



# **Program Directory for Control Center for VM**

Version 7 Release 1.0

Program Number 5697-F42

for Use with  
VM/ESA

Document Date: September 2000

GI10-5002-00

**Note!**

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

This program directory, dated September 2000, applies to DB2 Control Center for VM Version 7 (Control Center for VM) Release 1.0 , Program Number 5697-F42 for the following:

<b>COMPIDs</b>	<b>Feature Numbers</b>	<b>System Name</b>
5697F4206	5975	VM/ESA
5697F4206	5976	VM/ESA
5697F4206	5991	VM/ESA
5697F4206	6048	VM/ESA

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None





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## Chapter 1. Introduction

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 Control Center for VM. 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:

- Chapter 2, “Program Materials” on page 2 identifies the basic and optional program materials and documentation for Control Center for VM.
- Chapter 3, “Program Support” on page 4 describes the IBM support available for Control Center for VM.
- Chapter 4, “Program and Service Level Information” on page 5 lists the APARs (program level) and PTFs (service level) incorporated into Control Center for VM.
- Chapter 5, “Installation Requirements and Considerations” on page 6 identifies the resources and considerations for installing and using Control Center for VM.
- Chapter 6, “Installation and Migration Instructions Overview” on page 7 provides an overview of the installation and servicing instructions for Control Center for VM.
- Chapter 7, “Installing the Service Machine” on page 14 provides detail Service Machine installation instructions Control Center for VM.
- Chapter 8, “Installing a Support Machine” on page 27 provides detail Support Machine installation instructions for Control Center for VM.
- Chapter 9, “Migration” on page 37 provides a detailed migration path for upgrading from a prior version of Control Center for VM to the current version.
- Chapter 10, “Service Instructions” on page 46 provides service instructions for Control Center for VM.

Before installing Control Center for VM, read “Preventive Service Planning” on page 4. This section tells you how to find any updates to the information and procedures in this program directory.

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## Chapter 2. Program Materials

An IBM program is identified by a program number and a feature code. The program number for Control Center for VM is 5697-F42.

The program announcement material describes the features supported by Control Center for VM. Ask your IBM marketing representative for this information if you have not already received a copy.

The following sections identify:

- The basic and optional program materials available with this program

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### Basic Machine-Readable Material

The distribution medium for this program is 9-track magnetic tape (written at 6250 BPI), 3480 cartridge, 1/4-inch tape cartridge, or 4mm tape cartridge. The tape or cartridge contains all the programs and data needed for installation. Control Center for VM is installed using VMFPLC2. See Chapter 6, "Installation and Migration Instructions Overview" on page 7 for more information about how to install the program. Figure 1 describes the tape or cartridge. Figure 2 describes the file content of the program tape or cartridge.

*Figure 1. Basic Material: Program Tape*

Feature Number	Medium	Physical Volume	Tape Content	External Tape Label
5975	6250 tape	1	Control Center for VM	Control Center VM
5976	3480 cart.	1	Control Center for VM	Control Center VM
5991	1/4 inch.	1	Control Center for VM	Control Center VM
6048	4 mm. cart.	1	Control Center for VM	Control Center VM

*Figure 2. Program Tape: File Content*

Tape File	Content	Number of Files
1	Control Center for VM V7R1.0	445

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### Optional Machine-Readable Material

There are no optional machine-readable materials for Control Center for VM.

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## Program Publications

The following sections identify the basic and optional publications for Control Center for VM.

### Basic Program Publications

*Figure 3. Basic Material: Publications*

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Publication Title	Form Number
Control Center Operations Guide for VM	GC09-2993

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### Optional Program Publications

There are no optional publications for Control Center for VM.

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## Program Source Materials

There are no source materials available for Control Center for VM.

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## Publications Useful During Installation

You can find a list of related publications in *Control Center Operations Guide for VM*, GC09-2993-01.

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## Chapter 3. Program Support

This section describes the IBM support available for Control Center for VM.

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### Preventive Service Planning

Before installing Control Center for VM, check with your IBM Support Center or use either Information/Access or IBMLink (Service Link) to see whether there is additional Preventive Service Planning (PSP) information that you should know. To obtain this information, specify the following UPGRADE and SUBSET values:

*Figure 4. PSP Upgrade and Subset ID*

---

Retain			
COMPID	Release	Upgrade	Subset
5697F4206	710	DB2VSEVM710	CCVM

If you have received Control Center for VM only from IBM Software Distribution, then before installing Control Center for VM, you should also check with your IBM Support Center or use either Information/Access or SoftwareXcel Extended to see if there is additional PSP information that you should know.

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### 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.

Figure 5 identifies the component IDs (COMPID), Retain Release and Field Engineering Service Numbers (FESN) for Control Center for VM.

*Figure 5. Component IDs*

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Retain			
COMPID	Release	Component Name	FESN
5697F4206	710	Control Center for VM	0407192

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## **Chapter 4. Program and Service Level Information**

This section identifies the program and any relevant service levels of Control Center for VM. 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.

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### **Program Level Information**

The new version of Control Center for VM has incorporated all closed APARs from previous versions/releases at the time of this product GA.

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### **Service Level Information**

Check the DB2VSEVM710 PSP bucket for any additional PTFs that should be installed or any additional installation information.

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### **Cumulative Service Tape**

There is no cumulative service tape for Control Center for VM.

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## **Chapter 5. Installation Requirements and Considerations**

The following sections identify the system requirements for installing and activating Control Center for VM.

### **Operating System and Product Requirements**

This section summarizes the products required for Control Center for VM. Unless otherwise stated, Control Center for VM works with subsequent versions, releases, and modification levels of the products listed in this section.

The following operating system(s) and product(s) are required:

- IBM Virtual Machine/Enterprise Systems Architecture (VM/ESA) Version 2 Release 3, or later
- DB2 Server for VM Version 7 Release 1 (5697-F42)

Control Center is compatible with the following product but does not guarantee future support.

- DB2 Server for VM Version 6 Release 1 (5648-A70)

### **DASD Storage Requirements**

Several different types of machines may be involved in the activation of Control Center for VM. For a description of the machines and their DASD storage requirements, refer to “Control Center Virtual Machine Requirements” on page 9.

### **Processor Storage Requirements**

Several different types of machines may be involved in the activation of Control Center for VM. For a description of the machines and their processor storage requirements, refer to “Control Center Virtual Machine Requirements” on page 9.

### **Machine Requirements**

One tape drive supported by VM/ESA is required for installation.

### **Programming Requirements**

There are no special programming requirements for the driving system.

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### **Program, System or Special Considerations**

There are no program, system, or special considerations for Control Center for VM.

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## Chapter 6. Installation and Migration Instructions Overview

The next few chapters are intended for the person installing Control Center for VM. These chapters describe:

- How to install the Control Center product.
    - Installing the Control Center Service Machine (Chapter 7)
    - Installing a Control Center Support Machine (Chapter 8)
  - How to migrate from earlier releases of Control Center or SQL Master. (Chapter 9)
- Checklists included in each of the above Chapters, allow you to mark off required steps as you complete them.

Information presented in this section assumes that you have read the “Introduction” and “Architecture” chapters of the *DB2 Server for VM Control Center Operations Guide*, and are familiar with CMS commands, EXECs, and Virtual Machine (VM) operation.

---

### Installation

The installation of the Control Center product is separated into three distinct procedures.

#### 1. Installation of the Control Center Service Machine (required)

Either,

- *Full Installation*, which includes defining a Control Center service machine, defining and formatting a Control Center code disk, installing code from the distribution tape to the code disk, and configuring the Control Center control files. In this configuration the Control Center service machine owns the code disk.

OR

- *Shared Installation*, which includes defining a Control Center service machine with a read-only link to a previously installed Control Center code disk, and configuration of the Control Center control files.

Refer to Chapter 7, beginning on page 14.

#### 2. Installation of a Control Center Support Machine (Optional, although one or more support machines is a good idea.)

Includes defining a Control Center support machine that links in READ mode to the same code disk as the managing service machine, configuring the Control Center control files, and establishing proper machine authorities.

Refer to Chapter 8, beginning on page 27.

#### 3. Setting Up a DB2 Server for VM Database with Control Center (required)

Includes redefining an existing database machine to link in READ mode to the same code disk as the managing service machine, configuring the Control Center database control files, and establishing proper machine authorities.

Refer to the “Database Setup” chapter of the *DB2 Server for VM Control Center Operations Guide*.

New installations *must*, at a minimum, complete the following:

- a. Install a Control Center service machine (full installation), and
- b. Set up a database to work with Control Center.

Once a Control Center service machine has been successfully installed you can at any time:

- Repeat the steps described in the “Database Setup” chapter in the *DB2 Server for VM Control Center Operations Guide* to set up additional databases to work with the installed service machine.
- Perform the steps described in Chapter 8, “Installing a Support Machine” on page 27 to add a Control Center support machine to your installation configuration. Multiple Control Center support machines can be installed.

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## Migration

Migration is the process used to move from one level of Control Center code to another level.

If you are migrating from Control Center Version 6 Release 1, or Version 5 Release 1, or SQL Master (either Version 1 Release 2.0 or Version 1 Release 1.2), refer to Chapter 9 beginning on page 37. For migration from earlier levels of SQL Master (SQL Master/VM Version 1 Release 1 Modification 0 or Modification 1), you must first migrate to SQL Master Version 1.2. To do this, execute the migration exec MIGRV1R2. You will be prompted through this migration. Once you have migrated to SQL Master Version 1.2, follow the recommended steps in the above referenced migration chapter to complete the migration to V7.1.0 .

---

## Optional Steps

Depending on the needs of your installation, there are several ways of configuring the Control Center environment. The following is a brief description of some optional steps which can be taken during the installation process.

### Multiple Databases

A single Control Center service machine can manage up to 26 database servers. The only restriction is that each database machine must be on the same CPU as the Control Center service machine.

