40**

Last Run Time: Nov 4, 2020 8:59 AM

---

from beginning

1	0/59	1/59
In Progress	Fail	Success

After opening the notification, the owner can see the user that is requesting access and can accept or decline it.

If the project owner accepts your request, you are added as a member of the project with a Viewer role. A Viewer role is the default role assigned and is restricted to specific actions.

You then see the project under My Projects on the Home page.

If the project owner declines your request, follow up with the project owner.

#### Results

You have successfully sent a request to become a member of another project.

### Managing access to server projects

You might want to add or remove a project member role from your project.

#### About this task

As a project owner, you can assign access by specifying a role when you add a user to your project. You can also assign more access or remove access for a user. Roles enable users to perform tasks on project resources such as running tests and viewing test results.

1. Choose the role in a project based on its associated actions.

Option	Description
<b>Owner of a project</b>	<ul style="list-style-type: none"> <li>◦ All Tester's actions</li> <li>◦ Update, archive, list, and view a project</li> </ul>

Option	Description
	<ul style="list-style-type: none"> <li>◦ Assign, update, delete, and list user roles for a project</li> <li>◦ Accept new member requests</li> <li>◦ Create, update, and delete a dataset classification in a project</li> <li>◦ Add, update, and remove an encrypted dataset from a classification</li> <li>◦ Update current row for a listed dataset in a project</li> <li>◦ Delete, list and view a report</li> <li>◦ Update, delete, and list a repository in a project</li> <li>◦ Get the test assets from a repository in a project</li> <li>◦ Create, update, delete and list secrets in a project</li> <li>◦ Create, update, delete, and list resource monitoring sources in a project</li> <li>◦ Get the content of a resource monitoring source in a project</li> <li>◦ Register, update, delete, and list resource monitoring agents</li> <li>◦ Create, configure, and delete the Jira change management system</li> <li>◦ Create and update defects in the Jira change management system</li> <li>◦ Create and update components in the system model</li> </ul>
<b>Tester of a project</b>	<ul style="list-style-type: none"> <li>◦ All Viewer's actions</li> <li>◦ List repositories in a project</li> <li>◦ Run a test and create a report</li> <li>◦ Stop a test while running</li> <li>◦ Get the test assets from a repository in a project</li> <li>◦ Get a list of datasets in a project</li> <li>◦ Get the content of a dataset</li> <li>◦ Update the current row for a listed dataset in a project</li> <li>◦ Add, update, and remove an encrypted dataset from a classification</li> </ul>

Option	Description
	<ul style="list-style-type: none"> <li>◦ Delete a report if you created the report</li> <li>◦ Create and update defects in the Jira change management system</li> <li>◦ Create and update components in the system model</li> </ul>
<b>Viewer of a project</b>	<ul style="list-style-type: none"> <li>◦ List your own roles on a project</li> <li>◦ List running tests</li> <li>◦ List and view a report</li> <li>◦ List resource monitoring sources in a project</li> <li>◦ Get the content of a resource monitoring source in a project</li> <li>◦ List the resource monitoring agents</li> <li>◦ View components in the system model</li> <li>◦ View defects in the Jira change management system</li> </ul>
<b>Non-member of a project</b>	<ul style="list-style-type: none"> <li>◦ Request to be a member of a project</li> </ul>

2. Open the project that you own.

From the project details, you can see a list of project members for your project and then add or remove a members role.

3. Add or remove the member access by using the **Menu** icon  next to each user in the member list.

## Archiving or unarchiving server projects

You can archive a project when that project is no longer needed but you want to retain it for future reference. If you do want to use an archived project, you can unarchive it.


### About this task

As a project owner, you can archive inactive projects. Archived projects are not visible to users or project members, but owners can show or hide their archived projects. You can view the list of all archived projects from the navigation pane. Archived projects can be unarchived.



#### Note:

- To archive a project:

1. Log in to Rational® Test Automation Server.
2. Select your project from the **Projects** page.
3. Click the **Configure project** icon  on the project card.

**Result**

The **Details** page is displayed.

4. Click **Archive Project**.
5. Confirm that you want to archive the project when prompted.

If you proceed, the project is archived and is hidden from **My Projects**.


- To view an archived project:

1. Log in to Rational® Test Automation Server.
2. Select your team space.
3. Click **Archived Projects**.

**Result**

A list of all archived projects that are associated with you is displayed under **My Projects** and the archived projects that are associated with others are displayed under **Other Projects**.

- To unarchive a project:

1. Log in to Rational® Test Automation Server.
2. Click **Archived Projects**.
3. Select your archived project, and then click the **Configure project** icon  on the project card.

**Result**

The **Details** page is displayed.

4. Click **Unarchive Project**.
  5. Confirm that you want to unarchive the project when prompted.
- If you proceed, the project is unarchived and is shown under **My Projects**.

## Deleting server projects

You might want to delete a project when the project is no longer needed, and you want to free up disk space.

**About this task**

As a project owner, you can delete a project that you no longer want. When you delete a project it is permanent. You cannot undo the delete project action.

After you delete the project, you can use the project name again.

1. Open the project that you want to delete.
2. From the project details, delete the project.

3. Confirm that you want to delete the project when prompted. If you proceed, the project is deleted including all of its test assets, results, and members.



**Note:** The repository that you used for the project is not deleted.

## An overview of test assets, modifications, and scheduled runs

After you configure a project with one or more Git repositories and run some test assets, you can view statistics about those test assets.

From the **Overview** page, several cards display charts, sliders, and tables of the statistics of the test assets in your server project. You can click some of the charts, sliders, or tables to see more information, such as the progress of a scheduled run or the results of a run. You can also review some statistics by date and see more details such as the proportion of test assets by type.

You can view a server project, which might contain multiple repositories and multiple branches, by selecting the name of the branch from the **Branch** drop-down list. For more information about selecting branches, see the related links.

### Test suites

This card displays a slider of the percentage of test suites by type. A test suite is a collection of tests, including schedules, compound tests, API Suites, and AFT Suites. You can hover over the slider and see the proportion of test suites by test suite type. The number of suites shown are relative to the selected branch.

### Individual tests

This card displays a slider of the percentage of individual tests by type that are used in the test suites. You might have performances tests, API tests, or UI tests according to the desktop clients that you used to create the tests. You can hover over the slider and see the proportion of individual tests by type. The number of tests shown are relative to the selected branch.

### Execution results

This card displays a chart of the proportion of test suites that were run by status and by date. If no date is selected, the card displays all the run results associated with the project since it was created. You can see the run results by clicking a test suite status. You can also hover over the chart and see the test suite status and the proportion of test assets. You can view statistics by test suites run.



#### Notes:

- The results shown are generated from test suites run.
- The statistics exclude canceled test suites.
- The number of test suites and individual tests that are associated with your project are shown on the **Home** page along with a verdict summary. You can see the run results by



clicking a verdict. You can also see the last date and time when you ran one or more test assets.

- The number of suites shown are relative to the selected branch.

### Last run

This card displays a table of the last three runs by date and time. You can see the run results by clicking each last run.

### New or modified

This card displays a chart of new and modified test assets that were made in your Git repository for a week or for the last seven days based on a selected date range. You can hover your mouse over each bar in the chart and see the proportion of test assets by type. The data shown is relative to the selected branch.

### Scheduled runs

This card displays a table of the next three scheduled runs by date and time. You can see the progress of a scheduled run by clicking each scheduled run.

---

#### Related information

[Test assets and a server project on page 433](#)

[Selecting the global branch in a project on page 452](#)

## Managing repositories

After you create a project in Rational® Test Automation Server, you can add repositories that contain test assets and resources to the project. You can also change the repository details, update the user credentials of a repository, delete a repository, create a webhook for the configured repository.

### Tasks in a repository

To add a repository in your project and work on the repository, you can perform the tasks listed in the following table:

Task	More information
Adding a repository	<a href="#">Adding repositories to a server project on page 437</a>
Updating the repository credentials	<a href="#">Updating the authentication credentials of the repository on page 449</a>
Refreshing a repository	<a href="#">Refreshing repositories manually on page 450</a>
Deleting a repository	<a href="#">Deleting a repository on page 450</a>
Selecting the global branch	<a href="#">Selecting the global branch in a project on page 452</a>

Task	More information
Creating a webhook for the repository	<a href="#">Creating webhooks on page 453</a>

## Adding repositories to a server project

You can add repositories to a server project to access assets and resources available in the respective repository.

### Before you begin

You must have completed the following tasks:

- Added a project on IBM® Rational® Test Automation Server.
- Been granted permission to access the repository.

### About this task

As a project owner or a tester, you can add one or more repositories to your project. When you add a repository, the Git repository is cloned to your project. While adding a repository, you must provide the necessary authentication credentials that are set for the Git repository that you want to add to your project. For example, if the authentication type is SSH, then you must provide the Git URL, a deploy key, and a passphrase.

1. Log in to Rational® Test Automation Server and open the team space that contains your project.
2. Open your project either from the left navigation pane or from the **My Projects** page.
3. Click **Manage** from the left navigation pane.

The **Repositories** page of the project is displayed.

4. Click the **Add repository** button.

The **Add Repository** dialog box is displayed.

5. Enter the URL of the Git repository that you want to add to your project in the **Git Repository** field.
6. Enter the required credentials based on any of the following authentication methods configured in the repository.

