Program Directory for

IBM Z Workload Scheduler

Version 10.1.0

Program Number 5698-T09

for Use with
z/OS

Document Date: March 2022

GI13-5605-00

Note

Before using this information and the product it supports, be sure to read the general information under 7.0, “Notices” on page 24.

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Figures

1.0 Introduction

This program directory is intended for system programmers who are responsible for program installation and maintenance. It contains information about the material and procedures associated with the installation of IBM Z Workload Scheduler. This publication refers to IBM Z Workload Scheduler as IBM Z Workload Scheduler.

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 3 identifies the basic program materials and documentation for IBM Z Workload Scheduler.
- 3.0, “Program Support” on page 5 describes the IBM support available for IBM Z Workload Scheduler.
- 4.0, “Program and Service Level Information” on page 7 lists the APARs (program level) and PTFs (service level) that have been incorporated into IBM Z Workload Scheduler.
- 5.0, “Installation Requirements and Considerations” on page 9 identifies the resources and considerations that are required for installing and using IBM Z Workload Scheduler.
- 6.0, “Installation Instructions” on page 17 provides detailed installation instructions for IBM Z Workload Scheduler. It also describes the procedures for activating the functions of IBM Z Workload Scheduler, or refers to appropriate publications.

Before installing IBM Z Workload Scheduler, read the *CBPDO Memo To Users* and the *CBPDO Memo To Users Extension* that are supplied with this program in softcopy format and this program directory; after which, keep the documents for your reference. Section 3.2, “Preventive Service Planning” on page 5 tells you how to find any updates to the information and procedures in this program directory.

IBM Z Workload Scheduler is supplied in a Custom-Built Product Delivery Offering (CBPDO, 5751-CS3). The program directory that is provided in softcopy format on the CBPDO tape is identical to the hardcopy format if one was included with your order. All service and HOLDDATA for IBM Z Workload Scheduler are included on the CBPDO tape.

Do not use this program directory if you install IBM Z Workload Scheduler with a SystemPac or ServerPac. When you use one of those offerings, use the jobs and documentation supplied with the offering. The offering will point you to specific sections of this program directory as needed.

1.1 IBM Z Workload Scheduler Description

IBM Z Workload Scheduler is a program for enterprise-wide production workload scheduling. It enables you to plan, schedule, and track the workload, not only on z/OS platforms, but also in a distributed environment.

This program directory is intended for the system programmer responsible for program installation and maintenance.

It contains information concerning the material and procedures associated with the installation of IBM Z Workload Scheduler. You should read all this program directory before installing the program and then keep it for future reference.

This program directory should be used when installing the English language version of the IBM Z Workload Scheduler base function together with one (or more) additional IBM Z Workload Scheduler features.

If you are installing the English language as additional language, then there are steps that you need to skip during the installation.

1.2 IBM Z Workload Scheduler FMIDs

IBM Z Workload Scheduler consists of the following FMIDs:

HWSZA10
JWSZA12
JWSZA1B
JWSZA13

2.0 Program Materials

An IBM program is identified by a program number. The program number for IBM Z Workload Scheduler is 5698-T09.

Basic Machine-Readable Materials are materials that are supplied under the base license and are required for the use of the product.

The program announcement material describes the features supported by IBM Z Workload Scheduler. Ask your IBM representative for this information if you have not already received a copy.

2.1 Basic Machine-Readable Material

The distribution medium for this program is physical media or downloadable files. This program is in SMP/E RELFILE format and is installed by using SMP/E. See 6.0, “Installation Instructions” on page 17 for more information about how to install the program.

You can find information about the physical media for the basic machine-readable materials for IBM Z Workload Scheduler in the *CBPDO Memo To Users Extension*.

2.2 Program Publications

The following sections identify the basic publications for IBM Z Workload Scheduler.

Figure 1 identifies the basic unlicensed publications for IBM Z Workload Scheduler.

The unlicensed documentation for IBM Z Workload Scheduler can be found on the IBM Documentation Center at https://www.ibm.com/docs/z-workload-scheduler/10.1.0

Figure 1 (Page 1 of 2). Basic Material: Unlicensed Publications

Publication Title	Form Number	Media Format
Memo to Users		IBM Documentation Center.
Program Directory		IBM Documentation Center.
Planning and Installation		IBM Documentation Center.
Customization and Tuning		IBM Documentation Center.
Managing the Workload		IBM Documentation Center.
Scheduling End-to-end with Fault-Tolerance Capabilities		IBM Documentation Center.
Scheduling End-to-end with z-centric Capabilities		IBM Documentation Center.