The steps for setting up a database machine to work with Control Center are discussed in the “Database Setup” chapter of the *DB2 Server for VM Control Center Operations Guide*.



## Control Center Support Machine

Database Administration tools are database applications which require a dedicated virtual machine during processing. These tools should *not* be scheduled (using the Control Center Job Scheduling tool) to execute on a Control Center service machine, since all automated operation functions with all databases managed by the service machine will be disabled during tool execution.

If you plan on scheduling Database Administration tools, you should install one or more Control Center support machines where these tools can execute, allowing the Control Center service machine to continue performing other tasks. Installing multiple support machines allows you to run tools against different databases concurrently. Job scheduling is managed by the controlling Control Center service machine.

The steps for installing a Control Center support machine are discussed in Chapter 8, beginning on page 27.

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## Corrective Service Planning

Refer to Chapter 10, beginning on page 46.

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## Control Center for VM Code Disk DASD Requirements

Approximately 25 cylinders of IBM 3380-equivalent or approximately 20 cylinders of IBM 3390-equivalent direct access storage is required to store the Control Center code and control files.

Several different types of machines may be involved in the activation of Control Center for VM. For a description of the machines and their DASD storage requirements, refer to “Control Center Virtual Machine Requirements.”

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## Tape Manager Products Support

Control Center does not require a tape management product, but it provides support for the DYNAM/T, VMTAPE, and EPIC products, if they are used on the target system. Control Center also supports environments without any tape management products, sending tape mount request messages directly to a defined tape operator user ID. Control Center can also be adapted to other tape management products with customization.

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## Control Center Virtual Machine Requirements

## Machine Descriptions

To install the Control Center product, you need these virtual machines:

1. **The VM MAINT machine.** Used for installation of Control Center from the distribution tape. This machine or its equivalent already exists in all VM systems.
2. **A database machine.** One or more database machines (application servers) is required. Machine identifier (user ID) SQLMACH is used in this manual to refer to a database machine. You should use the identifier of a database machine in your environment.
3. **A Control Center service machine.** A virtual machine operated in disconnect mode that runs the Control Center code. The service machine can be defined as owning a Control Center code disk or sharing (links and accesses) an existing code disk on the same CPU. In this section, machine ID MSTRSRVO refers to a service machine that owns a code disk, MSTRSRVS refers to a service machine that shares a code disk, and MSTRSRV is a generic reference to both types of service machines. You can define a Control Center service machine with any valid machine identifier (user ID). A single service machine can manage one or more database servers on the same CPU. There can be more than one service machine per CPU.
4. **A Control Center support machine** (optional). A virtual machine operated in disconnect mode and managed by a Control Center service machine. It is referred to in this manual as the MSTRSUP machine, but you can define it with any valid machine identifier. Support machines are dedicated to running scheduled Database Administration tools (database applications) allowing the managing service machine and user machine to continue performing other tasks. A support machine is required if you wish to schedule dbspace or table reorganizations. Reorganizations must not be scheduled to be executed on the Control Center service machine.

Multiple Control Center support machines can be installed on a single CPU and managed by a single Control Center service machine.

A Control Center support machine links and accesses the same code disk as its managing service machine.

5. **A Control Center owner machine.** A virtual machine designated as the owner of a Control Center service machine or support machine. (*Own* in this context describes a logical association between two virtual machines.) It is referred to in this manual as the MSTROWN machine, but you can define it with any valid machine identifier.

### Notes:

- a. The requirements for an owner machine are the same regardless of whether it is designated as the owner of a service machine or support machine. Therefore, a single machine identifier (MSTROWN) is used when referring to an owner machine.
- b. A single MSTROWN machine can be the owner of any number and combination of service machines and support machines.
- c. An owner machine can also be a Control Center user machine.
- d. References to the owner of the service machine also apply to the owner of the support machine unless specifically stated otherwise.

6. **A Control Center user machine.** Any virtual machine that has been defined to access the Control Center product. There can be many user machines.

To complete Control Center for VM installation, these machines must meet certain virtual storage and minidisk requirements. These requirements are discussed in the following sections.

## VM MAINT Machine

The MAINT machine is referred to throughout this section, but you can use another machine with equivalent authority and disk access.

### Virtual Storage Requirements

The Control Center product does not have any special virtual storage requirements for the MAINT machine.

### Minidisk Requirements

The Control Center product does not have any special minidisk storage requirements for the MAINT machine. Control Center code is loaded from tape directly to the Control Center code disk.

## Database Machine (SQLMACH)

The VM directory entries for a database machine will require updating to identify the managing Control Center service machine as the secondary (alternate) console machine on the CONSOLE statement. You will be instructed to redefine the SQLMACH machine during database setup.

### Virtual Storage Requirements

The Control Center product does not have any special virtual storage requirements for the SQLMACH machine.

### Minidisk Requirements

Several small files will be created on the database machine's 191 minidisk (A-disk) during normal operations under Control Center. The 191 minidisk may therefore need to be increased slightly from the requirements specified within the *DB2 Server for VM System Administration* manual.

## Control Center Service Machine (MSTRSRV)

A Control Center service machine must be defined to install and run the Control Center product. It will contain a collection of data structures and operating software that allows it to manage and communicate with database servers and Control Center support machines. MSTRSRV operates in a continuous disconnected server mode, reacting to external interrupts in the form of VM messages and reader files, and acting on scheduled interrupts to execute planned activities. You will be instructed to define the MSTRSRV machine during installation.

## Virtual Storage Requirements

The virtual storage required by the Control Center service machine varies depending on the number of databases being managed. The minimum machine size for a single database is 6-megabytes, and 8-megabytes for a multiple database environment.

## Minidisk Requirements

Two minidisks are required for the MSTRSRV virtual machine:

- Control Center system minidisk.
- Control Center code minidisk.

### Control Center System Minidisk

An A-disk (191 minidisk) which will contain control files, parameter files, output files, all database-related files, and other files customized for the local environment.

The size of the 191 minidisk will vary depending on the number of databases, the number of backup copies of modified files that MSTRSRV is instructed to keep, and the number and frequency of Database Monitoring tools that are scheduled. A typical installation will require approximately 10 cylinders of IBM 3380-equivalent DASD, which can later be adjusted as required for your environment.

### Control Center Code Minidisk

The MSTRSRV virtual machine requires read access to a Control Center code disk. The code disk can either be owned by the service machine being installed or by another service machine on the same CPU. That is, a single Control Center code disk can be shared among multiple Control Center service machines (and support machines) on the same CPU.

In addition to Control Center code modules, files `SQLMSTR DIRECTRY` and `DBINIT CONTROL` are kept on the code disk and are maintained by the service machine owning the disk. These files define key characteristics of the Control Center and database environment, including what service machines manage what databases, and are required for proper Control Center operation. All machines which link to the code disk use these files and therefore, will be a part of the same environment.

A Control Center code disk (195 minidisk) will require approximately 25 cylinders of IBM 3380-equivalent or approximately 20 cylinders of IBM 3390-equivalent DASD to contain all the Control Center code and control files.<sup>1</sup>

## Control Center Support Machine (MSTRSUP)

A Control Center support machine is dedicated to running Database Administration tools (database applications) scheduled by a managing service machine. It is defined similar to a service machine except it always shares (links and accesses) the existing Control Center code disk used by the managing service machine. You will be instructed to define the MSTRSUP machine during installation.

---

<sup>1</sup> You can use any valid virtual device number (cuu) for linking the code disk.

### **Virtual Storage Requirements**

The virtual storage required by the Control Center support machine is somewhat larger than that of the service machine. Depending on the type of activity and size of dbSPACE and table reorganizations, a 6 to 8-megabyte machine size should be used.

### **Minidisk Requirements**

The size of the A-disk (191 minidisk) for the support machine will vary greatly depending on the type and number of activities scheduled to execute on the machine and the options chosen when tools are scheduled. See "Installation Step step 2: Define a Control Center Support Machine (MSTRSUP)" on page 29 for a further discussion of these requirements.

## **Control Center Owner Machine (MSTROWN)**

At least one Control Center owner machine is required in the Control Center environment. The owner machine automatically has Control Center administrator authority and will receive CONSOLE files that are closed and transferred from the service machine each day at midnight. The owner of a Control Center service machine is identified in file SQLMSTR PROFILE on the service machine's 191 A-disk. The owner machine can also be a user machine. No changes to the VM directory are necessary for the MSTROWN machine.

### **Virtual Storage Requirements**

The owner machine should have a minimum of 4 megabytes.

### **Minidisk Requirements**

The owner machine must have an A-disk (191 minidisk) with approximately three cylinders of IBM 3380-equivalent DASD.

## **Control Center User Machine (MSTRUSR)**

Any virtual machine that has been defined to access the Control Center product is referred to as an MSTRUSR machine. User machines must link and access the Control Center code disk to use the product. No changes to the VM directory are necessary for MSTRUSR machines.

### **Virtual Storage Requirements**

The user machine should have a minimum of 4 megabytes. Depending on the type of activity and size of dbSPACE and table reorganizations, a 6-megabyte machine may be needed.

### **Minidisk Requirements**

The user machine must have an A-disk (191 minidisk) with approximately three cylinders of IBM 3380-equivalent DASD.

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## Chapter 7. Installing the Service Machine

This chapter describes how to install the Control Center service machine.

- *Full Installation* includes defining a Control Center service machine, defining and formatting a Control Center code disk, installing code from the distribution tape to the code disk, and configuring of the Control Center control files.
- *Shared Installation* includes defining a Control Center service machine with a read-only link to a previously installed Control Center code disk, and configuration of the Control Center control files.