To gain access to the repository, you must use any one of the authentication methods:

Authentication method	Credentials required
SSH	<ul style="list-style-type: none"> <li>◦ Deploy key</li> <li>◦ Passphrase</li> </ul>
HTTPS	<ul style="list-style-type: none"> <li>◦ User name</li> <li>◦ Password</li> </ul>
HTTP	<ul style="list-style-type: none"> <li>◦ User name</li> <li>◦ Password</li> </ul>



Notes:





- You must have defined the authentication type and set the authentication credentials in the Git repository.
- If you use SSH to connect to your remote repository and Rational® Test Automation Server displays an `Auth Fail` exception while using the deliver changes option, you can resolve this exception error by regenerating your SSH keys by using the `-m PEM` option.

#### 7. Click **Add**.

The Git repository is added to your project in the team space.



**Note:** Depending on the size of the repository that you are cloning, it can take a few to several minutes to clone the repository.

#### 8. **Optional:** Repeat the steps to add another repository.

### What to do next

You can perform the following actions on the repository that you added:

- Update the authentication credentials if they are changed in the Git repository configuration.
- Delete a repository if it is no longer required.
- Refresh a repository to fetch and synchronize changes from the remote repository.
- Configure a webhook to notify the server when there is a push event in the remote repository.

## Updating the authentication credentials of the repository

If the authentication credentials of the Git repository which was added to your project are changed, then you must update the credentials of the repository in Rational® Test Automation Server.

### Before you begin

You must have completed the following tasks:

- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Tester* or *Owner* role in the project with access permissions to edit repositories.

### About this task

In Rational® Test Automation Server, the repository is refreshed at regular intervals to pull the latest changes committed to the Git repository. After you update your authentication credentials of the repository, the repository is refreshed to ensure that you have access to the Git repository and to the latest assets in the repository.

1. Log in to Rational® Test Automation Server and open the team space that contains your project.
2. Open your project either from the left navigation pane or from the **My Projects** page.
3. Click **Manage** from the left navigation pane.

The **Repositories** page of the project is displayed.

4. Click the **Open action menu** icon inline with the repository that you want to update, and then click **Change...**

The **Edit Repository** dialog box is displayed.

5. Enter the new credentials, and then click **Update**.

The new credentials are updated and your access to the repository is retained.

## Deleting a repository

You can delete repositories that you no longer require in your test environment.

### Before you begin

You must have completed the following tasks:

- Configured the repository that contains the test assets in your project.
- Been assigned a *Owner* or a *Tester* role with access to delete repositories.

### About this task

You can delete a repository that you have configured for your project.

1. Log in to Rational® Test Automation Server and open the team space that contains your project.
2. Open your project either from the left navigation pane or from the **My Projects** page.
3. Click **Manage** from the left navigation pane.

The **Repositories** page of the project is displayed.

4. Click the **Open action menu** icon inline with the repository that you want to update, and then click **Delete**.

The **Delete repository** dialog box is displayed.

5. Select the checkbox, and then click the **Delete** button.

The repository is deleted and removed from the list.

## Refreshing repositories manually

You can manually trigger the refresh activity for a repository to instantly fetch and synchronize the changes from the remote repository.

### Before you begin

You must have completed the following tasks:


- Configured the repository that contains the test assets in your project.
- Been assigned a *Member* or a *Project Creator* role.
- Been assigned a *Owner* or a *Tester* role.

### About this task

Every two minutes, the repository is refreshed automatically. You can also manually trigger the refresh activity for a repository.

1. Log in to Rational® Test Automation Server and open the team space that contains your project.
2. Open your project either from the left navigation pane or from the **My Projects** page.
3. Click **Manage** from the left navigation pane.

The **Repositories** page of the project is displayed.





4. Click the **Open action menu** icon  inline with the repository, and then select **Refresh**.

The refresh activity is triggered.



**Note:** The **Refresh** option is disabled when the refresh is in progress. After the refresh is completed, the **Refresh** option is enabled.

The following table lists the icons and their description based on the status of the refresh activity:

Refresh icon	Description
	<p>The last refresh activity was successful.</p>
	<p>The last refresh activity was successful but errors were found while processing some of the test assets. To view the error details of the test assets for a specific repository, you can click the arrow inline with the repository name.</p> <p>You can resolve the errors of these test assets in the Git server, and then refresh the server repository, if required.</p> <p> <b>Note:</b> The repository, which contains the branch that is selected in the <b>Branch</b> field, displays the unprocessed test assets for that branch. Other repositories display the unprocessed test assets for their default branch.</p>
	<p>The refresh activity was not successful due to any one of the following reasons:</p> <ul style="list-style-type: none"> <li>◦ Internal error</li> <li>◦ Connection issue</li> <li>◦ Authentication failure</li> <li>◦ Disk quota exceeded</li> <li>◦ Repository unreachable</li> </ul>

## Results

You have manually refreshed the repository and the **Last Refreshed** field is updated with the following details:

- The time when it was last refreshed in the remote repository.
- Latest commit ID and message of the remote repository.

## Selecting the global branch in a project

After you add one or more repositories to your project, you can start accessing all branches in all repositories of that project. You can select only one branch as a global branch from the list of branches in the **Execution, Datasets, and Overview** pages.

### Before you begin

You must have completed the following tasks:

- Been assigned a *Member* or *Project Creator* role in a team space.
- Added at least one repository in your project.

### About this task

You can access all the branches contained in all the repositories, which are added to the project, by using the **Branch** field on the **Execution, Datasets, and Overview** pages.

After you select a branch from any of the repositories as the global branch, this selection is retained for you as the global branch unless you change the branch on any of the following pages: **Overview, Execution, or Datasets** pages.



#### Note:

- When you add the first repository to a project, the global branch is set to the default branch of the repository.
- Branches are arranged in an increasing order of their names in the list.
- When you change the branch in one of the pages, then the same branch is displayed as selected in the other pages and the contents of that page displays the assets from the selected branch.

1. Log in to Rational® Test Automation Server and open the team space that contains your project.
2. Open your project either from the left navigation pane or from the **My Projects** page.

The project **Overview** page is displayed.

3. Select a branch from the **Branch** field.

The branch that you select on any of the following pages is reflected in the rest of the other pages and the test assets are filtered based on the global branch selection on each of these pages.:

- **Overview**
- **Execution**
- **Datasets**

## Results

You have selected a global branch in a project.


## Creating webhooks

You can configure a webhook for a repository in the Git server to notify Rational® Test Automation Server whenever there is a push event in the remote repository. Then, the refresh activity is triggered to fetch the latest changes to the server repository.

### Before you begin

You must have completed the following tasks:

- Configured the repository that contains the test assets in your project.
- Been assigned a *Member* or *Project Creator* role in a team space.
- Been assigned the *Tester* or *Owner* role in the project.

1. Log in to Rational® Test Automation Server and open the team space that contains your project.
2. Open your project.
3. Go to the **Repositories** page.
4. Click the **Menu** icon  and then click **Webhook**.

The **Webhook Configuration** dialog box is displayed.

5. Copy the URL and the Secret of the repository that you want to configure.



**Note:** The URL and the Secret details are specific to a repository.

6. Click the link of the repository for which you want to configure the webhook.

The remote repository page is displayed.

7. Paste the details, which you copied from Rational® Test Automation Server, in the appropriate fields of the remote repository.

## Results

You have configured the webhook for a repository in the Git server. The changes of the remote repository are synchronized in the repository of your project.

## Protecting API test assets by using secrets

Secrets are key-value pairs that are created for your project in IBM® Rational® Test Automation Server under a secrets collection. You can create secrets collections for your project that enable you or members in your project to use secrets at test runtime either in Rational® Test Automation Server or in desktop clients.

The secrets collections in a project in Rational® Test Automation Server has a separate access control list managed by the members with access to the secrets collections. Controlling access to secrets means controlling access to applications and systems under test. The introduction of secrets (under secrets collections) for a project has simplified managing access to separate environments. If a member of a project does not have access to a secret, for example, a *server credential* then the member cannot accidentally or maliciously run tests against that server. For example, tests that must access the database server by using the server credentials to retrieve stored data can only be run by a member if the access to the secrets is granted.



**Note:** Secrets and secrets collections are applicable to test assets authored in IBM® Rational® Integration Tester that enable running tests in defined environments. Secrets are not applicable to tests authored in Rational® Functional Tester or Rational® Performance Tester.

As a project member with the *Owner* or *Tester* role, you can create secrets collections in the project. You can grant or restrict access to the secrets collection that you create in the project.

Members with access to a secrets collection can access, edit, or delete the secrets collection in Rational® Test Automation Server and can view secrets, edit secrets, or delete secrets.

Members with access to secrets collections can grant access to or remove the following:

- Other members added specifically
- All members with a specific role

Members in the project with the *Owner* or *Tester* role and with access the secrets collection can use the secrets in the secrets collection, in tests at runtime.

If you are configuring a project to run an API Suite with tests that refer to secret values, you must configure the secrets under a secrets collection by using the **SECRETS** tab. You must complete the following tasks:

1. Create a secrets collection. See [Step 1 on page 455](#) in [Managing secrets collections on page 454](#).
2. Add secrets in the secrets collection created. See [Step 1 on page 457](#) in [Creating a secret in a secrets collection on page 456](#).
3. Grant access to project members or member roles, who can access the secrets collection. See [Step 1 on page 458](#) in [Granting access to members or member roles on page 457](#).

