



**Program Directory for
IBM Db2 Automation Expert for z/OS**

V01.01.00

Program Number 5698-DAE

FMIDs H33A110 and H25F132

for Use with
z/OS

Document Date: November 2023

GI13-5576-00

Note

Before using this information and the product it supports, be sure to read the general information under 7.0, "Notices" on page 27.

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1.0 Introduction

This program directory is intended for system programmers who are responsible for program installation and maintenance. It contains information about the material and procedures associated with the installation of IBM Db2 Automation Expert for z/OS. This publication refers to IBM Db2 Automation Expert for z/OS as Db2 Automation Expert.

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 3 identifies the basic program materials and documentation for Db2 Automation Expert.
- 3.0, “Program Support” on page 6 describes the IBM support available for Db2 Automation Expert.
- 4.0, “Program and Service Level Information” on page 8 lists the APARs (program level) and PTFs (service level) that have been incorporated into Db2 Automation Expert.
- 5.0, “Installation Requirements and Considerations” on page 9 identifies the resources and considerations that are required for installing and using Db2 Automation Expert.
- 6.0, “Installation Instructions” on page 18 provides detailed installation instructions for Db2 Automation Expert. It also describes the procedures for activating the functions of Db2 Automation Expert, or refers to appropriate publications.

Before installing Db2 Automation Expert, read the *CBPDO Memo To Users* and the *CBPDO Memo To Users Extension* that are supplied with this program in softcopy format and this program directory; after which, keep the documents for your reference. Section 3.2, “Preventive Service Planning” on page 6 tells you how to find any updates to the information and procedures in this program directory.

Db2 Automation Expert is supplied in a Custom-Built Product Delivery Offering (CBPDO, 5751-CS3). The program directory that is provided in softcopy format on the CBPDO is identical to the hardcopy format if one was included with your order. All service and HOLDDATA for Db2 Automation Expert are included on the CBPDO.

Do not use this program directory if you install Db2 Automation Expert with a 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 Db2 Automation Expert Description

IBM Db2 Automation Expert for z/OS, V1.1 (5698-DAE) is a new offering which provides automated processing of Db2 maintenance for timely optimization. It is a Db2 utilities automation solution that approaches fully automated processing of Db2 maintenance and includes modern dashboards, data streaming, Ansible support, and APIs for DevOps pipelines. Key features in this initial release:

- **Expert processing** (Advanced AND/OR logic support for exception profiles)

Users can fine-tune how exception processing evaluates multiple conditions by using parentheses around groups of attributes to create logical sets of conditions that are evaluated using AND or OR logical relationships. This gives full control over how exception conditions are evaluated by exception processing, to determine more accurately if and when an automated process should execute.

- **Advanced scheduling**

Db2 Automation Expert fully integrates autonomic scheduling functions in a more logical and intuitive way. Autonomic scheduling is infused into the definition of the automation profiles, making autonomic processing fully part of profile processing.

- **REORG avoidance** (through integration with Db2 Query Monitor)

Db2 Automation Expert initiates smarter reorganization recommendations by providing the objects to be monitored and the time frame to be monitored by Db2 Query Monitor. Db2 Query Monitor collects performance data on queries that are run against those objects during that time frame. Db2 Query Monitor then analyzes the data and provides information to Db2 Automation Expert as to whether a reorganization is recommended.

- **Out of the box productivity** (Enhanced best practices profiles)

To help users efficiently implement Db2 Automation Expert, sample profiles are provided that follow Db2 best practices as defined by the developers of the Db2 for z/OS engine. The profiles provide a range of automation examples for different object types and schedules.

- **ODP stream to provide statistical data**

ODP provides a means to send statistical data to analytics platforms, such as Elastic and Grafana, where custom dashboards can provide insights into a Db2 object's condition. Db2 Automation Expert streams certain near real-time statistics to show the trends in your Db2 object's status over time. This allows for a visual depiction of the trend toward entropy and gives an insight into when an object should be serviced. Sample dashboards for leading solutions are provided.

- **Ansible support for external automation (REST API)**

Leveraging new REST APIs, Db2 Automation Expert can participate in corporate workflows originating off z/OS using the Ansible platform or similar automation tool set. This will allow existing pipelines to process utilities on an as needed basis. Db2 Automation Expert delivers sample playbooks to provide day one integration into your Ansible workflows.

1.2 Db2 Automation Expert FMIDs

Db2 Automation Expert consists of the following FMIDs:

H33A110

H25F132

2.0 Program Materials

An IBM program is identified by a program number. The program number for Db2 Automation Expert is 5698-DAE.

