



Program Directory for AI System Service for IBM z/OS

01.01.00

Program Number 5655-164

FMID HAQN310 and HHBO510

for Use with
z/OS 3.1 or higher

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Note

Before using this information and the product it supports, be sure to read the general information under 7.0, “Notices” on page 25.

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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 AI System Service for IBM z/OS. This publication refers to AI System Service for IBM z/OS as AISS, IBM Watson Machine Learning for z/OS Core Edition as Watson Machine Learning Core and IBM Z Common Data Provider as ZCDP.

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 3 identifies the basic program materials and documentation for AISS.
- 3.0, “Program Support” on page 5 describes the IBM support available for AISS.
- 4.0, “Program and Service Level Information” on page 7 lists the APARs (program level) and PTFs (service level) that have been incorporated into AISS.
- 5.0, “Installation Requirements and Considerations” on page 8 identifies the resources and considerations that are required for installing and using AISS.
- 6.0, “Installation Instructions” on page 17 provides detailed installation instructions for AISS. It also describes the procedures for activating the functions of AISS, or refers to appropriate publications.

Before installing AISS, 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.

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

Do not use this program directory if you install AISS 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 AISS Description

AI System Service for IBM z/OS delivers foundational AI capabilities and represents one of the key components of the AI Framework for IBM z/OS that is intended to support AI infusion into z/OS. This solution provides IT data ingestion and filtering capabilities to allow the collection of data for training and inferences purposes. Furthermore, it delivers AI model server capabilities that support the AI model lifecycle, including AI model training, deployment, inference, monitoring, and retaining. The combination and integration of AI System Services for IBM z/OS with the rest of the AI Framework for IBM z/OS components that are delivered within z/OS 3.1 enable you to put prebuild AI models into operation. Based

on those capabilities, system programmers can leverage prebuilt and operationalized AI models for use cases that are geared towards helping to simplify the management of z/OS and its offerings by augmenting them with AI to help:

- Reduce skill requirements
- Optimize IT processes
- Improve performance

AI System Service for IBM z/OS enables the setup and use of AI-infused capabilities into z/OS base components, starting with the initial use case: AI-powered WLM batch initiator management.

AI System Service for IBM z/OS represents an important set of capabilities that are part of the AI Framework for IBM z/OS. The AI Framework for IBM z/OS, including AI System Service for IBM z/OS, is a new AI platform introduced with z/OS 3.1 that is designed to seamlessly integrate a set of components to enable the operationalization and usage of AI-infused capabilities into z/OS based components. It is intended to offer a seamless and simplified installation, setup, and management experience of the AI-infused capabilities without requiring additional data science or AI skills. It is designed to pave the way for AI use case providers that can harness the foundational AI capabilities to address AI model operationalization requirements, simplify the process to put future AI use cases to work, and accelerate time to market.

IBM Watson Machine Learning for z/OS Core Edition 3.1 is a lightweight set of REST-API based core AI services that includes online scoring, making it easy for applications running on z/OS to leverage AI System Service for IBM z/OS as their AI engine as part of their solution. AISS helps deliver key AI products for increased decision velocity and operational excellence.

Some of the key features of AISS include the following:

- APIs for user management, model management, and deployment services
- Can natviely leverage newer machine learning libraries for time series models.
- SparkML runtime
- Spark and PMML scoring services

Description information for ZCDP can be found in the Program Directory, 5698-LDA, GI13-5932.

1.2 AISS FMIDs

AISS consists of the following FMIDs:

- HAQN310
- HHBO510

2.0 Program Materials

An IBM program is identified by a program number. The program number for AISS is 5655-164.

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 AISS. 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 AISS in the *CBPDO Memo To Users Extension*.

Figure 1 describes the program file content for AISS. You can refer to the *CBPDO Memo To Users Extension* to see where the files reside on the image.

Notes:

1. The data set attributes in this table must be used in the JCL of jobs that read the data sets. However, because the data sets are in IEBCOPY unloaded format, their actual attributes might be different.
2. If any RELFILES are identified as PDSEs, ensure that SMPTLIB data sets are allocated as PDSEs.

Figure 1. Program File Content				
Name	ORG	RECFM	RECL	BLK SIZE
SMPMCS	SEQ	FB	80	8
IBM.HAQN310.F1	PDS	FB	80	8800
IBM.HAQN310.F2	PDS	VB	255	6144
IBM.HAQN310.F3	PDS	VB	255	6144
IBM.HAQN310.F4	PDS	VB	255	6144
IBM.HAQN310.F5	PDS	VB	255	6144
Note: Machine readable materials for ZCDP can be found in the Program Directory, 5698-LDA, GI13-5932.				