## Managing secrets collections

You can create secrets in a secrets collection for your project. Secrets are credentials required in certain tests during test runs. Secrets stored in the collection can be used by members to run tests on different environments and

eliminates the need to store secrets in multiple locations. You can opt to edit or delete a secrets collection that you configured for your project any time after you create a secrets collection.

### Before you begin

- You must have created a project on Rational® Test Automation Server. See [Test assets and a server project on page 433](#).
- You must have completed the following tasks before you edit or delete a secrets collection:
  - Configured a secrets collection in your project.
  - Created secrets in the selected secrets collection. See [Creating a secret in a secrets collection on page 456](#).
- You must be a member with the *Owner* or *Tester* role to create a secrets collection.
- You must be a member with access to the secrets collection to edit or delete the secrets collection. See [Granting access to members or member roles on page 457](#).

### About this task


You must configure secrets collections in your project so that the members of the project can use secrets contained in a collection during test runs. You can configure secrets so that you can use them in different test environments.

As a member with access to the secrets collection, you can opt to edit or delete a secrets collection configured in a project. For example, you might want to edit the secrets collection name or delete the secrets collection if the testing environment has changed and if secrets that are configured earlier are not required.

- To create a secrets collection, go to [Step 1 on page 455](#).
- To edit or delete a secrets collection, go to [Step 4 on page 456](#).

To create a secrets collection:

1. To create a secrets collection while configuring a new project in the Rational® Test Automation Server UI, open the **SECRETS** tab in the **Project Configuration** and create a secrets collection. Use **Add Collection**.
2. Alternatively, to create a secrets collection in an existing project, complete the following steps:
  - a. Log in to Rational® Test Automation Server and from the User Interface (UI) open the project listed under **My Projects** for which you want to create a secrets collection.
  - b. Open the Project Configuration page, and then open the **SECRETS** tab to create a secrets collection.
3. Enter a name for the secrets collection as its *Identifier*.

 **Tip:** You can create a secrets collection that contains secrets for a particular test environment in your project. For example, the secrets collection *test\_env* can contain secrets that application testers can use in tests that they run while the secrets collection *dev\_env* can contain secrets that application developers can use in tests they run.

A message is displayed for the successful creation of the secrets collection.

The secrets collection created is displayed.

You can add secrets to the secrets collection you created.

To edit or delete a secrets collection:

4. Log in to Rational® Test Automation Server and from the UI open the project listed under **My Projects**.


5. Open the secrets collection from the **SECRETS** tab in the Project Configuration page.

If there are multiple secrets collections in the project, select the secrets collection that you want from the list.

- To edit a secrets collection, go to [Step 6 on page 456](#).

- To delete a secrets collection, go to [Step 7 on page 456](#).

6. To edit a secrets collection, complete the following steps:

a. Click the **Edit** icon  to edit the selected secrets collection.



**Note:** The **Edit** icon  is displayed only for the project owner.

b. Edit the name of the secrets collection, and update the secrets collection.

The secrets collection is updated with the updated name.

7. To delete a secrets collection, click the **Delete** icon  to delete the selected secrets collection.

The selected secrets collection is removed from the list of secrets collections configured for the project.

## Results

You have completed the following tasks:

- Created a secrets collection for your project.
- Edited the name of a secrets collection in your project.
- Removed a secrets collection from your project.

## What to do next

- If you have created a new secrets collection, you must add secrets to your secrets collection.
- You must provide access to project members or member roles to the secrets collection by selecting members or member roles.

## Creating a secret in a secrets collection

You must create secrets in the secrets collections configured in your project so that the secrets contained in a collection can be used in certain tests by members of the project with access to the secrets collections during an API suite run.



**Before you begin**

You must have created a project on Rational® Test Automation Server and configured a secrets collection in your project.

You must be a member with access to the secrets collection.

**About this task**

You can also configure secrets such that the secrets can be used across different test environments by members with access to the secrets collection. Secrets correspond to the environment variables or tags that you create in a Rational® Integration Tester project specific to an environment.

1. To create a secret under a secrets collection while configuring a new project in the Rational® Test Automation Server UI, select the secrets collection listed in the **SECRETS** tab in the Project Configuration page and create a secret under the secrets collection.
2. Alternatively, to create a secret under a secrets collection in an existing project, complete the following tasks:
  - a. Log in to Rational® Test Automation Server and from the UI open the project listed under **My Projects**.
  - b. Open the secrets collection from the **SECRETS** tab in the Project Configuration page.
3. Enter a name for the secret as its *Identifier* and enter the `password` as the *Value* for the secret. For example, under the secrets collection (named as `test_env`), enter the name of the secret to access a database as `dbcred` and enter the `password` required to access the database as its value.

A message is displayed for successful creation of the secret.

**Results**

You have created secrets in the selected secrets collection for your project.

**What to do next**

- You can view, edit, or delete the secrets created under a secrets collection any time you want.
- You can use the secrets in the tests that require these secrets during test runs.

**Granting access to members or member roles**

You can grant or revoke access to the secrets collection in your project to individual members with different roles or the all members with a specific role. Without access to the secrets collection, members cannot view, create, edit, delete, or use the secrets in the secrets collection.

**Before you begin**

You must have created a project on Rational® Test Automation Server and configured a secrets collection in your project.

You must be a member with access to the secrets collection.

1. To grant access to a secrets collection while configuring a new project in Rational® Test Automation Server UI, select the secrets collection listed in the **SECRETS** tab in the Project Configuration page.
2. Alternatively, to grant access to a secrets collection in an existing project, complete the following tasks:
  - a. Log in to Rational® Test Automation Server and from the UI open the project listed under **My Projects**.
  - b. Open the secrets collection from the **SECRETS** tab in the Project Configuration page.  
If there are multiple secrets collections in the project, select the secrets collection that you want from the list.
3. To grant access to a secrets collection in a new project or an existing project, select from the following methods:
  - To add all members with a specific role, click the role listed under **Grant access to role**. For example, if you select **Testers**, then all members in the project with a tester role are granted access to the secrets collection. You can select any role or all the roles listed.
  - To select specific members to grant access to the selected secrets collection, enter the name or the email ID of the member in the field box and add them from the list that is displayed.




**Note:** Members added specifically are listed under **Members with access to this collection** but all the members granted access solely due to their roles are not listed.



**Important:** Irrespective of the role that the member (*Owner, Tester or Viewer*) was assigned in the project, the access to the secrets collections has to be specifically granted to the members from the **SECRETS** tab.

### Removing access to a secrets collection

4. To remove access granted to all members with a specific role or a specific member, select from the following methods:
  - To remove all members with a specific role, click the role listed under **Grant access to role** to clear the selection. For example, if **Testers** is selected and you clear it, then all members in the project with a tester role are removed from the access list to the secrets collection.
  - To remove specific members with access to the secrets collection, select the member and click the **Delete** icon .



**Notes:**



- Any member with access to the secrets collection can remove access of other members specifically added or of all members with a specific role.
- Members with access to the secrets collection can remove themselves from the access list. Members can do this when there is at least one member remaining in the list. After removing themselves, members cannot add themselves back to the access list and must be added by any of the other remaining members in the list.

## Results

You have added members from your project or members with specific role to the access list of people who can access secrets in the selected secrets collection, or you have removed specific members or members with specific role from the access list.

## What to do next

You can create secrets under secrets collections for your project.

## Managing secrets

You can view, edit, or delete the secrets configured under a secrets collection any time after you have created secrets or after you were granted access to the secrets collection. You can change the value of the secret by editing the secret. You can delete secrets that you no longer require in your test environment.

## Before you begin

You must have created a project on Rational® Test Automation Server and configured a secrets collection in your project.


You must have created secrets in the selected secrets collection or the secrets collection must contain secrets.




You must be a member with access to the secrets collection.

1. Log in to Rational® Test Automation Server and from the UI open the project listed under **My Projects**.
2. Complete the following steps:
  - a. Open the secrets collection from the **SECRETS** tab in the Project Configuration page.
  - b. Optionally, select the secrets collection that you want from the list if there are multiple secrets collections in the project.

The secrets configured in the selected secrets collection are displayed.

3. Complete the steps for the task you want to perform as listed in the following table:

Task	Steps
Viewing a secret value	Click the <b>Show</b> icon  for the secret you want to view its value, which most likely is a password for the secret.

Task	Steps
	The value configured for the secret is displayed.
Editing a secret value	<p>Click the <b>Edit</b> icon  for the secret you want to edit, and enter a <code>new value</code> for the secret as its <i>Value</i>. The value can be a password for the secret.</p> <p> <b>Note:</b> You can only change the value of the secret.</p> <p>The value of the selected secret is changed.</p>
Deleting a secret	<p>Click the <b>Delete</b> icon  in the row of the secret you want to delete.</p> <p>After deleting it, the secrets list in the collection is removed from the list.</p>

## Results

- You viewed the password configured of the secret under a secrets collection that you created or were granted access.
- You changed the secret value of the secret under a secrets collection in your project.
- You deleted and removed the secret from the selected secrets collection in your project.

## What to do next

You can use secrets in the tests that require these secrets during test runs.

