IBM

Program Directory for

IBM MQ for z/OS

Continuous Delivery

V9.0.2

Program Number 5655-MQ9

FMID HMS9010

for Use with
z/OS

(V9 Continuous Delivery Release refreshed with PTFs for V9.0.2 functionality)

Document Date: April 2017

> **Note**
>
> Before using this information and the product it supports, be sure to read the general information under Appendix D, "Notices" on page 63.

Contents

Figures

1.0 Introduction

IBM MQ for z/OS Version V9.0 has two types of release; a Long Term Support Release (LTSR) and a Continuous Delivery (CD) release. The differences between these two are documented in detail at http://www.ibm.com/support/knowledgecenter/en/SSFKSJ_9.0.0/com.ibm.mq.pla.doc/q004715_.htm. This program directory describes installation of the FMIDs associated with the Continuous Delivery release.

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 MQ for z/OS. This publication refers to IBM MQ for z/OS as IBM MQ for z/OS.

The Program Directory contains the following sections:

- 2.0, "Program Materials" on page 3 identifies the basic program materials and documentation for IBM MQ for z/OS.

- 3.0, "Program Support" on page 9 describes the IBM support available for IBM MQ for z/OS.

- 4.0, "Program and Service Level Information" on page 11 lists the APARs (program level) and PTFs (service level) that have been incorporated into IBM MQ for z/OS.

- 5.0, "Installation Requirements and Considerations" on page 13 identifies the resources and considerations that are required for installing and using IBM MQ for z/OS.

- 6.0, "Installation Instructions" on page 25 provides detailed installation instructions for IBM MQ for z/OS. It also describes the procedures for activating the functions of IBM MQ for z/OS, or refers to appropriate publications.

- Appendix A, "Customizing the sample installation manually" on page 55 describes what you must do if you wish to customize the sample installation jobs manually.

- Appendix B, "Enabling automatic relinking after service is applied" on page 57 describes how to use an SMP/E option to perform automatic cross-zone link-editing after service has been applied.

- Appendix C, "SMP/E Migration considerations" on page 59 describes what you must do when migrating from an earlier release of IBM MQ for z/OS.

Before installing IBM MQ for z/OS, 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; then keep them for future reference. Section 3.2, "Preventive Service Planning" on page 9 tells you how to find any updates to the information and procedures in this program directory.

IBM MQ for z/OS 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 MQ for z/OS are included on the CBPDO tape.

Do not use this program directory if you install IBM MQ for z/OS 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 MQ for z/OS Description

IBM MQ for z/OS enables z/OS applications to use message queuing to participate in message-driven processing. With message-driven processing, applications can communicate across different platforms by using the appropriate MQ products. All MQ products implement a common application programming interface whatever platform the applications run on. The calls made by the applications and the messages they exchange are common.

1.2 IBM MQ for z/OS FMIDs

IBM MQ for z/OS consists of the following FMIDs:

    HMS9010
    JMS9011
    JMS9012
    JMS9013
    JMS9014
    JMS9015
    JMS9016
    JMS9018

2.0 Program Materials

An IBM program is identified by a program number. The program number for IBM MQ for z/OS is 5655-MQ9.

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 MQ for z/OS. 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 25 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 MQ for z/OS in the *CBPDO Memo To Users Extension*.

Figure 1 describes the physical tape.

> ┌─── **NOTE** ───
> If IBM MQ for z/OS was shipped to you in a CBPDO, you need to refer to the CBPDO Memo To Users Extension for the physical tape layout of the basic machine-readable materials.

Figure 2 on page 4 describes the file content.

Notes:

 1. The data set attributes in these tables should be used in the JCL of jobs reading the data sets, but since the data sets are in IEBCOPY unloaded format, their actual attributes may be different.

 2. If any RELFILEs are identified as PDSEs, ensure that SMPTLIB data sets are allocated as PDSEs.

Figure 1. Basic Material: Program Tape			
Medium	**Physical Volume**	**External Label**	**VOLSER**
3590 cart.	1	IBM MQ for z/OS Base	MS9010

Figure 2 on page 4 describes the program file content for IBM MQ for z/OS. You can refer to the *CBPDO Memo To Users Extension* to see where the files reside on the tape.

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.

Name	ORG	RECFM	LRECL	BLK SIZE
Figure 2 (Page 1 of 2). Program File Content				
SMPMCS	SEQ	FB	80	3120
IBM.HMS9010.F1	PDSE	FB	80	27920
IBM.HMS9010.F2	PDSE	FB	80	8800
IBM.HMS9010.F3	PDSE	FB	80	8800
IBM.HMS9010.F4	PDSE	FB	80	8800
IBM.HMS9010.F5	PDSE	FB	80	8800
IBM.HMS9010.F6	PDSE	FB	80	8800
IBM.HMS9010.F7	PDSE	FB	80	8800
IBM.HMS9010.F8	PDSE	FB	80	8800
IBM.HMS9010.F9	PDSE	U	0	6144
IBM.HMS9010.F10	PDSE	FB	80	8800
IBM.JMS9011.F1	PDSE	FB	80	27920
IBM.JMS9011.F2	PDSE	U	0	6144
IBM.JMS9011.F3	PDSE	FB	80	8800
IBM.JMS9011.F4	PDSE	FB	80	8800
IBM.JMS9011.F5	PDSE	FB	80	8800
IBM.JMS9012.F1	PDSE	FB	80	27920
IBM.JMS9012.F2	PDSE	U	0	6144
IBM.JMS9012.F3	PDSE	FB	80	8800
IBM.JMS9012.F4	PDSE	FB	80	8800
IBM.JMS9012.F5	PDSE	FB	80	8800
IBM.JMS9013.F1	PDSE	FB	80	27920
IBM.JMS9013.F2	PDSE	U	0	6144
IBM.JMS9013.F3	PDSE	FB	80	8800
IBM.JMS9013.F4	PDSE	FB	80	8800

Name		O R G	R E C F M	L R E C L	BLK SIZE
Figure 2 (Page 2 of 2). Program File Content					
IBM.JMS9013.F5		PDSE	FB	80	8800
IBM.JMS9014.F1		PDSE	FB	80	27920
IBM.JMS9014.F2		PDSE	U	0	6144
IBM.JMS9014.F3		PDSE	FB	80	8800
IBM.JMS9014.F4		PDSE	FB	80	8800
IBM.JMS9014.F5		PDSE	FB	80	8800
IBM.JMS9015.F1		PDSE	FB	80	27920
IBM.JMS9015.F2		PDSE	U	0	6144
IBM.JMS9015.F3		PDSE	FB	80	8800
IBM.JMS9015.F4		PDSE	FB	80	8800
IBM.JMS9015.F5		PDSE	FB	80	8800
IBM.JMS9016.F1		PDSE	VB	130	27998
IBM.JMS9016.F2		PDSE	VB	32000	32004
IBM.JMS9018.F1		PDSE	VB	130	27998
IBM.JMS9018.F2		PDSE	VB	32000	32004

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for IBM MQ for z/OS.

2.3 Program Publications

The following sections identify the basic publications for IBM MQ for z/OS.

Figure 3 identifies the basic unlicensed publications for IBM MQ for z/OS. Those that are in softcopy format publications can be obtained from the IBM Publications Center website at http://www.ibm.com/shop/publications/order/.

Figure 3. Basic Material: Unlicensed Publications		
Publication Title	**Form Number**	**Media Format**
IBM MQ for z/OS V9.0.2 Licensed Program Specifications	GC34-7464	DVD-ROM
IBM MQ for z/OS V9.0.2 Program Directory	GI13-3391	IBM Publications Center

2.3.1 Optional Program Publications

No optional publications are provided for IBM MQ for z/OS.

2.4 Program Source Materials

No program source materials or viewable program listings are provided for IBM MQ for z/OS.

2.5 Publications Useful During Installation

You might want to use the publications listed in Figure 4 during the installation of IBM MQ for z/OS.

Additionally, IBM MQ for z/OS V9.0.2 documentation is published in IBM Knowledge Center, which can be viewed from a web browser with Internet access at
http://www.ibm.com/support/knowledgecenter/SSFKSJ_9.0.0/com.ibm.mq.helphome.v90.doc/WelcomePagev9r0.htm.

Figure 4 (Page 1 of 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/
z/OS MVS Initialization and Tuning Reference	SA23-1380	http://www.ibm.com/shop/publications/order/
z/OS MVS JCL Reference	SA23-1385	http://www.ibm.com/shop/publications/order/
z/OS UNIX System Services Planning	GA32-0884	http://www.ibm.com/shop/publications/order/

Figure 4 (Page 2 of 2). Publications Useful During Installation		
Publication Title	**Form Number**	**Media Format**
z/OS UNIX System Services User's Guide	SA23-2279	http://www.ibm.com/shop/ publications/order/

3.0 Program Support

This section describes the IBM support available for IBM MQ for z/OS.

3.1 Program Services

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

3.2 Preventive Service Planning

Before you install IBM MQ for z/OS, 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 6.3.15, "Perform SMP/E APPLY" on page 44 for a sample APPLY command

If you obtained IBM MQ for z/OS as part of a CBPDO, HOLDDATA is included.

If the CBPDO for IBM MQ for z/OS 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://www-01.ibm.com/software/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 MQ for z/OS are included in Figure 5.

Figure 5 (Page 1 of 2). PSP Upgrade and Subset ID		
UPGRADE	**SUBSET**	**Description**
MQMESA	HMS9010	IBM MQ for z/OS base program
MQMESA	JMS9011	U.S. English language feature
MQMESA	JMS9012	Japanese language feature
MQMESA	JMS9013	Simplified Chinese language feature

Figure 5 (Page 2 of 2). PSP Upgrade and Subset ID		
UPGRADE	**SUBSET**	**Description**
MQMESA	JMS9014	U.S. English (uppercase) language feature
MQMESA	JMS9015	French language feature
MQMESA	JMS9016	Unix System Services Web Components feature
MQMESA	JMS9018	Unix System Services Components feature

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 6 identifies the component IDs (COMPID) for IBM MQ for z/OS.

Figure 6. Component IDs			
FMID	**COMPID**	**Component Name**	**RETAIN Release**
HMS9010	5655MQ900	IBM MQ for z/OS Base	010
JMS9011	5655MQ900	IBM MQ for z/OS US English ENU	011
JMS9012	5655MQ900	IBM MQ for z/OS Japanese JPN	012
JMS9013	5655MQ900	IBM MQ for z/OS Simplified Chinese CHS	013
JMS9014	5655MQ900	IBM MQ for z/OS Uppercase English ENP	014
JMS9015	5655MQ900	IBM MQ for z/OS French FRA	015
JMS9016	5655MQ900	IBM MQ for z/OS Unix System Services Web Components	016
JMS9018	5655MQ900	IBM MQ for z/OS Unix System Services Components	018

4.0 Program and Service Level Information

This section identifies the program and relevant service levels of IBM MQ for z/OS. 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 MQ for z/OS have been incorporated into this release. They are listed by FMID.