2.2 Program Publications

The following sections identify the basic publications for AISS.

Figure 2 on page 4 identifies the basic licensed program publications for AISS.

<i>Figure 2. Basic Material: Licensed Publications</i>		
Publication Title	Form Number	Media Format
AI System Service for IBM z/OS License Information	GI13-5665	CD image
IBM Watson Machine Learning for z/OS Core Edition License Information	LC28-3283	CD image
Note: License information for ZCDP can be found in the Program Directory, 5698-LDA, GI13-5932.		

2.2.1 Optional Program Publications

No optional publications are provided for AISS.

2.3 Program Source Materials

No program source materials or viewable program listings are provided for AISS.

2.4 Publications Useful During Installation

You might want to use the publications listed in Figure 3 during the installation of AISS.

<i>Figure 3. Publications Useful During Installation</i>	
Publication Title	Form Number
<i>IBM SMP/E for z/OS User's Guide</i>	SA23-2277
<i>IBM SMP/E for z/OS Commands</i>	SA23-2275
<i>IBM SMP/E for z/OS Reference</i>	SA23-2276
<i>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</i>	GA32-0883

Note: These publications can be found in IBM Documentation. Use a web browser with internet access to refer to: <https://www.ibm.com/docs/en/zos/2.5.0?topic=zos-smpe>

3.0 Program Support

This section describes the IBM support available for AISS.

3.1 Program Services

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

3.2 Preventive Service Planning

Before you install AISS, 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 AISS as part of a CBPDO, HOLDDATA is included.

If the CBPDO for AISS 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:

<https://esupport.ibm.com/customercare/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/>.

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 AISS are included in Figure 4.

<i>Figure 4. PSP Upgrade and Subset ID</i>		
UPGRADE	SUBSET	Description
5698WMC	HAQN310	Watson Machine Learning for z/OS Core Edition
ZCDP	HHBO510	Z Common Data Provider

Figure 5. Component IDs

FMID	COMPID	Component Name	RETAIN Release
HAQN310	5698ML100	Watson Machine Learning for z/OS	310
HHBO510	5698ABJ00	Z Common Data Provider - Base 5.1.0	510

4.0 Program and Service Level Information

This section identifies the program and relevant service levels of AISS. 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

No APARs have been incorporated into AISS.

4.2 Service Level Information

No PTFs against this release of AISS have been incorporated into this Product Package.

Frequently check the AISS 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 AISS. 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 AISS.

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 6. 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 higher	N/A	No
Note: Driving System requirements for ZCDP can be found in the Program Directory, 5698-LDA, GI13-5932.				

Note: SMP/E is a requirement for Installation and is an element of z/OS.

Note: Installation might require migration to new z/OS releases to be service supported. See <https://www.ibm.com/support/lifecycle/>

AISS invokes UNIX shell scripts during installation. These shell scripts require the following:

- Be connected to a group that has a GID with read access or higher to the following:
 - BPX.FILEATTR.APF resource in the FACILITY class
 - BPX.FILEATTR.PROGCTL resource in the FACILITY class
- Have WRITE access to the /usr/lpp/IBM/aln/v3r1/core/IBM path

AISS is installed into a zFS file system. Before installing AISS, you must ensure that the target system file system data sets are available for processing on the driving system. OMVS must be active on the driving system and the target system file data sets must be mounted on the driving system.

If you plan to install AISS in a zFS file system, this requires that zFS be active on the driving system. Information on activating and using zFS can be found in z/OS Distributed File Service zSeries File System Administration, SC24-5989.

5.2 Target System Requirements

This section describes the environment of the target system required to install and use AISS.

AISS install in the z/OS (Z038) SREL.

5.2.1 Machine Requirements

AI System Service for IBM z/OS 3.1 requires one of the following IBM Z systems:

- z16, z15, or z14

Make sure that the system where your AISS runs is configured with the required capacity.

Figure 7. Target System Minimum Capacity for CORE

Number of LPARs	CPUs per LPAR/Server	Memory (GB) per LPAR/Server	DASD/DISK space (GB) per LPAR/Server
1	1 GCP/4 zIIPs	100 GB	50 GB

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 8. Target System Mandatory Installation Requisites

Program Number	Product Name	Minimum VRM	Minimum Service Level will satisfy these APARs	Included in the shipped product?
5655-ZOS	z/OS	03.01.00 or higher	N/A	No

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.

AISS 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.