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### Related information

[Test run configurations on page 190](#)

[Becoming a project member on page 441](#)

## Managing an encrypted dataset

You can use encrypted datasets to limit access to confidential information such as account number or passwords. You can arrange data by an appropriate category so that project members can use datasets more effectively in certain tests and protect them.

### About this task

A dataset can contain classified information that other members can access with permission. As a project owner, you can group encrypted datasets into different classifications and enable project members to view and edit datasets and run tests associated with the encrypted datasets. After you have created a classification, you can change the classification for a dataset. You can also delete a classification if you do not require it in your test environment.

**Notes:**

- You must grant access and provide an encryption key of an encrypted dataset to other members of the project to work with the encrypted dataset.
- A project member who has been added as a **Tester** role can work with the encrypted dataset.

## Creating a classification

As a project **Owner**, you can organize encrypted datasets by creating a classification so that project members can use and protect datasets more efficiently.


### Before you begin

You must have completed the following tasks:






- Created a project in . See [Test assets and a server project on page 433](#).
- Configured the repository that contains the test assets in your project. See [Adding repositories to a server project on page 437](#).
- Created at least one dataset and encrypted the dataset with an encryption key. See [Dataset encryption on page 126](#).

### About this task

After creating a classification, you can grant access and provide the encryption key to other members of the project to work with the encrypted dataset.

1. Go to the URL.
2. Enter your user name and password, and then click **Login**.
3. Open your project from the UI.
4. Click **Manage**, and then the **DATA SECURITY** tab.
5. Click **New classification** and enter a name for the classification.
6. Click **Create**.
7. Click the **Add** icon  to select the encrypted dataset to become part of the new classification.
8. Select a dataset from the list and enter the encryption key in the **Password** field for the dataset, and then click the **Add** icon.

The encrypted dataset that is added to the classification is displayed.

DETAILS	REPOSITORIES	SECRETS	DATA SECURITY
Classification			 
Credentials			▼
Datasets			
Name	Encrypted Columns	Actions	
JqueryAccordion	Tag programming languages_ _2	 	

### What to do next

You can grant access to other project members to use the encrypted dataset.

## Editing or deleting a classification

After you have created a classification, you can edit the name of the classification. You can also delete a classification when it is not required in your test environment.

### Before you begin

You must have completed the following tasks:

- 
- Created at least two classifications. See [Creating a classification on page 461](#).

### About this task

You can opt to edit or delete a classification for your project any time after you create a classification. For example, you might want to edit the name of the classification or delete the classification if the classification that is created earlier are not required.



**Note:** You must be a project **Owner** to create, edit, or delete a classification.


- To edit a classification, go to [Step 1 on page 462](#).
- To delete a classification, go to [Step 2 on page 463](#).

1. Perform the following steps to edit a classification:

- a.
- b.


- c. Select a classification that you want to edit from the list.



- d. Click the **Edit** icon  to edit the selected classification.

- e. Edit the name of the classification, and then click **Save**.

2. Perform the following steps to delete a classification:

- a.
- b. Select a classification that you want to delete from the list.
- c. Click the **Delete** icon .
- d. Click **Delete** in the **Delete classification** window to confirm the deletion of the classification.



**Note:** Before deleting a classification, you must move the added encrypted datasets to another classification else the delete icon is disabled.


## Results

- You have edited the name for a classification in your project.
- You have deleted a classification.

## Moving an encrypted dataset to another classification






When you add many encrypted datasets to the same classification, you can move some of them to another classification.

### Before you begin

- 1.
- 2.
3. Select a classification from the list that has the encrypted dataset.
4. Click the **Edit** icon  from the **Actions** column of a dataset.

5. Select a classification from the list and enter the encryption key of the dataset in the **Password** field.
6. Click **Save**.

A classification for a dataset is updated successfully.

DETAILS	REPOSITORIES	SECRETS	DATA SECURITY
Classification			 
Imp Credentials			▼
Datasets			
Name	Encrypted Columns	Actions	
JqueryAccordion	Tag programming languages_ _2		

## Results


You have moved the encrypted dataset from one classification to another.

## Removing a dataset from the classification

You can remove a datasets added to a classification when they are no longer required.

### Before you begin

You must have completed the following tasks:

- - Created a classification and added the encrypted dataset to it. See [Creating a classification on page 461](#).
- 1.
  - 2.
  3. Select a classification from the list that has an encrypted dataset.
  4. Click the **Delete** icon  from the **Actions** column of a dataset.
  5. Click **Remove** in the **Change the classification for the Dataset** window.



**Note:** Removing dataset from the classification also removes the password stored in for encrypted data. You must enter the password again to gain access to the encrypted columns.

## Results

You have removed the datasets from a classification.



## Granting classification access to members or members roles

You can grant or revoke access to the classification in your project to individual members with different roles or the all members with a specific role. Without access to the classification, members cannot view, create, edit, delete, or use the classification.

### Before you begin

You must be a project **Owner** and have completed the following tasks:

- - Added one or more users to your project. See [Adding users to a project on page 438](#).
  - 
  - Created at least one classification. See [Creating a classification on page 461](#).
- 1.
  - 2.
  3. Select the classification from the drop-down list.
  4. Choose any of the following methods to grant access to a member:

#### Choose from:

- To add all members with a specific role, click the role listed under **Grant access to role**. For example, if you select **Testers** then all members in the project with a tester role are granted access to the selected classification. You can select any role or all the roles listed.
- To select specific members to grant access to the selected classification, enter the name or the email ID of the member in the **Grant access to member** field and add them from the list that displays.




**Note:** Members added specifically are listed under **Members with access to this classification** but the members added for a role are not displayed.



**Important:** Irrespective of the role that the member (**Owner**, **Tester** or **Viewer**) was assigned in the project, the access to the classification has to be specifically granted to the members from the **DATA SECURITY** tab.

5. Choose any of the following methods to revoke access from a member:

#### Choose from:

- To remove all members with a specific role, click the role listed under **Grant access to role** to clear the selection. For example, if **Testers** is selected and you clear it, then all members in the project with a tester role are removed from the access list to the classification.
- To remove specific member with access to the classification, select the member and click the **Delete** icon .

**Notes:**

- Any member with access to the classification can remove access of other members specifically added or of all members with a specific role.
- Members with access to the classification can remove themselves from the access list provided that there is at least one member in the list. After removing themselves, members cannot add themselves back to the access list and must be added by any of the other members in the list.

**Results**

You have granted or revoked the classification access to project members.

---

Related information

[Adding a project on page 436](#)

## Managing notifications

IBM® Rational® Test Automation Server provides a feature to display notifications for different events within the user interface (UI) of Rational® Test Automation Server. You can configure an SMTP server on Rational® Test Automation Server when you want Rational® Test Automation Server to send out notifications about the different events as emails to the subscribed users.

Rational® Test Automation Server provides you the following features to receive notifications about server events:

Channels	Description
In-app	Notifications are displayed within the UI of Rational® Test Automation Server.
SMTP	Notifications are sent by Rational® Test Automation Server in emails to subscribed users.

When you register as a user in Rational® Test Automation Server, the in-app and SMTP channels are automatically subscribed for you.

### Managing notifications in the server UI

Viewing the in-app notifications or notifications in the server UI is a feature that is enabled automatically when you register as a user in Rational® Test Automation Server.

You are subscribed to the following channels for all events as the default option when you sign up on the server.

- In-app
- SMTP

If you want to receive notifications about specific events and not all events, you can change the default subscriptions and modify your subscription for the server events. You can also view the in-app notifications that are displayed for you. See [Managing in-app notifications on page 467](#).

## Managing SMTP notifications

You, as a *Server Administrator* or *Team Space Owner* can configure an existing Simple Mail Transfer Protocol (SMTP) server so that Rational® Test Automation Server can send out notifications about the server events in emails to the registered users. See [Configuring an SMTP server to manage email notifications on page 477](#).

You are subscribed to the following channels for all events as the default option when you sign up on the server.

- In-app
- SMTP

If you, as a registered user of Rational® Test Automation Server want to receive the email notifications about specific events and not all events, you can change the default subscriptions and modify the subscription for the server events. See [Managing email notifications on page 473](#).

## Managing in-app notifications

You can manage the in-app notifications by changing the subscriptions that are automatically enabled for you for all server events. You can view the server events that are automatically subscribed and then change the subscription for any or all events. For example, as a team space owner, you can choose to be notified when members of the team space create new projects or delete their projects but not be notified when tests are run.

### Before you begin

- 
- 

### About this task


The in-app notifications that are automatically subscribed for you, are displayed in the server UI under the following categories for the server events that occur:

Category	Notifications displayed
User	Include information about actions performed by team space members in the team space.
System	Include information about actions performed by registered users at the server level.

- 1.
2. Select from the following actions that you want to perform:

- Modify notification settings. Go to [Step 3 on page 468](#).
- View notifications. Go to [Step 4 on page 469](#).
- Unsubscribe from the in-app notifications. Go to [Step 5 on page 470](#).