- FMID HMS9010

PI40486	PI64163	PI68790
PI46796	PI64205	PI68897
PI50176	PI64235	PI68940
PI54598	PI64687	PI68957
PI55507	PI64757	PI68960
PI55997	PI65410	PI68961
PI56364	PI65445	PI69177
PI56916	PI65448	PI69210
PI59408	PI65550	PI69218
PI59706	PI65778	PI69231
PI60014	PI65794	PI69442
PI60172	PI65854	PI69443
PI60424	PI65898	PI69622
PI60478	PI65901	PI70192
PI60869	PI66133	PI70482
PI61141	PI66136	PI70483
PI61291	PI66235	PI70532
PI61530	PI66242	PI70611
PI61741	PI66256	PI70890
PI61954	PI66686	PI71077
PI62041	PI66708	PI71442
PI62084	PI67124	PI71527
PI62193	PI67693	PI71574
PI62545	PI67814	PI71874
PI62604	PI67947	PI72356
PI63036	PI68052	PI72854
PI63137	PI68193	PI74451
PI63228	PI68196	PI74553
PI63367	PI68653	PI74748
PI63485	PI68657	PI74922
PI63883	PI68707	PI75103

4.2 Service Level Information

PTFs containing APAR fixes against this release of IBM MQ for z/OS have been incorporated into this product package. For a list of included PTFs, examine the ++VER statement in the product's SMPMCS.

Frequently check the IBM MQ for z/OS 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 MQ for z/OS. 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 MQ for z/OS.

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 7. 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	V2.1.0	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 V3.6.0.

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.

IBM MQ for z/OS Unix System Services Components and IBM MQ for z/OS Unix System Services Web Components are installed into a file system, either HFS or zFS. Before installing IBM MQ for z/OS Unix System Services Components, 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 system data sets must be mounted on the driving system.

If you plan to install IBM MQ for z/OS Unix System Services Components 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 IBM MQ for z/OS.

IBM MQ for z/OS 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 8. 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	V2.1.0 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 MQ for z/OS 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. Target System Mandatory Operational Requisites	
Program Number	**Product Name and Minimum VRM/Service Level**
5650-ZOS	z/OS V2.1.0 or higher

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 10 (Page 1 of 2). Target System Conditional Operational Requisites		
Program Number	**Product Name and Minimum VRM/Service Level**	**Function**
5655-W32	Enterprise COBOL for z/OS V5.1.0 or higher	COBOL applications
5655-S71	Enterprise COBOL for z/OS V4.2.0 or higher	COBOL applications
Any **one** of the following:		
5635-A05	IMS Version 14.1.0	IMS applications
5635-A04	IMS Version 13.1.0 or higher	IMS applications

Figure 10 (Page 2 of 2). Target System Conditional Operational Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5635-A03	IMS Version 12.1.0 or higher	IMS applications
Any **one** of the following:		
5615-DB2	DB2 for z/OS 11.1.0 or higher	Shared-queue access
5605-DB2	DB2 for z/OS 10.1.0 or higher	Shared-queue access
Any **one** of the following:		
5655-Y04	CICS Transaction Server for z/OS Version 5.1.0 or higher	CICS applications
5655-S97	CICS Transaction Server for z/OS Version 4.1.0 or higher	CICS applications
Note: To use APIs added in WebSphere MQ for z/OS V7R0M0 and CICS Transaction Server for z/OS Version 4.1 requires APAR PK89844.		
5694-A01	Cryptographic Services System SSL (FMID HCPT3D0)	SSL Channels
5694-A01	Cryptographic Services Security Level 3 (FMID JCPT3D1)	Some CipherSpecs for SSL Channels
5650-ZOS	Cryptographic Support for z/OS V2R1 (FMID HCR77A1)	Optional random number generator
Any **one** of the following:		
5655-W43	IBM 31-bit SDK for z/OS, Java Technology Edition Version 7.0	JMS applications
5655-W44	IBM 64-bit SDK for z/OS, Java Technology Edition Version 7.0	JMS applications, MQ Web Console and administrative REST API
Any **one** of the following:		
5655-W65	WebSphere Application Server for z/OS V8.5.0 or higher	MQ Service Provider for z/OS Connect
5655-CEE	z/OS Connect Enterprise Edition V2.0.0	MQ Service Provider for z/OS Connect
Any **one** of the following:		
5610-A01	z/OSMF V2.1.0	MQ provisioning workflows for z/OSMF
5650-ZOS	z/OS V2.2.0 **Note:** z/OSMF V2.2 has been integrated as a base feature of z/OS 2.2.0. It is no longer separately installable.	MQ provisioning workflows for z/OSMF

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 MQ for z/OS 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.

Figure 11. Target System Negative Requisites	
Program Number	**Product Name and Minimum VRM/Service Level**
5655-MQ9	IBM MQ for z/OS V9.0.0

5.2.3 DASD Storage Requirements

IBM MQ for z/OS libraries can reside on all supported DASD types.

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

Figure 12. Total DASD Space Required by IBM MQ for z/OS		
Library Type	**Total Space Required in 3390 Trks**	**File System Description**
Target	3538	Target libraries
Distribution	10787	Distribution libraries
File System	600 MB	IBM MQ for z/OS Unix System Services Components

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 6.3.11, "Allocate SMP/E Target and Distribution Libraries" on page 41.

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.

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 be in the LPA, but they are not required to be in the LPA.
   - These data sets can be in the LNKLST.
   - The SCSQAUTH, SCSQLINK, SCSQMVR1, SCSQANLE, SCSQANLK, SCSQANLC, SCSQANLU, SCSQANLF, SCSQSNLE, SCSQSNLK, SCSQSNLC, SCSQSNLU, SCSQSNLF libraries need to be APF authorized if used by features you install.

The following figures describe the target and distribution libraries and file system paths required to install IBM MQ for z/OS. The storage requirements of IBM MQ for z/OS 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
SCSQINST	SAMP	ANY	U	PDSE	FB	80	15	N/A
SCSQC37S	SAMP	ANY	U	PDSE	FB	80	65	N/A
SCSQPROC	SAMP	ANY	U	PDSE	FB	80	46	N/A
SCSQCOBS	SAMP	ANY	U	PDSE	FB	80	56	N/A
SCSQPLIS	SAMP	ANY	U	PDSE	FB	80	10	N/A
SCSQCPPS	SAMP	ANY	U	PDSE	FB	80	10	N/A
SCSQCLST	CLIST	ANY	U	PDSE	FB	80	10	N/A
SCSQDEFS	DATA	ANY	U	PDSE	FB	80	63	N/A
SCSQMAPS	DATA4	ANY	U	PDSE	FB	80	10	N/A
SCSQEXEC	EXEC	ANY	U	PDSE	FB	80	29	N/A
SCSQMACS	MAC	ANY	U	PDSE	FB	80	71	N/A
SCSQHPPS	MAC	ANY	U	PDSE	FB	80	10	N/A
SCSQASMS	MAC	ANY	U	PDSE	FB	80	12	N/A
SCSQCOBC	MAC	ANY	U	PDSE	FB	80	40	N/A
SCSQC370	MAC	ANY	U	PDSE	FB	80	53	N/A

Figure 13 (Page 1 of 3). Storage Requirements for IBM MQ for z/OS Target Libraries

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
SCSQPLIC	MAC	ANY	U	PDSE	FB	80	35	N/A
SCSQPNLA	PNLENU	ANY	U	PDSE	FB	80	10	N/A
SCSQAUTH	LMOD	ANY	U	PDSE	U	0	1503	N/A
SCSQMVR1	LMOD	ANY	U	PDSE	U	0	311	N/A
SCSQLOAD	LMOD	ANY	U	PDSE	U	0	272	N/A
SCSQCICS	LMOD	ANY	U	PDSE	U	0	81	N/A
SCSQLINK	LMOD	ANY	U	PDS	U	0	10	5
SCSQMSGE	MSGENU	ANY	U	PDSE	FB	80	10	N/A
SCSQPNLE	PNLENU	ANY	U	PDSE	FB	80	117	N/A
SCSQTBLE	TBLENU	ANY	U	PDSE	FB	80	10	N/A
SCSQANLE	LMOD	ANY	U	PDSE	U	0	17	N/A
SCSQSNLE	LMOD	ANY	U	PDS	U	0	10	5
SCSQMSGK	MSGJPN	ANY	U	PDSE	FB	80	10	N/A
SCSQPNLK	PNLJPN	ANY	U	PDSE	FB	80	118	N/A
SCSQTBLK	TBLJPN	ANY	U	PDSE	FB	80	10	N/A
SCSQANLK	LMOD	ANY	U	PDSE	U	0	17	N/A
SCSQSNLK	LMOD	ANY	U	PDS	U	0	10	5

Figure 13 (Page 2 of 3). Storage Requirements for IBM MQ for z/OS Target Libraries

Library DDNAME	Member Type	Target Volume	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
SCSQMSGC	MSGCHS	ANY	U	PDSE	FB	80	10	N/A
SCSQPNLC	PNLCHS	ANY	U	PDSE	FB	80	105	N/A
SCSQTBLC	TBLCHS	ANY	U	PDSE	FB	80	10	N/A
SCSQANLC	LMOD	ANY	U	PDSE	U	0	16	N/A
SCSQSNLC	LMOD	ANY	U	PDS	U	0	10	5
SCSQMSGU	MSGENP	ANY	U	PDSE	FB	80	10	N/A
SCSQPNLU	PNLENP	ANY	U	PDSE	FB	80	117	N/A
SCSQTBLU	TBLENP	ANY	U	PDSE	FB	80	10	N/A
SCSQANLU	LMOD	ANY	U	PDSE	U	0	17	N/A
SCSQSNLU	LMOD	ANY	U	PDS	U	0	10	5
SCSQMSGF	MSGFRA	ANY	U	PDSE	FB	80	10	N/A
SCSQPNLF	PNLFRA	ANY	U	PDSE	FB	80	126	N/A
SCSQTBLF	TBLFRA	ANY	U	PDSE	FB	80	10	N/A
SCSQSNLF	LMOD	ANY	U	PDS	U	0	10	5
SCSQANLF	LMOD	ANY	U	PDSE	U	0	16	N/A

Figure 13 (Page 3 of 3). Storage Requirements for IBM MQ for z/OS Target Libraries

Figure 14. IBM MQ for z/OS File System Paths		
DDNAME	**T Y P E**	**Path Name**
SCSQW90X	N	/usr/lpp/mqm/V9R0MX/IBM/
SCSQJ90X	N	/usr/lpp/mqm/V9R0MX/IBM/

