



**Program Directory for
DB2 UDB for OS/390
DB2 Management Tools Package**

Version 06 Release 01, Modification Level 00

Program Number 5645-DB2

FMID JDB661D

for Use with
OS/390

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Note!

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

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

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1.0 Introduction

This release of DB2 Management Tools Package includes:

- Workstation Clients CD-ROM
- DB2 Connect Personal Edition Kit
- 390 Enablement

This program directory is intended for the system programmer responsible for program installation and maintenance. It contains information concerning the material and procedures associated with the installation of DB2 Management Tools Package. You should read all of this program directory before installing the program and then keep it for future reference.

The program directory contains the following sections:

- 2.0, "Program Materials" on page 6 identifies the basic and optional program materials and documentation for 390 Enablement.
- 3.0, "Program Support" on page 9 describes the IBM support available for 390 Enablement.
- 4.0, "Program and Service Level Information" on page 11 lists the APARs (program level) and PTFs (service level) incorporated into 390 Enablement.
- 5.0, "Installation Requirements and Considerations" on page 12 identifies the resources and considerations for installing and using 390 Enablement.
- 6.0, "Installation Instructions" on page 18 provides detailed installation instructions for 390 Enablement. It also describes the procedures for activating the functions of 390 Enablement, or refers to appropriate publications.
- Appendix A, "390 Enablement Install Logic" on page 25 provides the install logic for 390 Enablement.

Before installing 390 Enablement, read 3.2, "Preventive Service Planning" on page 9. This section tells you how to find any updates to the information and procedures in this program directory.

Do not use this program directory if you are installing 390 Enablement with an MVS Custom-Built Installation Process Offering (CBIPO), SystemPac, or ServerPac. When using these offerings, use the jobs and documentation supplied with the offering. This documentation may point you to specific sections of the program directory as required.

If you are installing 390 Enablement using the MVS Custom-Built Product Delivery Offering (CBPDO) (5751-CS3), use the softcopy program directory provided on the CBPDO tape. Your CBPDO contains a softcopy preventive service planning (PSP) upgrade for this product. All service and HOLDDATA for 390 Enablement are included on the CBPDO tape.

1.1 Workstation Clients CD-ROM

The DB2 Management Tools Package Workstation Clients CD-ROM includes:

- DB2 Installer
- Visual Explain
- DB2 Estimator

1.1.1 DB2 Installer

The copy of DB2 Installer on the Management Tools Package Workstation Clients CD-ROM, was generated in May of 1999 for DB2 for OS/390 V6. To access the latest copy of DB2 Installer, with support for DB2 for OS/390 V6R1M0, please load file: `wiv610nten.exe` located at:
www.ibm.com/software/data/db2/os390/db2inst.

DB2 Installer lets you install DB2 for OS/390 Version 6 from a workstation. Whether you are installing DB2 for OS/390 for the first time or are an experienced installer, you can use DB2 Installer to increase your productivity.

DB2 Installer is a “command center” from which you can install, migrate, or update 390 Enablement. With the graphical interface, you can follow an easy-to-read map through the entire installation process. In addition, you keep a graphical record of how each subsystem was defined.

You can customize your DB2 subsystem as much or as little as you need to by using DB2 Installer. You can quickly install a basic subsystem or you can customize every installation option. DB2 Installer layers installation options so that options you must specify appear on the main windows and other options are available on advanced windows.

You can use DB2 Installer in the way that best meets the needs of your site. For example, if your site uses CBIPO or CBPDO, you can skip the SMP/E tasks. You can also run some jobs directly on the host and some from DB2 Installer.

DB2 Installer requires one of the following:

- Windows NT, Version 4.0

Note: TCP/IP is required if you want to use all the functions in DB2 Installer and is required if you want to run jobs or use the “Copy jobs to host” function from the workstation. You can use DB2 Installer to customize your installation jobs if you do not have TCP/IP, but you will need to use a method outside of DB2 Installer to move jobs from the workstation to MVS for execution.

1.1.2 Visual Explain

The latest version of Visual Explain is available on the website <http://www.software.ibm.com/data/db2/os390/db2ve/>.

Visual Explain is a workstation based feature of DB2 for OS/390 that displays:

- an easy-to-understand graph of the access paths of SQL statements
- catalog statistics for referenced objects from the access path graph
- a list of explainable statements from plans and packages, optionally filtered by cost or access path criteria

The graphical representation of the access path allows you to instantly distinguish operations such as a sort, parallel access or the use of one or more indexes. You can view suggestions from the graph that describe how you might improve the performance of your SQL statement.