3. Perform the following steps to modify the notification settings:

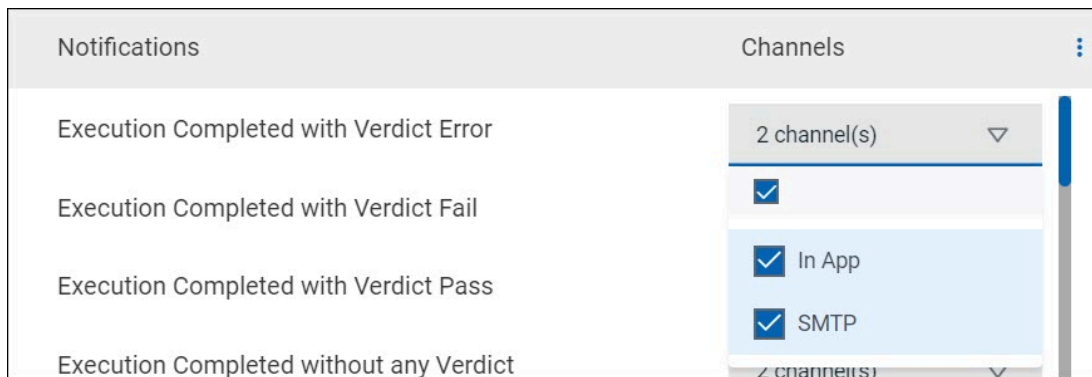
- a. Click the **User** icon  on the menu bar.
- b. Click **Notification Settings**.

The **Notification Settings** dialog is displayed.

- c. Change the language in which you want to receive the notifications, if you do not want to use the default language.

The default language is the locale language set on the computer that hosts .

You can notice that for each of the server events, both the channels are displayed as selected, which is the default selection unless you have modified the subscriptions.




- d. Identify the server events for which you want to change the subscription.
- e. Perform the actions indicated in the following table to clear the subscriptions for server events that you do not want to be notified and to select the in-app subscription for the server events that you want to be notified.

When	Action
You do not want to receive the in-app notifications for a specific server event.	Perform the following steps: <ol style="list-style-type: none"> <li>i. Expand the channel list in the row of the server event.</li> <li>ii. Clear the checkbox in the header row to clear the subscriptions to both channels.</li> <li>iii. Click <b>Apply</b>.</li> </ol>

When	Action
	You have unsubscribed from both channels and the in-app notifications for the server event is not displayed for you when the event occurs.
You want to receive the in-app notifications for a specific server event.	<p>Perform the following steps:</p> <ol style="list-style-type: none"> <li>i. Expand the channel list in the row of the server event.</li> <li>ii. Select any of the following actions: <ul style="list-style-type: none"> <li>▪ Clear the <b>SMTP</b> checkbox.</li> </ul> <p>The <b>In App</b> selection is retained while the checkbox in the header row and for the <b>SMTP</b> options are cleared.</p> <ul style="list-style-type: none"> <li>▪ Clear the checkbox in the header row to clear the subscriptions to both channels, and then select the <b>In App</b> checkbox.</li> </ul> </li> <li>iii. Click <b>Apply</b>.</li> </ol> <p>You have unsubscribed from the SMTP channel and retained the subscription for the in-app notifications for the server event.</p>

f. Go to [Results on page 472](#).

4. Perform the following steps to view the in-app notifications:

a. Click the **Notifications** icon  on the menu bar.

The **Notifications** dialog is displayed. The notifications are displayed in the following tabs:

- User
- System

The notifications in the **USER** tab is displayed as the default option.

b. View the notifications in the **USER** tab.

c. Click the **SYSTEM** tab to view the notifications at the server level.

You can find the information about the default notifications that you can view based on your role in the server as in-app notifications in the **USER** tab and **SYSTEM** tab.

Category	Notification details	or	or		
User notifications	Information about events at the server level or across team	✓	✓	✗	✗


Category	Notification details	or	or		
	spaces performed by other team space owners.				
	Information about events in the team space performed by other team space members.	✓	✗	✗	✗
	Information about events in the project performed by other project members.	✗	✓	✓	✗
	Information about events performed by you in a project.	✗	✗	✓	✓
System notifications	Information about events at the server level or across team spaces.	✓	✓	✗	✗
	Information about events in the team space performed by other team space members.	✓	✓	✗	✗
	Information about events in the projects at the team space level performed by other project members.	✓	✓	✗	✗

d.

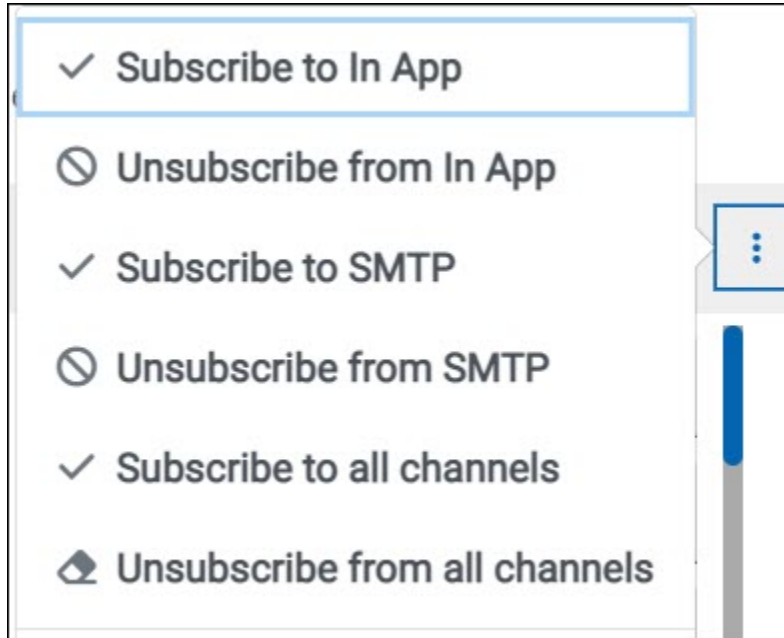
5. Perform the following steps to unsubscribe to the in-app notifications:

a.

b.

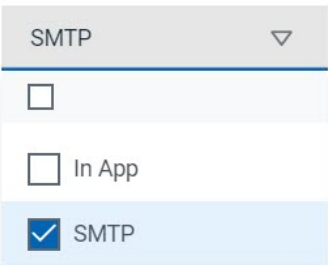
c. Click the **Open action menu** icon  in the row of **Notifications**.

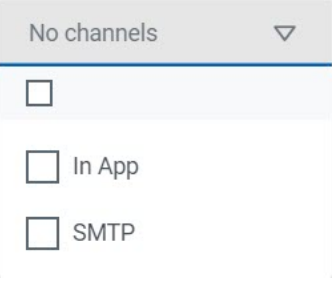
The following panel is displayed:



You can notice that the subscriptions to in-app, SMTP, and all channels are displayed as selected.

d. Perform the actions indicated in the following table for the option you want:

When	Action	Results in
You do not want to receive any in-app notifications.	Click the <b>Unsubscribe from In App</b> option, and then click <b>Apply</b> .	The in-app channel selection for all server events is cleared and you are unsubscribed from the in-app channel. The SMTP notifications is displayed as selected for subscription for all server events. 
You do not want to receive any in-app or the SMTP email notifications.	Click the <b>Unsubscribe from all Channels</b> option, and then click <b>Apply</b> .	The in-app channel and the SMTP channel selections for all server events are cleared and you are unsubscribed from both

When	Action	Results in
		the channels. No channel is displayed as selected for subscription for all server events. 
You want to subscribe to the in-app notifications for all server events.	Click the <b>Subscribe to In App</b> option, and then click <b>Apply</b> .	The in-app channel for all server events is selected and you are subscribed to the in-app channel. The in-app notifications is displayed as selected for subscription for all server events.
You want to receive notifications as in-app and as SMTP email notifications.	Click the <b>Subscribe to all Channels</b> option, and then click <b>Apply</b> .	The in-app channel and the SMTP channel are displayed as selected for all server events and you are subscribed to both the channels.

e.

## Results

You completed the following tasks:

- Modified the notification subscriptions.
- Viewed the notifications displayed for you in the **USER** tab and **SYSTEM** tab.
- Unsubscribed from or subscribed to either the in-app channel or both the channels.

---

Related information

[Managing notifications on page 466](#)



## Managing email notifications

You can manage the email notifications by changing the subscriptions that are automatically enabled for you for all server events. You can view the server events that are automatically subscribed and then change the subscription for any or all events. For example, as a project owner, you can choose to be notified when members of the project add a repository or run a test in a team space but not be notified when projects are created in the team space.

### Before you begin

- Ensured that the `or` has configured a Simple Mail Transfer Protocol (SMTP) server. See [Configuring an SMTP server to manage email notifications on page 477](#).
- 
- 

### About this task

The email notifications in the SMTP channel are automatically subscribed for you for all server events. You can view the server events that are subscribed in the **Notifications Settings** dialog. You can either unsubscribe from the SMTP channel or change your subscriptions for the server events for which you do not want the email notifications.

- 1.
2. Select from the following actions that you want to perform:
  - Modify notification settings. Go to [Step 3 on page 473](#).
  - Unsubscribe from the email notifications. Go to [Step 4 on page 475](#).
3. Perform the following steps to modify the email notifications settings:

a. Click the **User** icon  on the menu bar.