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### Checklist for Installation of the Control Center Service Machine

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Notes:

- *Perform the steps in order.*
- *Optional steps are preceded by a circle (o).*
- *Page references appear in parentheses.*

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#### Preliminary Installation

1. Log On to the VM MAINT Machine (15)
2. Define a Control Center Service Machine (15)
  - a. [Full Installation Only] Define MSTRSRVO (15)
  - OR
  - b. [Shared Installation Only] Define MSTRSRVS (17)
3. o Define a Control Center Owner Machine (MSTROWN) (18)
4. Update the VM Directory (18)
5. Link and Format the 191 Disk(s) (19)
6. [Full Installation Only] Link and Format the Code Disk (19)
7. [Full Installation Only] Make Code Disk Available (19)
8. Add Service Machine to Autolog List (19)

#### Code Installation

9. [Full Installation Only] Install Control Center Code (20)
10. Log Off the MAINT Machine (20)
11. Log On to the Service Machine (20)
12. Access Code Disk (20)
13. Configure Control Center Control Files (20)
14. Start Control Center Service Machine (24)

#### Installation Verification

15. o Log On to the MSTROWN Machine (24)
16. o Verify Files/Messages Received (24)
17. o Link and Access the Control Center Code Disk (24)
18. o Verify Control Center Service Machine Operation (24)

#### Post-Installation

19. o Tape Mount Interface Customization (25)
20. Perform Database Setup (26)
21. Perform Data Restore Setup (26)

---

## Preliminary Installation

The first eight steps of the installation process prepare your VM system for the Control Center product by defining all required virtual machines and their minidisks, and making the Control Center code disk available to users of the product. Figure 6 on page 15 summarizes what you will accomplish when performing a *full installation*. Figure 7 on page 16 summarizes what you will accomplish when performing a *shared installation*.

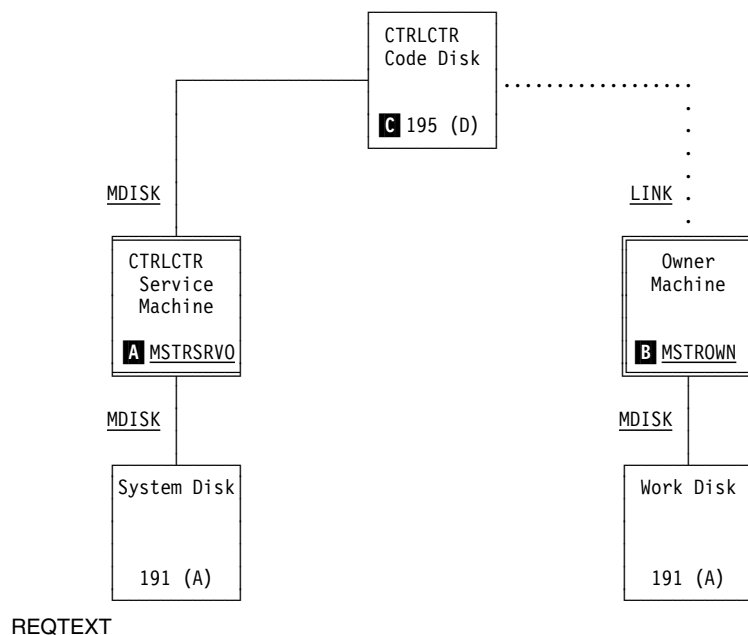


Figure 6. Virtual Machines and Minidisks in a Control Center Service Machine Full Installation. MSTRSRVO **A** is the owner of the Control Center code disk **C**. MSTROWN **B** links to the code disk in READ mode and is defined as the logical owner of MSTRSRVO.

### Installation Step 1: Log On to the VM MAINT Machine

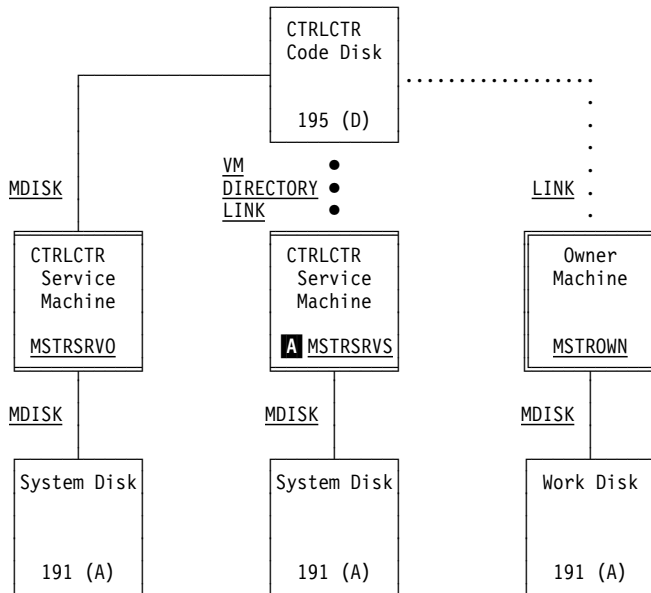
To begin the Control Center installation, log on to the VM MAINT virtual machine.

### Installation Step 2: Define a Control Center Service Machine

To use the Control Center product, define a service machine with the appropriate VM directory entries.

#### Installation Step 2a: [Full Installation Only] Define MSTRSRVO

Update the VM directory statements as shown in Figure 8 on page 16 to define a Control Center service machine that owns a code disk.



REQTEXT

Figure 7. Virtual Machines and Minidisks in a Control Center Service Machine Shared Installation. MSTRSRVS **A** has been added to the environment shown in Figure 6 using the *shared installation* process. A single MSTROWN machine (installed during the *full installation* process) is defined as the logical owner of MSTRSRVS and MSTRSRVO. You may, however, define a separate owner machine for each service machine.

- 1** USER MSTRSRVO XXXXXXXX 6M 6M BG  
ACCOUNT NNNNNN
- 2** IUCV ANY MSGLIMIT 255
- 3** IPL CMS
- 4** CONSOLE 0009 3215  
SPOOL 000C 2540 READER \*  
SPOOL 000D 2540 PUNCH A  
SPOOL 000E 1403 A  
LINK MAINT 0190 0190 RR  
LINK MAINT 019D 019D RR  
LINK MAINT 019E 019E RR
- 5** MDISK 0191 3380 cylr 020 volser MR
- 6** MDISK 0195 3380 cylr 025 volser MR

Figure 8. Sample VM Directory Entries for a Service Machine With a Code Disk

**Statement 1: USER MSTRSRVO XXXXXXXX 6M 6M BG**

Defines the MSTRSRVO machine as a 6-megabyte virtual machine with the VM privilege classes B and G. Privilege class B is optional and allows the service machine to send messages with the MSGNOH command for improved clarity.



**Statement 2: IUCV ANY MSGLIMIT 255**

This statement allows the service machine to communicate with any database machine through the Inter-User Communications Vehicle (IUCV) feature of VM. The **MSGLIMIT 255** option on this statement provides the service machine with a message queue capacity of 255 messages. This option is required to prevent possible loss of database messages, especially when multiple database machines are controlled by a single service machine.

**Statement 3: IPL CMS**

This statement should use the CMS saved segment name which is applicable for your VM environment.

**Statement 4: CONSOLE 009 3215**

This statement *must not* include the **T userid** option (which specifies a secondary console for the service machine).

**Note:**

All Control Center functions will be disabled if the CONSOLE statement includes the **T userid** option.

**Statement 5: MDISK 191 3380 cylr 020 volser MR**

MDISK entry for read/write Control Center system disk (A-disk) with device address 191. This is required by the service machine to contain control files and other locally modified files for Control Center operation. Between 10 and 25 cylinders of IBM 3380-equivalent DASD should be sufficient to hold all software and control files for up to six databases. This may differ by installation depending on the number of active users, the number of back copies of control files retained, and the amount of activity performed during a typical day's work (especially Database Monitoring tools).

**Statement 6: MDISK 195 3380 cylr 025 volser MR**

MDISK entry for read/write Control Center code disk with device address 195 (can be any address other than 191). This is required by the service machine to contain all executable Control Center code. This disk may be shared by multiple Control Center service/support machines on the same system.

All other VM directory entries in this example should correspond with those provided for any virtual machine on the target system.

**Installation Step 2b: [Shared Installation Only] Define MSTRSRVS**

To define a Control Center service machine that shares an existing Control Center code disk, update the VM directory statements as shown in Figure 9 on page 18.

Only the statements which differ from those of the full installation are explained below. For details on the other statements, refer to "Installation Step 2a: [Full Installation Only] Define MSTRSRVO" on page 15.

```

1  USER MSTRSRVO XXXXXXXX 6M 6M BG
      ACCOUNT NNNNNN
      IUCV ANY MSGLIMIT 255
      IPL CMS
      CONSOLE 0009 3215
      SPOOL  000C 2540 READER *
      SPOOL  000D 2540 PUNCH A
      SPOOL  000E 1403 A
      LINK MAINT 0190 0190 RR
      LINK MAINT 019D 019D RR
      LINK MAINT 019E 019E RR
      MDISK 0191 3380 cylr 015 volser MR
2  LINK MSTRSRVO 195 195 RR

```

Figure 9. Sample VM Directory Entries For a MSTRSRV Machine that Shares a Code Disk

**Statement 1: USER MSTRSRVS XXXXXXXX 6M 6M BG**

Defines the MSTRSRVS machine as a 6-megabyte virtual machine with the VM privilege classes B and G. Privilege class B is optional and allows the service machine to send messages with the MSGNOH command for IND\$FILE PUT ARIC141 EPSBIN A (RECFM V

**Statement 2: LINK MSTRSRVO 195 195 RR**

This statement links in READ mode to an existing Control Center code disk (MSTRSRVO) with virtual device address 195 (can be any address other than 191).

**Note:** MSTRSRVS must be authorized to access the code disk in READ mode.

### Installation Step 3: Define a Control Center Owner Machine (MSTROWN)

A MSTROWN machine should be defined at this time if such a machine does not already exist. MSTROWN will be designated later in the installation process as the owner of the service machine. (*Own* in this context describes a logical association between two virtual machines.) No special VM directory changes are required for this machine.