Figure 1 (Page 2 of 2). Basic Material: Unlicensed Publications		
Publication Title	**Form Number**	**Media Format**
Quick Reference		IBM Documentation Center.
Diagnosis Guide and Reference		IBM Documentation Center.
Messages and Codes		IBM Documentation Center.
Developer's Guide: Driving IBM Z Workload Scheduler		IBM Documentation Center.
IBM Workload Automation: Overview		IBM Documentation Center.
Workload Automation Programming Language for z/OS User's Guide and Reference		IBM Documentation Center.

The IBM Z Workload Scheduler product manuals and other IBM product documentation can be found at the IBM Documentation Center website https://www.ibm.com/docs/z-workload-scheduler/10.1.0

2.3 Program Source Materials

No program source materials or viewable program listings are provided for IBM Z Workload Scheduler.

2.4 Publications Useful During Installation

You might want to use the publications listed in Figure 2 during the installation of IBM Z Workload Scheduler.

Figure 2. Publications Useful During Installation		
Publication Title	**Form Number**	**Media Format**
IBM SMP/E for z/OS User's Guide	SA23-2277	http://www.ibm.com/shop/publications/order/
IBM SMP/E for z/OS Commands	SA23-2275	http://www.ibm.com/shop/publications/order/
IBM SMP/E for z/OS Reference	SA23-2276	http://www.ibm.com/shop/publications/order/
IBM SMP/E for z/OS Messages, Codes, and Diagnosis	GA32-0883	http://www.ibm.com/shop/publications/order/

3.0 Program Support

This section describes the IBM support available for IBM Z Workload Scheduler.

3.1 Program Services

Contact your IBM representative for specific information about available program services.

3.2 Preventive Service Planning

Before you install IBM Z Workload Scheduler, make sure that you have reviewed the current Preventive Service Planning (PSP) information. Review the PSP Bucket for General Information, Installation Documentation, and the Cross Product Dependencies sections. For the Recommended Service section, instead of reviewing the PSP Bucket, it is recommended you use the IBM.PRODUCTINSTALL-REQUIREDSERVICE fix category in SMP/E to ensure you have all the recommended service installed. Use the **FIXCAT(IBM.PRODUCTINSTALL-REQUIREDSERVICE)** operand on the **APPLY CHECK** command. See 6.1.9, “Perform SMP/E APPLY” on page 21 for a sample APPLY command

If you obtained IBM Z Workload Scheduler as part of a CBPDO, HOLDDATA is included.

If the CBPDO for IBM Z Workload Scheduler is older than two weeks by the time you install the product materials, you can obtain the latest PSP Bucket information by going to the following website:

http://www14.software.ibm.com/webapp/set2/psearch/search?domain=psp

You can also use S/390 SoftwareXcel or contact the IBM Support Center to obtain the latest PSP Bucket information.

For program support, access the Software Support Website at https://www.ibm.com/mysupport/s/?language=en_US

PSP Buckets are identified by UPGRADEs, which specify product levels; and SUBSETs, which specify the FMIDs for a product level. The UPGRADE and SUBSET values for IBM Z Workload Scheduler are included in Figure 3.

Figure 3 (Page 1 of 2). PSP Upgrade and Subset ID

UPGRADE	SUBSET	Description
TWSZOSA10	HWSZA10	Agent
TWSZOSA10	JWSZA12	Engine
TWSZOSA10	JWSZA1B	Engine English

Figure 3 (Page 2 of 2). PSP Upgrade and Subset ID		
UPGRADE	**SUBSET**	**Description**
TWSZOSA10	JWSZA13	End-to-End and Java Enablers

3.3 Statement of Support Procedures

Report any problems which you feel might be an error in the product materials to your IBM Support Center. You may be asked to gather and submit additional diagnostics to assist the IBM Support Center in their analysis.

Figure 4 identifies the component IDs (COMPID) for IBM Z Workload Scheduler.

Figure 4. Component IDs			
FMID	**COMPID**	**Component Name**	**RETAIN Release**
HWSZA10	5697WSZ01	Agent	A10
JWSZA12	5697WSZ01	Engine	A12
JWSZA1B	5697WSZ01	Engine English	A1B
JWSZA13	5697WSZ01	End-to-End and Java Enablers	A13

4.0 Program and Service Level Information

This section identifies the program and relevant service levels of IBM Z Workload Scheduler. The program level refers to the APAR fixes that have been incorporated into the program. The service level refers to the PTFs that have been incorporated into the program.

4.1 Program Level Information

The following APAR fixes against previous releases of IBM Z Workload Scheduler have been incorporated into this release. They are listed by FMID.