Visual Explain allows you filter capabilities by access path of explainable SQL statements. For example, you can choose to only display statements that contain a sort or have an estimated cost greater than 500 milliseconds.

The report feature of Visual Explain allows you to view, save into a file or print the access path descriptions, statistics, SQL text and cost of any number of explainable SQL statements.

You can also EXPLAIN SQL statements dynamically and immediately, and graph their access path. You can enter the statement, have Visual Explain read it from a file, or extract it from a bound plan or package.

Also available through Visual Explain is the capability for you to browse the real time settings of DSNZPARMs (subsystem parameters) and DSNHDECP.

DB2 Visual Explain requires one of the following:

- Windows NT Version 4.0, DB2 Connect Version 5 or higher, and one of the following communications software: TCP/IP or Communications Server 5.0, or SNA Version 3 integrated SNA support in DB2 Universal Database, or
- Windows NT Version 4 .0, Distributed Database Connection Services (DDCS) Version 2 Release 4, and DB2 Client Application Enabler (CAE), or
- OS/2 Warp Version 3, DDCS for OS/2 Version 2 Release 3, DB2 for OS/2 and Communications Manager 1.11

DB2 Visual Explain subsystem parameter browser requires an activated stored procedures address space.

1.1.3 DB2 Estimator

DB2 Estimator is a tool that aids in the planning and analysis of Version 5 or Version 6 DB2 for OS/390 SQL applications. With it you can generate accurate estimates of SQL, transaction and application performance, and evaluate DASD, CPU and database design alternatives. It can be used to analyze and evaluate SQL performance. It has an easy-to-use graphical user interface that can be used with or without a connection to a DB2 subsystem. Table, index, view, and SQL definitions can be easily downloaded from an OS/390 DB2 system, or they can be created entirely via Estimator without the need of a DB2 connection.

DB2 Estimator is useful for making better proposals for new systems, for analyzing existing systems, and for evaluating the effects of change (extensions, data and transaction volume, modifications to index and data structures, etc.) to existing systems.

1.2 DB2 Connect Personal Edition Kit

DB2 Connect Personal Edition Kit contains:

- DB2 Connect
- DB2 Control Center
- DB2 Stored Procedures Builder

DB2 Connect is a communication product that enables extremely fast and robust connectivity from any desktop application to enterprise data on database servers using the Distributed Relational Database Architecture (DRDA) protocol. Included with DB2 Connect are the tools you need to use your enterprise data for e-business including Control Center for DB2 UDB and DB2 Stored Procedure Builder.

IBM's DB2 Universal Database (UDB) Version 6 Control Center is being extended to support DB2 for OS/390. Users can now manage DB2 for OS/390 database objects using the same workstation-based GUI tool developed for UDB. DB2 for OS/390 objects can now be displayed on the Control Center main window. The actions and utilities to manage these objects can be invoked by selecting the appropriate object on the navigation tree. For example, a user can list the table spaces of a particular database and perform the following actions on a selected table space: alter, drop, copy, runstats, etc.

The stored procedure builder is a graphical tool that provides an easy-to-use development environment for creating, installing, and testing stored procedures for DB2.

1.3 390 Enablement

IBM DB2 Control Center provides support to help you manage DB2 databases on an array of operating systems in your workplace. For Control Center to work with DB2 Universal Database for OS/390, a set of stored procedures must be installed at each DB2 UDB for OS/390 subsystem that you want to work with using DB2 Control Center. 390 Enablement provides these stored procedures in the form of an SMP/E installable package.

The remainder of this document provides information to help you install the SMP/E package for 390 Enablement

1.3.1 390 Enablement FMID

390 Enablement consists of the following FMID:

JDB661D

2.0 Program Materials

An IBM program is identified by a program number and a feature number. The program number for 390 Enablement is 5645-DB2.

Basic Machine-Readable Materials are materials that are supplied under the base license and feature code, and are required for the use of the product. Optional Machine-Readable Materials are orderable under separate feature codes, and are not required for the product to function.

The program announcement material describes the features supported by 390 Enablement. 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 9-track magnetic tape (written at 6250 BPI), 3480 cartridge, 3590 cartridge, or 4mm cartridge. The tape or cartridge contains all the programs and data needed for installation. It is installed using SMP/E, and is in SMP/E RELFILE format. See 6.0, "Installation Instructions" on page 18 for more information about how to install the program.

Figure 1 describes the tape or cartridge. Figure 2 on page 7 describes the file content of the program tape or cartridge.

Note: If you are installing 390 Enablement using the MVS Custom-Built Product Delivery Offering (CBPDO) (5751-CS3), some of the information in these figures may not be valid. Consult the CBPDO documentation for actual values.