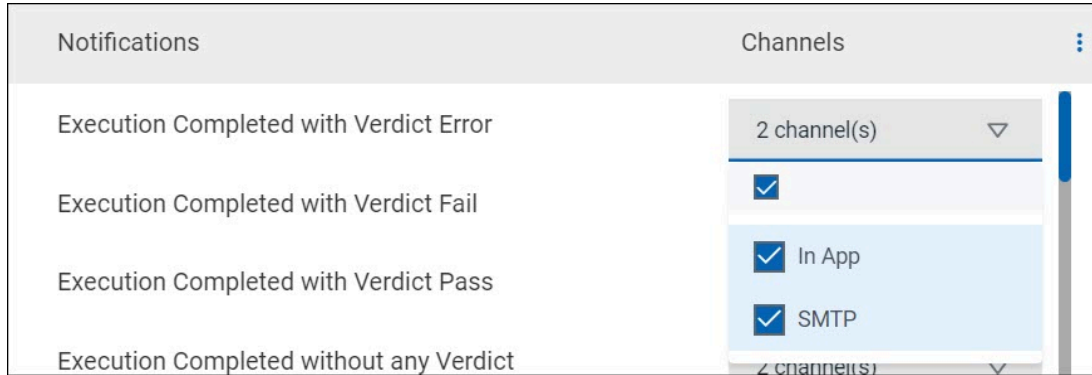
b. Click **Notification Settings**.

The **Notification Settings** dialog is displayed.

c. Change the language in which you want to receive the email notifications, if you do not want to use the default language.

The default language is the locale language set on the computer that hosts .

You can notice that for each of the server events, both the channels are displayed as selected, which is the default selection unless you have modified the subscriptions.



- d. Identify the server events for which you want to change the subscription.
- e. Perform the actions indicated in the following table to clear the subscriptions for server events that you do not want to be notified and to select the SMTP subscription for the server events that you want to be notified in emails.

When	Action
<p>You do not want to receive the email notifications for a specific server event.</p>	<p>Perform the following steps:</p> <ul style="list-style-type: none"> <li>i. Expand the channel list in the row of the server event.</li> <li>ii. Clear the checkbox in the header row to clear the subscriptions to both channels.</li> <li>iii. Click <b>Apply</b>.</li> </ul> <p>You have unsubscribed from both channels and the email notifications for the server event are not sent to you when the event occurs.</p>
<p>You want to receive the email notifications for a specific server event.</p>	<p>Perform the following steps:</p> <ul style="list-style-type: none"> <li>i. Expand the channel list in the row of the server event.</li> <li>ii. Select any of the following actions:                             <ul style="list-style-type: none"> <li>▪ Clear the <b>In App</b> checkbox.</li> </ul> <p>The <b>SMTP</b> selection is retained while the checkbox in the header row and for the <b>In App</b> options are cleared.</p> <ul style="list-style-type: none"> <li>▪ Clear the checkbox in the header row to clear the subscriptions to both channels, and then select the <b>SMTP</b> checkbox.</li> </ul> </li> <li>iii. Click <b>Apply</b>.</li> </ul>

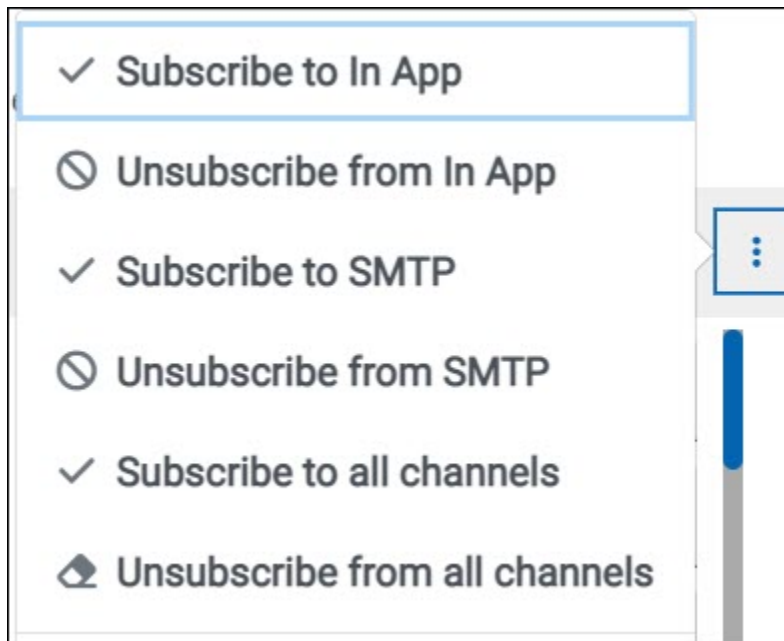
When	Action
	You have unsubscribed from the in-app channel and retained the subscription for the email notifications for the server event.

f. Go to [Results on page 477](#).

4. Perform the following steps to unsubscribe to the email notifications:

- a.
- b.
- c. Click the **Open action menu** icon  in the row of **Notifications**.

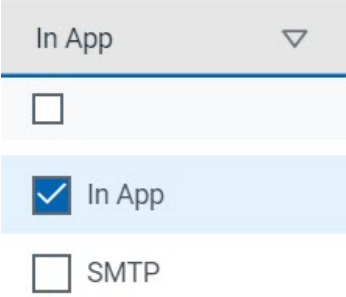
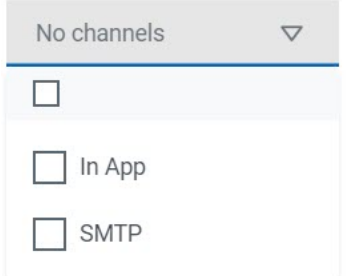
The following panel is displayed:



You can notice that the subscriptions to in-app, SMTP, and all channels are displayed as selected.

d. Perform the actions indicated in the following table for the option you want:

When	Action	Results in
You do not want to receive any email notifications.	Click the <b>Unsubscribe from SMTP</b> option, and then click <b>Apply</b> .	The SMTP channel selection for all server events is cleared and you are unsubscribed from the SMTP channel. The <b>In App</b> option is displayed as selected

When	Action	Results in
		for subscription for all server events. 
You do not want to receive any in-app or the SMTP email notifications.	Click the <b>Unsubscribe from all Channels</b> option, and then click <b>Apply</b> .	The in-app channel and the SMTP channel selections for all server events are cleared and you are unsubscribed from both the channels. No channel is displayed as selected for subscription for all server events. 
You want to subscribe to the email notifications for all server events.	Click the <b>Subscribe to SMTP</b> option, and then click <b>Apply</b> .	The SMTP channel for all server events is selected and you are subscribed to the in-app channel. The <b>In App</b> option is displayed as selected for subscription for all server events.
You want to receive notifications as in-app and as SMTP email notifications.	Click the <b>Subscribe to all Channels</b> option, and then click <b>Apply</b> .	The in-app channel and the SMTP channel are displayed as selected for all server events

When	Action	Results in
		and you are subscribed to both the channels.

e.

## Results

You completed the following tasks:

- Modified the notification subscriptions.
- Unsubscribed from or subscribed to either the SMTP channel or both the channels.

---

Related information

[Managing notifications on page 466](#)

## Configuring an SMTP server to manage email notifications

Before you can receive email notifications about events that occur in Rational® Test Automation Server, you need to configure an existing Simple Mail Transfer Protocol (SMTP) server in Rational® Test Automation Server. When events occur in Rational® Test Automation Server, email notifications are sent to the registered users of Rational® Test Automation Server if they are subscribed to the SMTP notification channel.

### Before you begin

You must have completed the following tasks:

- Ensured that you are assigned a role as a *Team Space Owner* in the team space. See [Managing members and their roles in a team space on page 429](#).
- Ensured that an existing SMTP server is available to be connected to Rational® Test Automation Server.

### About this task

The configuration works for emails that are supported by the SMTP server. To use this capability, you must enable IBM® Rational® Test Automation Server to connect to the SMTP server to send email notifications.

As a server administrator, you can configure email notifications so that other users can receive information about actions on the server projects.

1. Log in to Rational® Test Automation Server.

The team space that contains your project is displayed.

2. Click the **Settings** icon  from the menu bar.

The **Notifications** page is displayed.

3. Click **Add Configuration**.
4. Provide the following details to configure the SMTP server:
  - A name to the configuration.
  - The host name and port number of the SMTP server.



**Note:** The default configuration uses a local SMTP server that listens to the default port 25. This SMTP server does not require any authentication.

- The email address of the sender. The email address is displayed in email notifications. The email notifications are sent to the users based on the notification settings.
- The encryption type for secure communications is when the SMTP server is on an external network. You can enable either **STARTTLS** or **SSL/TLS**.



**Note:** The SMTP server for the secure communication listens to the default port 465.

- Login credentials are required if the SMTP server requires authentication.

5. Click **Add**.



**Note:** The SMTP configuration is added after a valid connection is established with the SMTP server.

## Results

You configured an SMTP server to connect with Rational® Test Automation Server and send out email notifications about the server events to users who have subscribed to the SMTP channel.

## What to do next

You can modify the default subscriptions for the SMTP channel, see [Managing email notifications on page 473](#).

---

### Related information

[Managing notifications on page 466](#)

# Chapter 8. Troubleshooting

This guide describes how to analyze and resolve some of the common problems that you might encounter while you work with Rational® Test Automation Server.