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 Db2 Automation Expert. Ask your IBM representative for this information if you have not already received a copy.

2.1 Basic Machine-Readable Material

The distribution medium for this program is physical media or downloadable files. This program is in SMP/E RELFILE format and is installed by using SMP/E. See 6.0, "Installation Instructions" on page 18 for more information about how to install the program.

You can find information about the physical media for the basic machine-readable materials for Db2 Automation Expert in the *CBPDO Memo To Users Extension*.

Figure 1 describes the program file content for Db2 Automation Expert. You can refer to the *CBPDO Memo To Users Extension* to see where the files reside on the image.

Notes:

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

Figure 1 (Page 1 of 2). Program File Content

Name	O R G	R E C F M	L R E C L	BLK SIZE
SMPMCS	SEQ	FB	80	8800
IBM.H33A110.F1	PDS	FB	80	27920
IBM.H33A110.F2	PDSE	U	0	6144
IBM.H33A110.F3	PDS	FB	80	27920
IBM.H33A110.F4	PDS	FB	80	8800
IBM.H33A110.F5	PDS	FB	80	27920

Figure 1 (Page 2 of 2). Program File Content

Name	O R G	R E C F M	L R E C L	BLK SIZE
IBM.H33A110.F6	PDS	FB	80	27920
IBM.H33A110.F7	PDS	FB	80	27920
IBM.H33A110.F8	PDS	FB	80	27920
IBM.H33A110.F9	PDS	FB	4096	24576
IBM.H33A110.F10	PDS	FB	80	27920
IBM.H33A110.F11	PDS	VB	256	27998
IBM.H33A110.F12	PDS	FB	80	8800

Figure 2. Program File Content for FEC Common Code

Name	O R G	R E C F M	L R E C L	BLK SIZE
IBM.H25F132.F1	PDS	FB	80	8800
IBM.H25F132.F2	PDS	U	0	6144
IBM.H25F132.F3	PDS	FB	80	27920
IBM.H25F132.F4	PDS	FB	80	27920
IBM.H25F132.F5	PDS	FB	80	27920
IBM.H25F132.F6	PDS	FB	80	27920

2.2 Program Publications

The following sections identify the basic publications for Db2 Automation Expert.

Figure 3 identifies the basic unlicensed publications for Db2 Automation Expert. Those that are in softcopy format can be obtained from the IBM Publications Center website at <https://www.ibm.com/resources/publications>

Figure 3. Basic Material: Unlicensed Publications

Publication Title	Form Number	Media Format
<i>Db2 Automation Expert for z/OS License Information</i>	LC28-3288	Electronic
<i>Db2 Automation Expert for z/OS User's Guide</i>	SC28-3290	IBM Documentation

No optional publications are provided for Db2 Automation Expert.

2.3 Program Source Materials

No program source materials or viewable program listings are provided for Db2 Automation Expert.

2.4 Publications Useful During Installation

You might want to use the publications listed in Figure 4 during the installation of Db2 Automation Expert.

Figure 4. Publications Useful During Installation

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

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

3.0 Program Support

This section describes the IBM support available for Db2 Automation Expert.

3.1 Program Services

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

3.2 Preventive Service Planning

Before you install Db2 Automation Expert, 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-REQUIRESERVICE fix category in SMP/E to ensure you have all the recommended service installed. Use the **FIXCAT(IBM.PRODUCTINSTALL-REQUIRESERVICE)** operand on the **APPLY CHECK** command. See 6.1.12, "Perform SMP/E APPLY" on page 23 for a sample APPLY command

If you obtained Db2 Automation Expert as part of a CBPDO, HOLDDATA is included.

If the CBPDO for Db2 Automation Expert is older than two weeks by the time you install the product materials, you can obtain the latest PSP Bucket information by searching on the following website:

<https://www.ibm.com/support/pages/ibmsearch>

You can also contact the IBM Support Center to obtain the latest PSP Bucket information.

For program support, access the Software Support Website at <https://www.ibm.com/mysupport/>.

PSP Buckets are identified by UPGRADEs, which specify product levels; and SUBSETs, which specify the FMIDs for a product level. The UPGRADE and SUBSET values for Db2 Automation Expert are included in Figure 5.

UPGRADE	SUBSET	Description
5698DAE	H33A110	IBM Db2 Automation Expert for z/OS
5655F55	H25F132	FEC Common Code

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 on page 7 identifies the component IDs (COMPID) for Db2 Automation Expert.

