IBM

Program Directory for

IBM Z Workload Scheduler

Version 9.5.0

Program Number 5698-T08

for Use with
z/OS

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Contents

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 10 identifies the resources and considerations that are required for installing and using IBM Z Workload Scheduler.

- 6.0, "Installation Instructions" on page 18 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:

    HWSZ950
    JWSZ952
    JWSZ95B
    JWSZ953

2.0 Program Materials

An IBM program is identified by a program number. The program number for IBM Z Workload Scheduler is 5698-T08.

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 18 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 Knowledge Center at https://www.ibm.com/support/knowledgecenter/en/SSRULV

Figure 1 (Page 1 of 2). Basic Material: Unlicensed Publications		
Publication Title	**Form Number**	**Media Format**
Memo to Users		In the product package.
Program Directory		In the product package.
Planning and Installation		IBM Knowledge Center.
Customization and Tuning		IBM Knowledge Center.
Managing the Workload		IBM Knowledge Center.
Scheduling End-to-end Fault-Tolerance Capabilities		IBM Knowledge Center.
Scheduling End-to-end with z-centric Capabilities		IBM Knowledge Center.

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

The IBM Z Workload Scheduler product manuals and other IBM product documentation can be found at the IBM Knowledge Center website https://www.ibm.com/support/knowledgecenter/en/SSRULV

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 http://wwww.ibm.com/support/.

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
TWSZOS950	HWSZ950	Agent
TWSZOS950	JWSZ952	Engine
TWSZOS950	JWSZ95B	Engine English

Figure 3 (Page 2 of 2). PSP Upgrade and Subset ID		
UPGRADE	**SUBSET**	**Description**
TWSZOS950	JWSZ953	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**
HWSZ950	5697WSZ01	Agent	950
JWSZ952	5697WSZ01	Engine	952
JWSZ95B	5697WSZ01	Engine English	95B
JWSZ953	5697WSZ01	End-to-End and Java Enablers	953

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 HWSZ950

PI79321	PI89088	PI98835
PI79679	PI93525	PI99511
PI79886	PI93526	PI99683
PI80105	PI94300	PH00586
PI82373	PI95141	PH01519
PI84298	PI96399	PH01693
PI85993	PI98004	PH01845
PI87513	PI98241	PH04921
PI88339	PI98368	

- FMID JWSZ952

PI49668	PI44307	PI48133
PI27903	PI44485	PI48138
PI28989	PI44759	PI48298
PI31475	PI45335	PI49789
PI37926	PI45443	PI51276
PI38246	PI45615	PI52219
PI40040	PI45919	PI52226
PI40945	PI45980	PI52399
PI41253	PI46848	PI52530
PI41358	PI46850	PI53352
PI41538	PI46931	PI53794
PI42098	PI47333	PI53976
PI42640	PI47506	PI54379
PI42759	PI47702	PI54662
PI43008	PI47790	PI54994
PI43227	PI47914	PI55070
PI43412	PI48075	PI55326

PI55399	PI69363	PI82890
PI55640	PI69695	PI83224
PI55902	PI70568	PI83242
PI55991	PI71045	PI83411
PI56563	PI71917	PI83881
PI56564	PI72266	PI83962
PI56945	PI73153	PI84298
PI57149	PI73571	PI84737
PI57310	PI73844	PI84914
PI57531	PI73960	PI85047
PI58693	PI74181	PI85048
PI58889	PI74334	PI85223
PI59300	PI74544	PI85254
PI59680	PI74940	PI85368
PI59726	PI74979	PI85626
PI60108	PI74982	PI85651
PI60152	PI75821	PI85812
PI60481	PI75824	PI86233
PI60537	PI75825	PI87103
PI60952	PI76896	PI87113
PI61504	PI77422	PI88217
PI62016	PI77482	PI88466
PI62105	PI77527	PI88571
PI62211	PI77825	PI88653
PI62520	PI77870	PI89088
PI62521	PI78027	PI89942
PI62540	PI78029	PI90059
PI62684	PI78142	PI90166
PI62781	PI78469	PI90278
PI62823	PI78683	PI90677
PI62901	PI78919	PI91425
PI63004	PI79175	PI91458
PI63396	PI79233	PI92133
PI63604	PI79237	PI92865
PI64047	PI79321	PI93457
PI64155	PI79337	PI93525
PI65300	PI80105	PI93526
PI65538	PI81094	PI93835
PI65692	PI81136	PI94155
PI66393	PI81194	PI94300
PI66395	PI81820	PI94787
PI67654	PI82352	PI95644
PI68584	PI82353	PI96242
PI69191	PI82373	PI96722
PI69216	PI82562	PI96778
		PI96940

PI97807	PI98960	PH01149
PI98004	PI99026	PH01229
PI98094	PI99158	PH01519
PI98175	PI99511	PH01790
PI98241	PI99683	PH01845
PI98368	PI99683	PH02407
PI98502	PH00300	PH04504
PI98835	PH00586	PH04831
		PH04921