In addition to the list of problems that you might encounter, these resources are available to help you troubleshoot Rational® Test Automation Server problems. Known problems of Rational® Test Automation Server are documented in the form of individual technotes in the Support Knowledge Base. As problems are discovered and resolved, the knowledge base is updated and maintained with new information. By searching the knowledge base, you can quickly find workarounds or solutions to problems.

[Troubleshooting documentation for Rational® Test Workbench](#)

You can contact IBM® support if you are unable to troubleshoot the problem. Gather all the required background information and provide the details to IBM® support for investigation. For more information, see [IBM Support](#).

## Troubleshooting issues

You can find information about the issues or problems that you might encounter while working with Rational® Test Automation Server. Details about issues, their causes and the resolutions that you can apply to fix the issues are described.

The troubleshooting issues are presented to you in the following tables based on where or when you might encounter these issues on Rational® Test Automation Server.

- [Table 10: Troubleshooting issues: installation on page 479](#)
- [Table 11: Troubleshooting issues: server administration on page 482](#)
- [Table 12: Troubleshooting issues: resource monitoring on page 482](#)
- [Table 13: Troubleshooting issues: configuring test runs on page 483](#)
- [Table 14: Troubleshooting issues: test or stub runs on page 484](#)
- [Table 15: Troubleshooting issues: test results and reports on page 487](#)

**Table 10. Troubleshooting issues: installation**


<b>Problem</b>	<b>Description</b>	<b>Solution</b>
On Ubuntu, when you are installing the server software and you encounter errors in the scripts that are running.	At times, scripts might not appear to be running due to any of the following reasons:	You can complete any of the following tasks:

**Table 10. Troubleshooting issues: installation (continued)**

Problem	Description	Solution
	<ul style="list-style-type: none"> <li>• Slow connection speeds.</li> <li>• Insufficient CPU, memory, or disk resources.</li> <li>• A firewall that was configured incorrectly is already enabled.</li> </ul>	<ul style="list-style-type: none"> <li>• To identify the issue, you can perform a diagnostic check by running the following command:           <pre>journalctl -u k3s</pre> <p>This command displays the log that you can use to check for the problem.</p> </li> <li>• Run the following command to see which pods are running and which pods are not running:           <pre>kubectl get pods -A</pre> <p>Run the following command to get details about a specific pod:</p> <pre>kubectl describe pod -n &lt;namespace&gt; &lt;pod name&gt;</pre> </li> <li>• Follow the on-screen instructions to resolve the errors.</li> <li>• Some issues can be solved by re-running the following script:           <pre>sudo ./ubuntu-init.sh</pre> </li> </ul>
On Ubuntu, DNS is not working as expected.		<p>The DNS configuration that is used by the cluster can be displayed by using the following command:</p> <pre>kubectl get cm -n kube-system coredns -ojsonpath="{.data.Corefile}"</pre>



Table 10. Troubleshooting issues: installation (continued)

Problem	Description	Solution
		<p>The <b>forward</b> setting displays the <i>nameservers</i> that are used. For example, you might see the following in the <code>corefile</code>:</p> <pre>.:53 { :     forward . 8.8.8.8 9.9.9.9 : }</pre> <p>A script (<code>ubuntu-set-dns.sh</code>) is supplied for managing these values.</p> <p>For example, to set the DNS values for the values shown in the previous example:</p> <pre>sudo ./ubuntu-set-dns.sh --server 8.8.8.8 --server 9.9.9.9</pre> <p> <b>Note:</b> If you do not use <code>sudo</code> in the command, the script runs but the configuration might be lost if the cluster is restarted.</p> <p>To learn more about the behavior of the script, run the following command:</p> <pre>sudo ./ubuntu-set-dns.sh --help</pre>
When running <code>helm install</code> the created pods keep crashing, and the logs contain: <code>ACCESS_REFUSED</code> when trying to connect to RabbitMQ	In some instances, the RabbitMQ password is not automatically setup correctly.	Manually apply the necessary password:

**Table 10. Troubleshooting issues: installation (continued)**

Problem	Description	Solution
		<pre>&lt;release-name&gt;-rabbitmq -o   jsonpath='{.data.rabbitmq-p   assword}'   base64   --decode)"</pre>

**Table 11. Troubleshooting issues: server administration**

Problem	Description	Solution
When a user is assigned an additional role, the change in the permissions is not observed in the browser.		You must log out of the session and log in again for the changed role to take effect.
You see the following message displayed on Rational® Test Automation Server:  <div style="border: 1px solid black; padding: 5px; width: fit-content;">       You can't request to join a project that has no owners     </div>	You requested to join a project that no longer has an owner. Orphaned projects occur when the project owners are deleted. This can occur, for example, when the person leaves the organization.	Ask an administrator to take ownership of the project, and then add you as a member.

**Table 12. Troubleshooting issues: resource monitoring**

Problem	Description	Solution
You are not able to add a Prometheus server as a Resource Monitoring source.	The cause might be that you have not installed the Prometheus server at the time of server installation.	Verify that the Prometheus server was installed in Helm at the time of server installation. See <a href="#">Installing the server software on Ubuntu by using k3s on page 55</a> . If not, consult your cluster administrator to get the Prometheus server installed and configured.

Table 13. Troubleshooting issues: configuring test runs

Problem	Description	Solution
<p>When you configure a run of a schedule that matches the following conditions:</p> <ul style="list-style-type: none"> <li>• The schedule has two user groups configured to run on static agents when the schedule was created in Rational® Performance Tester 10.1.</li> <li>• One of the user groups is disabled and the asset is committed to the remote repository.</li> </ul> <p>Both the static agents are displayed as available for the test run in the <b>Location</b> tab of the <b>Execute test asset</b> dialog box when only one agent that is configured for the user group must be available.</p>	<p>The cause might be because of the following reasons:</p> <ul style="list-style-type: none"> <li>• The schedule was created in Rational® Performance Tester 10.1.</li> <li>• The user group that is disabled is not removed or deleted from the test resources.</li> <li>• The agent configured on the disabled user group is already added as an agent to the server project and is available for selection.</li> </ul>	<p>To resolve the problem, select from either of the following methods:</p> <ul style="list-style-type: none"> <li>• By using Rational® Performance Tester 10.1.1.</li> </ul> <p>Perform the following steps:</p> <ol style="list-style-type: none"> <li>1. Open the schedule in Rational® Performance Tester 10.1.1.</li> <li>2. Save the schedule and the project.</li> <li>3. Commit your test asset to the remote repository.</li> <li>4. Proceed to configure a run for the schedule on Rational® Test Automation Server 10.1.1.</li> </ol> <ul style="list-style-type: none"> <li>• By using Rational® Performance Tester 10.1.</li> </ul> <p>Perform the following steps:</p> <ol style="list-style-type: none"> <li>1. Select the disabled user group.</li> <li>2. Click <b>Remove</b>.</li> <li>3. Save the schedule and the project.</li> <li>4. Commit your test asset to the remote repository.</li> <li>5. Proceed to configure a run for the schedule on Rational® Test Automation Server 10.1.1.</li> </ol>

**Table 14. Troubleshooting issues: test or stub runs**


Problem	Description	Solution															
<p>You encounter any of the following issues:</p> <ul style="list-style-type: none"> <li>• When many tests are run simultaneously on the default cluster location and you observe the following issues:                             <ul style="list-style-type: none"> <li>◦ Out of memory errors.</li> <li>◦ Observe that the test runs are slow with a high CPU</li> </ul> </li> </ul>	<p>The issue is seen when any of the following events occur:</p> <ul style="list-style-type: none"> <li>• Many tests are run in parallel.</li> <li>• The memory that is used by the tests during the test run exceeds the allocated default memory of 1 GB.</li> <li>• The default memory of the container is not adequate for the test run.</li> <li>• Pods are evicted due to low node memory.</li> </ul>	<p>To resolve the problem, you can increase the resource allocation for test runs.</p> <p>You can enter arguments in the <b>Additional configuration options</b> field in the <b>Advanced</b> settings panel of the <b>Execute test asset</b> dialog box when configuring a test run.</p> <p> <b>Important:</b> The memory settings that you configure for a test run is persisted for the test when ever you run it. You must use this setting judiciously. Configuring all tests for an increased memory limit might affect subsequent test runs or cause other memory issues when tests run simultaneously.</p> <p>You can increase the resource allocation for test runs by using any of the following arguments:</p> <table border="1"> <thead> <tr> <th>Requirement</th> <th>Configuration option name</th> <th>Default value, if no value is set</th> <th>An example value</th> <th>Result of using the example value</th> </tr> </thead> <tbody> <tr> <td>Specifying the memory limit of the <i>init container</i>.</td> <td><code>init.resource.memory.limit</code></td> <td><i>1024Mi</i></td> <td><i>2048Mi</i></td> <td>Increases the memory limit of the <i>init container</i> from the default value to <i>2048Mi</i>.</td> </tr> <tr> <td>Configuring a larger memory request for the <i>init container</i> to avoid pod eviction.</td> <td><code>init.resource.memory.request</code></td> <td><i>64Mi</i></td> <td><i>1024Mi</i></td> <td>Increases the initial memory request for the <i>init container</i> from the default value to <i>1024Mi</i>.</td> </tr> </tbody> </table>	Requirement	Configuration option name	Default value, if no value is set	An example value	Result of using the example value	Specifying the memory limit of the <i>init container</i> .	<code>init.resource.memory.limit</code>	<i>1024Mi</i>	<i>2048Mi</i>	Increases the memory limit of the <i>init container</i> from the default value to <i>2048Mi</i> .	Configuring a larger memory request for the <i>init container</i> to avoid pod eviction.	<code>init.resource.memory.request</code>	<i>64Mi</i>	<i>1024Mi</i>	Increases the initial memory request for the <i>init container</i> from the default value to <i>1024Mi</i> .
Requirement	Configuration option name	Default value, if no value is set	An example value	Result of using the example value													
Specifying the memory limit of the <i>init container</i> .	<code>init.resource.memory.limit</code>	<i>1024Mi</i>	<i>2048Mi</i>	Increases the memory limit of the <i>init container</i> from the default value to <i>2048Mi</i> .													
Configuring a larger memory request for the <i>init container</i> to avoid pod eviction.	<code>init.resource.memory.request</code>	<i>64Mi</i>	<i>1024Mi</i>	Increases the initial memory request for the <i>init container</i> from the default value to <i>1024Mi</i> .													