A MSTROWN machine must include an A-disk (191 minidisk) with approximately three cylinders of IBM 3380-equivalent DASD.

### Installation Step 4: Update the VM Directory

After you have made the VM directory control statement changes for the Control Center service machine and the Control Center owner machine, update the VM directory using your local operating procedures.

## Installation Step 5: Link and Format the 191 Disk(s)

Link to the service machine's 191 disk and format as the A-disk.

If a new MSTROWN machine was defined above, then you should also format the MSTROWN 191 disk as the A-disk.

## Installation Step 6: [Full Installation Only] Link and Format the Code Disk

**Important:**

This step is applicable only when performing a *full installation*.

Link to the service machine's 195 code disk and format as the D-disk.

## Installation Step 7: [Full Installation Only] Make Code Disk Available

Each database machine, shared service machine, support machine, user machine, and the owner machine will require read access to the Control Center code disk.

Follow your local authorization procedures to grant read access to the Control Center code disk. If your environment uses a security access product, then follow the directions of the product for ensuring access to the code disk.

**Note:** Universal read access to the code disk should be defined.

## Installation Step 8: Add Service Machine to Autolog List

Under normal operations the service machine should be autologged each time the CPU is IPLed. The service machine should therefore be included in the list of virtual machines that are autologged each time the CPU is IPLed.

**Important:**

1. To correctly establish the secondary console interface (SCIF) between the service machine and each database, the service machine *must* be autologged *first* (in disconnect mode) before each database machine is logged on. If a database machine is logged on before the service machine, the SCIF interface will not be established between the two and the service machine will not be able to perform its normal function with that database.
2. If your VM system has a facility installed which logs off inactive machines, place the service machine in the list of machines to be excluded. This list is generally referred to as the log-off exclusion list.

---

## Code Installation

The VM system is now prepared for the Control Center product. Steps 9 through 14 install the product.

### Installation Step 9: [Full Installation Only] Install Control Center Code

If doing a full installation, then the Control Center code must be installed on the MSTRSRVO 195 code disk from the product distribution tape. This is normally accomplished from the MAINT user ID by linking to the MSTRSRVO 195 code disk in WRITE mode, mounting the product tape, and using VMFPLC2 to copy the code from tape to disk, as described in this procedure:

1. Link and access the MSTRSRVO 195 code disk in WRITE mode, for example as file mode K.
2. Mount the Control Center distribution tape on CUU 181 without a ring. The actual mount command will vary from site to site depending on the tape handling software installed.
3. Rewind the tape.

**VMFPLC2 REW**

4. Load the files onto the accessed MSTRSRVO 195 code disk.

**VMFPLC2 LOAD \* \* K**

**Note:** The file SQLMSTR VERSION, which is included in the LOAD, will contain the version number of the Control Center software.

5. Detach the tape.

### Installation Step 10: Log Off the MAINT Machine

Release and detach the service machine's 191 disk and, if doing a full installation, the code disk. Log off the MAINT Machine.

### Installation Step 11: Log On to the Service Machine

Log on to the service machine to complete the installation and configuration process.

### Installation Step 12: Access Code Disk

Access the Control Center 195 code disk with an available disk mode.

### Installation Step 13: Configure Control Center Control Files

Use the C5697F42 EXEC supplied with Control Center to configure the Control Center software for your installation by entering,

C5697F42

at the CMS command prompt.

**Note:** The C5697F42 EXEC takes approximately 10 minutes to complete.

The C5697F42 EXEC will first verify that all Control Center code has been successfully installed on the code disk. It then prompts you for information about the type of installation being performed and the Control Center code disk being used:

1. The type of Control Center machine you are installing; enter SERVICE.
2. Whether this is a full or shared installation.
3. [Shared Installation Only] The virtual machine ID of the code disk owner.
4. The virtual device address (CUU) to be used by the service machine when linking the code disk.
  - [Full Installation Only] You must use the same CUU specified on the MDISK directory statement in Step 2a.
  - [Shared Installation Only] You must use the same CUU specified on the LINK directory statement in Step 2b.
5. The disk access mode to be used by the service machine when accessing the code disk.

Next, C5697F42 EXEC generates these Control Center control files, prompting you for information as required:

- SQLMSTR CONTROL
- SQMOUNT EXEC
- SQLMSTR PROFILE
- PROFILE EXEC
- SQLMSTR TIMES

When file SQLMSTR CONTROL is generated, you are prompted for the information described below. You should review your needs ahead of time so you can respond properly for your installation. Once Control Center is operational, you can update file SQLMSTR CONTROL through the Control Center panel interface.

1. The number of Control Center service machine log files to retain.

Enter the number of days you wish to keep a log file before it is automatically deleted. If no entry is made, the default (5) will be used.

Control Center service machine log files contain a history of all interrupts within the service machine and are used primarily for debugging purposes. They are generated daily (named SQLMSTR LOG $yyddd$ , where  $yy$  is the year and  $ddd$  is the Julian day) and are kept on the service machine's 191 disk before being automatically deleted after the specified number of days.

2. The number of backup copies of modified files to retain.

Enter the number of past copies of modified files that you wish Control Center to keep. If no entry is made, the default (3) will be used.

When a file is updated on the service machine's 191 A-disk and the code disk (if it is the owner), Control Center creates a backup copy of the original file with a date-coded file type and places it on

the same disk. Previous backup copies will be maintained by Control Center up to the number specified by this value.

3. The Spool Console option is set to Y (yes).

The spool Console option is set to Y. This means that Control Center will spool its console upon startup. This will allow a complete console to be available if needed. This option can be modified to N, if spooling is not desired by using the `SQM CONSOLE OFF` command from the CMS command line.

4. Whether your installation uses a tape management product.

Specify the tape management product, if any, that your installation uses to support DB2 Server for VM.

Enter `DYNAMT` if the `CA-DYNAM/T` product is used for all tape mount requests, `VMTAPE` if the `VMTAPE` product is used, `EPIC` if the `EPIC` product is used, or `NONE` if none of these products are used.

5. Whether your installation uses `DYNOPEN` as the method for handling tape mounts if `DYNAMT` is used.

6. The name of the virtual machine that should receive mount requests.

Specify the recipient of tape mount requests.

Control Center issues tape mount requests by sending messages to an appropriate virtual machine (user ID). The name of the tape manager virtual machine (or operator) should be entered here, whether a tape manager product is used or not. If no entry is specified, then the previous response is used, unless it was `NONE`, in which case the value `OPERATOR` is used.

If `DYNAM/T`, `VMTAPE`, or `EPIC` is being used, you are prompted for information about the tape manager code disk:

- a. The virtual machine ID of the tape manager code disk owner.
- b. The virtual device address of the tape manager code disk.
- c. The file mode the database should use to access the code disk.

These entries are only required if you want each database to automatically link and access the tape manager code disk during startup. If you provide the link and access yourself, these entries can be left blank by simply pressing only the `ENTER` key.

7. The Control Center disk usage warning threshold.

Enter an integer value between 50 and 98 for the disk full percentage which, when reached, causes a warning message to be sent to Control Center Administrators. If no entry is specified, the default value (70) is used.

Each day at midnight, Control Center determines whether the Control Center Administrators should be notified about the amount of data on the service machine's 191 A-disk. If the service machine's A-disk has reached or exceeded the percent full indicated by this value, then a message file will be sent to each Administrator notifying them of this condition.

8. The Control Center disk full warning threshold.

Enter an integer greater than that of the previous response (and less than or equal to 99) for the disk full percentage which, when reached, causes a serious warning message to be sent to Control Center Administrators. If no entry is specified, then a value one greater than your previous response is used.

## 9. Date/Time Format

Control Center offers four different date/time formats to be used in all menu displays and reports generated. They are:

- USA for mm/dd/yy and hh:mm:ss (this is the default format)
- EUR for dd.mm.yyy and hh:mm:ss
- ISO for yyyy-mm-dd and hh:mm:ss, and
- JIS (same as ISO)

Enter any of the above or blank to default to USA.

You should now receive several messages indicating that files SQLMSTR CONTROL and SQMOUNT EXEC have been generated.

When file SQLMSTR PROFILE is generated, you are prompted for the information described below. You should review your needs ahead of time so you can respond properly for your installation.

### 1. The logical owner of the service machine.

Enter the machine identifier (user ID) that should be recognized as the owner of the Control Center service machine. The owner machine is referred to in this manual as MSTROWN, but it can be any existing virtual machine. The Service machine itself, should not be listed as the owner.

This machine will automatically have Control Center Administrator authority and will additionally receive the SQLMSTR CONSOLE file that is closed and transferred from the service machine each day at midnight.

### 2. One or more users who will be Control Center Administrators.

Respond in the form `userid` or `userid at nodeid`. This prompt will be displayed repeatedly until you enter a blank response (or Q to terminate the install process early).

Each user ID entered will be given Control Center Administrator authority to the Control Center service machine, allowing them complete control and authority to perform any Control Center function for any database.

The Service machine needs to be a Control Center Administrator, so authority is given during installation.

**Note:** Control Center Administrators may be added and deleted through the Control Center panel interface once Control Center is operational.

You should now receive several messages indicating that files SQLMSTR PROFILE, PROFILE EXEC and SQLMSTR TIMES have been generated, and that Control Center parameters have been loaded into memory.

This completes C5697F42 EXEC processing.

## Installation Step 14: Start Control Center Service Machine

This step will initialize and start the Control Center service machine.

Enter these commands at the CMS command prompt:

```
#CP IPL CMS  
SQLMSTR
```

The service machine should immediately be disconnected from your active terminal session and the startup process will be completed in disconnect mode. You will be logged off the terminal at this point. The installation process is complete.

---

## Installation Verification

The following steps will determine whether Control Center is functioning and can communicate with users (but not yet with databases, which is verified after a database setup under Control Center has been done).