- FMID HWSZA10

PH28933	PH35124	PH37773
PH29040	PH36238	PH07283
PH30150	PH37012	PH39643
PH30107	PH36960	PH37495
PH30108	PH26152	PH35416
PH32380	PH36886	PH37676
PH33894	PH36526	PH38682
PH33387	PH36247	PH38644
PH33258	PH36496	PH39091
PH33431	PH37490	PH40108
PH33442	PH35728	PH39137
PH33896	PH37032	PH37357
PH34508	PH36710	PH40590
PH35729	PH37347	PH43086
PH29692	PH37082	PH43273
PH33714	PH36096	

- FMID JWSZA12

PH31997	PH28460	PH35000
PH28933	PH32833	PH33714
PH31466	PH33258	PH28235
PH27597	PH30407	PH28453
PH30150	PH34419	PH35582
PH30107	PH34525	PH37012
PH32003	PH33896	PH34937
PH30866	PH34508	PH34682
PH33894	PH34495	PH36061
PH27356	PH35729	PH36960

PH36886	PH34256	PH41135
PH37419	PH38294	PH41304
PH36496	PH35639	PH30830
PH37037	PH37495	PH39137
PH35728	PH31421	PH42370
PH29191	PH40217	PH37357
PH38379	PH38627	PH41084
PH36710	PH37608	PH33669
PH28300	PH38450	PH36062
PH37347	PH40284	PH39600
PH36644	PH37885	PH42445
PH37082	PH40494	PH40590
PH39393	PH39932	PH27429
PH33035	PH38644	PH32492
PH38552	PH39987	PH43086
PH07283	PH40108	PH42875
PH32939	PH39459	PH43366
PH35992	PH41668	PH43273

- FMID JWSZA1B

PH25412	PH36496
PH35580	PH37357

- FMID JWSZA13

PH34316	PH25860
PH39393	PH42053

4.2 Service Level Information

No PTFs against this release of IBM Z Workload Scheduler have been incorporated into the product package.

Frequently check the IBM Z Workload Scheduler PSP Bucket for HIPER and SPECIAL attention PTFs against all FMIDs that you must install. You can also receive the latest HOLDDATA, then add the **FIXCAT(IBM.PRODUCTINSTALL-REQUIREDSERVICE)** operand on your **APPLY CHECK** command. This will allow you to review the recommended and critical service that should be installed with your FMIDs.

5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating IBM Z Workload Scheduler. The following terminology is used:

- *Driving system*: the system on which SMP/E is executed to install the program.

  The program might have specific operating system or product level requirements for using processes, such as binder or assembly utilities during the installation.

- *Target system*: the system on which the program is configured and run.

  The program might have specific product level requirements, such as needing access to the library of another product for link-edits. These requirements, either mandatory or optional, might directly affect the element during the installation or in its basic or enhanced operation.

In many cases, you can use a system as both a driving system and a target system. However, you can make a separate IPL-able clone of the running system to use as a target system. The clone must include copies of all system libraries that SMP/E updates, copies of the SMP/E CSI data sets that describe the system libraries, and your PARMLIB and PROCLIB.

Use separate driving and target systems in the following situations:

- When you install a new level of a product that is already installed, the new level of the product will replace the old one. By installing the new level onto a separate target system, you can test the new level and keep the old one in production at the same time.
- When you install a product that shares libraries or load modules with other products, the installation can disrupt the other products. By installing the product onto a separate target system, you can assess these impacts without disrupting your production system.

5.1 Driving System Requirements

This section describes the environment of the driving system required to install IBM Z Workload Scheduler.

5.1.1 Machine Requirements

The driving system can run in any hardware environment that supports the required software.

5.1.2 Programming Requirements

Figure 5. Driving System Software Requirements

Program Number	Product Name	Minimum VRM	Minimum Service Level will satisfy these APARs	Included in the shipped product?
5650-ZOS	z/OS	V02.04.00 or later	N/A	No

Note: SMP/E is a requirement for Installation and is an element of z/OS but can also be ordered as a separate product, 5655-G44, minimally V03.06.00.

Note: Installation might require migration to new z/OS releases to be service supported. See https://www-01.ibm.com/software/support/lifecycle/index_z.html.

5.2 Target System Requirements

This section describes the environment of the target system required to install and use IBM Z Workload Scheduler.

IBM Z Workload Scheduler installs in the z/OS (Z038) SREL.

5.2.1 Machine Requirements

The target system can run in any hardware environment that supports the required software.

5.2.2 Programming Requirements

5.2.2.1 Installation Requisites

Installation requisites identify products that are required and *must* be present on the system or products that are not required but *should* be present on the system for the successful installation of this product.

Mandatory installation requisites identify products that are required on the system for the successful installation of this product. These products are specified as PREs or REQs.

