Program Directory for
IBM DB2 Accessories Suite for z/OS
DB2 Adapter for z/OS Connect

V04.01.00
Program Number 5697-Q05

FMID H2AZ330

for Use with
z/OS

Document Date: October 2016
Before using this information and the product it supports, be sure to read the general information under 7.0, "Notices" on page 23.
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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 Accessories Suite for z/OS, DB2 Adapter for z/OS Connect. This publication refers to IBM DB2 Accessories Suite for z/OS, DB2 Adapter for z/OS Connect as DB2 Adapter.

The Program Directory contains the following sections:

- **2.0, “Program Materials” on page 3** identifies the basic program materials and documentation for DB2 Adapter.
- **3.0, “Program Support” on page 5** describes the IBM support available for DB2 Adapter.
- **4.0, “Program and Service Level Information” on page 7** lists the APARs (program level) and PTFs (service level) that have been incorporated into DB2 Adapter.
- **5.0, “Installation Requirements and Considerations” on page 8** identifies the resources and considerations that are required for installing and using DB2 Adapter.
- **6.0, “Installation Instructions” on page 15** provides detailed installation instructions for DB2 Adapter. It also describes the procedures for activating the functions of DB2 Adapter, or refers to appropriate publications.

Before installing DB2 Adapter, 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 5 tells you how to find any updates to the information and procedures in this program directory.

DB2 Adapter 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 DB2 Adapter are included on the CBPDO tape.

Do not use this program directory if you install DB2 Adapter 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 DB2 Adapter Description

DB2 Adapter for z/OS Connect is a service provider that connects RESTful web, mobile, and cloud applications to DB2 in the z/OS environment for service discovery and invocation. DB2 Adapter for z/OS Connect provides an integrated solution, including the IBM Liberty Profile for z/OS and the z/OS Connect component. It leverages the IBM Data Studio for tooling support. DB2 Adapter for z/OS Connect provides a fast, dynamic, scalable, and secure solution for you to interact with protected DB2 assets through RESTful services in JSON data format. Although the DB2 Adapter for z/OS Connect feature will operate with DB2 12, it is recommended that clients instead utilize the DB2 DDF native RESTFUL API capabilities delivered in the DB2 12 for z/OS product (5650-DB2 or 5770-AF3).

Data Studio V4.1.2 (APAR3 or later) when used as the front-end tooling can create, deploy, or remove DB2 Adapter for z/OS services. DB2 Adapter for z/OS Connect does the service transformation into an SQL or Stored Procedure call as defined in the Liberty Profile for z/OS Connect service configuration. The DB2 Adapter for z/OS Connect is capable of performing data conversion from JSON payload to the input of SQL or stored procedures and generates JSON payload from SQL and stored procedures results as output.

This solution is effective for companies looking to simplify the deployment of mobile or cloud-based applications that require access to their mission-critical DB2 for z/OS assets. It can supplement existing user-written mobile solutions and mobile solutions offered by IBM.

The latest version of Data Studio is available for download at the IBM Data Studio website.

1.2 DB2 Adapter FMID

DB2 Adapter consists of the following FMID:

H2AZ330 (DB2 Adapter for z/OS Connect)
2.0 Program Materials

An IBM program is identified by a program number. The program number for DB2 Adapter is 5697-Q05.

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 Adapter. 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 15 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 Adapter in the CBPDO Memo To Users Extension.

Figure 1 describes the program file content for DB2 Adapter. 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.

<table>
<thead>
<tr>
<th>Name</th>
<th>SEQ</th>
<th>FB</th>
<th>BLK SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMPMCS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM.H2AZ330.F1</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
</tr>
<tr>
<td>IBM.H2AZ330.F2</td>
<td>PDS</td>
<td>VB</td>
<td>255</td>
</tr>
<tr>
<td>IBM.H2AZ330.F3</td>
<td>PDS</td>
<td>VB</td>
<td>8188</td>
</tr>
</tbody>
</table>
2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for DB2 Adapter.

2.3 Program Publications

The following sections identify the basic publications for DB2 Adapter.