<i>Figure 6. Component IDs</i>			
FMID	COMPID	Component Name	RETAIN Release
H33A110	5698DAE00	Db2 Automation Expert	110
H25F132	5655F5504	FEC Common Code	132

4.0 Program and Service Level Information

This section identifies the program and relevant service levels of Db2 Automation Expert. The program level refers to the APAR fixes that have been incorporated into the program. The service level refers to the PTFs that have been incorporated into the program.

4.1 Program Level Information

No APARs have been incorporated into Db2 Automation Expert.

4.2 Service Level Information

No PTFs against this release of Db2 Automation Expert have been incorporated into the product package.

Frequently check the Db2 Automation Expert 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-REQUIRESERVICE)** 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 Db2 Automation Expert. 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 Db2 Automation Expert.

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	02.04.00 or higher	N/A	No

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

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

Db2 Automation Expert has members that are installed into a file system. Before installing Db2 Automation Expert, you must ensure that the target system file system data sets are available for processing on the driving system. OMVS must be active on the driving system and the target system file data sets must be mounted on the driving system.

zFS must 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 Db2 Automation Expert.

Db2 Automation Expert installs in the DBS (P115) 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?
5698-DAE	FEC Common Code - FMID H25F132 *	1.3.2 or higher	See Note below	Yes

Note: * FEC is required to be at the **current maintenance level** prior to the installation of H33A110. If not, unpredictable results may occur.

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

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.

Db2 Automation Expert 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
5655-TC1	IBM Tools Customizer for z/OS V01.01.00 plus APAR PH42701 (See NOTE below)
Any one of the following:	
5770-AF4	Db2 Utilities Suite for z/OS V12.1 if running Db2 for z/OS V12.1
5698-DUT	Db2 Utilities Suite for z/OS V13.1 if running Db2 for z/OS V13.1
Any one of the following:	
5650-DB2	Db2 for z/OS V12.1
5770-AF3	Db2 for z/OS Value Unit Edition V12.1
5698-DB2	Db2 for z/OS V13.1 plus APAR PH51878
5698-DBV	Db2 for z/OS Value Unit Edition V13.1 plus APAR PH51878

Note: IBM Tools Customizer for z/OS, (5655-TC1), FMID HTCZ110, is a no-charge product that must be separately ordered and installed to customize Db2 Automation Expert. IBM Tools Customizer for z/OS was formerly a component of IBM Tools Base,

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

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

Figure 10. Target System Conditional Operational Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5655-E37 or 5697-US4 or 5697-MS2	IBM Db2 Automation Tool for z/OS, V4.3, all maintenance applied up through APAR PH56096	Migrating from IBM Db2 Automation Tool for z/OS V3.4 to Db2 Automation Expert
5655-MS2 or 5697-US4	IBM Db2 Autonomics Director for z/OS V1.6, all maintenance applied up through APAR PH48738	Migrating from IBM Db2 Autonomics Director to Db2 Automation Expert
5698-DAE	FEC Common Code - with latest maintenance	Operating basic functions of Db2 Automation Expert
5698-DAE	OMEGAMON Data Provider (ODP) APAR OA64880 applied (See NOTE below)	For ODP and API use with Db2 Automation Expert
5698-UM1 or 5698-ADF	Unified Management Server or Db2 Administration Foundation APAR PH56865	For ODP and API use with Db2 Automation Expert

Note: OMEGAMON Data Provider can be obtained by ordering the 5698-DAE, Db2 Automation Expert for z/OS V01.01.00. 'Db2 Automation Expert **MVS**' feature located in the z/OS Shopz catalog.

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

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.

Db2 Automation Expert 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.

Db2 Automation Expert has no negative requisites.

5.2.3 DASD Storage Requirements

Db2 Automation Expert libraries can reside on all supported DASD types.

Figure 11 lists the total space that is required for each type of library.

Library Type	Total Space Required in 3390 Trks	Description
Target	1255	
Distribution	2372	
File System(s)	10	

Notes:

1. For non-RECFM U data sets, IBM recommends using system-determined block sizes for efficient DASD utilization. For RECFM U data sets, IBM recommends using a block size of 32760, which is most efficient from the performance and DASD utilization perspective.
2. Abbreviations used for data set types are shown as follows.
 - U** Unique data set, allocated by this product and used by only this product. This table provides all the required information to determine the correct storage for this data set. You do not need to refer to other tables or program directories for the data set size.
 - S** Shared data set, allocated by this product and used by this product and other products. To determine the correct storage needed for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.
 - E** Existing shared data set, used by this product and other products. This data set is *not* allocated by this product. To determine the correct storage for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

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

deleting the old release with a dummy function, compressing the libraries, and comparing the space requirements with the free space in the libraries.