Figure 15 (Page 1 of 2). Storage Requirements for IBM MQ for z/OS 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**
ACSQINST	U	PDSE	FB	80	15	N/A
ACSQC37S	U	PDSE	FB	80	65	N/A
ACSQPROC	U	PDSE	FB	80	46	N/A
ACSQCOBS	U	PDSE	FB	80	56	N/A
ACSQPLIS	U	PDSE	FB	80	10	N/A
ACSQCPPS	U	PDSE	FB	80	10	N/A
ACSQCLST	U	PDSE	FB	80	10	N/A
ACSQDEFS	U	PDSE	FB	80	63	N/A
ACSQMAPS	U	PDSE	FB	80	10	N/A
ACSQEXEC	U	PDSE	FB	80	29	N/A
ACSQMACS	U	PDSE	FB	80	71	N/A
ACSQHPPS	U	PDSE	FB	80	10	N/A
ACSQASMS	U	PDSE	FB	80	12	N/A
ACSQCOBC	U	PDSE	FB	80	40	N/A
ACSQC370	U	PDSE	FB	80	53	N/A
ACSQPLIC	U	PDSE	FB	80	35	N/A
ACSQMOD	U	PDSE	U	0	2502	N/A
ACSQPNLA	U	PDSE	FB	80	10	N/A
ACSQMSGE	U	PDSE	FB	80	10	N/A
ACSQPNLE	U	PDSE	FB	80	117	N/A
ACSQTBLE	U	PDSE	FB	80	10	N/A
ACSQMSGK	U	PDSE	FB	80	10	N/A

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
ACSQPNLK	U	PDSE	FB	80	118	N/A
ACSQTBLK	U	PDSE	FB	80	10	N/A
ACSQMSGC	U	PDSE	FB	80	10	N/A
ACSQPNLC	U	PDSE	FB	80	105	N/A
ACSQTBLC	U	PDSE	FB	80	10	N/A
ACSQMSGU	U	PDSE	FB	80	10	N/A
ACSQPNLU	U	PDSE	FB	80	117	N/A
ACSQTBLU	U	PDSE	FB	80	10	N/A
ACSQMSGF	U	PDSE	FB	80	10	N/A
ACSQPNLF	U	PDSE	FB	80	126	N/A
ACSQTBLF	U	PDSE	FB	80	10	N/A
ACSQOWSH	U	PDSE	VB	130	10	N/A
ACSQOWPX	U	PDSE	VB	32000	5126	N/A
ACSQOJSH	U	PDSE	VB	130	10	N/A
ACSQOJTR	U	PDSE	VB	32000	1911	N/A

Figure 15 (Page 2 of 2). Storage Requirements for IBM MQ for z/OS Distribution Libraries

5.3 FMIDs Deleted

Installing IBM MQ for z/OS 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 MQ for z/OS 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 MQ for z/OS 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 MQ for z/OS. The MQ product documentation hosted in IBM Knowledge Center describes the further step-by-step procedures to customize the functions of IBM MQ for z/OS.

Please note the following points:

- If you want to install IBM MQ for z/OS 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 The components of IBM MQ for z/OS

IBM MQ for z/OS has several components, and optional features. These are explained here:

Required features:

- IBM MQ for z/OS Base

  This comprises the basic function of MQ and the distributed queuing facility (supporting both TCP/IP and LU 6.2 communications).

- IBM MQ for z/OS US English ENU

Optional features

- Language support features

  - IBM MQ for z/OS Japanese JPN
  - IBM MQ for z/OS Simplified Chinese CHS
  - IBM MQ for z/OS Uppercase English ENP
  - IBM MQ for z/OS French FRA

- IBM MQ for z/OS Unix System Services Components

  Select this feature if you want to build and run:

  - Java applications which use JMS to connect to IBM MQ for z/OS, or

  - HTTP applications which use HTTP to connect to IBM MQ for z/OS, or

  - z/OSMF workflows to provision/de-provision IBM MQ for z/OS resources and to perform actions against these resources, or

- – Applications that use z/OS Connect to interact with IBM MQ for z/OS queues and topics via a RESTful API
- • IBM MQ for z/OS Unix System Services Web Components

  Select this feature if you want to use:

  - – the MQ Web Console, or
  - – the administrative REST API to IBM MQ for z/OS

  This feature requires the IBM MQ for z/OS Unix System Services Components feature to be installed as well.

The installable features are shipped on a single tape: IBM MQ for z/OS Base. The contents of this tape are described in Figure 16.

Figure 16. Cross Reference of Tapes to Installable Features	
Tape Label	**Installable feature**
IBM MQ for z/OS Base MS9010	HMS9010 - IBM MQ for z/OS Base
	JMS9011 - IBM MQ for z/OS US English ENU
	JMS9012 - IBM MQ for z/OS Japanese JPN
	JMS9013 - IBM MQ for z/OS Simplified Chinese CHS
	JMS9014 - IBM MQ for z/OS Uppercase English ENP
	JMS9015 - IBM MQ for z/OS French FRA
	JMS9016 - IBM MQ for z/OS Unix System Services Web Components
	JMS9018 - IBM MQ for z/OS Unix System Services Components

6.2 IBM MQ for z/OS libraries

All IBM MQ for z/OS supplied load modules in the following libraries are reentrant and can be placed in the LPA if desired:

- • SCSQAUTH
- • SCSQANLC
- • SCSQANLE
- • SCSQANLF
- • SCSQANLK
- • SCSQANLU
- • SCSQMVR1

6.3 Installing IBM MQ for z/OS

This section covers the following topics. You are recommended to read all these sections **before** you start to install IBM MQ for z/OS.

If you are migrating from a previous version of IBM MQ for z/OS, please read Appendix C, "SMP/E Migration considerations" on page 59 before you start.

The Configuring > Configuring z/OS section of the MQ product documentation hosted in IBM Knowledge Center describes how to use the REFRESH QMGR command to update the version of early code being installed.

6.3.1 SMP/E Considerations for Installing IBM MQ for z/OS

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of IBM MQ for z/OS.

There is a separate RECEIVE job for each TAPE which contains features you are installing. See Figure 16 on page 26 for a list of which features are provided on each tape. The APPLY and ACCEPT jobs will have been customized to deal with all the features you selected in a single run of the job when you ran the **CSQ8ASYJ** job above.

If you are using the optional LINK job, see Appendix B, "Enabling automatic relinking after service is applied" on page 57.

6.3.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 17 on page 28. 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 17. SMP/E Options Subentry Values		
Subentry	**Value**	**Comment**
DSSPACE	800	The DSSPACE options entry must specify at least 800 directory blocks.
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

6.3.3 SMP/E CALLLIBS Processing

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

- CSSLIB
- SCEEBND2
- SCEECPP
- SCEELIB
- SCEELKED
- SCEELKEX
- SCEEOBJ
- SCEESPC

Note: CALLLIBS uses the previous DDDEFs only to resolve the link-edit for IBM MQ for z/OS. These data sets are not updated during the installation of IBM MQ for z/OS.

6.3.4 Installation summary for IBM MQ for z/OS

The steps you have to perform to install IBM MQ for z/OS are summarized below. Sample JCL is provided for all these steps except 1, 2, and 3.

1. Obtain the latest Preventive Service Planning (PSP) information, which contains the list of required actions and service and apply any relevant service. See Section 3.0, "Program Support" on page 9 for details.

2. Before installing IBM MQ for z/OS, you must choose names and values for a number of parameters. These names and values depend on the standards that apply to your enterprise. You also need to decide whether you want to install any of the optional features.

3. Read the sample installation JCL and CLIST from tape and customize it.

    6.3.9, "Prepare the installation environment" on page 39 leads you through choosing values suitable for your environment. 6.3.8, "Customize the sample installation JCL" on page 36 describes how to

update the global customization job with the values you have chosen. The updated job is then run to customize all of the other jobs required in the installation.

4. Set up an SMP/E environment. This environment must be tailored for IBM MQ for z/OS.

5. Allocate the target and distribution libraries.

6. Set up the file system data sets and directory structures required by IBM MQ for z/OS Unix System Services Components.

7. Add DDDEF statements to the SMP/E environment to define the target and distribution libraries to SMP/E.

8. Run the SMP/E RECEIVE jobs to unload the required features from the base product tape.

9. Run the SMP/E APPLY job to install the features into the target libraries.

10. Run the SMP/E ACCEPT job to install the features into the distribution libraries.

11. Run the SMP/E LINK job if you want to enable automatic relinking after service is applied. This job is optional; if you want to use it, read Appendix B, "Enabling automatic relinking after service is applied" on page 57 before you go any further with installing IBM MQ for z/OS in order to understand the additional things you need to do when performing the other installation tasks.

When IBM MQ for z/OS has been installed, use SMP/E to install preventative or corrective service if required.

6.3.5 Prepare to install IBM MQ for z/OS

Before you install IBM MQ for z/OS, you must make the following decisions and preparations. The decisions that you make here effect the customization of the sample JCL provided with IBM MQ for z/OS. You should write down the appropriate values as you work through this section. Where applicable, space has been provided in Figure 18 on page 30, Figure 19 on page 31, and Figure 20 on page 32 to note the values assigned.

1. Decide which parts of IBM MQ for z/OS you wish to install; the parts available are described in 6.1, "The components of IBM MQ for z/OS" on page 25.

2. Ensure that you have the correct pre-requisite products installed. For information about pre-requisite products, and the levels of these products required to install and use IBM MQ for z/OS, see 5.1.2, "Programming Requirements" on page 13.

3. Plan the environment that you are going to install IBM MQ for z/OS in to. You need to decide:

   • The space requirements (see 5.2.3, "DASD Storage Requirements" on page 17)

   • The high-level qualifiers to use (see 6.3.5.1, "High-level qualifiers" on page 30)

   • Disk volume and unit names (see 6.3.5.2, "Volume and unit names" on page 31)

   • The SMP/E environment, for which you need to decide whether to install into a new SMP/E environment or into an existing SMP/E environment (see 6.3.5.3, "SMP/E environment" on page 31).

6.3.5.1 High-level qualifiers: Use Figure 18 on page 30 to plan the high-level qualifiers for the IBM MQ for z/OS data sets.

Parameter name in the sample JCL provided	Default value	Assigned value	Description
CSSQUAL	SYS1		High-level qualifiers for the OS/390 callable service library CSSLIB.
DHLQUAL	MQ.DLIB		High-level qualifiers for the IBM MQ for z/OS distribution data sets.
DHQ	DHQ		High-level qualifiers for the UCSQINST data set into which the installation JCL will be loaded from tape.
LEQUAL	PP.ADLE370		High-level qualifiers for the Language Environment target libraries.
MACQUAL	SYS1		High-level qualifier for the SYS1.MACLIB library. This library is referenced during definition of the SMP/E global zone to initialize the VSAM CLUSTER as an SMP/E CSI.
PATHPREFIX	/usr/lpp/mqm/V9R0MX		Install path for the IBM MQ for z/OS Unix System Services Components and IBM MQ for z/OS Unix System Services Web Components.
SHLQUAL	MQ.SMPE		High-level qualifiers for the new SMP/E data sets that you are going to use to install IBM MQ for z/OS. If you are going to install into existing data sets, this name is already defined.
SSLPREFIX	.		Any prefix required on the driver system for the /usr/lpp/gskssl directory. If a prefix is specified the directory will be in the following form: /SSLPREFIX/usr/lpp/gskssl.
THLQUAL	MQ.TLIB		High-level qualifiers for the IBM MQ for z/OS target data sets.
THQ	THQ		High-level qualifiers for the TCSQINST data set into which the customized installation JCL will be placed.
ZFSNAME	ZFSNAME		The data set name used by CSQ8J8ZF for creation of a zFS file system on which to install IBM MQ for z/OS Unix System Services Components.