Figure 2 identifies the basic unlicensed publications for DB2 Adapter. Those that are in softcopy format publications can be obtained from the IBM Publications Center website at: http://www.ibm.com/shop/publications/order/

<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
<th>Media Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM DB2 Accessories Suite for z/OS, DB2 Adapter for z/OS Connect License Information</td>
<td>GC27-8815</td>
<td><a href="http://www.ibm.com/software/sla/slab.db.nsf">http://www.ibm.com/software/sla/slab.db.nsf</a></td>
</tr>
</tbody>
</table>

2.3.1 Optional Program Publications

No optional publications are provided for DB2 Adapter.

2.4 Program Source Materials

No program source materials or viewable program listings are provided for DB2 Adapter.

2.5 Publications Useful During Installation

You might want to use the publications listed in Figure 3 during the installation of DB2 Adapter.

<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
<th>Media Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</td>
<td>GA32-0883</td>
<td><a href="http://www.ibm.com/shop/publications/order/">http://www.ibm.com/shop/publications/order/</a></td>
</tr>
</tbody>
</table>
3.0 Program Support

This section describes the IBM support available for DB2 Adapter.

3.1 Program Services

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

3.2 Preventive Service Planning

Before you install DB2 Adapter, make sure that you have reviewed the current Preventive Service Planning (PSP) information. Review the PSP Bucket for General Information, Installation Documentation, and the Cross Product Dependencies sections. For the Recommended Service section, instead of reviewing the PSP Bucket, it is recommended you use the IBM.ProductInstall-RequiredService fix category in SMP/E to ensure you have all the recommended service installed. Use the FIXCAT(IBM.ProductInstall-RequiredService) operand on the APPLY CHECK command. See 6.1.11, “Perform SMP/E APPLY” on page 20 for a sample APPLY command.

If you obtained DB2 Adapter as part of a CBPDO, HOLDDATA is included.

If the CBPDO for DB2 Adapter 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:


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 DB2 Adapter are included in Figure 4.

<table>
<thead>
<tr>
<th>UPGRADE</th>
<th>SUBSET</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5697Q05</td>
<td>H2AZ330</td>
<td>DB2 Adapter for z/OS Connect</td>
</tr>
</tbody>
</table>
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 5 on page 6 identifies the component IDs (COMPID) for DB2 Adapter.

<table>
<thead>
<tr>
<th>FMID</th>
<th>COMPID</th>
<th>Component Name</th>
<th>RETAIN Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2AZ330</td>
<td>5655R1405</td>
<td>DB2 Adapter for z/OS Connect</td>
<td>330</td>
</tr>
</tbody>
</table>
4.0 Program and Service Level Information

This section identifies the program and relevant service levels of DB2 Adapter. 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 Adapter.

4.2 Service Level Information

No PTFs against this release of DB2 Adapter have been incorporated into the product package.

Frequently check the DB2 Adapter 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 DB2 Adapter. 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 Adapter.

5.1.1 Machine Requirements

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

5.1.2 Programming Requirements
### Figure 6. Driving System Software Requirements

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name</th>
<th>Minimum VRM</th>
<th>Minimum Service Level will satisfy these APARs</th>
<th>Included in the shipped product?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5650-ZOS</td>
<td>z/OS</td>
<td>V02.01.00</td>
<td>N/A</td>
<td>No</td>
</tr>
</tbody>
</table>

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

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

DB2 Adapter is installed into a file system, either HFS or zFS. Before installing DB2 Adapter, you must ensure that the target system file system data sets are available for processing on the driving system. OMVS must be active on the driving system and the target system file data sets must be mounted on the driving system.

If you plan to install DB2 Adapter 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 DB2 Adapter.

DB2 Adapter 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.
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.

DB2 Adapter 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.

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name</th>
<th>Minimum VRM</th>
<th>Minimum Service Level will satisfy these APARs</th>
<th>Included in the shipped product?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5650-ZOS</td>
<td>z/OS</td>
<td>02.01.00</td>
<td>N/A</td>
<td>No</td>
</tr>
</tbody>
</table>

**Figure 7. Target System Mandatory Installation Requisites**

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name and Minimum VRM/Service Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>5694-A01</td>
<td>z/OS V02.01</td>
</tr>
</tbody>
</table>

Any one of the following:

- 5605-DB2: DB2 for z/OS V10.01.00 with JDBC FMID JDBAA12
- 5697-P31: DB2 for z/OS 10.01.00 Value Unit Edition with JDBC FMID JDBAA12
- 5615-DB2: DB2 for z/OS V11.01.00 with JDBC FMID JDBBB12
- 5697-P43: DB2 for z/OS V11.01.00 Value Unit Edition with JDBC FMID JDBBB12
- 5650-DB2: DB2 for z/OS V12.01.00
- 5770-AF3: DB2 for z/OS V12.01.00 Value Unit Edition

**Figure 8. Target System Mandatory Operational Requisites**
Before installing DB2 Adapter for z/OS Connect, the user should make sure one of the following optional DB2 for z/OS FMIDs has been installed:

- JDBAA12 - if DB2 for z/OS V10.01.00
- JDBBB12 - if DB2 for z/OS V11.01.00
- JDBCC12 - if DB2 for z/OS V12.01.00

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.

DB2 Adapter has no conditional operational requisites.

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

DB2 Adapter 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 Adapter has no negative requisites.

5.2.3 DASD Storage Requirements

DB2 Adapter libraries can reside on all supported DASD types.

Figure 9 lists the total space that is required for each type of library.

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Total Space Required in 3390 Trks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>16 tracks</td>
</tr>
<tr>
<td>Distribution</td>
<td>3767 tracks</td>
</tr>
<tr>
<td>File System(s)</td>
<td>7500 tracks</td>
</tr>
</tbody>
</table>

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.

3. 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.

4. 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.

5. 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.
   - These data sets are not required to be APF-authorized.

The following figures describe the target and distribution libraries required to install DB2 Adapter. The storage requirements of DB2 Adapter must be added to the storage required by other programs that have data in the same library.
**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 10. Storage Requirements for DB2 Adapter Target Libraries

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>Member Type</th>
<th>Target Volume</th>
<th>RE L No.</th>
<th>RE L No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDSNZNOT</td>
<td>DATA</td>
<td>Any U PDS VB</td>
<td>8188</td>
<td>10 5</td>
</tr>
<tr>
<td>SDSN5ZBS</td>
<td>SAMP</td>
<td>Any U PDS FB</td>
<td>80</td>
<td>6 2</td>
</tr>
</tbody>
</table>

### Figure 11. DB2 Adapter File System Paths

<table>
<thead>
<tr>
<th>DDNAME</th>
<th>Path Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDSN5ZZ1</td>
<td>/usr/lpp/db2zadapterv1r1/IBM</td>
</tr>
</tbody>
</table>

### Figure 12. Storage Requirements for DB2 Adapter Distribution Libraries

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>Target Volume</th>
<th>RE L No.</th>
<th>RE L No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADSN5ZBS</td>
<td>U PDS FB</td>
<td>80</td>
<td>10 3</td>
</tr>
<tr>
<td>ADSN5ZFS</td>
<td>U PDS VB</td>
<td>255 3750</td>
<td>5</td>
</tr>
<tr>
<td>ADSN5ZNT</td>
<td>U PDS VB</td>
<td>8188 7</td>
<td>2</td>
</tr>
</tbody>
</table>

### 5.3 FMIDs Deleted

Installing DB2 Adapter 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 Adapter 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

DB2 Adapter for z/OS Connect includes several executable programs and load modules which are installed into the Unix file system path. Some of these programs require that Unix file extended attributes be set so that they can properly execute under APF-authorized, program control, or shared library environments.

The programs that require the Unix file extended attribute settings have been included to set the necessary Unix file extended attribute bits during the SMP/E APPLY processing. You must run the SMP/E APPLY job with a user ID has READ access to all of the following, or be UID 0:

- READ access to the BPX.FILEATTR/APF resource in the FACILITY class
- READ access to the BPX.FILEATTR/PROGCTL resource in the FACILITY class
- READ access to the BPX.FILEATTR/SHARELIB resource in the FACILITY class

If the SMP/E user ID does not have the required FACILITY resource access, then the SMP/E operation will fail.
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 Adapter.

Please note the following points:

• If you want to install DB2 Adapter 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 Adapter

6.1.1 SMP/E Considerations for Installing DB2 Adapter

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of DB2 Adapter.

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 13. 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.