Figure 9 (Page 1 of 2). Target System Mandatory Operational Requisites base z/OS

Program Number	Product Name and Minimum VRM/Service Level
5655-DGH	IBM 64-bit SDK for z/OS, Java Technology Edition, V8, SR7 or Version 11 or later

Figure 9 (Page 2 of 2). Target System Mandatory Operational Requisites base z/OS

Program Number	Product Name and Minimum VRM/Service Level
And any one of the following, ONLY if you choose Db2 for z/OS as the repository metadata database (also see table note):	
5650-DB2	IBM Db2 12 for z/OS
5770-AF3	IBM Db2 12 for z/OS Value Unit Edition
5698-DB2	IBM Db2 13 for z/OS
5698-DBV	IBM Db2 13 for z/OS Value Unit Edition
Note: <ul style="list-style-type: none"> z/OS UNIX System Services configured, see z/OS UNIX Service Planning, to ensure that your z/OS UNIX environment is properly configured and customized. <ul style="list-style-type: none"> Recommend to access z/OS UNIX shell environment via z/OS OpenSSH. See z/OS OpenSSH for instructions. For high availability configuration, it is required to choose and use Db2 for z/OS as the repository metadata. IBM WebSphere application Server for z/OS Liberty is a feature of z/OS. Version 22.0.0.9 or later is required. 	
Note: Target System Mandatory Operational Requisites for ZCDP can be found in Program Directory, 5698-LDA, GI13-5932.	

Note: Installation might require migration to new releases to obtain support. See <https://www.ibm.com/support/lifecycle/>

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.

AISS has no conditional operational requisites.

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.

AISS 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.

AISS has no negative requisites.

5.2.3 DASD Storage Requirements

AISS libraries can reside on all supported DASD types.

Figure 10 on page 12 lists the total space that is required for each type of library.

<i>Figure 10. Total DASD Space Required by AISS</i>		
Library Type	Total Space Required in 3390 Trks	Description
Target	8 tracks	
Distribution	26000 tracks	
File System(s)	55000 tracks	
Note: DASD Storage Requirements for ZCDP can be found in Program Directory, 5698-LDA, GI13-5932.		

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 6.1.5, "Allocate SMP/E Target and Distribution Libraries" on page 19.

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 data set should be placed in the LPA, see the Special Considerations section below.
- These data sets can be in the LNKST. If so, see the Special Considerations section below.
- These data sets are not required to be APF-authorized, with some exceptions. If the data set must be APF-authorized, see the Special Considerations section below.

Figure 11. Storage Requirements for SMP/E Work Data Sets

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
SMPWRK1	S	PDS	FB	80	37500	10
SMPWRK2	S	PDS	FB	80	37500	10
SMPWRK3	S	PDS	FB	80	37500	10
SMPWRK4	S	PDS	FB	80	37500	10
SMPWRK6	S	PDS	FB	80	37500	10
SMPLTS	S	PDSE	U	0	120	150
SYSUT1	U	SEQ	--	--	37500	0
SYSUT2	U	SEQ	--	--	37500	0
SYSUT3	U	SEQ	--	--	37500	0
SYSUT4	U	SEQ	--	--	37500	0

Note: If using SMPWKDIR DD statement in the RECEIVE job, start with 10,000 cylinders. If not using SMPWKDIR DD statement in the RECEIVE job, the RECEIVE job uses the system /tmp directory by default. Make sure there is enough space in /tmp directory.

The following table provides an estimate of the storage needed in the SMP/E data sets for AISS. You must add the estimates to those of any other programs and service that you install to determine the total additional storage requirements.

<i>Figure 12. Storage Requirements for SMP/E Data Sets</i>							
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	
SMPMTS	S	PDS	FB	80	135	60	
SMPPTS (see Note below)	S	PDS	FB	80	45000	50	
SMPPTS1	S	PDS	FB	80	45000	50	
SMPSCDS	S	PDS	FB	80	150	300	
SMPSTS	S	PDS	FB	80	150	150	

Note: After installing AISS, it is recommended that you ensure you have at least two SMPPTS datasets of 45000 tracks each, before applying any PTFs.

The following figures describe the target and distribution libraries and file system paths required to install AISS. The storage requirements of AISS 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.

<i>Figure 13. Storage Requirements for AISS Target Libraries</i>								
Library DDNAME	Member Type	Target Volume	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
SALNBASE	Sample	ANY	U	PDS	FB	80	7	3
Note: Storage Requirements for ZCDP Target Libraries can be found in Program Directory, 5698-LDA, GI13-5932.								