For more information about the names and sizes of the required data sets, see 6.1.8, "Allocate SMP/E Target and Distribution Libraries" on page 21.

3. Abbreviations used for the file system path type are as follows.

- N** New path, created by this product.
- X** Path created by this product, but might already exist from a previous release.
- P** Previously existing path, created by another product.

4. All target and distribution libraries listed have the following attributes:

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

5. All target libraries listed have the following attributes:

- These data sets can be SMS-managed, but they are not required to be SMS-managed.
- These data sets are not required to reside on the IPL volume.
- The values in the "Member Type" column are not necessarily the actual SMP/E element types that are identified in the SMPMCS.

6. All target libraries that are listed and contain load modules have the following attributes:

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

Figure 12. Storage Requirements for SMP/E Data Sets

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SMPPTS	E	PDS	FB	80	450	15

The following figures describe the target and distribution libraries required to install Db2 Automation Expert. The storage requirements of Db2 Automation Expert must be added to the storage required by other programs that have data in the same library or path.

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

Figure 13. Storage Requirements for Db2 Automation Expert 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
SDAJBASE	SAMP	Any	U	PDS	FB	80	8	5
SDAJDBRM	MAC	Any	U	PDS	FB	80	40	12
SDAJDENU	MSG	Any	U	PDS	FB	80	135	5
SDAJEXP	DATA	Any	U	PDS	FB	4096	225	5
SDAJEXP2	DATA	Any	U	PDS	FB	80	225	2
SDAJLOAD	MOD	Any	U	PDSE	U	0	400	100
SDAJMENU	MSG	Any	U	PDS	FB	80	15	10
SDAJPENU	PNL	Any	U	PDS	FB	80	370	130
SDAJSAMP	SAMP	Any	U	PDS	FB	80	7	5
SDAJSLIB	SKL	Any	U	PDS	FB	80	55	10

Figure 14. Storage Requirements for FEC Common Code 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
SFECDBRM	MAC	Any	S	PDS	FB	80	1	1
SFECLOAD	LMOD	Any	S	PDS	U	0	42	15
SFECMENU	MSG	Any	S	PDS	FB	80	6	5
SFECPENU	PNL	Any	S	PDS	FB	80	36	15
SFECSAMP	SAMP	Any	S	PDS	FB	80	6	2

Figure 15. Db2 Automation Expert File System Paths

DDNAME	T Y P E	Path Name
SDAJBIN	N	/usr/lpp/IBM/db2ae/v1r1/bin/IBM/

Figure 16. Storage Requirements for Db2 Automation Expert 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
ADAJBASE	U	PDS	FB	80	8	5
ADAJBIN	U	PDS	VB	256	5	1
ADAJDBRM	U	PDS	FB	80	40	12
ADAJDENU	U	PDS	FB	80	135	5
ADAJEXP	U	PDS	FB	4096	225	4
ADAJEXP2	U	PDS	FB	80	225	5
ADAJLOAD	U	PDSE	U	0	400	100
ADAJMENU	U	PDS	FB	80	15	10
ADAJPENU	U	PDS	FB	80	275	130
ADAJSAMP	U	PDS	FB	80	7	5
ADAJSLIB	U	PDS	FB	80	10	

Figure 17. Storage Requirements for FEC Common Code 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
AFECDBRM	S	PDS	FB	80	3	5
AFECLOAD	S	PDS	U	0	42	25
AFECMENU	S	PDS	FB	80	3	5
AFECPENU	S	PDS	FB	80	30	20
AFECSAMP	S	PDS	FB	80	3	5

5.3 FMIDs Deleted

Installing Db2 Automation Expert 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 Db2 Automation Expert 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

The FEC Common Code - FMID H25F132 (included in this software package) is required to be at the current maintenance level prior to the installation of Db2 Automation Expert. If not, unpredictable results may occur.

The following datasets can be in the LPA, but they are not required to be in the LPA. These data sets can be in the LNKLST.

- SDAJLOAD and SFECLOAD are required to be APF-authorized.

Ensure to copy `/usr/lpp/IBM/db2ae/v1r1/bin/daj-odp.jar` to `/usr/lpp/IBM/odp/daj/user/extensions/daj-odp.jar` as this file needs to reside in the ODP connect user extension folder.