<table>
<thead>
<tr>
<th>Figure 13. SMP/E Options Subentry Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subentry</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>DSSPACE</td>
</tr>
<tr>
<td>PEMAX</td>
</tr>
</tbody>
</table>

6.1.3 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install DB2 Adapter:
You can access the sample installation jobs by performing an SMP/E RECEIVE (refer to 6.1.6, “Perform SMP/E RECEIVE” on page 18) then copy the jobs from the RELFILES to a work data set for editing and submission. See Figure 14 on page 15 to find the appropriate relfile data set.

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

```
//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
/* Make the //TAPEIN DD statement below active if you install* /from a CBPDO tape by uncommenting the DD statement below. *
/* Make the //TAPEIN DD statement below active if you install* /from a product tape received outside the CBPDO process  *
/* (using the optional SMP/E RECEIVE job) by uncommenting *
/* the DD statement below. *
*/
//TAPEIN DD DSN=IBM.H2AZ330.F1,UNIT=tunit,
  VOL=SER=volser, LABEL=(x,SL),
  DISP=(OLD,KEEP)
/* Make the //TAPEIN DD statement below active if you install* /from a product tape received outside the CBPDO process  *
/* (using the optional SMP/E RECEIVE job) by uncommenting *
/* the DD statement below. *
*/
//TAPEIN DD DSN=IBM.H2AZ330.F1,UNIT=tunit,
```

Figure 14. Sample Installation Jobs

<table>
<thead>
<tr>
<th>Job Name</th>
<th>Job Type</th>
<th>Description</th>
<th>RELFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSN5ZALA</td>
<td>SMP/E</td>
<td>Sample job to allocate and initialize a new SMP/E CSI data set <em>(Optional)</em></td>
<td>IBM.H2AZ330.F1</td>
</tr>
<tr>
<td>DSN5ZALB</td>
<td>SMP/E</td>
<td>Sample job to allocate SMP/E data sets <em>(Optional)</em></td>
<td>IBM.H2AZ330.F1</td>
</tr>
<tr>
<td>DSN5ZREC</td>
<td>RECEIVE</td>
<td>Sample RECEIVE job for DB2 Adapter for z/OS Connect</td>
<td>IBM.H2AZ330.F1</td>
</tr>
<tr>
<td>DSN5ZALC</td>
<td>ALLOCATE</td>
<td>Sample job to allocate target and distribution libraries</td>
<td>IBM.H2AZ330.F1</td>
</tr>
<tr>
<td>DSN5ZZFS</td>
<td>ALLOMZF</td>
<td>Sample job to allocate, create and mount ZFS files <em>(Optional)</em></td>
<td>IBM.H2AZ330.F1</td>
</tr>
<tr>
<td>DSN5ZIMK</td>
<td>MKDIR</td>
<td>Sample job to invoke the supplied DSNZMKS EXEC to allocate HFS or ZFS files</td>
<td>IBM.H2AZ330.F1</td>
</tr>
<tr>
<td>DSN5ZDD1</td>
<td>DDDEF</td>
<td>Sample job to define SMP/E DDDEFs</td>
<td>IBM.H2AZ330.F1</td>
</tr>
<tr>
<td>DSN5ZAPY</td>
<td>APPLY</td>
<td>Sample APPLY job</td>
<td>IBM.H2AZ330.F1</td>
</tr>
<tr>
<td>DSN5ZACP</td>
<td>ACCEPT</td>
<td>Sample ACCEPT job</td>
<td>IBM.H2AZ330.F1</td>
</tr>
</tbody>
</table>

16  DB2 Adapter Program Directory
/* VOL=SER=2AZ330, LABEL=(2,SL), */
/* DISP=(OLD,KEEP) */

/*****************************************************************************/
/* Make the //FILEIN DD statement below active for downloaded DASD files. */
/*****************************************************************************/

FILEIN DD DSN=IBM.H2AZ330.F1,UNIT=SYSALLDA,DISP=SHR,
/* VOL=SER=filevol */
 OUT DD DSNAME=jcl-library-name,
 /* DISP=(NEW,CATLG,DELETE),
 /* VOL=SER=dasdvol,UNIT=SYSALLDA,
 /* SPACE=(TRK,(20,10,5)) */ SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
SYSIN DD *
 COPY INDD=xxxxIN,OUTDD=OUT
/*

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

TAPEIN:

- **tunit** is the unit value that matches the product package.
- **volser** is the volume serial that matches the product package.
- **x** is the tape file number that indicates the location of the data set name on the tape.