Figure 6. Target System Mandatory Installation Requisites

Program Number	Product Name	Minimum VRM	Minimum Service Level will satisfy these APARs	Included in the shipped product?
5650-ZOS	z/OS	V02.04.00 or later	N/A	No

Note: Installation might require migration to new z/OS releases to be service supported. See http://www-03.ibm.com/systems/z/os/zos/support/zos_eos_dates.html.

Conditional installation requisites identify products that are *not* required for successful installation of this product but can resolve such things as certain warning messages at installation time. These products are specified as IF REQs.

IBM Z Workload Scheduler has no conditional installation requisites.

5.2.2.2 Operational Requisites

Operational requisites are products that are required and *must* be present on the system or products that are not required but *should* be present on the system for this product to operate all or part of its functions.

Mandatory operational requisites identify products that are required for this product to operate its basic functions.

IBM Z Workload Scheduler has no mandatory operational requisites.

Conditional operational requisites identify products that are *not* required for this product to operate its basic functions but are required at run time for this product to operate specific functions. These products are specified as IF REQs.

Figure 7 (Page 1 of 2). Target System Conditional Operational Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5698-ZWE	IBM Z Distribution for Zowe V01.00.00	Zowe is required if you want to use the IBM Z Workload Scheduler Zowe CLI add-on. Additionally, Zowe is required if you want to add the IBM Z Workload Scheduler REST APIs to the Zowe API Mediation Layer.
Any **one** of the following:		
5698-AAF	IBM Z Service Management Suite 1.x	IBM Z ChatOps is required to send ZWS events to an enterprise chat tool.
5698-014	IBM Z Service Management Suite 2.x	IBM Z ChatOps is required to send ZWS events to an enterprise chat tool.
5698-SA1	IBM Z Service Automation Suite	IBM Z ChatOps is required to send ZWS events to an enterprise chat tool.
5698-B66	IBM Z Monitoring Suite	IBM Z ChatOps is required to send ZWS events to an enterprise chat tool.

Figure 7 (Page 2 of 2). Target System Conditional Operational Requisites		
Program Number	**Product Name and Minimum VRM/Service Level**	**Function**
5698-SA4	IBM Z System Automation	IBM Z ChatOps is required to send ZWS events to an enterprise chat tool.
Note: For detailed information on ZOWE usage, see the documentation on Knowledge Center at the following link: https://www.ibm.com/support/knowledgecenter/SSRULV_10.1.0/com.ibm.tivoli.itws.doc_10.1/zos/src_inst/eqqi1zowe.htm		

5.2.2.3 Toleration/Coexistence Requisites

Toleration/coexistence requisites identify products that must be present on sharing systems. These systems can be other systems in a multisystem environment (not necessarily sysplex), a shared DASD environment (such as test and production), or systems that reuse the same DASD environment at different time intervals.

IBM Z Workload Scheduler has no toleration/coexistence requisites.

5.2.2.4 Incompatibility (Negative) Requisites

Negative requisites identify products that must *not* be installed on the same system as this product.

IBM Z Workload Scheduler has no negative requisites.

5.2.3 DASD Storage Requirements

IBM Z Workload Scheduler libraries can reside on all supported DASD types.

Figure 8 lists the total space that is required for each type of library.

Figure 8. Total DASD Space Required by IBM Z Workload Scheduler		
Library Type	**Total Space Required in 3390 Trks**	**Description**
Target	5209	
Distribution	5909	
File System(s)	8000	

Notes:

1. For non-RECFM U data sets, IBM recommends using system-determined block sizes for efficient DASD utilization. For RECFM U data sets, IBM recommends using a block size of 32760, which is most efficient from the performance and DASD utilization perspective.
2. Abbreviations used for data set types are shown as follows.

   U Unique data set, allocated by this product and used by only this product. This table provides all the required information to determine the correct storage for this data set. You do not need to refer to other tables or program directories for the data set size.

   S Shared data set, allocated by this product and used by this product and other products. To determine the correct storage needed for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

   E Existing shared data set, used by this product and other products. This data set is *not* allocated by this product. To determine the correct storage for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

   If you currently have a previous release of this product installed in these libraries, the installation of this release will delete the old release and reclaim the space that was used by the old release and any service that had been installed. You can determine whether these libraries have enough space by deleting the old release with a dummy function, compressing the libraries, and comparing the space requirements with the free space in the libraries.

   For more information about the names and sizes of the required data sets, see 6.1.6, “Allocate SMP/E Target and Distribution Libraries” on page 20.
3. Abbreviations used for the file system path type are as follows.