Medium	Feature Number	Physical Volume	External Label Identification	VOLSER
6250 Tape	5949	1	390 Enable Mgt/Tool	DB661D
		2	DB2 Management Tools Package Workstation Clients	CDROM
		3	DB2 Connect Personal Edition Kit	CDROM
3480 Cart	5950	1	390 Enable Mgt/Tool	DB661D
		2	DB2 Management Tools Package Workstation Clients	CDROM
		3	DB2 Connect Personal Edition Kit	CDROM
4mm Cart	5530	1	390 Enable Mgt/Tool	DB661D
		2	DB2 Management Tools Package Workstation Clients	CDROM
		3	DB2 Connect Personal Edition Kit	CDROM

Figure 2. Program Tape: File Content

VOLSER	File	Name	Dist Library	RECFM	LRECL	BLK SIZE
DB661D	1	SMPMCS	n/a	FB	80	6400
	2	IBM.JDB661D.F1	ADSNBASE	FB	80	8800
	3	IBM.JDB661D.F2	ADSNMACS	FB	80	8800
	4	IBM.JDB661D.F3	ADSNLOAD	U	0	6144

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for 390 Enablement.

2.3 Program Publications

The following sections identify the basic and optional publications for 390 Enablement.

2.3.1 Basic Program Publications

No base publications are provided with 390 Enablement.

2.3.2 Optional Program Publications

No optional publications are provided for 390 Enablement.

2.4 Program Source Materials

No program source materials or viewable program listings are provided for 390 Enablement.

2.5 Publications Useful During Installation

Figure 3 (Page 1 of 2). Publications Useful During Installation

Publication Title	Form Number
<i>SMP/E User's Guide</i>	SC28-1302
<i>SMP/E Reference</i>	SC28-1107
<i>SMP/E Messages and Codes</i>	SC28-1108

Figure 3 (Page 2 of 2). Publications Useful During Installation

Publication Title	Form Number
<i>OS/390 SMP/E User's Guide</i>	SC28-1740
<i>OS/390 SMP/E Reference</i>	SC28-1806
<i>OS/390 SMP/E Messages and Codes</i>	SC28-1738

3.0 Program Support

This section describes the IBM support available for 390 Enablement.

3.1 Program Services

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

3.2 Preventive Service Planning

Before installing 390 Enablement, you should review the current Preventive Service Planning (PSP) information. If you obtained 390 Enablement as part of a CBPDO, there is HOLDDATA and PSP information included on the CBPDO tape.

If you obtained 390 Enablement on a product tape, or if the CBPDO is more than two weeks old when you install it, you should contact the IBM Support Center or use S/390 SoftwareXcel to obtain the current PSP Bucket.

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 390 Enablement are:

Figure 4. PSP Upgrade and Subset ID

UPGRADE	SUBSET	Description
DB2610	JDB661D	390 Enablement

It is recommended that CBIPO/CBPDO should be used as the installation maintenance vehicle to ensure the most current level of maintenance.

3.3 Statement of Support Procedures

Report any difficulties you have using this program to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Note: Please note that maintenance for the new DB2 Installer and Visual Explain features is available via the Internet (www.ibm.com/software/data/db2/os390).

Figure 5 identifies the component IDs (COMPID) for 390 Enablement.

Figure 5. Component IDs

F MID	COMP ID	Component Name	RETAIN Release
JDB661D	5740XYR05	390 Enablement	61D

4.0 Program and Service Level Information

This section identifies the program and any relevant service levels of 390 Enablement. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs integrated. Information about the cumulative service tape is also provided.

4.1 Program Level Information

No APARs have been incorporated into 390 Enablement.

4.2 Service Level Information

No PTFs against this release of 390 Enablement have been incorporated into the product tape.

4.3 Cumulative Service Tape

A cumulative service tape, containing PTFs not incorporated into this release, might be included with this program. Installation instructions for cumulative service tapes can be found in the SMP/E publications.

If you received this product as part of a CBPDO or a ProductPac, PTFs not incorporated into this release are provided on the tape, and a separate cumulative service tape will not be provided.

5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating 390 Enablement. The following terminology is used:

- *Driving system*: the system used to install the program.
- *Target system*: the system on which the program is installed.

In many cases, the same system can be used as both a driving system and a target system. However, you may want to set up a clone of your system to use as a target system by making a separate IPL-able copy of the running system. The clone should 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.

Some cases where two systems should be used include the following:

- When installing a new level of a product that is already installed, the new product will delete the old one. By installing onto a separate target system, you can test the new product while still keeping the old one in production.
- When installing a product that shares libraries or load modules with other products, the installation can disrupt the other products. Installing onto a test system or clone will allow you to 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 390 Enablement.