See the documentation that is provided by CBPDO for the location of IBM.H2AZ330.F1 on the tape.

FILEIN:

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

OUT:

- **jcl-library-name** is the name of the output data set where the sample jobs are stored.
- **dasdvol** is the volume serial of the DASD device where the output data set resides.

SYSIN:

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

### 6.1.4 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 DSN5ZALA to allocate the SMP/E data set for DB2 Adapter. 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.
6.1.5 Initialize CSI zones (Optional)

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

Edit and submit sample job DSN5ZALB to initialize SMP/E zones for DB2 Adapter. 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 Perform SMP/E RECEIVE

If you have obtained DB2 Adapter as part of a CBPDO, use the RCVPDO job in the CBPDO RIMLIB data set to receive the DB2 Adapter 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 DSN5ZREC to perform the SMP/E RECEIVE for DB2 Adapter for z/OS Connect. Consult the instructions in the sample job for more information.

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

6.1.7 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job DSN5ZALC to allocate the SMP/E target and distribution libraries for DB2 Adapter. 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, create and mount ZFS Files (Optional)

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

If you plan to install DB2 Adapter into a new z/OS UNIX file system, you can edit and submit the optional DSN5ZZFS job to perform the following tasks:

- Create the z/OS UNIX file system
- Create a mount point
- 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 mount point is `usr/lpp/db2zadapterv1r1`.

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 Adapter 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.

```bash
MOUNT FILESYSTEM( '#dsn' )
  MOUNTPOINT( 'usr/lpp/db2zadapterv1r1' )
  MODE(RDWR)   /* can be MODE(READ) */
  TYPE(ZFS) PARM('AGGREGROW') /* 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/db2zadapterv1r1` is the name of the mount point 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.

### 6.1.9 Allocate File System Paths

The target system HFS or zFS data set must be mounted on the driving system when running the sample DSN5ZIMK job since the job will create paths in the HFS or zFS.

Before running the sample job to create the paths in the file system, you must ensure that OMVS is active on the driving system and that the target system's HFS or zFS file system is mounted to the driving system. zFS must be active on the driving system if you are installing DB2 Adapter into a file system that is zFS.

If you plan to install DB2 Adapter into a new HFS or zFS file system, you must create the mountpoint and mount the new file system to the driving system for DB2 Adapter.

The recommended mountpoint is `usr/lpp/db2zadapterv1r1`.

Edit and submit sample job DSN5ZIMK to allocate the HFS or zFS paths for DB2 Adapter. 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.

### 6.1.10 Create DDDEF Entries

Edit and submit sample job DSN5ZDD1 to create DDDEF entries for the SMP/E target and distribution libraries for DB2 Adapter. 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.
6.1.11 Perform SMP/E APPLY

1. Ensure that you have the latest HOLDDATA; then edit and submit sample job DSN5ZAPY to perform an SMP/E APPLY CHECK for DB2 Adapter for z/OS Connect. Consult the instructions in the sample job for more information.

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

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

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

Here are sample APPLY commands:

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

   APPLY S(fmid,fmid,...) CHECK FORFMID(fmid,fmid,...)
   SOURCEID(RSU/c5197)
   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.
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.

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

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.

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

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

6.1.12 Perform SMP/E ACCEPT

Edit and submit sample job DSN5ZACP to perform an SMP/E ACCEPT CHECK for DB2 Adapter for z/OS Connect. Consult the instructions in the sample job for more information.

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

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

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

Note: The GROUPEXTEND operand indicates that SMP/E accepts all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.
Expected Return Codes and Messages from ACCEPT CHECK: You will receive a return code of 0 if this job runs correctly.

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

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

6.1.13 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 Adapter, 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 Adapter

The publication 'DB2 Adapter for z/OS Connect User’s Guide' contains the necessary information to customize and use DB2 Adapter. The publications are DB2 version-specific and can be found here:

- For v11:
  http://www.ibm.com/support/knowledgecenter/SSEPEK_11.0.0/adapter/src/tpc/adapter_overview.html
- For v12:
  http://www.ibm.com/support/knowledgecenter/SSEPEK_12.0.0/adapter/src/tpc/adapter_overview.html
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