Figure 18. High-level qualifiers for data set names

Note: If required, DHQ can be the same as DHLQUAL and THQ can be the same as THLQUAL.

If these high-level qualifiers do not already exist, you must define them to RACF, or any other security product you are using, and have ALIAS definitions in the master catalog.

The TSO user ID used to install or service IBM MQ for z/OS requires RACF ALTER access to these high-level qualifiers. See the MQ product documentation hosted in IBM Knowledge Center for details of the security authorization required for running IBM MQ for z/OS.

If you are going to use the System Display and Search Facility (SDSF) to look at the output from the installation jobs, you must have authorization to use the prefix CSQ8* to view them, or you must customize the names of the jobs to use a prefix to which you are authorized. This can be done using the JCPREF option in **CSQ8ASYJ** as described in 6.3.8, "Customize the sample installation JCL" on page 36.

6.3.5.2 Volume and unit names:
Plan the volume and unit names shown in Figure 19. These are used by the supplied sample JCL during the installation of IBM MQ for z/OS. You must decide where you are going to install the product, taking into account the space requirements (see Figure 15 on page 22 and Figure 13 on page 19) and how frequently the data sets are going to be accessed.

Parameter Name in the Sample Jobs	Values Required	Value Specified	Description
SMPVOL	VOLSER and unit type		SMP/E data set volume if installing into new SMP/E data sets. Also used for temporary libraries.
TARVOL	VOLSER		IBM MQ for z/OS target data set volume.
DISVOL	VOLSER		IBM MQ for z/OS distribution data set volume.
DISKUNIT	Unit type		The default of SYSALLDA is sufficient for most installations.
TAPEUNIT	Tape unit type		Unit type of the tape drive used to read the IBM MQ for z/OS tapes.
ZFSVOL	VOLSER		Volume name for the zFS filing system created by CSQ8J8ZF.

Figure 19. Volume and unit names

Notes:

1. By default, all target and distribution libraries are allocated to a unit type of SYSALLDA.
2. You can let the system choose the volume used by the allocation by substituting a period (.) for the VOLSER of TARVOL and DISVOL. See the customization step in section 6.3.8, "Customize the sample installation JCL" on page 36.
3. SMPVOL must have both the VOLSER and the unit type specified.
4. ZFSVOL must have the VOLSER specified.

6.3.5.3 SMP/E environment:
You must decide whether to install IBM MQ for z/OS into a new or an existing SMP/E environment. Remember that installing a new release of IBM MQ for z/OS into the same SMP/E zones as an existing release will cause the earlier level to be deleted from both the SMP/E zones and the existing release data sets.

If you are going to install into the same SMP/E zones, then to preserve your current release while you install and test the new release you should copy the existing release data sets into data sets with different

names. Do not rename or delete the current data sets because they need to be available to SMP/E for delete processing during the installation of the new release. If they are not available, the APPLY and ACCEPT steps will fail with a return code of 12. After running a successful ACCEPT of the IBM MQ for z/OS products, the previous release data sets are no longer required and can be deleted when testing of the new release has been completed.

If you use existing SMP/E data sets, you need to know the names of your target zone and distribution zone, and the data set name of your global CSI.

You must decide upon the names for the SMP/E zones.

Figure 20. Target and distribution zone names			
Parameter Name in the Sample Jobs	**Default Value**	**Assigned Value**	**Description**
DZNAME	DZONE		The name of your distribution zone
GZONECSI	NEW		The data set name of your global zone CSI
LETZN	LETZN		The name of the target zone in which Language Environment is installed (only required if you are going to use the optional LINK jobs, see Appendix B, "Enabling automatic relinking after service is applied" on page 57).
OS390TZN	OS390TZN		The name of the target zone in which OS/390 callable services are installed (only required if you are going to use the optional LINK jobs, see Appendix B, "Enabling automatic relinking after service is applied" on page 57).
TCPTZN	TCPTZN		The name of the target zone in which IBM TCP/IP is installed. (only required if you are going to use the optional LINK jobs, see Appendix B, "Enabling automatic relinking after service is applied" on page 57).
TZNAME	TZONE		The name of your target zone
ACCJCLIN	YES		Indicates that JCLIN is to be saved in the distribution zone whenever a SYSMOD containing inline JCLIN is accepted. The default value of 'YES' is recommended.
Note: If you are using the LINK command, and Language Environment, IBM TCP/IP, and OS/390 callable services are installed in the same SMP/E target zone, LETZN, TCPTZN, and OS390TZN must **all** be set to the same value.			

6.3.5.4 File system: Both IBM MQ for z/OS Unix System Services Components and IBM MQ for z/OS Unix System Services Web Components install into the same file system in Unix System Services. By default, code is installed under the path **/usr/lpp/mqm/V9R0MX**.

If you choose to change this default behavior, modify the **PATHPREFIX** value in **CSQ8ASYJ**

Figure 21. Path for IBM MQ for z/OS Unix System Services Components.		
Default value	**Assigned Value**	**Description**
/usr/lpp/mqm/V9R0MX		The path for IBM MQ for z/OS Unix System Services Components and IBM MQ for z/OS Unix System Services Web Components.

To set up the file system and install IBM MQ for z/OS Unix System Services Components or IBM MQ for z/OS Unix System Services Web Components into it you will require a logon that has an OMVS segment defined. If a new file system data set is being created for the install, as described in 6.3.12, "Set up the file system" on page 41, then the owner of the top level directory in this file system data set will be the logon used to allocate the file system data set. If the logon does not have an OMVS segment, the owner will be UID 0, meaning that only a superuser will be able to access the file system when mounted.

In addition to having an OMVS segment you will require READ access to the RACF BPX.FILEATTR.PROGCTL and BPX.FILEATTR.APF profiles in the FACILITY class. Having superuser authority does not give you access to these profiles automatically.

6.3.6 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install IBM MQ for z/OS:

Figure 22 (Page 1 of 3). Sample Installation Jobs			
Job Name	**Job Type**	**Description**	**RELFILE**
CSQ8B0GZ	GZONE	Sample job to set up an SMP/E global zone	IBM.HMS9010.F2
CSQ8C0TZ	TZONE	Sample job to set up an SMP/E target zone	IBM.HMS9010.F2
CSQ8D0DZ	DZONE	Sample job to set up an SMP/E distribution zone	IBM.HMS9010.F2
CSQ8E1AL	ALLOCATE	Sample job to allocate IBM MQ for z/OS base target and distribution libraries	IBM.HMS9010.F2
CSQ8F2AL	ALLOCATE	Sample job to allocate IBM MQ for z/OS Japanese language target and distribution libraries	IBM.HMS9010.F2
CSQ8G3AL	ALLOCATE	Sample job to allocate IBM MQ for z/OS simplified Chinese language target and distribution libraries	IBM.HMS9010.F2
CSQ8H4AL	ALLOCATE	Sample job to allocate IBM MQ for z/OS U.S. English (uppercase) language target and distribution libraries	IBM.HMS9010.F2

Figure 22 (Page 2 of 3). Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
CSQ8H5AL	ALLOCATE	Sample job to allocate IBM MQ for z/OS French language target and distribution libraries	IBM.HMS9010.F2
CSQ8I6AL	ALLOCATE	Sample job to allocate the libraries for IBM MQ for z/OS Unix System Services Web Components	IBM.HMS9010.F2
CSQ8I8AL	ALLOCATE	Sample job to allocate the libraries for IBM MQ for z/OS Unix System Services Components	IBM.HMS9010.F2
CSQ8J8ZF	ALLOMTZFS	Sample job to create, format, mount and make active a zFS file system for IBM MQ for z/OS Unix System Services Components	IBM.HMS9010.F2
CSQ8K8MK	MKDIR	Sample job to create the file system path for IBM MQ for z/OS Unix System Services Components	IBM.HMS9010.F2
CSQ8L0DD	DDDEF	Sample job to define IBM MQ for z/OS target and distribution libraries to SMP/E	IBM.HMS9010.F2
CSQ8M6DD	DDDEF	Sample job to define libraries for IBM MQ for z/OS Unix System Services Web Components to SMP/E	IBM.HMS9010.F2
CSQ8M8DD	DDDEF	Sample job to define libraries for IBM MQ for z/OS Unix System Services Components to SMP/E	IBM.HMS9010.F2
CSQ8N0RC	RECEIVE	Sample RECEIVE job for IBM MQ for z/OS	IBM.HMS9010.F2
CSQ8P0AP	APPLY	Sample APPLY job for IBM MQ for z/OS	IBM.HMS9010.F2
CSQ8Q0AC	ACCEPT	Sample ACCEPT job for IBM MQ for z/OS	IBM.HMS9010.F2
CSQ8RLKB	CUSTOMIZE	Customizes the CSQ8SLDQ SMP/E link statement	IBM.HMS9010.F2
CSQ8ZLKB	REXX	REXX program to scan a set of libraries looking for aliases then convert a JCL file to resolve aliases to their real names	IBM.HMS9010.F2
CSQ8SLDQ	LINK	Optional link job	IBM.HMS9010.F2
CSQ8Z8MK	REXX	REXX program to create the necessary ZFS directories for IBM MQ for z/OS Unix System Services Components	IBM.HMS9010.F2
CSQ8TUBP	USERMOD	User modification that moves the IBM MQ for z/OS exit program into the SYS1.SIFALIB data set	IBM.HMS9010.F2

Figure 22 (Page 3 of 3). Sample Installation Jobs			
Job Name	**Job Type**	**Description**	**RELFILE**
CSQ8UERL	USERMOD	User modification that moves the CSQ3ECMX load module into the SCSQLINK data set	IBM.HMS9010.F2

You can access the sample installation jobs by performing an SMP/E RECEIVE (refer to 6.3.10, "Perform SMP/E RECEIVE" on page 40) then copy the jobs from the RELFILES to a work data set for editing and submission. See Figure 22 on page 33 to find the appropriate relfile data set.

6.3.7 Create the installation JCL

This section takes you through loading the sample installation JCL from the tape and customizing it ready for your use.

6.3.7.1 Read in the sample installation JCL: Read the sample installation JCL from tape.

(Alternatively, you can also access the sample installation jobs by performing an SMP/E RECEIVE and then copying the jobs from the SMPTLIBs to a work data set for editing and submission. See Figure 22 on page 33 to find the appropriate SMPTLIB data set.)

1. Type in the following JCL as `DHQ.XCSQINST` as a sequential data set, substituting the values you have chosen for **dhq**, **disvol** and **tapeunit** into the JCL, and adding job statement information if required:

```
//OFFTAPE JOB
//TALLOC   EXEC PGM=IEBCOPY,REGION=1024K
//SYSPRINT DD SYSOUT=*
//IN       DD DSN=IBM.HMS9010.F2,
//         LABEL=(3,SL),
//         UNIT=tapeunit,
//         VOL=SER=MS9010,
//         DISP=OLD
//OUT      DD DSN=dhq.UCSQINST,
//         DCB=(LRECL=80,RECFM=FB,BLKSIZE=8800),
//         SPACE=(CYL,(1,1,20)),
//         VOL=SER=disvol,UNIT=SYSALLDA,
//         DISP=(NEW,CATLG)
//SYSUT3   DD SPACE=(TRK,(5)),UNIT=SYSALLDA
//SYSUT4   DD SPACE=(TRK,(5)),UNIT=SYSALLDA
//SYSIN    DD *
  COPY INDD=IN,OUTDD=OUT
/*
//
```

2. Mount the tape.

3. Run the above job to load the samples. The job should finish with a return code of 0.

   If the return code is not 0, check the job output carefully to ensure that the sample jobs have been copied correctly. If the sample jobs have not been copied correctly, correct any errors found, and re-submit the job.