5.1.1 Machine Requirements

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

5.1.2 Programming Requirements

Figure 6. Driving System Software Requirements

Program Number	Product Name and Minimum VRM/Service Level
5645-001	OS/390 System Modification Program/Extended (SMP/E) Release 1

5.1.2.1 Required Toleration PTFs In order to avoid syntax errors on the DESCRIPTION operand, introduced with OS/390 Version 2 Release 7, during the SMP/E installation of 390 Enablement, you are required to install one of the following:

Toleration PTFs

- OS/390 Version 1 Release 3 and Version 2 Release 4:
 - PTF UR51067
- OS/390 Version 2 Release 5 and Release 6:
 - PTF UR51068

5.2 Target System Requirements

This section describes the environment of the target system required to install and use 390 Enablement.

5.2.1 Machine Requirements

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

5.2.2 Function-Dependent Hardware Requirements

- DB2 Installer requires:
 - 20MB disk memory on the target drive, and 1MB of disk space for each subsystem defined
 - Workstation with OS/2 or Windows NT 4.0
 - monitor capable of displaying 1024 by 768 resolution
- DB2 Visual Explain runs on Windows NT 4.0 and OS/2 Warp Version 3 TCP/IP or SNA communications software and DB2 Connect Version 5 or higher, or DDCS Version 2 Release 4 and DB2 CAE. Visual Explain's subsystem parameter browser requires an activated stored procedures address space on the DB2 subsystem.

APAR II11164 contains the current list of prerequisite TCP/IP, OE, and DB2 APARs, which are the minimum requirements for OS/390 OpenEdition for DB2 native TCP/IP Support.

For more information about specific hardware requirements, see *System/390 Parallel Reference Guide*, G326-0416.

5.2.3 Programming Requisites

5.2.3.1 Minimum Requisites: A minimum requisite is defined as one of the following:

1. *Installation Requisite:* A product that is required at installation time. i.e. this product **will not install** successfully unless this requisite is met. This includes products that are specified as REQs, PREs, or CALLLIBs.
2. *Run Time Requisite:* A product that is **not** required for the successful installation of this product, but **is** needed at run time in order for this product to work.

Figure 7. Minimum Requisites

Program Number	Product Name and Minimum VRM/Service Level	Install Req?
5645-001	OS/390 Version 1 Release 3	Yes

5.2.3.2 Functional Requisites: Before you can activate 390 Enablement as described in 6.2, “Activating 390 Enablement” on page 22, the functional requisites identified below must first be applied to DB2 UDB Server for OS/390 V6:

Figure 8. Functional Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function	Install Req?
5645-DB2	DB2 Universal Database Server for OS/390 V6 with the following APARS: PQ23325 - Storage Manager Component Overlay Problem PQ23543 - Enhance Display Database() Restrict PQ23724 - IMS ODBS Support for Stored Procedures PQ24720 - Utilities as a Stored Procedure Enhancement PQ25091 - RUNSTATS Utility New Function PQ26287 - DSNWZP INOUT Parameter Change PQ27679 - INSERT and REPLACE Functions double-byte CHAR fix PQ30038 - Non-LE Enabled Compiler Problem for DSNUTILS	DB2 Database Server for OS/390	Yes

To enable all 390 functionality of Control Center, six DB2 stored procedures must be installed and configured as described in 6.2, “Activating 390 Enablement” on page 22. Four of these stored procedures are packaged with 390 Enablement: DSNACCMD, DSNACCQC, DSNACCMG, and DSNACCAV. Two of these stored procedures are packaged with DB2: DSNWZP, and DSNUTILS.

The 390 Enablement stored procedures and DSNWZP must be set to run in the DB2 stored procedures address space.

DSNUTILS must run in a WLM environment. See DB2 for OS/390 Administration Guide, Volume 2 for information about setting up WLM to run a DB2 stored procedure. After APAR PQ24720 is installed, see member DSNUTSP of DB2 target data set SDSNMACS for DD statements that must be added to the JCL procedure to start a WLM-established address space for DSNUTILS.

Also, Resource Recovery Services (RRS) with associated system logger setup must be enabled to support DB2 RRS/Attach as part of the DB2 WLM environment.

See IBM Redbook *Getting Started with DB2 Stored Procedures (SG24-4693)* for useful information to configure WLM and RRS to support DB2 stored procedures.