   N New path, created by this product.
   X Path created by this product, but might already exist from a previous release.
   P Previously existing path, created by another product.
4. All target and distribution libraries listed have the following attributes:

   - The default name of the data set can be changed.
   - The default block size of the data set can be changed.
   - The data set can be merged with another data set that has equivalent characteristics.
   - The data set can be either a PDS or a PDSE, with some exceptions. If the value in the "ORG" column specifies "PDS", the data set must be a PDS. If the value in "DIR Blks" column specifies "N/A", the data set must be a PDSE.
5. All target libraries listed have the following attributes:

   - These data sets can be SMS-managed, but they are not required to be SMS-managed.
   - These data sets are not required to reside on the IPL volume.
   - The values in the "Member Type" column are not necessarily the actual SMP/E element types that are identified in the SMPMCS.
6. All target libraries that are listed and contain load modules have the following attributes:

- These data sets can not be in the LPA, with some exceptions. If the value in the "Member Type" column specifies "LPA", it is advised to place the data set in the LPA.
- These data sets can be in the LNKLST.
- These data sets are not required to be APF-authorized, with some exceptions. If the value in the "Member Type" column specifies "APF", the data set must be APF-authorized.

The following figures describe the target and distribution libraries and file system paths required to install IBM Z Workload Scheduler. The storage requirements of IBM Z Workload Scheduler must be added to the storage required by other programs that have data in the same library or path.

Note: Use the data in these tables to determine which libraries can be merged into common data sets. In addition, since some ALIAS names may not be unique, ensure that no naming conflicts will be introduced before merging libraries.

Figure 9. Storage Requirements for IBM Z Workload Scheduler Target Libraries

Library DDNAME	Member Type	Target Volume	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
SEQQLMD0	LMOD	ANY	U	PDS	U	0	1600	160
SEQQMISC	DATA	ANY	U	PDS	FB	80	600	100
SEQQCLIB	CLIST	ANY	U	PDS	FB	80	30	2
SEQQDATA	DATA	ANY	U	PDS	VB	6156	6	3
SEQQMAC0	Macro	ANY	U	PDS	FB	80	30	4
SEQQMSG0	Message	ANY	U	PDS	FB	80	500	120
SEQQPNL0	Panel	ANY	U	PDS	FB	80	60	8
SEQQSAMP	Sample	ANY	U	PDS	FB	80	200	30
SEQQWAPL	Sample	ANY	U	PDS	FB	80	200	30
SEQQSKL0	Skeleton	ANY	U	PDS	FB	80	30	8
SEQQTBL0	Table	ANY	U	PDS	FB	80	6	3
SEQQPENU	Panel	ANY	U	PDS	FB	80	2000	200
SEQQGENU	Advanced ISPF panels	ANY	U	PDS	FB	80	130	70
SEQQLENU	Advanced ISPF panel templates	ANY	U	PDS	FB	80	20	70

Figure 10. IBM Z Workload Scheduler File System Paths

DDNAME	TYPE	Path Name
SEQQ0001	N	/usr/lpp/TWS/V10R1M0/bin/IBM
SEQQ0002	N	/usr/lpp/TWS/V10R1M0/catalog/C/IBM
SEQQ0003	N	/usr/lpp/TWS/V10R1M0/codeset/IBM
SEQQ0004	N	/usr/lpp/TWS/V10R1M0/config/IBM
SEQQ0005	N	/usr/lpp/TWS/V10R1M0/zoneinfo/IBM
SEQQ0006	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Africa/IBM
SEQQ0007	N	/usr/lpp/TWS/V10R1M0/zoneinfo/America/IBM
SEQQ0008	N	/usr/lpp/TWS/V10R1M0/zoneinfo/America/Argentina/IBM
SEQQ0009	N	/usr/lpp/TWS/V10R1M0/zoneinfo/America/Indiana/IBM
SEQQ0010	N	/usr/lpp/TWS/V10R1M0/zoneinfo/America/Kentucky/IBM
SEQQ0011	N	/usr/lpp/TWS/V10R1M0/zoneinfo/America/ North_Dakota/IBM
SEQQ0012	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Antarctica/IBM
SEQQ0013	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Arctic/IBM
SEQQ0014	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Asia/IBM
SEQQ0015	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Atlantic/IBM
SEQQ0016	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Australia/IBM
SEQQ0017	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Brazil/IBM
SEQQ0018	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Canada/IBM
SEQQ0019	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Chile/IBM
SEQQ0020	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Etc/IBM
SEQQ0021	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Europe/IBM
SEQQ0022	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Indian/IBM
SEQQ0023	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Mexico/IBM
SEQQ0025	N	/usr/lpp/TWS/V10R1M0/zoneinfo/Pacific/IBM
SEQQ0026	N	/usr/lpp/TWS/V10R1M0/zoneinfo/US/IBM

Figure 11. Storage Requirements for IBM Z Workload Scheduler Distribution Libraries