You have now read all the sample jobs into the data set `DHQ.UCSQINST`. To confirm that you have the correct set of jobs, check the list of members in `DHQ.UCSQINST` against the list in Appendix A, "Customizing the sample installation manually" on page 55. The next step is to customize the sample jobs for your system.

6.3.8 Customize the sample installation JCL

To customize the sample installation JCL use the customization job (**CSQ8ASYJ**) provided with IBM MQ for z/OS. If you don't want to use this job and would rather customize the sample installation jobs manually, see Appendix A, "Customizing the sample installation manually" on page 55.

If you use **CSQ8ASYJ**, you can customize the sample jobs by adding the names you chose in section 6.3.5, "Prepare to install IBM MQ for z/OS" on page 29 to **CSQ8ASYJ** in `DHQ.UCSQINST` and running this job.

We recommend that you customize all the installation jobs together, although you might not need some of them until later.

CSQ8ASYJ calls a REXX program to copy and edit the sample jobs from `DHQ.UCSQINST` to `THQ.TCSQINST`. If `THQ.TCSQINST` does not exist, it is created by **CSQ8ASYJ**. Full instructions for modifying **CSQ8ASYJ** are included in its comments. Where selections are to be made, this is usually done by removing the leading asterisk.

The following rules apply when updating **CSQ8ASYJ**:

- Enter values in the correct case (uppercase for everything except SSLPREFIX and PATHPREFIX, which can contain lowercase letters).

- The keywords in the JCL can appear in any order and starting in any column as long as they are the first nonblank characters on a line and are within columns 1 through 72.

- If you place a nonblank character before a keyword, the line is treated as a comment. Use an asterisk as the nonblank character to avoid accidentally forming a valid keyword.

- Do not delete lines in **CSQ8ASYJ**, because you might need them in the future. If they do not apply, comment them out by placing an asterisk at the beginning of the unwanted lines.

Use your usual editor to update **CSQ8ASYJ** in `DHQ.UCSQINST` as follows:

1. Change the job statement at the top of **CSQ8ASYJ** to match the requirements of your enterprise. If you need to code a 'TIME=' parameter on your JCL, a value of 10 minutes CPU time is enough to run **CSQ8ASYJ**.

2. Customize the JCL statements in Section 2 of **CSQ8ASYJ** with the names you have chosen for DHQ and THQ. Replace the variable DHQ for the SYSPROC and MINPUT lines, and the variable THQ for the MOUTPUT line.

3. Select the features you want (none of the features are mutually exclusive):

   a. By default, **CSQ8ASYJ** selects all FMIDs for installation. You can choose not to install certain FMIDS by placing an asterisk in column 1.
   b. Both the base and U.S. English (mixed case) FMIDS must always be installed; do **not** change this.
   c. The IBM MQ for z/OS Unix System Services Web Components feature requires the IBM MQ for z/OS Unix System Services Components feature to be installed as well.

   The following tokens are used in **CSQ8ASYJ**:

   MQM
   > IBM MQ for z/OS Base

   MQMNL US ENGLISH
   > IBM MQ for z/OS US English ENU

   MQMNL JAPANESE
   > Optional IBM MQ for z/OS Japanese JPN

   MQMNL SIMPLIFIED CHINESE
   > Optional IBM MQ for z/OS Simplified Chinese CHS

   MQMNL UPPERCASE ENGLISH
   > Optional IBM MQ for z/OS Uppercase English ENP

   MQMNL FRENCH
   > Optional IBM MQ for z/OS French FRA

   WEB
   > Optional IBM MQ for z/OS Unix System Services Web Components

   JMS
   > Optional IBM MQ for z/OS Unix System Services Components

4. Choose which sample jobs you want to customize. **CSQ8ASYJ** is supplied with all jobs selected; this will customize all jobs. This is correct for a new installation requiring all features to be installed.

   You can change this default behavior, if required, by commenting out the select statements with an asterisk in column 1.

5. Type job statement information for the sample jobs. You must leave the characters

```
 JOB  //xxxxxxxx  JOB
```

intact and insert your parameters after the second 'JOB' on this line. If your enterprise does not require any additional information on the job statement you must still leave this line intact. You can also add lines such as /*ROUTE or /*JOBPARM by using the JOB keyword.

You can enter more than one line for your JOB statement. Begin each line with the keyword JOB followed by at least one blank, and type the text as you would expect to see it in the resulting JCL, including all punctuation such as start of line '//' and end of line commas.

If your enterprise needs a 'TIME=' parameter, you must specify a value large enough to run the SMP/E apply step. This can take up to 120 minutes for IBM MQ for z/OS.

Below is an example of a JOB statement with some additional information:

```
JOB //XXXXXXXX JOB (ACCOUNT),CLASS=A,MSGLEVEL=(1,1)
```

Whilst the following lines show a case where there is so much information added that a continuation statement has been created:

```
JOB //XXXXXXXX JOB (ACCOUNT),CLASS=A,MSGLEVEL=(1,1),
JOB // USER=USERID,NOTIFY=USERID
```

6. You can change the default value of the prefix, 'CSQ8', next to the 'JCPREF' keyword. If you change it to a value that is one to four characters long, the prefix will be concatenated with the last four characters of the JCL member name to form the job name. If you change the prefix to a value that is five to eight characters long, the prefix alone will form the job name.

7. Type the values you have chosen for the MQ product high-level qualifiers, where they are different from the defaults.

8. Type the values you have chosen for your system high-level qualifiers, where they are different from the defaults.

9. Type the values you have chosen for your volume serial numbers and unit types, where they are different from the defaults.

   To let the system choose the volumes for the target and distribution libraries (TARVOL and DISVOL) change 'VOLSER' to a '.'. (Quotes should not be used in the JCL). The SMP/E volume and unit type must be changed to an existing volume name and its actual unit type.

10. Type the SMP/E zone names you have chosen if they are different from the defaults. If you use your existing SMP/E data sets, you must customize the names of your target zone, distribution zone, and global CSI data set.

    If you intend to let IBM MQ for z/OS create a new SMP/E environment, leave the SMP/E information as it is. If you are going to use the optional LINK job (see Appendix B, "Enabling automatic relinking after service is applied" on page 57) you must customize the name of the target zones in which Language Environment, IBM TCP/IP, and OS/390 callable services are installed.

    Specifying NEW for GZONECSI means that the customization step will add the name SHLQUAL.GLOBAL.CSI for the global zone CSI. If you wish to use a different global zone CSI you must specify the fully qualified name for GZONECSI.

Choose whether to have SYSMOD JCLIN saved in the distribution zone when SYSMODS are accepted, by changing the value for ACCJCLIN. This switch sets the ACCJCLIN subentry on the SMP/E DZONE subentry. The default is YES.

11. Type the file system install path for the IBM MQ for z/OS Unix System Services Components, if it is different from the default.

12. Run **CSQ8ASYJ**. It should finish with a return code of 0.

    If the return code is not 0, inspect the output to discover what caused the problem:

    A return code of 4 may indicate that no FMIDs were selected for installation, or, that one or more members were truncated during customization.
    CSQ8ASYJ can be run again when the error has been corrected, but running it many times might cause the output data set `THQ.TCSQINST` to need compressing.

Now carry out the installation steps in the following sections, using the customized versions of the sample jobs from the `THQ.TCSQINST` data set.

6.3.9 Prepare the installation environment

You must create the environment in which to run SMP/E to install IBM MQ for z/OS.

Note: The job output listings produced by the following jobs might be split into a number of separate data sets.

6.3.9.1 High-level assembler consideration: If you create a new global zone, the default
utility for ASM (assembler) will be used for the SMP/E environment. If your site uses the high-level assembler, you might need to do the following:

1. Add an SMP/E UTILITY for the high-level assembler to your global zone, by uncommenting the lines below the two comments containing the word HLASM in the **CSQ8B0GZ** job.

2. Change the **CSQ8D0DZ** job so that it references the high-level assembler utility entry by uncommenting the lines below the the comment containing the word HLASM.

6.3.9.2 Global zone

- If you are installing into an existing global zone, check that:

    - The PEMAX option entry is set to 9999, or left to default.
    - The DSSPACE options entry specifies at least 800 directory blocks.

- If you are installing into a new global zone, run **CSQ8B0GZ** from THQ.TCSQINST.

    Expected Return Codes and Messages: CSQ8B0GZ has a number of steps, all of which should complete with a return code of 0.

    Note: If you are running under JES3, you must edit it to remove the comment asterisks for the whole of steps DUMMYCSI and DELDUMMY. This is to avoid the problem of defining and using VSAM data sets in the same jobstream under JES3.

If any of the return codes is not 0, inspect the job output to determine what caused the problem and correct it, then rerun the job from the step that failed.

6.3.9.3 Target and distribution zones: If you are using the optional LINK job, see Appendix B, "Enabling automatic relinking after service is applied" on page 57.

If you need to create new target and distribution zones, run the following jobs:

- **CSQ8C0TZ** to create a target zone
- **CSQ8D0DZ** to create a distribution zone

Expected Return Codes and Messages:

Both jobs consist of a number of steps, all of which should complete with a return code of 0.

If any of the return codes is not 0, inspect the job output to determine what caused the problem, correct it, and then rerun the job from the step that failed.

6.3.10 Perform SMP/E RECEIVE

If you have obtained IBM MQ for z/OS as part of a CBPDO, use the RCVPDO job in the CBPDO RIMLIB data set to receive the IBM MQ for z/OS 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 **CSQ8N0RC** to perform the SMP/E RECEIVE for IBM MQ for z/OS. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages:

All the RECEIVE jobs should complete with a return code of 0, and the following messages should appear in the SMPLOG (depending on which features you have decided to install). The example below is from **CSQ8N0RC**, similar messages will be seen for any of the other RECEIVE jobs you run:

```
GIM22701I RECEIVE PROCESSING WAS SUCCESSFUL FOR SYSMOD HMS9010
GIM22701I RECEIVE PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9011
GIM22701I RECEIVE PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9012
GIM22701I RECEIVE PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9013
GIM22701I RECEIVE PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9014
GIM22701I RECEIVE PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9015
GIM22701I RECEIVE PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9016
GIM22701I RECEIVE PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9018
```

If the return code is not 0, check the job output listing to find out why the job failed, correct the error, and then rerun the job.