5.2.4 DASD Storage Requirements

390 Enablement libraries can reside on 3380 or 3390 DASD.

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

<i>Figure 9. Total DASD Space Required by 390 Enablement</i>	
Library Type	Total Space Required
Target	10 blocks
Distribution	10 blocks

Notes:

1. The data set sizes specified contain 15% extra space. You may wish to revise these numbers based on your plans for adding additional function or service.
2. IBM recommends use of system determined block sizes for efficient DASD utilization for all non-RECFM U data sets. For RECFM U data sets, IBM recommends a block size of 32760, which is the most efficient from a performance and DASD utilization perspective.

If you choose not to use system determined block sizes, use the block sizes and numbers of blocks specified to allocate the data sets. Data sets can be reblocked to a larger size. Please note that the maximum allowable block size will depend on the type of DASD on which the dataset will reside; for example, the block size of datasets on a 3350 DASD cannot exceed 19,069.

3. Abbreviations used for the data set type are:

- U** Unique data set used by only the FMIDs listed. In order to determine the correct storage needed for this data set, this table provides all required information; no other tables (or program directories) need to be referenced for the data set size.
- S** Shared data set used by more than the FMIDs listed. In order to determine the correct storage needed for this data set, the storage size given in this table needs to be added to 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 one and reclaim the space used by the old release and any service that had been installed. You can determine whether or not 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 on the names and sizes of the required data sets, please refer to 6.1.6, "Allocate SMP/E Target and Distribution Libraries" on page 20.

Figure 10. Storage Requirements for SMP/E Work Data Sets

Library DDNAME	T Y P E	D S O R G	R E C F M	L R E C L	No. of 3380/ 9345 Trks	No. of 3390 Trks	No. of DIR Blks
SMPWRK1	S	PO	FB	80	3	2	150
SMPWRK2	S	PO	FB	80	3	2	150
SMPWRK3	S	PO	FB	80	3	2	150
SMPWRK4	S	PO	FB	80	3	2	150
SMPWRK6	S	PO	FB	80	3	2	150

The following table provides an estimate of the storage needed in the SMP/E data sets for 390 Enablement. The estimates must be added to those of any other programs and service being installed to determine the total additional storage requirements.

Figure 11 (Page 1 of 2). Storage Requirements for SMP/E Data Sets

Library DDNAME	T Y P E	D S O R G	R E C F M	L R E C L	No. of 3380/ 9345 Trks	No. of 3390 Trks	No. of DIR Blks
SMPLOG	S	PS	VB	260	508	435	—
SMPLOGA	S	PS	VB	260	508	435	—
SMPLTS	S	PO	U	0	18	15	50
SMPMTS	S	PO	FB	80	18	15	60

<i>Figure 11 (Page 2 of 2). Storage Requirements for SMP/E Data Sets</i>							
Library DDNAME	T	D	R	L	No.	No.	No.
	Y	S	E	R	of	of	of
	P	O	C	E	3380/	3390	DIR
	E	R	F	C	9345	Trks	Blks
	G	M	L	L	Trks	Trks	Blks
SMPPTS	S	PO	FB	80	52	45	300
SMPSCDS	S	PO	FB	80	52	45	300
SMPSTS	S	PO	FB	80	52	45	150

The following figures list the target and distribution libraries (data sets) and their attributes required to install 390 Enablement. The storage requirements of 390 Enablement must be added to the storage required by other programs having data in the same data set (library).

<i>Figure 12. Storage Requirements for 390 Enablement Target Libraries</i>							
Library DDNAME	T	D	R	L	No.	No.	No.
	Y	S	E	R	of	of	of
	P	O	C	E	3380/	3390	DIR
	E	R	F	C	9345	Trks	Blks
	G	M	L	L	Trks	Trks	Blks
SDSNBASE	U	PO	FB	80	4	3	5

<i>Figure 13. Storage Requirements for 390 Enablement Distribution Libraries</i>							
Library DDNAME	T	D	R	L	No.	No.	No.
	Y	S	E	R	of	of	of
	P	O	C	E	3380/	3390	DIR
	E	R	F	C	9345	Trks	Blks
	G	M	L	L	Trks	Trks	Blks
ADSNBASE	U	PO	FB	80	4	3	5

5.2.4.1 Storage Requirements for DB2 Installer and Visual Explain: For storage requirements for DB2 Installer, please see the README.TXT file on the 390 Enablement Installer CD. For storage requirements for DB2 Visual Explain, see the README.TXT file on the 390 Enablement Visual Explain CD.

5.3 Special Considerations

390 Enablement 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 390 Enablement.

Please note the following:

- If you want to install 390 Enablement 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.
- Sample jobs have been provided to help perform some or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries required for SMP/E execution have been defined in the appropriate zones.
- The SMP/E dialogs may be used instead of the sample jobs to accomplish the SMP/E installation steps.