## Installation Step 15: Log On to the MSTROWN Machine

Log on to the MSTROWN machine or any machine authorized previously as a Control Center Administrator on the service machine.

## Installation Step 16: Verify Files/Messages Received

If logged on to the MSTROWN machine, you should have received file SQLMSTR CONSOLE (sent by the service machine) in the virtual reader.

If, during Control Center startup processing, you are logged on to a machine with Control Center Administrator authority (including MSTROWN), you should receive a Control Center startup message from the service machine.

**Note:** You *must* be logged on at the time Control Center startup processing on the service machine issues the message for it to appear on your console. Continue with the verification steps even if you do not receive a message.

## Installation Step 17: Link and Access the Control Center Code Disk

Link and access the Control Center code disk in READ mode with an available virtual device address (CUU) and access mode (195 D).

## Installation Step 18: Verify Control Center Service Machine Operation

To establish communications with the service machine, enter this at the CMS command prompt:

```
SQM (MSTRSRV
```



Replace MSTRSRV with the machine ID of your service machine.

Verify the service machine is operating by entering,

```
SQM VERSION
```

Control Center will return a message identifying the service machine (MSTRSRV) and the Control Center product release and modification level. If this is successful, Control Center has been successfully installed and the verification process is complete.

For more information about SQM VERSION, refer to the “Version Tool” chapter in the *DB2 Server for VM Control Center Operations Guide*.

---

## Post-Installation

### Installation Step 19: Tape Mount Interface Customization

#### SQMOUNT

The Control Center tape mount interface exec (SQMOUNT EXEC) provides four different mount commands that will be issued depending on responses given during the installation process. The SQMOUNT EXEC is used when a mount request must be placed on the database or Data Restore machine's console by the Control Center service machine. The mount commands provided for EPIC should not need modification. The generic mount command provided for environments with DYNAM/T and VMTAPE, or other tape management products not mentioned above, may require customization for local standards based upon the tape drive used.

These parameters are passed to the SQMOUNT EXEC by Control Center when a tape mount is required:

- dbname** The database machine that needs the mounted tape.
- valid** The volume identifier of the tape to be mounted.
- cuu** The channel and unit address (virtual device address) where the tape should be attached (typically 181, 182, 183).
- density** The tape density that should be used. If VMTAPE is used with a 3490C tape drive, specify a tape density of **DEN E**.
- rw** Either READ or WRITE to indicate whether the tape should be mounted in READ mode or WRITE mode.
- dsn** The dataset name specified for archive, log archive, or tracing specified in the database parameters file. The database parameters file is discussed in the “Database Setup” chapter of the *DB2 Server for VM Control Center Operations Guide*.

Any modifications made to the SQMOUNT EXEC should utilize the above parameters to execute a tape mount request with the proper characteristics.

An example of the tape mount routines provided with Control Center can be found in file SQMOUNT \$EXEC on the Control Center code disk. All local changes should be made to SQMOUNT EXEC on the service machine's A-disk.

**Note:** All tape mount requests are issued using CP SEND CP dbname. The CP SEND CP command sends the command to the database virtual machine using the SCIF facility. The command will be executed on the database machine using the #CP command format, which allows a CP command to be issued while the database is operational. Only #CP format commands are executable on the database while the database is running, so this command construct must be kept for any modifications made to the SQMOUNT EXEC. Only valid CP commands are allowed. The supplied example utilizes the CP MSG command to issue all tape mount requests from the database machine.

## SQMSTAPE

The SQMSTAPE EXEC is provided to issue mount requests during table or dbspace reorganizations, and during some Data Restore functions when the DRTAPE\_PREMOUNT is Y in the database PARMS file. This exec is only used when a Data Restore machine, Support machine, or user machine must issue a tape mount for its own userid. The SQMSTAPE EXEC is located on the Control Center code disk. SQMSTAPE EXEC should be modified if an unsupported tape management system is used or if local modifications are necessary. The SQMSTAPE \$EXEC is provided as an example file and should not be modified.

## Installation Step 20: Perform Database Setup

Perform the database setup procedure described in the “Database Setup” chapter of the *DB2 Server for VM Control Center Operations Guide* for each database to be managed by this service machine.

## Installation Step 21: Perform Data Restore Setup

If Data Restore has been installed, do the steps listed in the “Database Restore Setup with Control Center” chapter of the *DB2 Server for VM Control Center Operations Guide* to enable Control Center to manage the Data Restore Functions.

---

## Chapter 8. Installing a Support Machine

This chapter describes how to install a Control Center support machine. A support machine is operated in disconnect mode and is managed by a Control Center service machine. It is used for running Database Administration tools (database applications) scheduled through the service machine using the Job Scheduling tool. Unlike service machines, users do not communicate directly with support machines.

The installation process is similar to that of a shared service machine. It includes defining a support machine (MSTRSUP) with read access to the same code disk accessed by the managing service machine, and an owner machine (MSTROWN) for receiving CONSOLE files. Additionally, since a support machine is used to run Database Administration tools (database applications), it is necessary to grant DBA authority in all databases it will operate against.

### Notes:

1. Multiple Control Center support machines may be installed on a single CPU and managed by a single Control Center service machine.
2. Instead of defining a new SQLMOWN machine, the owner machine of the managing service machine should also be the owner of the support machine.

Prior to installing a Control Center support machine you must install or have access to an existing Control Center service machine. Refer to Chapter 7, "Installing the Service Machine" on page 14.

---

## Checklist for Installation of the Control Center Support Machine

---

### Notes:

- *Perform the steps in order.*
- *Optional steps are preceded by a circle (o).*
- *Page references appear in parentheses.*

---

### Preliminary Installation

1. Log On to the VM MAINT Machine (28)
2. Define a Control Center Support Machine (MSTRSUP) (29)
3. o Authorization for SFS Databases (30)
4. o Define a Control Center Owner Machine (MSTROWN) (30)
5. Update the VM Directory (30)
6. Link and Format the 191 Disk(s) (31)
7. Add MSTRSUP Machine to Autolog List (31)

8. Log Off the MAINT Machine (31)

### Code Installation

9. Log On to the MSTRSUP Machine (31)
  10. Access Code Disk (31)
  11. Configure Control Center Support Machine (31)
  12. Start Control Center Support Machine (34)
- ### Installation Verification
13. o Log On to the MSTROWN Machine (34)

## Installing a Support Machine

- 14. ◦ Verify Files/Messages Received (34)
- 15. ◦ Link and Access the Control Center Code Disk (35)
- 16. ◦ Verify Control Center Support Machine Operation (35)

### Post-Installation

- 17. Authorize Communication (35)
- 18. Grant DBA Authority (36)

---

## Preliminary Installation

The first seven steps of the installation process prepare your VM system by defining all required virtual machines and their minidisks. Figure 10 summarizes what you will accomplish.

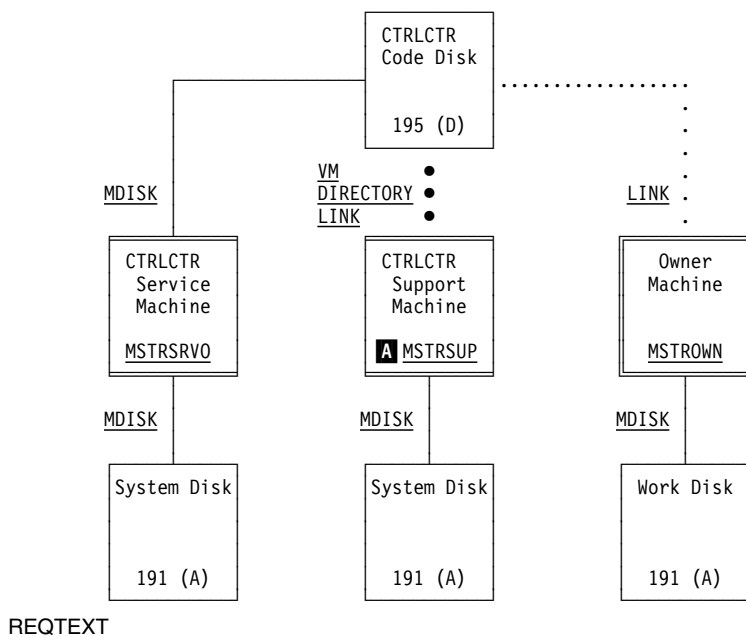


Figure 10. Virtual Machines and Minidisks in a Control Center Support Machine Environment

MSTRSUP **A** has been added to the environment shown in Figure 6 on page 15 using the support machine installation process. Service machine MSTRSRVO manages MSTRSUP and is the owner of the Control Center code disk. A shared service machine (MSTRSRVS) could have been used instead of MSTRSRVO; it would link to the same code disk as MSTRSUP. A single MSTROWN machine (installed during the service machine installation process) is defined as the logical owner of MSTRSRVO and MSTRSUP. You may, however, define a separate owner machine for the support machine.

## Installation Step 1: Log On to the VM MAINT Machine

To begin the Control Center installation, log on to the MAINT virtual machine.

## Installation Step step 2: Define a Control Center Support Machine (MSTRSUP)

To define an MSTRSUP machine which shares an existing Control Center code disk, update the VM directory statements as shown in Figure 11 on page 29.

<b>1</b>	USER MSTRSUP XXXXXXXX 6M 6M BG ACCOUNT NNNNNN
<b>2</b>	IUCV ANY
<b>3</b>	IPL CMS
<b>4</b>	CONSOLE 0009 3215 SPOOL 000C 2540 READER * SPOOL 000D 2540 PUNCH A SPOOL 000E 1403 A LINK MAINT 0190 0190 RR LINK MAINT 019D 019D RR LINK MAINT 019E 019E RR
<b>5</b>	LINK MSTRSRVO 0195 547 RR
<b>6</b>	MDISK 0191 3390 cylr 100 volser MR

Figure 11. VM Directory Control Statements for a SQLMSUP Machine

### Statement 1: USER MSTRSUP XXXXXXXX 6M 6M G

Defines the MSTRSUP machine as a 6-megabyte virtual machine with the VM privilege class G.