Figure 14. AISS File System Paths

DDNAME	T Y P E	Path Name
SALNZFS	X	/usr/lpp/IBM/aln/v3r1/core/IBM
Note: File System requirements for ZCDP can be found in Program Directory, 5698-LDA, GI13-5932, GI13-5932.		

Figure 15. Storage Requirements for AISS Distribution Libraries

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
AALNBASE	U	PDS	FB	80	7	3
AALNZFS	U	PDSE	VB	32630	5000	N/A
AALNZFS2	U	PDSE	VB	32630	7000	N/A
AALNZFS3	U	PDSE	VB	32630	6700	N/A
AALNZFS4	U	PDSE	VB	32630	8000	N/A
Note: Storage Requirements for ZCDP Distribution Libries can be found in Program Directory, 5698-LDA, GI13-5932.						

5.3 FMIDs Deleted

Installing AISS 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 AISS 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

Getting AISS up and running involves a sequence of tasks that might be best performed by people in different roles. Close collaboration and staying on track are key to the success of completing these tasks. Consider creating a high level action plan or using the IBM WMLz roadmap in the online IBM Documentation to manage, coordinate, and track all major planning, installation, and configuration activities.

AISS includes several executable programs which are installed into the Unix System Services (USS) path. Some of these programs require that USS file extended attributes be set so that they can properly execute under APF-authorized, program control, or shared library environments.

Upon the successful installation of AISS, add the product enablement policy using the IFAPRDxx PARMLIB member. Add the following product information to the policy, and activate it to take effect:

```
PRODUCT OWNER('IBM CORP')
NAME('WMLZ')
ID('5698-WMC')
VERSION(03) RELEASE(01) MOD(*)
FEATURENAME('WMLZ CORE')
STATE(ENABLED)
```

Note: Special Considerations for ZCDP can be found in Program Directory, 5698-LDA, G113-5932.

6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of AISS.

Please note the following points:

- If you want to install AISS into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMP/CSI 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 AISS

6.1.1 SMP/E Considerations for Installing AISS

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of AISS.

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 16. 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.

<i>Figure 16. SMP/E Options Subentry Values</i>		
Subentry	Value	Comment
DSSPACE	500,500,500	3390 Tracks
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

6.1.3 Sample Jobs

Sample JCL Jobs are provided as part of the product materials to help you install AISS. Customers need to be aware that these JCL Job are samples and do not excute on their own. Customization is required before any of these samples execute correctly. Ensure each sample PROLOG and commentary areas are read, understood and modified (as needed) before executing any of these samples.

Figure 17. Sample Installation Jobs

Job Name	Job Type	Description	SMPTLIB Data Set
ALNALA	CSI Allocation	Optional sample to allocate a new SMP/E CSI	IBM.HAQN310.F1
ALNALB	SMP/E dataset Allocation	Optional sample to allocate datasets needed by SMP/E itself	IBM.HAQN310.F1
ALNRECEV	RECEIVE	Optional sample RECEIVE job	IBM.HAQN310.F1
ALNALLOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HAQN310.F1
ALNZFS	ALLOMZFS	Sample job to allocate, create mountpoint, & mount zFS data sets	IBM.HAQN310.F1
ALNISMKD	MKDIR	Sample job to invoke the supplied ALNMKDIR EXEC to allocate file system paths	IBM.HAQN310.F1
ALNDDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HAQN310.F1
ALNAPPLY	APPLY	Sample APPLY job	IBM.HAQN310.F1
ALNACCEP	ACCEPT	Sample ACCEPT job	IBM.HAQN310.F1
Note: Sample Installation JCL Jobs for ZCDP can be found in Program Directory, 5698-LDA, GI13-5932.			

You can access the sample installation jobs by performing an SMP/E RECEIVE (refer to 6.1.4, “Perform SMP/E RECEIVE” on page 19) then copy the jobs from the SMPTLIB data sets to a work data set for editing and submission. See Figure 17 on page 17 to find the appropriate data set.