6.1 Installing 390 Enablement

6.1.1 SMP/E Considerations for Installing 390 Enablement

This release of 390 Enablement is installed using the SMP/E RECEIVE, APPLY, and ACCEPT commands. The SMP/E dialogs may be used to accomplish the SMP/E installation steps.

6.1.2 SMP/E Environment

All SMP/E installation jobs provided assume that all necessary DD statements for the execution of SMP/E are defined using DDDEFs.

Sample jobs are provided to assist you in installing 390 Enablement. After the RECEIVE step has been completed, the sample jobs can be found in SMPTLIB: **IBM.JDB661D.F1**. Make a copy of these jobs in your own library and modify them to use during the installation of 390 Enablement. The sample jobs are:

DSNEALC	Sample job to allocate target and distribution libraries
DSNEDDEF	Sample job to define SMP/E DDDEFs
DSNRECV	Sample RECEIVE job
DSNAPPLC	Sample APPLY CHECK job
DSNAPPLY	Sample APPLY job
DSNACCPC	Sample ACCEPT CHECK job
DSNACCPT	Sample ACCEPT job

In the sample SMP/E jobs provided, the name of the SMP/E CSI is #GLOBALCSI. The global zone name in the SMP/E CSI is GLOBAL. The distribution zone name is #DZONE. The target zone name is #TZONE. The sample jobs should be updated to reflect the CSI and zone names used at your installation.

6.1.3 SMP/E CALLLIBS Processing for 390 Enablement

390 Enablement uses the CALLLIBS function provided in SMP/E Release 8 to resolve external references during installation. When 390 Enablement is installed, ensure the following:

- Verify that the SMP/E SMPLTS data set has been allocated. Refer to *SMP/E Reference* for information on allocating the SMPLTS data set.

Note: For 390 Enablement, 120 cylinders of 3380/3390 DASD space is adequate for the SMPLTS.

- Provide DDDEFs for the following library:
 - SCEELKED
 - CSSLIB

Note: The DDDEF above are used only to resolve the link-edit for 390 Enablement using CALLLIBS. This data set is not updated during the installation of 390 Enablement.

6.1.4 SMP/E Options Subentry Values

The recommended values for some SMP/E CSI subentries are shown in Figure 14. Use of values lower than these may result in failures in the installation process. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. Refer to the SMP/E manuals for instructions on updating the global zone.

<i>Figure 14. SMP/E Options Subentry Values</i>		
SUB-ENTRY	Value	Comment
DSSPACE	(200, 200, 500)	3390 DASD tracks
PEMAX	9999	The SMP/E default is larger than what can be specified here

6.1.5 Unload the Sample JCL from the Product Tape

Sample installation jobs are provided on the distribution tape to help you install 390 Enablement. The following sample JCL will copy the 390 Enablement jobs from the tape. Add a job card and modify the parameters in boldface to uppercase values to meet your site's requirements before submitting.

```
//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=A
//IN DD DSN=IBM.JDB661D.F1,UNIT=tunit,VOL=SER=DB661D,
// LABEL=(2,SL),DISP=(OLD,KEEP)
//OUT DD DSNAME=DSN610.INSTALL,
// DISP=(NEW,CATLG,DELETE),
// VOL=SER=dasdvol,UNIT=dunit,
```

```
//          DCB=*.STEP1.IN,SPACE=(8800,(15,5,5))
//SYSUT3   DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN    DD *
          COPY INDD=IN,OUTDD=OUT
/*
```

where **tunit** is the unit value matching the product tape or cartridge, **DSN610.INSTALL** is the name of the data set where the sample jobs will reside, **dasdvol** is the volume serial of the DASD device where the data set will reside, and **dunit** is the DASD unit type of the volume.

You can also access the sample installation jobs by performing an SMP/E RECEIVE for FMID fmid, and then copying the jobs from dataset **hlq.IBM.JDB661D.F1** to a work dataset for editing and submission.

6.1.6 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job **DSNEALC** to allocate the SMP/E target and distribution libraries for 390 Enablement. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: This job should complete with a return code of 0.

6.1.7 Create DDDEF Entries

Edit and submit sample job **DSNEDDEF** to create DDDEF entries for the SMP/E target and distribution libraries for 390 Enablement. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: This job should complete with a return code of 0.

6.1.8 Perform SMP/E RECEIVE

Edit and submit sample job **DSNRECV** to perform the SMP/E RECEIVE for 390 Enablement. Consult the instructions in the sample job for more information.