6.3.11 Allocate SMP/E Target and Distribution Libraries

Before using SMP/E to install IBM MQ for z/OS, you must allocate two groups of data sets, the target and distribution libraries, for IBM MQ for z/OS. Run the job **CSQ8E1AL** from THQ.TCSQINST to allocate the libraries. This job has two steps; each should complete with a return code of 0.

If the return code is not 0, check the job output carefully to ensure that the data sets have been allocated correctly. If you need to rerun the job, you must delete any data sets that were created by the unsuccessful attempt. These all begin with the THLQUAL or DHLQUAL high-level qualifiers. (Be careful not to delete any SMP/E data sets.)

If you have chosen to install an additional feature, you must also run the appropriate job from the following list, in the same way that you ran **CSQ8E1AL**:

Figure 23. Allocation jobs for optional features	
Feature	**Data set allocation job**
IBM MQ for z/OS Japanese JPN	**CSQ8F2AL**
IBM MQ for z/OS Simplified Chinese CHS	**CSQ8G3AL**
IBM MQ for z/OS Uppercase English ENP	**CSQ8H4AL**
IBM MQ for z/OS French FRA	**CSQ8H5AL**
IBM MQ for z/OS Unix System Services Web Components	**CSQ8I6AL**
IBM MQ for z/OS Unix System Services Components	**CSQ8I8AL**

Expected Return Codes and Messages:

All the steps in these jobs should complete with a return code of 0.

6.3.12 Set up the file system

At this time, you need to make the file system data set which will contain the file system target directories available to install IBM MQ for z/OS Unix System Services Components and IBM MQ for z/OS Unix System Services Web Components. These two features both install into the same target directory, contained in the same file system data set. (Remember, although you can install IBM MQ for z/OS Unix System Services Components and IBM MQ for z/OS Unix System Services Web Components into your existing root file system data set, IBM strongly recommends that these components are installed in their own file system data set, which should be defined in the BPXPRMxx member of SYS1.PARMLIB.)

> **Important**
>
> During the creation of the mountpoints and the mounting of the file system data sets, the convention
> -PathPrefix-/usr/lpp/mountpoint is used. -PathPrefix- allows you to specify a service directory on your
> driving system. It is assumed that you will be mounting the IBM MQ for z/OS Unix System Services
> Components file system data set under a service directory which already contains the /usr and /usr/lpp
> directories. If this is not the case, you must create the /usr and /usr/lpp directories manually under your
> -PathPrefix- directory PRIOR to running the sample commands.
>
> In 6.3.5.1, "High-level qualifiers" on page 30 -PathPrefix-/usr/lpp/mountpoint was set to be the value
> you configured for PATHPREFIX for IBM MQ for z/OS Unix System Services Components.

If you choose to allocate separate a file system data set for these components, then 5.2.3, "DASD Storage
Requirements" on page 17 details the size required. The file system used may be either zFS or the older
HFS. Sample job CSQ8J8ZF is provided to allocate, format and mount a zFS filesystem. If you intend to
use zFS then follow instructions in 6.3.12.1, "zFS file system for IBM MQ for z/OS Unix System Services
Components." For HFS, follow instructions in 6.3.12.2, "HFS file system directories for IBM MQ for z/OS
Unix System Services Components" below.

6.3.12.1 zFS file system for IBM MQ for z/OS Unix System Services Components:
Use sample job CSQ8J8ZF to allocate, format and mount a data set for the zFS filesystem to contain IBM
MQ for z/OS Unix System Services Components then proceed to 6.3.13, "Allocating file system paths" on
page 43.

Expected Return Codes and Messages:

All the steps in these jobs should complete with a return code of 0.

6.3.12.2 HFS file system directories for IBM MQ for z/OS Unix System Services
Components: The following example JCL fragment illustrates the allocation of an HFS data set.
Modify it for your installation standards and submit it.

```
//CSQ8HFS  JOB
//* Allocate HFS data set
//ALLOCHFS EXEC PGM=IEFBR14
//HFS      DD  DSN=zos.dsname,
//      UNIT=SYSALLDA,VOL=SER=volser,
//      SPACE=(CYL,(60,5,1)),
//      DSNTYPE=HFS,
//      DISP=(NEW,CATLG)
```

If you have allocated the optional HFS file system data set for IBM MQ for z/OS Unix System Services
Components, you must make it available on your driving system for installation. Use the following sample
commands to create the mountpoint and mount the IBM MQ for z/OS Unix System Services Components
file system data set:

From the UNIX shell:

```
mkdir -p -PathPrefix-/usr/lpp/mqm/V9R0MX
```

From TSO:

```
MOUNT FILESYSTEM('zos.dsname')
  MOUNTPOINT('-PathPrefix-/usr/lpp/mqm/V9R0MX') TYPE(HFS)
  MODE(RDWR)
```

Where `'zos.dsname'` is a the name of an z/OS data set allocated to hold the HFS.

6.3.13 Allocating file system paths

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.

Once the file system is available at the correct mount point, edit and submit sample job **CSQ8K8MK** to allocate the file system paths for IBM MQ for z/OS Unix System Services Components. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages:

All the steps in these jobs should complete with a return code of 0.

6.3.14 Create DDDEF Entries

SMP/E needs to know the name of the IBM MQ for z/OS data sets; **CSQ8L0DD** is provided to add the appropriate DDDEFs to your SMP/E environment. Run the job **CSQ8L0DD** from `THQ.TCSQINST` to build your SMP/E DDDEF statements.

Expected Return Codes and Messages:

This job has 3 steps, and should complete with a return code of 0. If you are installing into existing zones, this job might give a return code of 8, because it attempts to add DDDEFS that might already exist.

If you have chosen to install the IBM MQ for z/OS Unix System Services Web Components, you must also run the job **CSQ8M6DD**.

If you have chosen to install the IBM MQ for z/OS Unix System Services Components, you must also run the job **CSQ8M8DD**.

> **Important**
>
> The values of SCSQW90X and SCSQJ90X should not be changed in the TARGDDDF step of
> **CSQ8M6DD** and **CSQ8M8DD**. The CHGPATH steps update the SCSQW90X and SCSQJ90X values
> to contain the PATHPREFIX chosen. The value of the SCSQW90X and SCSQJ90X DDDEFs will be
> the value you chose for PATHPREFIX suffixed by /IBM.

Expected Return Codes and Messages:

If the return code is not 0, and you are not installing into existing data sets, check the job output carefully
to ensure that the DDDEFs have been allocated correctly. **CSQ8L0DD**, **CSQ8M6DD** or **CSQ8M8DD** can
be re-run if required, but you need to replace the ADD commands with REP.

6.3.15 Perform SMP/E APPLY

Edit and submit the sample job **CSQ8P0AP** from data set THQ.TCSQINST to apply the FMIDs selected when
you customized the JCL. This job can take a long time to run, depending on the capacity of your system,
and on what other jobs are running.

Before running **CSQ8P0AP**, ensure that Language Environment load-library SCEERUN is available in the
LNKLIST or uncomment the STEPLIB DD statement in **CSQ8P0AP** replacing the '++LEQUAL++'
characters with the high level qualifier of the SCEERUN load-library.

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:

1. 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.

2. 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)) .
```

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.

3. 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.

Products successfully applied result in the following messages in the output listing of **CSQ8P0AP**, depending which features you have decided to install:

```
GIM22701I APPLY PROCESSING WAS SUCCESSFUL FOR SYSMOD HMS9010
GIM22701I APPLY PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9011
GIM22701I APPLY PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9012
GIM22701I APPLY PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9013
GIM22701I APPLY PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9014
GIM22701I APPLY PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9015
GIM22701I APPLY PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9016
GIM22701I APPLY PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9018
```

The job can be rerun, but if one of the FMIDs was successfully applied, you must first delete the lines from **CSQ8P0AP** that refer to this product FMID.

6.3.16 Perform SMP/E ACCEPT

Edit and submit the sample job **CSQ8Q0AC** from data set THQ.TCSQINST to accept all the products selected when you customized the JCL. This job takes a few minutes to run, depending on the capacity of your system, and on what other jobs are running. 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.

By default, supplied job CSQ8D0DZ was customized by CSQ8ASYJ in 6.3.8, "Customize the sample installation JCL" on page 36 to set ACCJCLIN on the DZONE.

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

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.

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.

If the return code is not 0, check the job output listing to find out why the job failed and correct the error.

The job can be rerun, but if one of the FMIDs was successfully accepted, you must first delete the line from **CSQ8Q0AC** that refers to this FMID. Products successfully accepted result in the following messages in the output listing of **CSQ8Q0AC** depending which features you have decided to install:

```
GIM22701I ACCEPT PROCESSING WAS SUCCESSFUL FOR SYSMOD HMS9010
GIM22701I ACCEPT PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9011
GIM22701I ACCEPT PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9012
GIM22701I ACCEPT PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9013
GIM22701I ACCEPT PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9014
GIM22701I ACCEPT PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9015
GIM22701I ACCEPT PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9016
GIM22701I ACCEPT PROCESSING WAS SUCCESSFUL FOR SYSMOD JMS9018
```

6.3.17 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 MQ for z/OS, 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.

6.3.18 Enabling automatic relinking after service is applied

During SMP/E APPLY processing, modules from other products were link-edited into the IBM MQ for z/OS target libraries. It is possible that future maintenance on these other products will update the parts that IBM MQ for z/OS uses.

Two separate mechanisms are available for updating the IBM MQ for z/OS target libraries after applying maintenance to other products:

1. The first uses SMP/E LINK LMODS processing to relink the IBM MQ for z/OS target libraries after maintenance has been applied on the other products.

This has the advantage that IBM MQ for z/OS libraries are only updated when definite action is taken on them.

If you choose to use this mechanism, no further action is needed at this stage.

2. The second uses SMP/E cross zone linking.

   SMP/E provides a facility to update the SMP/E information for products installed in other SMP/E zones, so that when maintenance is applied to them, IBM MQ for z/OS target libraries are automatically updated. IBM MQ for z/OS provides jobs to set up cross zone linking so that SMP/E will perform automatic cross zone link-editing when service has been applied to the following corequisite products:

   - Language Environment
   - z/OS callable services (which includes APPC)

   If you do want to use this facility, see Appendix B, "Enabling automatic relinking after service is applied" on page 57.

6.3.19 Mount the File System data sets on the target system

Before proceeding with activation, unmount the IBM MQ for z/OS file system data sets on the driving system, and mount them on the target system at the target system mountpoints. If you have selected the default mountpoints, you can use the following TSO commands on your target system to mount the zFS data sets:

```
MOUNT FILESYSTEM('zos.dsname1')
  MOUNTPOINT('/usr/lpp/mqm/V9R0MX')
  TYPE(ZFS) MODE(READ)
```

A MOUNT command will be required for each of the optional file system data sets you defined in 6.3.12, "Set up the file system" on page 41.

You will probably want to add these mounts to your BPXPRMxx members in PARMLIB to ensure that these data sets are always mounted. If, at a later date, you need to perform service on IBM MQ for z/OS Unix System Services Components,

- Temporarily unmount the file system data sets.

- Mount both data sets at the service (-PathPrefix-) mountpoint you created for installation.

- Apply the service.

- Unmount both data sets from the service mountpoint.

- Remount them at the production mountpoints given above.

6.4 Activating IBM MQ for z/OS

You have now installed IBM MQ for z/OS. Before you can start to use IBM MQ for z/OS, it must be customized. This is described in the Configuring > Configuring z/OS section of the MQ product documentation hosted in IBM Knowledge Center.

The customization steps require changes to SYS1.PARMLIB and may need an IPL to activate the changes. We recommend that you check the preventative service planning information and apply any APAR fixes that also require an IPL before doing this.

If you are migrating from a previous version of IBM MQ for z/OS, you do not need to perform all the customization tasks. To find out what you need to do, read the Configuring > Configuring z/OS section of the MQ product documentation hosted in IBM Knowledge Center about migrating from previous versions.

Installation verification programs are provided with IBM MQ for z/OS. These cannot be run until IBM MQ for z/OS has been customized and an IBM MQ for z/OS subsystem activated.

If you choose to have the HFS in which you have installed IBM MQ for z/OS mounted in read-only mode during execution, then no further tasks are required to accomplish this.

The Configuring > Configuring z/OS section of the MQ product documentation hosted in IBM Knowledge Center contains the step-by-step procedures to activate the functions of IBM MQ for z/OS.

6.4.1 Enabling measured usage license charges

If you want to enable measured usage license charges, run job **CSQ8TUBP** from data set `THQ.TCSQINST`. This job has two steps, the first step should complete with return code zero, and the second step should complete with return code 0 if FMID HMS9010 has been accepted, or return code 4 if it has not been accepted. On successful completion, this job will have copied the measured usage license charge exit program into the SIFALIB data set.

Note: By default this usermod is accepted into the distribution zone. If you do not want to accept it then the ACCEPT statement should be removed from the job before it is submitted.

The return code of 4 should be accompanied by the following message:

```
GIM61901W LMOD CSQ8UBEX WAS NOT MOVED BY SYSMOD CSQ8UBX BECAUSE
CSQ8UBEX IS NOT IN THE dist ZONE
```

Where `dist` is the name you allocated for the distribution zone.

6.4.2 Preparing LPA data sets

By default, two MQ data sets have to be added to the LPA; SCSQLINK, and one of the following:

- SCSQSNLE
- SCSQSNLF
- SCSQSNLC
- SCSQSNLK
- SCSQSNLU

A user modification is provided in **CSQ8UERL** in data set THQ.TCSQINST that moves the contents of the SCSQSNLx data set into SCSQLINK so that only one data set needs to be added to the LPA. Even if the customization job (**CSQ8ASYJ**) has been run, there will still be some manual customization required for **CSQ8UERL**. Customize job **CSQ8UERL** and run it; it should complete with either return code 0 if FMID HMS9010 has been accepted, or return code 4 if it has not been accepted.

Note: By default this usermod is accepted into the distribution zone. If you do not want to accept it then the ACCEPT statement should be removed from the job before it is submitted.

The return code of 4 should be accompanied by the following message:

```
GIM61901W LMOD CSQNL28x WAS NOT MOVED BY SYSMOD CSQ8RLY BECAUSE
CSQNL28x IS NOT IN THE dist ZONE
```

Where `dist` is the name you allocated for the distribution zone and `x` is the language suffix used in customizing the job.

6.5 What SMP/E has done

You have now taken the information off the distribution tape that IBM supplied and installed it onto your system.

6.5.1 Library contents after installation

After the successful completion of SMP/E processing, your libraries have the names and contents shown in Figure 24.

Figure 24 (Page 1 of 4). Library contents after installation		
Target library	**Distribution library**	**Description**
SCSQANLC		Load modules - IBM MQ for z/OS Simplified Chinese CHS product code and utilities

Figure 24 (Page 2 of 4). Library contents after installation		
Target library	**Distribution library**	**Description**
SCSQANLE		Load modules - IBM MQ for z/OS US English ENU product code and utilities
SCSQANLF		Load modules - IBM MQ for z/OS French FRA product code and utilities
SCSQANLK		Load modules - IBM MQ for z/OS Japanese JPN product code and utilities
SCSQANLU		Load modules - IBM MQ for z/OS Uppercase English ENP product code and utilities
SCSQASMS	ACSQASMS	Assembler sample source
SCSQAUTH		Load modules - IBM MQ for z/OS product code and utilities
SCSQCICS		Load modules required by CICS DFHRPL
SCSQCLST	ACSQCLST	Sample CLISTS
SCSQCOBC	ACSQCOBC	COBOL Copybooks (sample and product copybooks)
SCSQCOBS	ACSQCOBS	COBOL Sample source
SCSQCPPS	ACSQCPPS	C++ Sample source
SCSQC37S	ACSQC37S	C/370 Sample source
SCSQC370	ACSQC370	C/370 Headers (sample and product headers)
SCSQDEFS	ACSQDEFS	Side definitions for C++, the DB2 DBRMs for shared queuing and language header files from previous releases of WebSphere MQ for z/OS
SCSQEXEC	ACSQEXEC	Exec files
SCSQHPPS	ACSQHPPS	Headers for C++
SCSQINST	ACSQINST	Install jobs JCL
SCSQLINK		Load modules - early code (must be in LPA)
SCSQLOAD		Load modules - non APF authorized samples, user exits, IVPs, stubs, utilities, C++ runtime DLLs.
SCSQMACS	ACSQMACS	Sample, product, and ZPARM macros
SCSQMAPS	ACSQMAPS	Sample maps
	ACSQMOD	Object code library
SCSQMSGC	ACSQMSGC	IBM MQ for z/OS Simplified Chinese CHS messages to be included in ISPMLIB concatenation
SCSQMSGE	ACSQMSGE	IBM MQ for z/OS US English ENU messages to be included in ISPMLIB concatenation
SCSQMSGF	ACSQMSGF	IBM MQ for z/OS French FRA messages to be included in ISPMLIB concatenation

Figure 24 (Page 3 of 4). Library contents after installation		
Target library	**Distribution library**	**Description**
SCSQMSGK	ACSQMSGK	IBM MQ for z/OS Japanese JPN messages to be included in ISPMLIB concatenation
SCSQMSGU	ACSQMSGU	IBM MQ for z/OS Uppercase English ENP messages to be included in ISPMLIB concatenation
SCSQMVR1		Load modules required for the mover when using TCP/IP with the UNIX System Services sockets or IUCV interface, or LU 6.2
SCSQPLIC	ACSQPLIC	PL/I Headers
SCSQPLIS	ACSQPLIS	PL/I Sample source
SCSQPNLA	ACSQPNLA	Sample panels
SCSQPNLC	ACSQPNLC	IBM MQ for z/OS Simplified Chinese CHS panels to be included in ISPPLIB concatenation
SCSQPNLE	ACSQPNLE	IBM MQ for z/OS US English ENU panels to be included in ISPPLIB concatenation
SCSQPNLF	ACSQPNLF	IBM MQ for z/OS French FRA panels to be included in ISPPLIB concatenation
SCSQPNLK	ACSQPNLK	IBM MQ for z/OS Japanese JPN panels to be included in ISPPLIB concatenation
SCSQPNLU	ACSQPNLU	IBM MQ for z/OS Uppercase English ENP panels to be included in ISPPLIB concatenation
SCSQPROC	ACSQPROC	Sample JCL
SCSQSNLC		IBM MQ for z/OS Simplified Chinese CHS load modules required for specialized function
SCSQSNLE		IBM MQ for z/OS US English ENU load modules required for specialized function
SCSQSNLF		IBM MQ for z/OS French FRA load modules required for specialized function
SCSQSNLK		IBM MQ for z/OS Japanese JPN load modules required for specialized function
SCSQSNLU		IBM MQ for z/OS Uppercase English ENP load modules required for specialized function
SCSQTBLC	ACSQTBLC	IBM MQ for z/OS Simplified Chinese CHS tables to be included in ISPTLIB concatenation
SCSQTBLE	ACSQTBLE	IBM MQ for z/OS US English ENU tables to be included in ISPTLIB concatenation
SCSQTBLF	ACSQTBLF	IBM MQ for z/OS French FRA tables to be included in ISPTLIB concatenation

Figure 24 (Page 4 of 4). Library contents after installation		
Target library	**Distribution library**	**Description**
SCSQTBLK	ACSQTBLK	IBM MQ for z/OS Japanese JPN tables to be included in ISPTLIB concatenation
SCSQTBLU	ACSQTBLU	IBM MQ for z/OS Uppercase English ENP tables to be included in ISPTLIB concatenation

6.5.2 Directory contents after installation

After the successful completion of SMP/E processing for IBM MQ for z/OS Unix System Services Components, your directories will have the names and contents shown in Figure 25.

Figure 25. Directory contents after installation		
Directory	**File**	**Contents**
http	WMQHTTP.war	The MQ Bridge for HTTP application in a web application resource (WAR) archive
http/samples		Samples using the MQ bridge for HTTP
java/bin		IVPs and utilities
java/doc	wmqjms_javadoc.jar	MQ classes for JMS JavaDoc
java/lib		Jars and native libraries
java/samples	wmqjava/*	Samples using MQ classes for Java
java/samples	jms/*	Samples using MQ classes for Java Message Service
java/samples	pcf/*	Samples using MQ classes with PCF
web		IBM WebSphere Application Server Liberty Profile for IBM MQ for z/OS Unix System Services Web Components installation directory
web/usr		IBM WebSphere Application Server Liberty Profile user directory containing template mqweb server definition
zosmf	*.xml	Sample z/OSMF workflows for IBM MQ for z/OS
zosmf	*.properties	Sample z/OSMF workflow variables properties file for use with sample z/OSMF workflows for IBM MQ for z/OS
zosmf/exec	*.rexx	Sample REXX execs invoked by sample z/OSMF workflows for IBM MQ for z/OS
zosmf/jcl	*.jcl	Sample JCL submitted by sample z/OSMF workflows for IBM MQ for z/OS
zosconnect		MQ Service Provider for IBM z/OS Connect

The distribution libraries for IBM MQ for z/OS Unix System Services Web Components are ACSQOWSH and ACSQOWPX.

The distribution libraries for IBM MQ for z/OS Unix System Services Components are ACSQOJSH and ACSQOJTR.

6.5.3 What to do if you apply service

If you apply service to APPC, TCP/IP, or Language Environment, see the Configuring > Configuring z/OS section of the MQ product documentation hosted in IBM Knowledge Center for information about what to do.

Appendix A. Customizing the sample installation manually

You can customize the sample jobs manually using your preferred editor. (Alternatively, you can use **CSQ8ASYJ** to customize the jobs.) If you choose to customize the sample jobs manually, you will find that comments are provided in the JCL to help you and, additionally, you will need to add a job card to meet your site's requirements before submitting them. However, you should read the rest of 6.0, "Installation Instructions" on page 25 before you start.

If you want to customize the sample installation jobs manually, these are the jobs that you must customize:

CSQ8B0GZ Sets up an SMP/E global zone.

CSQ8C0TZ Sets up an SMP/E target zone.

CSQ8D0DZ Sets up an SMP/E distribution zone.

CSQ8E1AL Allocates the IBM MQ for z/OS base product and IBM MQ for z/OS US English ENU target and distribution libraries.

CSQ8L0DD Defines IBM MQ for z/OS target and distribution libraries to SMP/E.

CSQ8N0RC Runs the SMP/E RECEIVE step for IBM MQ for z/OS. When customizing this job you must add the list of FMIDs you want to install. Look at the comments in the job for details.

CSQ8P0AP Runs the SMP/E APPLY step for IBM MQ for z/OS. When customizing this job you must add the list of FMIDs you want to install. Look at the comments in the job for details.

CSQ8Q0AC Runs the SMP/E ACCEPT step for IBM MQ for z/OS. When customizing this job you must add the list of FMIDs you want to install. Look at the comments in the job for details.

If you are going to use the optional LINK job (described in Appendix B, "Enabling automatic relinking after service is applied" on page 57) you must also customize:

CSQ8RLKB Customizes the CSQ8SLDQ SMP/E link statement for your system.

CSQ8SLDQ SMP/E link for the base product.

In addition, if you are intending to install support for one of the optional national languages, you must customize:

CSQ8F2AL Allocates the IBM MQ for z/OS Japanese JPN target and distribution libraries.

CSQ8G3AL Allocates the IBM MQ for z/OS Simplified Chinese CHS target and distribution libraries.

CSQ8H4AL Allocates the IBM MQ for z/OS Uppercase English ENP target and distribution libraries.

CSQ8H5AL Allocates the IBM MQ for z/OS French FRA target and distribution libraries.

If you intend to install IBM MQ for z/OS Unix System Services Web Components you must customize:

Customizing the sample installation manually

CSQ8I6AL   Allocates the distribution libraries for IBM MQ for z/OS Unix System Services Web Components.

CSQ8M6DD   Defines the target and distribution libraries for IBM MQ for z/OS Unix System Services Web Components to SMP/E.

If you intend to install IBM MQ for z/OS Unix System Services Components you must customize:

CSQ8I8AL   Allocates the distribution libraries for IBM MQ for z/OS Unix System Services Components.

CSQ8J8ZF   Create, format, mount and make active a zFS filing system.

CSQ8K8MK   Creates the HFS target paths for IBM MQ for z/OS Unix System Services Components.

CSQ8M8DD   Defines the target and distribution libraries for IBM MQ for z/OS Unix System Services Components to SMP/E.

If you want to reduce the number of IBM MQ for z/OS target libraries that need to be added to the link list, you must customize the following job:

CSQ8UERL A user modification that moves the CSQ3ECMX load module into the SCSQLINK data set, from the specified language data set.

Finally, if you want to enable the measured usage license charge (MULC) feature, you must customize the following job:

CSQ8TUBP A user modification that moves the IBM MQ for z/OS exit program into the SYS1.SIFALIB data set.

Note: The order in which these jobs should be run is described in the following sections:

- 6.3.9, "Prepare the installation environment" on page 39
- 6.3.10, "Perform SMP/E RECEIVE" on page 40
- 6.3.15, "Perform SMP/E APPLY" on page 44
- 6.3.16, "Perform SMP/E ACCEPT" on page 46
- 6.4.1, "Enabling measured usage license charges" on page 49

There are a number of other members that may be in `DHQ.UCSQINST`. You do not need to customize them manually. They are:

CSQ8ASYJ

CSQ8Z8MK

CSQ8ZLKB

CSQ8ZLKN

CSQ8ZSYR

Appendix B. Enabling automatic relinking after service is applied

SMP/E provides a facility to perform automatic cross zone link-editing when service has been applied to the following corequisite products:

- Language Environment
- z/OS callable services (APPC and RRS)

If you choose to use this option, the following must apply:

- IBM MQ for z/OS must be installed in a separate target zone from these other products.

- You must set up ZONEINDEXs between MQ and the other zones.

- If you are using an existing target zone, you must make sure that the XZLINK subentry for your target zone is set to AUTOMATIC.

This is performed as part of the SMP/E APPLY step.

B.1 Cross zone preparation

1. Create a ZONEINDEX in the IBM MQ for z/OS global zone for the Language Environment target and distribution zones.

2. Create a ZONEINDEX in the Language Environment global zone for the IBM MQ for z/OS target and distribution zones.

3. Create a ZONEINDEX in the IBM MQ for z/OS global zone for the z/OS callable services target and distribution zones.

4. Create a ZONEINDEX in the z/OS callable services global zone for the IBM MQ for z/OS target and distribution zones.

An example of adding a ZONEINDEX entry using UCLIN:

Enabling automatic relinking after service is applied