You can also copy the sample installation jobs from the product files by submitting the following job. 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=*
//IN DD DSN=IBM.HAQN310.F1,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=IN,OUTDD=OUT
/*
```

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

IN:

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.

Note: Example JCL for unloading the installation samples for ZCDP can be found in Program Directory, 5698-LDA, GI13-5932.

6.1.4 Perform SMP/E RECEIVE

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

If you are using an SMPWKDIR DD statement in the RECEIVE job, start with 10,000 cylinders. If you are not using SMPWKDIR DD statement in the RECEIVE job, the RECEIVE job uses the system /tmp directory by default. Make sure there is enough space in /tmp directory.

You can also choose to edit and submit sample job ALNRECEV to perform the SMP/E RECEIVE for AISS. 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.

Note: Example JCL for the SMP/E RECEIVE for ZCDP can be found in Program Directory, 5698-LDA, GI13-5932.

6.1.5 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job ALNALLOC to allocate the SMP/E target and distribution libraries for AISS. 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.

Note: Example JCL for the allocating data sets for ZCDP can be found in Program Directory, 5698-LDA, GI13-5932.

6.1.6 Allocate, create and mount ZFS Files (Optional)

This job allocates, creates a mountpoint, and mounts zFS data sets.

If you plan to install AISS into a new z/OS UNIX file system, you can edit and submit the optional ALNZFS job to perform the following tasks:

- Create the z/OS UNIX file system
- Create a mountpoint
- Mount the z/OS UNIX file system on the mountpoint

Consult the instructions in the sample job for more information.

Before running the sample job to create the z/OS UNIX file system, you must ensure that OMVS is active on the driving system. zFS must be active on the driving system if you are installing AISS into a file system that is zFS.

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.

```
MOUNT FILESYSTEM('#dsn')
MOUNTPPOINT('&mntpnt1.')
MODE(RDWR)          /* can be MODE(READ) */
TYPE(ZFS) PARM('AGGRGROW') /* zFS, with extents */
```

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

#dsn is the name of the data set holding the z/OS UNIX file system.

&mntpnt1. is the name of the mountpoint where the z/OS UNIX file system will be mounted.

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

Note: Example JCL for allocating a ZCDP zFS data set, create a mountpoint, and mounting the zFS data set can be found in the ZCDP Program Directory, 5698-LDA, GI13-5932.

6.1.7 Allocate File System Paths

The target system zFS data set must be mounted on the driving system when running the sample ALNISMKD job since the job will create paths in the 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 zFS file system is mounted to the driving system. zFS must be active on the driving system if you are installing AISS into a file system that is zFS.

If you plan to install AISS into a new zFS file system, you must create the mountpoint and mount the new file system to the driving system for AISS.

The recommended mountpoint is */usr/lpp/IBM/aln/v3r1*

Edit and submit sample job ALNZFS to allocate the zFS paths for AISS. 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.

Note: Example JCL and REXX for allocating ZCDP file system paths can be found in the ZCDP Program Directory, 5698-LDA, GI13-5932.

6.1.8 Create DDDEF Entries

Edit and submit sample job ALNDDDEF to create DDDEF entries for the SMP/E target and distribution libraries for AISS. 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.

Note: DDDEF example JCL for ZCDP can be found in Program Directory, 5698-LDA, G113-5932.

6.1.9 Perform SMP/E APPLY

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

Perform an SMP/E APPLY CHECK for AISS.

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 if this job runs correctly.

Note: Information for the SMP/E APPLY of ZCDP can be found in Program Directory, 5698-LDA, GI13-5932.

6.1.10 Perform SMP/E ACCEPT

Edit and submit sample job ALNACCEP to perform an SMP/E ACCEPT CHECK for AISS. Consult the instructions in the sample job for more information.

Perform an SMP/E ACCEPT CHECK for AISS.

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.

Note: Information for the SMP/E ACCEPT of ZCDP can be found in Program Directory, 5698-LDA, GI13-5932.

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 AISS, 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.

6.1.12 Cleaning Up Obsolete Data Sets, Paths, and DDDEFs

The following file system paths, which were created and used by previous releases of this product, are no longer used in this release. You can delete these obsolete file system paths after you delete the previous release from your system.

- /usr/lpp/IBM/aln/v2r1m0/IBM
- /usr/lpp/IBM/aln/v2r1ma/IBM

6.2 Activating AISS

File systems may be mounted in Read/Write mode for programs Watson Machine Learning Core and ZCDP. Mount these file systems in READ only mode.

6.3 Product Customization

Specific customization information can be found at URL:

https://www.ibm.com/docs/en/SSLTBW_3.1.0/pdf/izsa100_v3r1.pdf

Refer to Chapter 4 - Configuring the z/OS AI Framework. Relevant area of interest are:

- The data collection engine (CDP)
- The AI model server (WMLz)

The Watson Machine Learning welcome page in online IBM Documentation provides the necessary information to customize and use Watson Machine Learning Core.

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APAR numbers are provided in this document to assist in locating PTFs that may be required. Ongoing problem reporting may result in additional APARs being created. Therefore, the APAR lists in this document may not be complete. To obtain current service recommendations and to identify current product service requirements, always contact the IBM Customer Support Center or use S/390 SoftwareXcel to obtain the current "PSP Bucket".

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