NOTE: if you obtained 390 Enablement as part of a CBPDO, you can use the RCVPDO job found in the CBPDO RIMLIB data set to RECEIVE the 390 Enablement FMIDs as well as any service, HOLDDATA, or preventive service planning (PSP) information included on the CBPDO tape. For more information, refer to the documentation included with the CBPDO.

Expected Return Codes and Messages: This job should complete with a return code of 4 or less.

Note: If you are running a lower level of OS/390 Version 2 Release 7, your DSNRECV job will end with a return code of 4. The following warning message will be issued: **GIM50050W**.

6.1.9 Perform SMP/E APPLY CHECK

Note: The following three modules are used in JCLIN. These modules are owned by DB2 UDB Server for OS/390 Version 6 of which 390 Enablement is a feature.

- DSNAAL
- DSNALI
- DSNTIAR

Edit and submit sample job **DSNAPPLC** to perform an SMP/E APPLY CHECK for 390 Enablement. 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 following on the APPLY CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (SYSMODs that are bypassed are treated as warnings, not errors, by SMP/E).

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

Expected Return Codes and Messages: This job should complete with a return code of 0.

6.1.10 Perform SMP/E APPLY

Note: The following three modules are used in JCLIN. These modules are owned by DB2 UDB Server for OS/390 Version 6 of which 390 Enablement is a feature.

- DSNAAL
- DSNALI
- DSNTIAR

Edit and submit sample job **DSNAPPLY** to perform an SMP/E APPLY for 390 Enablement. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: This job should complete with a return code of 0.

6.1.11 Perform SMP/E ACCEPT CHECK

Edit and submit sample job **DSNACCPC** to perform an SMP/E ACCEPT CHECK for 390 Enablement. 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 following on the ACCEPT CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (SYSMODs that are bypassed are treated as warnings, not errors, by SMP/E).

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

Expected Return Codes and Messages: This job should complete with a return code of 0.

6.1.12 Perform SMP/E ACCEPT

Edit and submit sample job **DSNACCPT** to perform an SMP/E ACCEPT for 390 Enablement. Consult the instructions in the sample job for more information.

Before using SMP/E to load new distribution libraries, it is recommended that you set the ACCJCLIN indicator in the distribution zone. This will cause entries produced from JCLIN to be saved in the distribution zone whenever a SYSMOD containing inline JCLIN is ACCEPTed. For more information on the ACCJCLIN indicator, see the description of inline JCLIN in the SMP/E manuals.

Expected Return Codes and Messages: This job should complete with a return code of 0.

If PTFs containing replacement modules are being ACCEPTed, SMP/E ACCEPT processing will linkedit/bind the modules into the distribution libraries. During this processing, the Linkage Editor or Binder may issue messages documenting unresolved external references, resulting in a return code of 4 from the ACCEPT step. These messages can be ignored, because the distribution libraries are not executable and the unresolved external references will not affect the executable system libraries.

6.2 Activating 390 Enablement

Before you can activate 390 Enablement, the functional requisites identified in 5.2.3.2, “Functional Requisites” on page 14, must first be installed on your system.

IBM DB2 Workstation Control Center provides support to help you manage DB2 databases on an array of operating systems in your workplace (see Figure 8). A set of stored procedures must be installed at each DB2 UDB for OS/390 subsystem that you want to work with using Control Center. 390 Enablement provides these stored procedures in the form of an SMP/E installable package. The FMID for the 390 Enablement feature of DB2 for OS/390 is JDB661D.

IBM provides two sample jobs for you to use to define the stored procedures that are needed by the workstation Control Center: DSNTIJCC and DSNTIJSG. When SMP/E applies the 390 Enablement installation package, DSNTIJCC is added to the DB2 target data set SDSNSAMP. Sample job DSNTIJSG is not shipped with 390 Enablement. It is part of the base feature of DB2 for OS/390 and is also a member of data set SDSNSAMP.

Run sample job DSNTIJSG to register and bind DB2 stored procedures DSNUTILS and DSNWZP to the DB2 system. These sample procedures are required by Control Center.

After you have run job DSNTIJSG, modify sample procedure DSNTIJCC to add a job card for your OS/390 system. Also, tailor it for your environment by updating the following strings with values that are correct for your installation:

SYSTEM(DSN)

Replace DSN with the DB2 subsystem identifier.

PLAN(DSNTIA!!)

Replace DSNTIA!! with the DSNTIAD plan name that was bound during installation by job SDSNSAMP(DSNTIJTM).