```
SET BOUNDARY(GZNAME) .
 UCLIN .
  ADD GLOBALZONE
      ZONEINDEX((TZNAME,HLQS.TZNAME.CSI,TARGET)
                (DZNAME,HLQS.DZNAME.CSI,DLIB)) .
 ENDUCL .

Where:
 GZNAME - The name of the global zone
 TZNAME - The name of the target zone
 DZNAME - The name of the distribution zone
 HLQS   - The high-level qualifiers for the target and
          distribution zones
```

The names of the target and distribution zones must be the same in each of the global zones in which ZONEINDEXs are defined. For example if the MQ target zone name is MQTZON in the MQ global zone ZONEINDEX, then it must also be MQTZON in the Language Environment global zone ZONEINDEX, and the z/OS Global zone.

B.2 SMP/E LINK

Run the following jobs in the order shown:

1. CSQ8RLKB

2. CSQ8SLDQ

Expected Return Codes and Messages:

The **CSQ8RLKB** job should complete with a return code of 0.

The **CSQ8SLDQ** job should complete with a return code of 0.

DDDEFs for SCEESPC and SCEELKED are required in the Language Environment target zone. DDDEFs are required in the z/OS callable services zone for CSSLIB. It is assumed these DDDEF entries were made during the installation of Language Environment, and z/OS.

Appendix C. SMP/E Migration considerations

These notes apply only if you are installing over the top of a previous release of this product, that is, you are installing into the same SMP/E zone and target and distribution libraries as used by the previous release.

The MQ product documentation hosted in IBM Knowledge Center contains the considerations for migrating queue managers from a previous release. Details of any APARs required for migration can be found online at:
http://www.ibm.com/support/entry/portal/Planning/Software/WebSphere/WebSphere_MQ.

C.1 Migrating from WebSphere MQ for z/OS Version 7.1.0 or IBM MQ for z/OS Version 8.0.0.

C.1.1 Target and distribution zones.

IBM strongly recommends creating new target and distribution zones and libraries for an installation of IBM MQ for z/OS V9.0 because:

- IBM MQ for z/OS V9.0 requires increased space for some target and distribution libraries.

- Some data sets may now require being PDSE's rather than PDS's. It is not possible to alter allocations of existing data sets.

- Using new zones allows the provided allocation jobs to be used to create new libraries.

- The CSQ8C0TZ job will correctly allocate a PDSE for use as the SMPLTS library in the new zone.

- Cross zone link information is different in IBM MQ for z/OS V9.0 from previous releases.

See C.2, "Tailoring Installation jobs for migration." for a description of steps required to tailor the installation jobs, and the jobs to run, to create a new IBM MQ for z/OS V9.0 target zone in an existing SMP/E environment.

C.2 Tailoring Installation jobs for migration.

The IBM MQ for z/OS installation jobs may be modified as followed to create new Target and Distribution zones within an existing SMP/E environment.

1. Edit members **CSQ8C0TZ** and **CSQ8D0DZ** in library `DHQ.UCSQINST` so that DDNAMES and DDDEFS for SMPSCDS, SMPMTS, SMPSTS and SMPLTS refer to data sets with names containing the customization variable `TZNAME`. For example, for each of these data sets, change instances of `SHLQUAL` to `SHLQUAL.TZNAME` - change:

    `//SMPSCDS    DD  DSN=SHLQUAL.SMPSCDS,`

and

```
  ADD DDDEF(SMPSTS)
      DA(SHLQUAL.SMPSTS)   SHR .
```

to

```
//SMPSCDS   DD  DSN=SHLQUAL.TZNAME.SMPSCDS,
```

and

```
  ADD DDDEF(SMPSTS)
      DA(SHLQUAL.TZNAME.SMPSTS)   SHR .
```

respectively.

Ensure that the SMPPTS, SMPLOG DDNAMEs and the SMPPTS, SMPLOG and SMPLOGA DDDEFs set up for the new target and distribution zones reference those which already exist for the global zone you are reusing.

2. Edit member **CSQ8ASYJ** of DHQ.UCSQINST paying particular attention to the following customization variables:

   - SHLQUAL should be set to the high level qualifier of the existing SMP/E environment which you want to use.

   - THLQUAL and DHLQUAL should contain version specific information for the new IBM MQ for z/OS data sets you will allocate, for example you might choose PP.MQM.V9R0M0 for THLQUAL.

   - GZONECSI should be the name of your existing SMP/E global zone.

   - TZNAME and DZNAME should be new target and distribution zone names for installing IBM MQ for z/OS, for example, you might choose TZMQ900 for TZNAME.

3. See 6.3.8, "Customize the sample installation JCL" on page 36 for further information on further customizing of the installation JCL.

4. Run **CSQ8ASYJ** to create customized installation jobs in THQ.THQINST.

5. Edit and submit **CSQ8C0TZ** to create a new target zone for installation of IBM MQ for z/OS.

6. Edit and submit **CSQ8D0DZ** to create a new distribution zone IBM MQ for z/OS.

7. Allocate target and distribution libraries by running the data set allocation jobs appropriate for your installation set. One or more of:

   - CSQ8E1AL
   - CSQ8F2AL
   - CSQ8G3AL
   - CSQ8H4AL
   - CSQ8H5AL
   - CSQ8I6AL
   - CSQ8I8AL

8. Optionally use **CSQ8J8ZF** to create and mount a ZFS for the USS components installed in JMS9018.

9. Create DDDEF entries for the new target and distribution zones by running **CSQ8L0DD**, and:

- `CSQ8M6DD`, if installing IBM MQ for z/OS Unix System Services Web Components
- `CSQ8M8DD`, if installing IBM MQ for z/OS Unix System Services Components.

10. Now run RECEIVE, APPLY and ACCEPT processing as described in 6.3.10, "Perform SMP/E RECEIVE" on page 40, 6.3.15, "Perform SMP/E APPLY" on page 44 and 6.3.16, "Perform SMP/E ACCEPT" on page 46.

SMP/E Migration considerations

Appendix D. Notices

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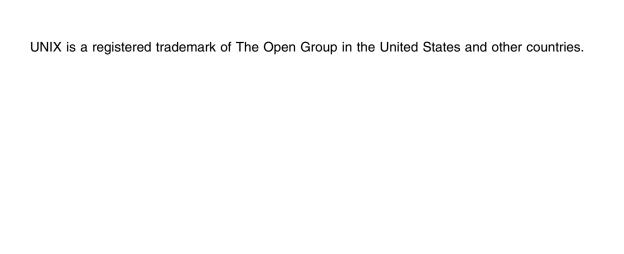> Armonk, New York 10504-1785
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