### Statement 2: IUCV ANY

This statement allows MSTRSUP to communicate with MSTRSRV through the Inter-User Communications Vehicle (IUCV) feature of VM.

### Statement 3: IPL CMS

This statement should use the CMS saved segment name which is applicable for your VM environment.

### Statement 4: CONSOLE 009 3215

This statement *must not* include the **T userid** option (which specifies a secondary console for the MSTRSUP machine).

#### Note:

All Control Center functions will be disabled if the CONSOLE statement includes the **T userid** option.

### Statement 5: LINK MSTRSRVO 195 547 RR

This statement links in READ mode to the same code disk linked to by the managing service machine. Depending on your environment, the code disk may be owned by a machine other than the managing service machine; (the managing service machine is sharing a code disk).

## Installing a Support Machine

**Note:** MSTRSUP must be authorized to access the Control Center code disk in READ mode.

### Statement 6: MDISK 191 3390 cylr 100 volser MR

An A-disk (191 minidisk) is required by the support machine to contain unloaded data, SQLDBSU (DBSU) control files, and DBSU listing files created by Database Administration tools. The user may request that a permanent or temporary minidisk be used by these tools. If a temporary disk is used, the DBSU listing files will be written to the A-disk to allow the user to verify that the job ran correctly even after the temporary disk is released. If a permanent disk is used, all output files will be written to the permanent disk, which may be the A-disk or another read/write disk specified by the user.

The size of the 191 minidisk will vary greatly depending on the activities scheduled on the machine, size of data objects, and the options chosen when a tool is scheduled; (use a temporary disk).

All other VM directory entries in this example should correspond with those provided for any virtual machine on the target system.

## Installation Step 3: Authorization for SFS Databases

When executing database administration tools such as SQLREORG, SQLMAINT, or SQLRINDX, the Control Center support machine must be:

- Enrolled as a USER in the SFS filepool where the production code directory is located
- Granted READ access on the production code directory and production code files
- Granted DBA on the servers where the database administration activities will be performed.

## Installation Step 4: Define a Control Center Owner Machine (MSTROWN)

An MSTROWN machine should be defined at this time if such a machine does not already exist. MSTROWN will be designated later in the installation process as the owner of the MSTRSUP machine. (*Own* in this context describes a logical association between two virtual machines.)

No special VM directory changes are required for this machine. It must include an A-disk (191 minidisk) with approximately three cylinders of IBM 3380-equivalent DASD.

**Note:** Instead of defining a new machine, the owner machine of the managing service machine should also be the owner of the support machine.

## Installation Step 5: Update the VM Directory

After you have made the VM directory control statement changes for the Control Center service machine and the Control Center owner machine, update the VM directory using your local operating procedures.

### Installation Step 6: Link and Format the 191 Disk(s)

Link to the MSTRSUP 191 disk and format as the A-disk.

If a new MSTRROWN machine was defined above, then you should also format the MSTRROWN 191 disk as the A-disk.

### Installation Step 7: Add MSTRSUP Machine to Autolog List

Under normal operations the MSTRSUP machine should be autologged each time the CPU is IPLed. The MSTRSUP machine should therefore be included in the list of virtual machines that are autologged each time the CPU is IPLed.

**Important:**

If your VM system has a facility installed which logs off inactive machines, place MSTRSUP in the list of machines to be excluded. This list is generally referred to as the log-off exclusion list.

### Installation Step 8: Log Off the MAINT Machine

Release and detach the support machine's 191 disk, then log off the MAINT Machine.

---

## Code Installation

Steps 9 through 12 install the Control Center code on the support machine.

### Installation Step 9: Log On to the MSTRSUP Machine

Log on to the MSTRSUP virtual machine to complete the installation and configuration process.

### Installation Step 10: Access Code Disk

Access the Control Center 547 code disk with an available disk mode.

### Installation Step 11: Configure Control Center Support Machine

Use the C5697F42 EXEC supplied with Control Center to configure the Control Center software for your installation by entering,

```
C5697F42
```

at the CMS command prompt.

**Note:** The C5697F42 EXEC takes approximately 10 minutes to complete.

## Installing a Support Machine

The C5697F42 EXEC will first verify that all Control Center code has been successfully installed on the code disk. It then prompts you for the following information about the type of installation being performed and the Control Center code disk being used:

1. The type of Control Center machine you are installing:

Enter SUPPORT.

2. The virtual machine ID of the managing service machine.
3. The virtual machine ID of the code disk owner.
4. The virtual device address (CUU) to be used by the MSTRSUP machine when linking the code disk.
  - You must use the same CUU specified on the LINK VM directory statement in Installation Step 2 above.
5. The disk access mode to be used by the MSTRSUP machine when accessing the code disk.

Next, C5697F42 EXEC generates these Control Center control files, prompting you for information as required:

- SQLMSTR CONTROL
- SQLMSTR PROFILE
- PROFILE EXEC
- SQLMSTR TIMES

When file SQLMSTR CONTROL is generated, you are prompted for the information described below. You should review your needs ahead of time so you can respond properly for your installation. Once Control Center is operational on the support machine you can update file SQLMSTR CONTROL through the Control Center panel interface.

1. The number of Control Center support machine log files to retain.

Enter the number of days you wish to keep a log file before it is automatically deleted. If no entry is made, the default (5) will be used.

Control Center support machine log files contain a history of all interrupts within the support machine and are used primarily for debugging purposes. They are generated daily (named SQLMSTR LOG $yyddd$ , where  $yy$  is the year and  $ddd$  is the Julian day) and are kept on the support machine's 191 disk before being automatically deleted after the specified number of days.

2. The number of backup copies of modified files to retain.

Enter the number of past copies of modified files that you wish Control Center to keep. If no entry is made, the default (3) will be used.

When a file is updated on the support machine's 191 A-disk, Control Center creates a backup copy of the original file with a date-coded file type and places it on the same disk. Previous backup copies will be maintained by Control Center up to the number specified by this value.

3. The Control Center disk usage warning threshold.



## Installing a Support Machine

Enter an integer value between 50 and 98 for the disk full percentage which, when reached, causes a warning message to be sent to Control Center Administrators. If no entry is specified, the default value (70) is used.

Each day at midnight Control Center determines whether the Control Center Administrators should be notified about the amount of data on the support machine's 191 A-disk. If the support machine's A-disk has reached or exceeded the percent full indicated by this value, then a message file will be sent to each Administrator notifying them of this condition.

#### 4. The Control Center disk full warning threshold.

Enter an integer greater than that of the previous response (and less than or equal to 99) for the disk full percentage which, when reached, causes a serious warning message to be sent to Control Center Administrators. If no entry is specified, then a value one greater than your previous response is used.

#### 5. The job output retention period.

Enter the number of days you wish to keep job output before it is automatically deleted. The minimum value is 1; the maximum value is 99999. If no entry is specified, the default value (30) is used.

#### 6. Date/Time Format

Control Center offers four different date/time formats to be used in all menu displays and reports generated. They are:

- USA for mm/dd/yy and hh:mm:ss (this is the default format)
- EUR for dd.mm.yyy and hh:mm:ss
- ISO for yyyy-mm-dd and hh.mm.ss, and
- JIS (same as ISO)

Enter any of the above or blank to default to USA.

You should now receive a message indicating that file SQLMSTR CONTROL has been generated.

When file SQLMSTR PROFILE is generated, you are prompted for the information described below. You should review your needs ahead of time so you can respond properly for your installation.

#### 1. The logical owner of the MSTRSUP machine.

Enter the machine identifier (user ID) that should be recognized as the owner of the Control Center support machine. The owner machine is referred to in this manual as MSTROWN, but it can be any existing virtual machine. The Support machine id itself, should not be listed as the owner.

This machine will automatically have Control Center Administrator authority and will additionally receive the SQLMSTR CONSOLE file that is closed and transferred from the support machine each day at midnight.

#### 2. One or more users who will be Control Center Administrators.

Respond in the form userid or userid at nodeid. This prompt will be displayed repeatedly until you enter a blank response (or Q to terminate the install process early).

## Installing a Support Machine

Each user ID entered will be given Control Center Administrator authority to the Control Center support machine, allowing them complete control and authority to perform any Control Center function for any database.

The Support machine needs to be a Control Center Administrator, so authority is given at installation time.

**Note:** Control Center Administrators may be added and deleted through the Control Center panel interface once Control Center is operational on the support machine.

You should now receive several messages indicating that files SQLMSTR PROFILE, PROFILE EXEC and SQLMSTR TIMES have been generated, and that Control Center parameters have been loaded into memory.

This completes C5697F42 EXEC processing.

## Installation Step 12: Start Control Center Support Machine

This step will initialize and start the Control Center support machine.

Enter these commands at the CMS command prompt:

```
#CP IPL CMS  
SQLMSUP
```

The support machine should immediately be disconnected from your active terminal session and the startup process will be completed in disconnect mode. You will be logged off the terminal at this point. The installation process is complete.

---

## Installation Verification

The following steps will determine whether the Control Center support machine is functioning.

## Installation Step 13: Log On to the MSTROWN Machine

Log on to the MSTROWN machine or any machine authorized previously as a Control Center Administrator on the support machine.

## Installation Step 14: Verify Files/Messages Received

If logged on to the MSTROWN machine, you should have received file SQLMSTR CONSOLE (sent by the MSTRSUP machine) in the virtual reader.

If, during Control Center startup processing, you are logged on to a machine with Control Center Administrator authority (including MSTROWN), you should receive a Control Center startup message from MSTRSUP.

**Note:** You *must* be logged on at the time Control Center startup processing on MSTRSUP issues the message for it to appear on your console. Continue with the verification steps even if you do not receive a message.