- FMID JWSZ95B

PI68514	PI56564	PI70985
PI42640	PI57310	PI74544
PI45443	PI58953	PI75972
PI47790	PI62520	PI79321
PI48493	PI62521	PI79949
PI54486	PI66395	

- FMID JWSZ953

PI41253	PI74899	PI88198
PI54994	PI75425	PH04284

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	V02.02.00 or higher	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	V02.02.00 or higher	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. 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 Workload Scheduler REST APIs to the Zowe API Mediation Layer.
Note: For detailed information on ZOWE usage, see the documentation on Knowledge Center at the following link: https://www.ibm.com/support/knowledgecenter/SSRULV_9.5.0/ com.ibm.tivoli.itws.doc_9.5/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.

Library Type	Total Space Required in 3390 Trks	Description
Figure 8. Total DASD Space Required by IBM Z Workload Scheduler		
Target	4806	
Distribution	5709	
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 21.

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.

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	1400	160
SEQQMISC	DATA	ANY	U	PDS	FB	80	400	100
SEQQCLIB	CLIST	ANY	U	PDS	FB	80	30	2
SEQQDATA	DATA	ANY	U	PDS	VB	6156	3	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	3	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 9. Storage Requirements for IBM Z Workload Scheduler Target Libraries

DDNAME	TYPE	Path Name
SEQQ0001	N	/usr/lpp/TWS/V9R5M0/bin/IBM
SEQQ0002	N	/usr/lpp/TWS/V9R5M0/catalog/C/IBM
SEQQ0003	N	/usr/lpp/TWS/V9R5M0/codeset/IBM
SEQQ0004	N	/usr/lpp/TWS/V9R5M0/config/IBM
SEQQ0005	N	/usr/lpp/TWS/V9R5M0/zoneinfo/IBM
SEQQ0006	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Africa/IBM
SEQQ0007	N	/usr/lpp/TWS/V9R5M0/zoneinfo/America/IBM

Figure 10 (Page 1 of 2). IBM Z Workload Scheduler File System Paths

DDNAME	TYPE	Path Name
Figure 10 (Page 2 of 2). IBM Z Workload Scheduler File System Paths		
SEQQ0008	N	/usr/lpp/TWS/V9R5M0/zoneinfo/America/Argentina/IBM
SEQQ0009	N	/usr/lpp/TWS/V9R5M0/zoneinfo/America/Indiana/IBM
SEQQ0010	N	/usr/lpp/TWS/V9R5M0/zoneinfo/America/Kentucky/IBM
SEQQ0011	N	/usr/lpp/TWS/V9R5M0/zoneinfo/America/North_Dakota/IBM
SEQQ0012	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Antarctica/IBM
SEQQ0013	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Arctic/IBM
SEQQ0014	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Asia/IBM
SEQQ0015	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Atlantic/IBM
SEQQ0016	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Australia/IBM
SEQQ0017	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Brazil/IBM
SEQQ0018	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Canada/IBM
SEQQ0019	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Chile/IBM
SEQQ0020	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Etc/IBM
SEQQ0021	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Europe/IBM
SEQQ0022	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Indian/IBM
SEQQ0023	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Mexico/IBM
SEQQ0024	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Mideast/IBM
SEQQ0025	N	/usr/lpp/TWS/V9R5M0/zoneinfo/Pacific/IBM
SEQQ0026	N	/usr/lpp/TWS/V9R5M0/zoneinfo/US/IBM
SEQQ0028	N	/usr/lpp/TWS/V9R5M0/apps/applicationJobPlugins/IBM
SEQQ0029	N	/usr/lpp/TWS/V9R5M0/apps/IBM
SEQQ0030	N	/usr/lpp/TWS/V9R5M0/scripts/IBM
SEQQ0031	N	/usr/lpp/TWS/V9R5M0/IBM

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
Figure 11 (Page 1 of 2). Storage Requirements for IBM Z Workload Scheduler Distribution Libraries						
AEQQLMD0	U	PDS	U	0	2300	500

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
Figure 11 (Page 2 of 2). Storage Requirements for IBM Z Workload Scheduler Distribution Libraries						
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.HWSZ950.F3
EQQALLOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HWSZ950.F3
EQQISMKD	MKDIR	Sample job to invoke the supplied EQQMKDIR EXEC to allocate file system paths	IBM.HWSZ950.F3
EQQDDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HWSZ950.F3
EQQAPPLE	APPLY	Sample APPLY job	IBM.HWSZ950.F3
EQQACPTE	ACCEPT	Sample ACCEPT job	IBM.HWSZ950.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 20) 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.HWSZ950.F3,UNIT=tunit,
//         VOL=SER=volser,LABEL=(x,SL),
//         DISP=(OLD,KEEP)
//FILEIN   DD DSN=IBM.HWSZ950.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.HWSZ950.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 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: Planing and Installation* contains the necessary information to customize and use IBM Z Workload Scheduler.

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