LIBRARY(DSN!!0.RUNLIB.LOAD)

Replace DSN!!0 with the user-defined prefix that was used during installation by DSNTINST CLIST.

LIBRARY(DSN!!0.SDSNDBRM)

Replace DSN!!0 with the user-defined prefix that was used during installation by DSNTINST CLIST.

Finally, run sample procedure DSNTIJCC to register the 390 Enablement stored procedures to your DB2 subsystem and to bind the packages required by these stored procedures to DB2.

Consult the *DB2 for UDB OS/390 Installation Guide*, GC26-9008, for more information about the jobs that were run when DB2 was installed.

To run the 390 Enablement installation job, you must have a user ID with authorization to bind the application packages and to update the SYSIBM.SYSROUTINES catalog table. A user ID with SYSADM authorization satisfies this requirement.

After you run sample job DSNTIJCC, you must refresh the DB2 stored procedures address space for the changes to take affect. Use the START and STOP PROCEDURE(*.*) DB2 commands to refresh the stored procedures address space.

Refer to Figure 15 for an overview of the steps to follow to activate 390 Enablement.

6.2.1 Activate 390 Enablement Detail Steps

Figure 15 (Page 1 of 2). Detail of 390 Enablement activation steps.

STEP	DESCRIPTION	JOB or COMMAND
1	Edit and run job to define DB2 stored procedures DSNUUTILS and DSNWZP. DSNUUTILS runs in a WLM managed address space. For information about WLM consult "MVS/ESA: Workload Management". For information about configuring and using WLM to run DB2 stored procedures, consult "DB2 UDB for OS/390 V6 Administration Guide".	DSNTIJSG

Figure 15 (Page 2 of 2). Detail of 390 Enablement activation steps.

STEP	DESCRIPTION	JOB or COMMAND
2	Stop the WLM-established stored procedure address space: VARY WLM,APPLENV=<name>,QUIESCE where <name> is the name of the WLM application environment.	MVS Console Command
3	Start the WLM-established stored procedure address space: VARY WLM,APPLENV=<name>,RESUME where <name> is the name of the WLM application environment.	MVS Console Command
4	Edit and run job to define 390 Enablement DB2 stored procedures DSNACCMD, DSNACCMG, DSNACCAV, and DSNACCQC in the DB2-established stored procedure address space.	DSNTIJCC
5	Stop the DB2-established stored procedure address space: -STOP PROCEDURE(*.*)	DB2 Command
6	Start the DB2-established stored procedure address space: -START PROCEDURE(*.*)	DB2 Command

Perform the following Control Center tasks to verify setup of the 390 stored procedure environment for Control Center:

- Select an MVS subsystem and double-click on the buffer pool object. A list of buffer pools for the subsystem should appear in the list pane. If a buffer pool object is not present under the MVS subsystem object, Control Center has determined that the 390 Enablement stored procedures are not known to DB2. In this case, 390 Enablement is not installed and activated.
- Select an MVS subsystem and click once on the right mouse button. Choose the 'Locate' choice. From the Locate window, specify object type 'Indexes' and object state filter of 'Runstats recommended.' Select OK. You should get back a list of indexes for which Runstats is recommended. Select Help for more information.
- Select an MVS subsystem. Use the right mouse button to select 'Display Subsystem Parameters.' You should get back a list of install panels and corresponding parameters and values.
- Select Catalog Tables object. Use right mouse button to select Query. Use the dropdown to select 'Without Stospace Information.' Select OK.
- Expand Databases object. Expand database DSNDB06. Select Table Spaces object. Choose any table space and use the right mouse button to select 'Report...'. A valid report summary should be returned.

Appendix A. 390 Enablement Install Logic

A.1 SMP/E Modification Control Statements

The SMP/E Modification Control Statements (SMPMCS) for 390 Enablement are contained in the SMPMCS file on the installation tape. The SMPMCS for each FMID in the product will be loaded to the SMPPTS dataset, with a member name matching the FMID, when the FMID is SMP/E RECEIVED. You may browse or print these members using TSO/E, ISPF, or IEBGENER (or IEBTPCH).

A.2 SMP/E JCLIN

The JCLIN for 390 Enablement is contained in the RELFILES on the installation tape. These files will be loaded to disk by SMP/E when the product is SMP/E RECEIVED. You may browse or print these files using TSO/E, ISPF, or IEBGENER (or IEBTPCH).

The files containing JCLIN are:

FMID JDB661D: DSN610.JDB661D.F1(JDB661D)

Note: The high-level qualifier is the qualifier specified as the DSPREFIX in the SMP/E OPTIONS. **DSN610** can be replaced by the qualifier of your choice.

Reader's Comments

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