Table 14. Troubleshooting issues: test or stub runs (continued)

Problem	Description	Solution				
<p>usage.</p> <ul style="list-style-type: none"> <li>◦ The Kubernetes pods are getting evicted.</li> </ul> <p>• When you run an AFT suite that contains multiple Web UI tests and you observe the following issues:</p> <ul style="list-style-type: none"> <li>◦ Error stating that the browser might not be installed or</li> </ul>		Requirement	Configuration option name	Default value, if no value is set	An example value	Result of using the example value
		Specifying the cpu request for the <i>init container</i> .	<code>init.resource.cpu-request</code>	50m	60m	Increases the cpu request for the <i>init container</i> from the default value 60m.
		Specifying the memory limit of the container used for the test run.	<code>resource.memory.limit</code>	The larger of 3Gi or maximum heap size + 1Gi	4Gi	Changes the memory limit of the main container from the default value to 4Gi.
		Specifying the memory request for the container used by the test run.	<code>resource.memory.request</code>	64Mi	1024Mi	Increases the memory request for the main container from the default value to 1024Mi.
		Specifying the cpu request for the main container used by the test run.	<code>resource.cpu-request</code>	50m	70m	Increases the cpu request for the main container from the default value to 70m.

In addition, in the **JVM Arguments** field under the **Advanced** settings you can set the maximum heap size for the test runtime. For example, adding the JVM argument **-Xmx3g** sets the maximum heap size to 3Gi.

**Table 14. Troubleshooting issues: test or stub runs (continued)**

Problem	Description	Solution
<p>the browser version is unsupported. Error stating multiple random timeouts or an internal error.</p>		
<p>You are not able to run the Istio stubs from the <b>Execution</b> page.</p>	<p>The cause might be that the fully qualified domain name is not specified in the <b>Host</b> field for the stub when it was created.</p>	<p>Verify and ensure to add the fully qualified domain name of the server in the <b>Host</b> field when the physical transport for the stub is configured in Rational® Integration Tester.</p>



**Note:** You can refer to the [Kubernetes documentation](#) for information about the different units that can be used for resources in the **Additional configuration option** fields.

**Table 15. Troubleshooting issues: test results and reports**

Problem	Description	Solution
<p>You are not able to view the Jaeger traces for the tests you ran.</p>	<p>The cause can be as follows:</p> <ul style="list-style-type: none"> <li>• Jaeger was not pre-installed in OpenShift.</li> <li>• The Jaeger trace is not supported for the particular test that you ran.</li> </ul>	<p>Check for any of the following solutions:</p> <ul style="list-style-type: none"> <li>• Verify that Jaeger was installed in Helm at the time of server installation. See <a href="#">Installing the server software on Ubuntu by using k3s on page 55</a>. If not, consult your administrator to get Jaeger installed and configured.</li> <li>• Verify that the tests you ran are supported for Jaeger traces. See <a href="#">Test results and reports overview on page 319</a>.</li> <li>• Verify if you provided the program variables when you configured the test run. See <a href="#">Considerations for using Jaeger traces in reports on page 166</a>.</li> </ul>

# Security Considerations

This document describes the actions that you can take to ensure that your installation is secure, customize your security settings, and set up user access controls.

- [Enabling secure communication between multiple applications on page cdlxxxviii](#)
- [Ports, protocols, and services on page cdlxxxviii](#)
- [Customizing your security settings on page cdlxxxviii](#)
- [Setting up user roles and access on page cdlxxxix](#)

## Enabling secure communication between multiple applications

The majority of communications are sent over TLS to port 443 (see [Ports, protocols, and services on page cdlxxxviii](#)). During the installation, an X.509 certificate is generated for the user provided DNS name, which is used to connect to the server. This certificate is self-signed and hence untrusted by other applications.

This self-signed certificate must be replaced by a certificate signed by a certificate authority trusted by your organization. For more information, see [X.509 Certificate User Authentication](#) in the Keycloak documentation.

For information about how the self-signed certificate was created, see the `ssl.sh` file in the `<install-directory>/prepare/` directory.

For information about importing a certificate authority trusted by your organization, see [Certificate authority: Importing and extending lists on page 92](#).

## Ports, protocols, and services

TCP port 443 is used by the majority of communications with the server.

The port 7085 is the default port for communications with agents registered with Rational® Test Automation Server.

The ports starting from 7085, are used in pairs such as 7085 and 7086, and are allotted for the Schedule that is executed first. The next Schedule is allotted the next pair (7087,7088), and so on for the Schedules that are running simultaneously.

You must open the required ports in pairs for each of the Schedules that you want to run simultaneously.

## Customizing your security settings

You can customize your security settings through user registration.

### User registration

By default, users can sign up themselves with the server. In some environments, this self sign-up might be undesirable. It can be changed by switching off user registration. For more information, see [User Registration](#) in the Keycloak documentation.



By default, user email addresses are not verified. This verification must be enabled in production environments. For more information, see [Email settings on page 81](#).

## **Setting up user roles and access**

You can manage user roles and access through single sign on (SSO) and administration only accounts.

### **Single sign-on**

By default, Keycloak manages users and passwords locally. In production environments, it is normally appropriate to use single sign-on. For more information, see [LDAP user administration on page 82](#).

### **Administration only accounts**

Users in the Administrator group can manage the team space where they can configure licenses and notifications and add a repository to store the System model. For more information, see [Team space overview on page 100](#).

Users in the Administrator group can also discover all projects stored on the server (including private ones) and assign themselves and others roles in those projects.

For this reason, users who use the server to perform both administration and non-administration tasks must have two different accounts, one for each purpose. For more information, see [Default user administration on page 80](#).

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# Index

## A

- accessibility
  - IBM
  - Rational
  - Test Automation Server
    - disability 24
    - keyboard 24
- Accessing secrets 454
- administration default security
  - IBM
  - Rational
  - Test Automation Server
    - 80
- administration ldap security
  - IBM
  - Rational
  - Test Automation Server
    - 82

## B

- backing up and restoring user data
  - IBM
  - Rational
  - Test Automation Server
    - 69, 71, 73

## C

- Change
  - Classification 460
  - Dataset 460
  - Encrypt 460
- Change Classification
  - Dataset 130
- Configure
  - Dataset 130
- Create
  - Classification 460
- Create Dataset 119
- Creating secrets 454

## D

- Dataset 130
- datasets
  - encrypting 127
  - removing encryption 128
- Delete
  - Classification 460
- Deleting secrets 454

## E

- Edit
  - Classification 460
- Editing secrets 454

## G

- getting started
  - guide 16
- Grant
  - access 460
  - Classification 460
- guide
  - getting started 16

## I

- IBM
- Rational
- Test Automation Server
  - accessibility 24

- backing up and restoring user data 69, 71, 73
- default security administration 80
- disability 24
- keyboard 24
- ldap security administration 82
- managing account settings 91
- repository considerations 434
- test assets 433

## IBM

- Rational
- Test Automation Server
  - project overview
    - test assets statistics 446

## M

- Manage encrypted dataset 460
- managing account settings
  - IBM
  - Rational
  - Test Automation Server
    - 91
- managing project secrets
  - Rational
  - Test Automation Server
    - 454

## O

- Offline tokens 418
- Offline user token 418
- offline user tokens
  - Rational
  - Test Automation Server
    - 418
- overview
  - server 16

## R

- Rational
- Test Automation Server
  - managing secrets 454
  - offline user tokens 418
- Remove
  - Classification 460
  - Dataset 460
  - Encrypt 460
- repository considerations
  - IBM
  - Rational
  - Test Automation Server
    - 434
- Revoke
  - access 460
  - Classification 460

## S

- Secrets
  - accessing 454
  - creating 454
  - deleting 454
  - editing 454
  - viewing 454
- security considerations
  - overview cdlxxxviii
- server
  - overview 16
  - task flows 20
- Set
  - Current row 130

- Dataset 130

## T

- task flows
  - server 20
- test assets
  - IBM
  - Rational
  - Test Automation Server
    - 433
- test assets statistics
  - IBM
  - Rational
  - Test Automation Server
    - project overview
      - 446
- tests
  - datasets 127, 128

## V

- View
  - Dataset 130, 130
  - Encrypt 130
  - Viewing secrets 454