6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of Db2 Automation Expert.

Please note the following points:

- If you want to install Db2 Automation Expert into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMPCSI and the SMP/E control data sets.
- You can use the sample jobs that are provided to perform part or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries that are required for SMP/E execution have been defined in appropriate zones.
- You can use the SMP/E dialogs instead of the sample jobs to accomplish the SMP/E installation steps.

6.1 Installing Db2 Automation Expert

6.1.1 SMP/E Considerations for Installing Db2 Automation Expert

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of Db2 Automation Expert.

Please note the following order in which to conduct the apply steps:

1. SMPE apply FEC Common Code FMID H25F132
2. Apply all H25F132 up to current maintenance level
3. SMPE apply Db2 Automation Expert FMID H33A110
4. Proceed with any remaining required SMPE sample jobs.

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 18. 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 18. SMP/E Options Subentry Values

Subentry	Value	Comment
DSSPACE	200,200,500	3390 Tracks
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

6.1.3 SMP/E CALLLIBS Processing

Db2 Automation Expert uses the CALLLIBS function provided in SMP/E to resolve external references during installation. When Db2 Automation Expert is installed, ensure that DDDEFs exist for the following libraries:

- CSSLIB
- SCEEBND2
- SCEELIB
- SCEELKED
- SDSNLOAD
- SIEASID
- SISpload

Note: CALLLIBS uses the previous DDDEFs only to resolve the link-edit for Db2 Automation Expert. These data sets are not updated during the installation of Db2 Automation Expert.

6.1.4 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install Db2 Automation Expert:

<i>Figure 19 (Page 1 of 2). Sample Installation Jobs</i>			
Job Name	Job Type	Description	SMPTLIB Data Set
DAJALA	SMP/E	Sample job to allocate and initialize a new SMP/E CSI data set (Optional)	IBM.H33A110.F12
DAJALB	SMP/E	Sample job to allocate SMP/E data sets (Optional)	IBM.H33A110.F12
DAJRECV	RECEIVE	Sample RECEIVE job for Db2 Automation Expert	IBM.H33A110.F12
DAJREC1	RECEIVE	Sample RECEIVE job for FEC Common Code	IBM.H33A110.F12
DAJALLOC	ALLOCATE	Sample job to allocate target and distribution libraries for Db2 Automation Expert	IBM.H33A110.F12
DAJALLO1	ALLOCATE	Sample job to allocate target and libraries for FEC Common Code	IBM.H33A110.F12
DAJZFS	ALLOMZFS	Sample job to allocate, create mountpoint, & mount zFS data sets (Optional)	IBM.H33A110.F12
DAJISMKD	MKDIR	Sample job to invoke the supplied DAJMKDIR EXEC to allocate file system paths for Db2 Automation Expert	IBM.H33A110.F12
DAJDDDEF	DDDEF	Sample job to define SMP/E DDDEFs for Db2 Automation Expert	IBM.H33A110.F12

Figure 19 (Page 2 of 2). Sample Installation Jobs

Job Name	Job Type	Description	SMPTLIB Data Set
DAJDDDE1	DDDEF	Sample job to define SMP/E DDDEFs for FEC Common Code	IBM.H33A110.F12
DAJAPPLY	APPLY	Sample APPLY job for H33A110, Db2 Automation Expert and FEC Common Code	IBM.H33A110.F12
DAJACCEP	ACCEPT	Sample ACCEPT job for H33A110, Db2 Automation Expert and FEC Common Code	IBM.H33A110.F12

You can access the sample installation jobs by performing an SMP/E RECEIVE (refer to 6.1.7, “Perform SMP/E RECEIVE” on page 21) then copy the jobs from the SMPTLIB data sets to a work data set for editing and submission. See Figure 19 on page 19 to find the appropriate data set.

You can also copy the sample installation jobs from the product files by submitting the following job. Before you submit the job, add a job card and change the lowercase parameters to uppercase values to meet the requirements of your site.

```
//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//IN DD DSN=IBM.H33A110.F12,UNIT=SYSALLDA,DISP=SHR,
// VOL=SER=filevol
//OUT DD DSNAME=jcl-library-name,
// DISP=(NEW,CATLG,DELETE),
// VOL=SER=dasdvol,UNIT=SYSALLDA,
// SPACE=(TRK,(primary,secondary,dir))
//SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN DD *
COPY INDD=IN,OUTDD=OUT
/*
```

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

IN:

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

OUT:

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

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

6.1.5 Allocate SMP/E CSI (Optional)

If you are using an existing CSI, do not execute this job.