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
AEQQMOD0	U	PDS	U	0	2300	500
AEQQMISC	U	PDS	FB	80	400	100
AEQQCLIB	U	PDS	FB	80	30	2
AEQQDATA	U	PDS	VB	6156	6	6
AEQQMAC0	U	PDS	FB	80	30	4
AEQQMSG0	U	PDS	FB	80	500	120
AEQQPNL0	U	PDS	FB	80	60	8
AEQQSAMP	U	PDS	FB	80	200	30
AEQQWAPL	U	PDS	FB	80	200	30
AEQQSKL0	U	PDS	FB	80	30	8
AEQQTBL0	U	PDS	FB	80	3	3
AEQQPENU	U	PDS	FB	80	2000	200
AEQQGENU	U	PDS	FB	80	130	70
AEQQLENU	U	PDS	FB	80	20	70
AEQQHFS0	U	PDS	VB	30000	8000	100

5.3 FMIDs Deleted

Installing IBM Z Workload Scheduler might result in the deletion of other FMIDs. To see which FMIDs will be deleted, examine the ++VER statement in the SMPMCS of the product.

If you do not want to delete these FMIDs at this time, install IBM Z Workload Scheduler into separate SMP/E target and distribution zones.

Note: These FMIDs are not automatically deleted from the Global Zone. If you want to delete these FMIDs from the Global Zone, use the SMP/E REJECT NOFMID DELETEFMID command. See the SMP/E Commands book for details.

5.4 Special Considerations

IBM Z Workload Scheduler has no special considerations for the target system.

6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of IBM Z Workload Scheduler.

Please note the following points:

- If you want to install IBM Z Workload Scheduler into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMPCSI and the SMP/E control data sets.
- You can use the sample jobs that are provided to perform part or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries that are required for SMP/E execution have been defined in appropriate zones.
- You can use the SMP/E dialogs instead of the sample jobs to accomplish the SMP/E installation steps.

6.1 Installing IBM Z Workload Scheduler

6.1.1 SMP/E Considerations for Installing IBM Z Workload Scheduler

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of IBM Z Workload Scheduler.

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 12. Using values lower than the recommended values can result in failures in the installation. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. See the SMP/E manuals for instructions on updating the global zone.

Figure 12. SMP/E Options Subentry Values

Subentry	Value	Comment
DSSPACE	400,400,400	Space allocation for temporary libraries
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

6.1.3 SMP/E CALLLIBS Processing

IBM Z Workload Scheduler uses the CALLLIBS function provided in SMP/E to resolve external references during installation. When IBM Z Workload Scheduler is installed, ensure that DDDEFs exist for the following libraries:

- MACLIB
- SCEELKED
- CSSLIB
- SEZACMTX

Note: CALLLIBS uses the previous DDDEFs only to resolve the link-edit for IBM Z Workload Scheduler. These data sets are not updated during the installation of IBM Z Workload Scheduler.

6.1.4 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install IBM Z Workload Scheduler:

Figure 13. Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
EQQRECVE	RECEIVE	Sample RECEIVE job	IBM.HWSZA10.F3
EQQALLOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HWSZA10.F3
EQQISMKD	MKDIR	Sample job to invoke the supplied EQQMKDIR EXEC to allocate file system paths	IBM.HWSZA10.F3
EQQDDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HWSZA10.F3
EQQAPPLE	APPLY	Sample APPLY job	IBM.HWSZA10.F3
EQQACPTE	ACCEPT	Sample ACCEPT job	IBM.HWSZA10.F3

You can access the sample installation jobs by performing an SMP/E RECEIVE (refer to 6.1.5, “Perform SMP/E RECEIVE” on page 19) then copy the jobs from the RELFILES to a work data set for editing and submission. See Figure 13 to find the appropriate relfile data set.

You can also copy the sample installation jobs from the tape or product files by submitting the following job. Depending on your distribution medium, use either the //TAPEIN or the //FILEIN DD statement and comment out or delete the other statement. Before you submit the job, add a job card and change the lowercase parameters to uppercase values to meet the requirements of your site.

```
//STEP1    EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//TAPEIN   DD DSN=IBM.HWSZA10.F3,UNIT=tunit,
//         VOL=SER=volser,LABEL=(x,SL),
//         DISP=(OLD,KEEP)
//FILEIN   DD DSN=IBM.HWSZA10.F3,UNIT=SYSALLDA,DISP=SHR,
//         VOL=SER=filevol
//OUT      DD DSNAME=jcl-library-name,
//         DISP=(NEW,CATLG,DELETE),
//         VOL=SER=dasdvol,UNIT=SYSALLDA,
//         SPACE=(TRK,(primary,secondary,dir))
//SYSUT3   DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN    DD *
    COPY INDD=xxxxIN,OUTDD=OUT
     S M=EQQDDDEF
     S M=EQQALLOC
     S M=EQQISMKD
     S M=EQQMKDIR
     S M=EQQRECVE
     S M=EQQAPPLE
     S M=EQQACPTE
/*
```

See the following information to update the statements in the previous sample:

TAPEIN:

tunit is the unit value that matches the product package.

volser is the volume serial that matches the product package.

x is the tape file number that indicates the location of the data set name on the tape. See the documentation that is provided by CBPDO for the location of IBM.HWSZA10.F3 on the tape.