### Installation Step 15: Link and Access the Control Center Code Disk

Link and access the Control Center code disk in READ mode with an available virtual device address (CUU) and access mode (195 D).

### Installation Step 16: Verify Control Center Support Machine Operation

To establish communications with MSTRSUP, enter this at the CMS command prompt:

```
SQM (MSTRSUP
```

Replace MSTRSUP with the machine ID of your support machine.

Verify the support machine is operating by entering,

```
SQM VERSION
```

. Control Center will return a message identifying the support machine (MSTRSUP) and the Control Center product release and modification level. If this is successful, Control Center has been successfully installed on the support machine and the verification process is complete.

For more information about SQM VERSION, refer to the “Version Tool” chapter in the *DB2 Server for VM Control Center Operations Guide*.

---

## Post-Installation

### Installation Step 17: Authorize Communication

The support machine must be authorized to send job completion messages to the managing service machine which controls the job schedule.

In brief, the steps to do this are:

1. Log on to a machine (user ID) that has Control Center Administrator authority on the managing Control Center service machine; for example, the owner machine of MSTRSRV.

**Note:** Do *not* log on to the service machine.

2. Authority for MSTRSUP can now be added using the Control Center panel interface.
  - a. Start Control Center in panel mode by entering this at the CMS command prompt:

```
SQM
```
  - b. Select Option AU (SQLMSTR Authorization) on the Control Center main menu.

## Installing a Support Machine

- c. Select Option M (MUM Machine) on the SQLMSTR Authorization panel.<sup>2</sup>
- d. Enter the machine ID (user ID) and node ID of the support machine and press ENTER.

## Installation Step 18: Grant DBA Authority

The support machine must be given DBA authority for each database it services. Issue the **GRANT DBA** authority by using the ISQL facility of the database.

---

<sup>2</sup> A MUM machine is the same as a Control Center support machine.

## Chapter 9. Migration

This chapter describes how to migrate an existing Control Center Version 6 Release 1, or Version 5 Release 1, or a SQL Master environment (either Version 1 Release 2.0 or Version 1 Release 1.2) to Control Center Version 7 Release 1.0.

To migrate from earlier levels of SQL Master (Version 1 Release 1.0 or Version 1 Release 1.1), you must first migrate to SQL Master Version 1.2. Follow the steps as you are prompted by migration exec MIGRV1R2. You will be instructed to provide the correct values for your environment. After you have successfully migrated to Version 1.2, it will be necessary for you to then execute MIGRV7R1 to complete the migration to Control Center Version 7 Release 1.

### Checklist for Migrating from SQL Master

Notes:

- *Perform the steps in order.*
- *Optional steps are preceded by a circle (o).*
- *Page references appear in parentheses.*

#### Code Migration

1. Log On to the Service/Support Machine (38)
2. Link and Access Code Disk (38)
3. Make Backup Files (38)
4. Install Control Center Code (39)
5. Migrate to Control Center (39)

#### Post Code Migration

6. Apply Local Changes (40)
7. Start Control Center Service/Support Machine (40)

#### Service/Support Machine Migration Verification

8. o Log On to the MSTROWN Machine (40)
9. o Link and Access the Control Center Code Disk (40)
10. o Verify Service/Support Machine Operation (41)

#### Important:

This completes the migration process for a Control Center support machine. If you are not migrating a Control Center service machine, omit all of the steps that follow.

#### [Service Machine Only] Database Machine Migration

11. Log On to the Database Machine (SQLMACH) (41)
12. Link and Access the Control Center Code Disk (41)
13. Copy and Update DBPROF EXEC (41)
14. Run DBSTART EXEC (43)

#### [Service Machine Only] Database Migration Verification

15. o Log On to the MSTROWN Machine (43)
16. o Verify Messages Received (43)

## Migration

- |   |  |
|---|--|
| 17. ○ Link and Access the Control Center Code Disk (44) | 19. ○ Convert SQLMAINT.SQLMAINT_TABLE (44) |
| 18. ○ Review the Database Startup File (44)             | <b>Data Restore Machine Migration</b>      |
| <b>YEAR 2000 Changes for SQLMAINT Users</b>             | 20. Rename the XTS9X001 Exec (45)          |
- 

## Code Migration

The following steps of the migration process load the Control Center Version 7 Release 1.0 code and preserve any modified Control Center control files.

### Migration Step 1: Log On to the Service/Support Machine

To begin the Control Center migration, log on to the service machine.

### Migration Step 2: Link and Access Code Disk

Link and access the Control Center code disk with an available virtual device address (cuu) and access mode.

**Note:** Depending on the machine being migrated and/or your installation configuration, the code disk may already be linked or linked and accessed.

### Migration Step 3: Make Backup Files

This step applies to the Control Center service machine. Use the CMS COPYFILE command to back up and rename these files from the code disk to the A-disk:

- DATABASE MESSAGES
- SQLMSTR DIRECTRY
- DBINIT CONTROL

For example, enter the following at the CMS command prompt to back up the DATABASE MESSAGES file:

```
COPYFILE DATABASE MESSAGES D DATABASE OMESSAGE A
```

Depending on your installation configuration, files SQLMSTR DIRECTRY and DBINIT CONTROL might not exist on the code disk. If this is the case, you do not need to back up these files. Note that these files will NOT be overlaid by the new code - backing them up is only a cautionary measure in the event they are needed in case of any unforeseen problem with the install.

#### Important:

Control Center modules on the code disk will be overwritten. You should back up all files that have been locally customized to the A-disk.

## Migration Step 4: Install Control Center Code

This step applies to the Control Center service machine. The Control Center code must be installed on the MSTRSRVO 195 code disk from the product distribution tape. This can be done from the MSTRSRVO machine by accessing the code disk in WRITE mode, mounting the product tape, and using VMFPLC2 to copy the code from tape to disk, as described in the procedure:

1. Link and access the MSTRSRVO 195 code disk in WRITE mode; for example, as file mode K.
2. Mount the Control Center distribution tape on cuu 181 without a ring, that is, in a write-protected manner. The actual mount command will vary from site to site depending on the tape handling software installed.
3. Rewind the tape.

```
VMFPLC2 REW
```

4. Load the files onto the accessed MSTRSRVO 195 code disk.

```
VMFPLC2 LOAD * * K
```

**Note:** The file SQLMSTR VERSION, which is included in the LOAD, will contain the version number of the Control Center software.

5. Detach the tape.

## Migration Step 5: Migrate to Control Center

Use the MIGRV7R1 exec supplied with Control Center to modify the SQLMSTR CONTROL file to add the Date-Time-Format (if not there); and to update the database parms files with new database and Data Restore parameters (if needed). Enter at the CMS command prompt line.

```
MIGRV7R1
```

The exec will prompt you for:

1. The current level of code. If you are at SQL Master Version 1.1.2, you will be prompted to supply the Date-Time-Format desired (USA, EUR, ISO, JIS). If you are at SQL Master level 1.2.0 **AND** do not have PTF UV59853 installed, you will be prompted for the same information. The current SQLMSTR CONTROL file will be backed up on your A-disk with the name SQLMSTR OCONTROL and an updated SQLMSTR CONTROL file will be created when needed.
2. The exec will then backup all the existing database parms files on your A-disk, with the new file type of OPARMS, and generate new database parms files when needed. Only Service machines hold database parms files.
3. After this is completed, you will receive a **Migration process has completed** message. If errors are encountered, you will be informed, and you must re-run the exec.
4. **IMPORTANT:** Database ARCHHIST files from Control Center Version 5 Release 1 or older are NOT compatible with Control Center 7.1.0. After MIGRV7R1 has executed, if you move control of other databases from older Control Center machines to a Control Center 7.1.0 machine, you must migrate

## Migration

the ARCHHIST file of that database by executing: **SQMMIGHS dbmach** on the CMS command line of the Control Center machine. Dbmach must be the userid of the database and the dbmach ARCHHIST and BACKHIST file must be on the Control Center service machine A-disk. Database TAPES files from older versions of Control Center will not contain Data Restore tapes. Executing: **SQMMIGTP dbmach** on the CMS command line of the Control Center machine will merge the DRTAPES file entries into the database TAPES file. Do **not** execute the MIGRV7R1 exec again to reformat individual ARCHHIST and TAPES files.

---

## Post-Service/Support Machine Migration

### Migration Step 6: Apply Local Changes

The SQLMSTR \$PROFILE file contains entries which are not on your current SQLMSTR PROFILE file. This file should be compared to your SQLMSTR PROFILE file and any updates should be made.

### Migration Step 7: Start Control Center Service/Support Machine

This step will initialize and start the Control Center service machine.

Enter these commands at the CMS command prompt:

```
#CP IPL CMS  
startexec
```

Replace startexec with SQLMSTR if migrating a service machine. Replace it with SQLMSUP if migrating a support machine.

The service/support machine immediately disconnects from your active terminal session and the startup process completes in disconnect mode. You will be logged off the terminal at this point. The migration process is complete.

---

## Service/Support Machine Migration Verification

These steps will determine whether Control Center is functioning and can communicate with users:

### Migration Step 8: Log On to the MSTROWN Machine

Log on to the MSTROWN machine or any machine that has Control Center Administrator authority on the managing service machine.

### Migration Step 9: Link and Access the Control Center Code Disk

Link and access the Control Center code disk in READ mode with an available virtual device address (cuu) and access mode (195 D).



## Migration Step 10: Verify Service/Support Machine Operation

To establish communications with the service/support machine, enter this command at the CMS command prompt:

```
SQM (machine
```

Replace *machine* with the machine ID of your service/support machine.

Verify the service/support machine is operating by entering,

```
SQM VERSION
```

Control Center will return a message identifying the machine and the Control Center product release and modification level.

You *must* be logged on to the MSTROWN or another machine with Control Center administrator authority for these messages to appear on your console.

If this is successful, Control Center has been successfully installed and the verification process is complete.