If you are allocating a new SMP/E data set for this install, edit and submit sample job DAJALA to allocate the SMP/E data set for Db2 Automation Expert. Consult the instructions in the sample job for more information.

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

6.1.6 Initialize CSI zones (Optional)

If you are using an existing CSI, do not execute this job.

Edit and submit sample job DAJALB to initialize SMP/E zones for Db2 Automation Expert. Consult the instructions in the sample job for more information.

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

6.1.7 Perform SMP/E RECEIVE

If you have obtained Db2 Automation Expert as part of a CBPDO, use the RCVPDO job in the CBPDO RIMLIB data set to receive the Db2 Automation Expert 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 DAJRECV to perform the SMP/E RECEIVE for Db2 Automation Expert. Consult the instructions in the sample job for more information.

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

6.1.8 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job DAJALLOC to allocate the SMP/E target and distribution libraries for Db2 Automation Expert. Consult the instructions in the sample job for more information.

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

6.1.9 Allocate, create and mount ZFS Files (Optional)

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

If you plan to install Db2 Automation Expert into a new z/OS UNIX file system, you can edit and submit the optional DAJZFS job to perform the following tasks:

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

Consult the instructions in the sample job for more information.

The recommended z/OS UNIX file system type is zFS. The recommended mountpoint is */usr/lpp/IBM/db2ae/v1r1*.

Before running the sample job to create the z/OS UNIX file system, you must ensure that OMVS is active on the driving system. zFS must be active on the driving system if you are installing Db2 Automation Expert into a file system that is zFS.

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

```
MOUNT FILESYSTEM('#dsn')
MOUNTPOINT('/usr/lpp/IBM/db2ae/v1r1')
MODE(RDWR) /* can be MODE(READ) */
TYPE(ZFS) PARM('AGGRGROW') /* zFS, with extents */
```

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

#dsn is the name of the data set holding the z/OS UNIX file system.
/usr/lpp/IBM/db2ae/v1r1 is the name of the mountpoint where the z/OS UNIX file system will be mounted.

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

6.1.10 Allocate File System Paths

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

Before running the sample job to create the paths in the file system, you must ensure that OMVS is active on the driving system and that the target system's zFS file system is mounted to the driving system. zFS must be active on the driving system.

If you plan to install Db2 Automation Expert into a new zFS file system, you must create the mountpoint and mount the new file system to the driving system for Db2 Automation Expert.

The recommended mountpoint is */usr/lpp/IBM/db2ae/v1r1*.

Edit and submit sample job DAJISMKD to allocate the file system paths for Db2 Automation Expert. Consult the instructions in the sample job for more information.

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

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

6.1.11 Create DDDEF Entries

Edit and submit sample job DAJDDDEF to create DDDEF entries for the SMP/E target and distribution libraries for Db2 Automation Expert. Consult the instructions in the sample job for more information.

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

6.1.12 Perform SMP/E APPLY

1. Ensure that you have the latest HOLDDATA; then edit and submit sample job DAJAPPLY to perform an SMP/E APPLY CHECK for Db2 Automation Expert. Consult the instructions in the sample job for more information.

Perform an SMP/E APPLY CHECK for Db2 Automation Expert.

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

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

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

Here are sample APPLY commands:

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

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

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

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

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

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

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

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

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

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

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

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

6.1.13 Perform SMP/E ACCEPT

Edit and submit sample job DAJACCEP to perform an SMP/E ACCEPT CHECK for Db2 Automation Expert. Consult the instructions in the sample job for more information.

Perform an SMP/E ACCEPT CHECK for Db2 Automation Expert.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the PRE, ID, REQ, and IFREQ on the ACCEPT CHECK. The SMP/E root cause analysis identifies the cause of *errors*

but not *warnings* (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings rather than errors).

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

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

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

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

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

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

6.1.14 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 Db2 Automation Expert, it is recommended that you run REPORT CROSSZONE against the new or updated target and distribution zones. REPORT CROSSZONE requires a global zone with ZONEINDEX entries that describe all the target and distribution libraries to be reported on.

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

6.2 Activating Db2 Automation Expert

6.3 Product Customization

The publication *IBM Db2 Automation Expert for z/OS User's Guide* (SC28-3290) contains the necessary information to customize and use Db2 Automation Expert.

7.0 Notices

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Printed in Ireland

G113-5576-00