FILEIN:

filevol is the volume serial of the DASD device where the downloaded files reside.

OUT:

jcl-library-name is the name of the output data set where the sample jobs are stored.

dasdvol is the volume serial of the DASD device where the output data set resides.

SYSIN:

xxxxIN is either TAPEIN or FILEIN depending on your input DD statement.

6.1.5 Perform SMP/E RECEIVE

If you have obtained IBM Z Workload Scheduler as part of a CBPDO, use the RCVPDO job in the CBPDO RIMLIB data set to receive the IBM Z Workload Scheduler FMIDs, service, and HOLDDATA that are included on the CBPDO package. For more information, see the documentation that is included in the CBPDO.

You can also choose to edit and submit sample job EQQRECVE to perform the SMP/E RECEIVE for IBM Z Workload Scheduler. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.6 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job EQQALLOC to allocate the SMP/E target and distribution libraries for IBM Z Workload Scheduler. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.7 Allocate File System Paths

The target system HFS or zFS data set must be mounted on the driving system when running the sample EQQISMKD job since the job will create paths in the HFS or zFS.

Before running the sample job to create the paths in the file system, you must ensure that OMVS is active on the driving system and that the target system's HFS or zFS file system is mounted to the driving system. zFS must be active on the driving system if you are installing IBM Z Workload Scheduler into a file system that is zFS.

If you plan to install IBM Z Workload Scheduler into a new HFS or zFS file system, you must create the mountpoint and mount the new file system to the driving system for IBM Z Workload Scheduler.

The recommended mountpoint is */usr/lpp/TWS*.

Edit and submit sample job EQQISMKD to allocate the HFS or zFS paths for IBM Z Workload Scheduler. Consult the instructions in the sample job for more information.

If you create a new file system for this product, consider updating the BPXPRMxx PARMLIB member to mount the new file system at IPL time. This action can be helpful if an IPL occurs before the installation is completed.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.8 Create DDDEF Entries

Edit and submit sample job EQQDDDEF to create DDDEF entries for the SMP/E target and distribution libraries for IBM Z Workload Scheduler. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.9 Perform SMP/E APPLY

1. Ensure that you have the latest HOLDDATA; then edit and submit sample job EQQAPPLE to perform an SMP/E APPLY CHECK for IBM Z Workload Scheduler. Consult the instructions in the sample job for more information.

   The latest HOLDDATA is available through several different portals, including http://service.software.ibm.com/holdata/390holddata.html. The latest HOLDDATA may identify HIPER and FIXCAT APARs for the FMIDs you will be installing. An APPLY CHECK will help you determine if any HIPER or FIXCAT APARs are applicable to the FMIDs you are installing. If there are any applicable HIPER or FIXCAT APARs, the APPLY CHECK will also identify fixing PTFs that will resolve the APARs, if a fixing PTF is available.

   You should install the FMIDs regardless of the status of unresolved HIPER or FIXCAT APARs. However, do not deploy the software until the unresolved HIPER and FIXCAT APARs have been analyzed to determine their applicability. That is, before deploying the software either ensure fixing PTFs are applied to resolve all HIPER or FIXCAT APARs, or ensure the problems reported by all HIPER or FIXCAT APARs are not applicable to your environment.

   To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the PRE, ID, REQ, and IFREQ on the APPLY CHECK. The SMP/E root cause analysis identifies the cause only of *errors* and not of *warnings* (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings, instead of errors).

   Here are sample APPLY commands:

   a. To ensure that all recommended and critical service is installed with the FMIDs, receive the latest HOLDDATA and use the APPLY CHECK command as follows

      ```
      APPLY S(fmid,fmid,...) CHECK
      FORFMID(fmid,fmid,...)
      SOURCEID(RSU*)
      FIXCAT(IBM.ProductInstall-RequiredService)
      GROUPEXTEND .
      ```

      Some HIPER APARs might not have fixing PTFs available yet. You should analyze the symptom flags for the unresolved HIPER APARs to determine if the reported problem is applicable to your environment and if you should bypass the specific ERROR HOLDs in order to continue the installation of the FMIDs.