---

## [Service Machine Only] Database Machine Migration

The next set of steps migrates a database machine to work with the service machine. They should be completed for each database machine managed by the service machine.

### Migration Step 11: Log On to the Database Machine (SQLMACH)

Log on to the database machine.

### Migration Step 12: Link and Access the Control Center Code Disk

Link and access the Control Center code disk used by the managing service machine with an available virtual device address (*cuu*) and disk access mode (547 D). Depending on your environment, the code disk may already be linked.

**Note:** SQLMACH must be authorized to access the code disk in READ mode.

### Migration Step 13: Copy and Update DBPROF EXEC

Use these commands to make a backup copy of the existing database machine PROFILE EXEC and to replace it with the DBPROF EXEC from the code disk (547 D):

```
COPYFILE PROFILE EXEC A PROFILE EXEC0 A (REP
COPYFILE DBPROF EXEC D PROFILE EXEC A (REP
```

## Migration

The PROFILE EXEC file may need to be modified for any LINK and ACCESS statements required at your installation.

### Important:

If the database machine does not link to the Control Center code disk with an entry in the VM directory or you used a device address (cuu) other than 547, you will need to modify the PROFILE EXEC.

A partial listing of the PROFILE EXEC is shown in Figure 12:

```
/* DBPROF EXEC */
/* 5697-F42 (C) COPYRIGHT IBM CORP. 2000 */
/* Licensed material - Program Property of IBM */
trace 'o'
address COMMAND

'SET AUTOREAD OFF'

/** try default access of SQLMSTR 195 disk for directory links **/

'SET CMSTYPE HT'
A address CMS 'ACCESS 547 D'
'SET CMSTYPE RT'

/*****
/* Check to see if a terminal is connected */
/*****
termaddr = '
'EXECIO * CP (STRING QUERY USERS' userid()
.
.
.
```

Figure 12. Partial Listing of the Database Machine PROFILE EXEC (Renamed from DBPROF EXEC)

- The ACCESS statement for the Control Center code disk is indicated by an **A**.
- If required, a LINK to the Control Center code disk should be inserted immediately before the ACCESS statement.

Two database disks will be linked by the database machine during normal operation: the database production disk (usually referred to as the 195 disk) and the database service disk (usually referred to as the 193 disk). During most database operations, both of these disks are linked in READ mode. During certain database single user mode operations (coldlogs, adding dbextents, adding dbspaces), the 195 disk will be linked in Multiple-write mode. These disks are linked by the DBLINK EXEC which is supplied with Control Center and are linked as the 195 (file mode Q) and 193 (file mode V) unless otherwise specified in the database parameters file. It is the responsibility of the installer to handle any DIRMAINT or access requirements of the installation environment which will allow the DBLINK exec to switch between read and write links to these disks. This may require a modification to the DBLINK EXEC file.

## Other Disk Links

If the database machine needs access to other local disks, the PROFILE EXEC should be modified to add the required LINK and ACCESS statements. When the DYNAM/T, EPIC or VMTAPE product is used, a link may be required to provide the database with access to the code required for tape operation. For example, the DMSTVI module must be accessed when VMTAPE or EPIC is used. The DMSTVI module is required to support multivolume archive tapes.

## Migration Step 14: Run DBSTART EXEC

If all of the previous steps were completed successfully, then the database can be started by entering this command at the CMS command prompt:

```
DBSTART
```

The DBSTART process will disconnect the database machine from your console and will start the database initiation process under control of Control Center.

---

## [Service Machine Only] Database Migration Verification

The following steps will determine whether the database machine and the managing service machine can communicate. They should be completed for each database machine managed by the service machine.

## Migration Step 15: Log On to the MSTROWN Machine

Log on to the MSTROWN machine or any machine that has Control Center Administrator authority on the managing service machine.

## Migration Step 16: Verify Messages Received

If, during database startup processing, you are logged on to a machine with Control Center Administrator authority, you should receive these messages:

```
12:43:44 * MSG FROM MSTRSRV: SQMA0025I SQLMACH=> Database ... testing SCIF interface
12:43:54 * MSG FROM MSTRSRV: SQMA0811I SQLMACH=> Database SQLMACH taking ARCHIVE FILEDEF SCIF SYNCPOINT
...
12:43:56 * MSG FROM MSTRSRV: SQMA0811I SQLMACH=> Database SQLMACH taking LARCHIVE FILEDEF SCIF SYNCPOINT
..
12:43:59 * MSG FROM MSTRSRV: SQMA0811I SQLMACH=> Database SQLMACH taking TRACE FILEDEF SCIF SYNCPOINT ....
12:44:08 * MSG FROM MSTRSRV: SQMA0025I SQLMACH=> Database ... is starting
12:44:30 * MSG FROM MSTRSRV: SQMA0045I SQLMACH=> SQLMACH V7.1 database has been started, logmode L
```

**Note:** You **must** be logged on to an userid with Control Center Administrator authority *during* database start up processing in order for these messages to appear on your console. Continue with the verification steps even if you do not receive a message.

## Migration

If, during database startup processing, you are logged on to a machine with Control Center Administrator authority, you should receive these messages:

### Migration Step 17: Link and Access the Control Center Code Disk

Link and access the Control Center code disk in READ mode with an available virtual device address (cuu) and access mode (for example, 547 D).

#### Notes:

1. Depending on your environment, the code disk may already be linked and accessed.
2. Depending on your environment, the code disk may be owned by a machine other than the managing service machine; (the managing service machine is sharing a code disk).

### Migration Step 18: Review the Database Startup File

Enter these commands at the CMS command prompt to request a copy of the database SQLSTART file:

```
SQM (MSTRSRV  
SQM CMS SENDFILE SQLMACH SQLSTART TO MSTROWN
```

Replace MSTRSRV, SQLMACH and MSTROWN with appropriate machine IDs.

MSTRSRV will send the SQLSTART file (SQLMACH SQLSTART) to your virtual reader where it can be viewed using the CMS PEEK command. Review this file to verify successful database startup.

An example of the database SQLSTART file can be found in the "Database Setup" chapter of the *DB2 Server for VM Control Center Operations Guide*.

### Migration Step 19: Convert SQLMAINT.SQLMAINT\_TABLE

**Note:** If installing the SQLMAINT function for the first time, or if you are migrating from Control Center Version 5.1 or Version 6.1, the instructions in this step are not necessary.

If you are migrating from SQL Master 1.1.2 or 1.2 and use SQLMAINT, and PTF UV59853 has **NOT** been installed, the steps below need to be taken to convert the SQLMAINT.SQLMAINT\_TABLE to Year 2000 format. A conversion exec (YR2000MC) has been supplied to aid in the conversion of the SQLMAINT.SQLMAINT\_TABLE. The SQLMAINT\_TABLE has 2 date fields which are in Julian format. These fields will be converted to an "extended Julian" format, a 4-digit year followed by the 3-digit day number). The exec provided unloads the data, drops and recreates the table, and reloads the table with the new extended date fields.

There are 2 DBSU input files used by the exec which are also supplied (YR2000 UNLDBSU and YR2000 LOADBSU).

1. Access the Control Center code disk.
2. From a DBA ID, run the SQLTABLE tool to capture the DDL for the SQLMAINT\_TABLE.

- a. Use Option **3** with PAUSE=YES and REBIND PACKAGES=NO option.
  - b. Unload to the A-disk or some other permanent disk.
  - c. Save the unloaded A4 file (SQLMAIN\$ SQLTABLE A4) as a backup.
  - d. Save the SQLMAIN\$ EXEC file if a recovery is needed.
  - e. Discard the SQLMAIN\$ LOADDBSU file.
  - f. Save the DDLDBSU file.
  - g. Move the 2 new supplied DBSU files (YR2000 UNLDBSU and YR2000 LOADDBSU) from the Control Center code disk to the DBA's A-disk (or the permanent disk used for unloading the table).
3. Modify the YR2000 LOADDBSU file, supply the DBSPACE name for the CREATE Table IN statement.
  4. Run the YR2000MC exec.
  5. If you have packages which were invalidated, do the following:
    - a. Execute SQMUTIL from the CMS ready screen. This will place you in the Object Search List Utility. Press **PF10** for the Table Search panel. Fill in the fields for the SQLMAINT\_TABLE and Press Enter.
    - b. You will be presented with the Table List panel.
    - c. Enter Option "**P**" for the SQLMAINT\_TABLE to get a list of packages on the table.
    - d. From the Package List screen, use the "**R**" option to rebind or the "**U**" and "**L**" options to unload and reload the packages.

### Migration Step 20: Rename the XTS9X001 Exec

If you are using Control Center to manage your Data Restore functions then you must rename the XTS9X001 EXEC provided by Data Restore. This step must be performed for each Data Restore machine after you have installed/migrated your Data Restore code and should be checked again each time Data Restore service is applied.

The XTS9X001 EXEC is a template provided by Data Restore to allow users to change log Labeldefs during Reload Recovery. Control Center provides this EXEC for you on its code disk. You must rename the XTS9X001 EXEC on the Data Restore code disk so that the Control Center code will execute.

Locate the XTS9X001 EXEC on the Data Restore code disk and execute this CMS command:

```
RENAME XTS9X001 EXEC fm = EXECDRF =
```

where "fm" is the file mode of the Data Restore disk.

---

### Activating Control Center for VM

Detailed steps to get the program into operational status are defined in *Control Center Operations Guide for VM*, GC09-2993-01.

---

## Chapter 10. Service Instructions

This program release will be maintained through the use of PTF tapes. An updated Version/Release replaces the entire program code. A PTF tape can only replace the changed portion of the program code.

For more information, refer to the "Corrective Service" chapter in the *Control Center Operations Guide for VM*, GC09-2993-01.

# Chapter 11. Reader's Comments

## Program Directory for DB2 Control Center for VM Version 7 Release 1.0

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Program Number: 5697-F42 5975  
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Printed in U.S.A.

GI10-5002-00