      This method requires more initial research, but can provide resolution for all HIPERs that have fixing PTFs available and are not in a PE chain. Unresolved PEs or HIPERs might still exist and require the use of BYPASS.

   b. To install the FMIDs without regard for unresolved HIPER APARs, you can add the BYPASS(HOLDCLASS(HIPER)) operand to the APPLY CHECK command. This will allow you to install FMIDs even though one or more unresolved HIPER APARs exist. After the FMIDs are installed, use the SMP/E REPORT ERRSYSMODS command to identify unresolved HIPER APARs and any fixing PTFs.

```
APPLY S(fmid,fmid,...) CHECK
FORFMID(fmid,fmid,...)
SOURCEID(RSU*)
FIXCAT(IBM.ProductInstall-RequiredService)
GROUPEXTEND
BYPASS(HOLDCLASS(HIPER)) .
 ..any other parameters documented in the program directory
```

This method is quicker, but requires subsequent review of the Exception SYSMOD report produced by the REPORT ERRSYSMODS command to investigate any unresolved HIPERs. If you have received the latest HOLDDATA, you can also choose to use the REPORT MISSINGFIX command and specify Fix Category IBM.PRODUCTINSTALL-REQUIREDSERVICE to investigate missing recommended service.

If you bypass HOLDs during the installation of the FMIDs because fixing PTFs are not yet available, you can be notified when the fixing PTFs are available by using the APAR Status Tracking (AST) function of ServiceLink or the APAR Tracking function of ResourceLink.

2. After you take actions that are indicated by the APPLY CHECK, remove the CHECK operand and run the job again to perform the APPLY.

   Note: The GROUPEXTEND operand indicates that SMP/E applies all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

   Expected Return Codes and Messages from APPLY CHECK: You will receive a return code of 0 if this job runs correctly.

   Expected Return Codes and Messages from APPLY: You will receive a return code of 0 or 4 if this job runs correctly.

   The APPLY step may end with RC=04 depending on the service level of your Operating System. The binder may issue several warning messages like IEW2646W and IEW2651W, while SMP/E may issue messages GIM23903W or GIM23913W. This is normal and can be ignored

6.1.10 Perform SMP/E ACCEPT

Edit and submit sample job EQQACPTE to perform an SMP/E ACCEPT CHECK for IBM Z Workload Scheduler. Consult the instructions in the sample job for more information.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the PRE, ID, REQ, and IFREQ on the ACCEPT CHECK. The SMP/E root cause analysis identifies the cause of *errors* but not *warnings* (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings rather than errors).

Before you use SMP/E to load new distribution libraries, it is recommended that you set the ACCJCLIN indicator in the distribution zone. In this way, you can save the entries that are produced from JCLIN in the distribution zone whenever a SYSMOD that contains inline JCLIN is accepted. For more information about the ACCJCLIN indicator, see the description of inline JCLIN in the SMP/E Commands book for details.

After you take actions that are indicated by the ACCEPT CHECK, remove the CHECK operand and run the job again to perform the ACCEPT.

Note: The GROUPEXTEND operand indicates that SMP/E accepts all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

Expected Return Codes and Messages from ACCEPT CHECK: You will receive a return code of 0 if this job runs correctly.

If PTFs that contain replacement modules are accepted, SMP/E ACCEPT processing will link-edit or bind the modules into the distribution libraries. During this processing, the Linkage Editor or Binder might issue messages that indicate unresolved external references, which will result in a return code of 4 during the ACCEPT phase. You can ignore these messages, because the distribution libraries are not executable and the unresolved external references do not affect the executable system libraries.

Expected Return Codes and Messages from ACCEPT: You will receive a return code of 0 if this job runs correctly.

6.1.11 Run REPORT CROSSZONE

The SMP/E REPORT CROSSZONE command identifies requisites for products that are installed in separate zones. This command also creates APPLY and ACCEPT commands in the SMPPUNCH data set. You can use the APPLY and ACCEPT commands to install those cross-zone requisites that the SMP/E REPORT CROSSZONE command identifies.

After you install IBM Z Workload Scheduler, it is recommended that you run REPORT CROSSZONE against the new or updated target and distribution zones. REPORT CROSSZONE requires a global zone with ZONEINDEX entries that describe all the target and distribution libraries to be reported on.

For more information about REPORT CROSSZONE, see the SMP/E manuals.

6.2 Activating IBM Z Workload Scheduler

6.2.1 File System Execution

If you mount the file system in which you have installed IBM Z Workload Scheduler in read-only mode during execution, then you do not have to take further actions to activate IBM Z Workload Scheduler.

6.3 Product Customization

The publication *IBM Z Workload Scheduler: Planning and Installation* contains the necessary information to customize and use IBM Z Workload Scheduler.

7.0 Notices

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