
VAX CDD/Plus Installation Guide

May 1989

This manual describes the installation procedure for VAX CDD/Plus software, Version 4.1.

Operating System:

VMS Version 5.0

Software Version:

VAX CDD/Plus Version 4.1

May 1989

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Contents

Preface	vii
1 Planning for Installation	
1.1 Accessing the Online Release Notes	1-2
1.2 Required Operating System Components	1-2
1.3 Prerequisite and Optional Software	1-3
1.3.1 Important Notice for Rdb/VMS Users	1-3
1.3.2 Installing CDD and CDD/Plus	1-3
1.3.3 Installing the Language-Sensitive Editor (LSE)	1-3
1.4 VMS License Management Facility	1-4
1.5 Files and Logical Names Installed by CDD/Plus	1-4
1.6 Requirements for Installing CDD/Plus	1-6
1.6.1 Backing Up Databases	1-6
1.6.1.1 Databases Created with Rdb/VMS Version 2.3 or Earlier	1-6
1.6.1.2 Databases Created with Rdb/VMS Version 3.0 or Later ...	1-6
1.6.2 Checking Access Privileges for Previous Versions	1-7
1.6.3 Preventing Interactive Users from Accessing the System	1-8
1.6.4 Shutting Down the Rdb/VMS Monitor	1-9
1.6.5 Shutting Down DECnet	1-10
1.6.6 Time	1-10
1.6.7 Privileges	1-10
1.6.8 Disk Space	1-12

1.6.9	System Parameters	1-13
1.6.9.1	Checking System Parameter Values	1-14
1.6.9.2	Setting the LOCKIDTBL_MAX Dynamic System Parameter	1-15
1.6.9.3	Calculating the Values for GBLPAGES and GBLSECTIONS	1-16
1.6.9.4	Changing System Parameter Values with AUTOGEN	1-17
1.6.10	Process Account Quotas	1-18
1.6.11	VMSINSTAL Requirements	1-19
1.6.12	Backing Up Dictionaries	1-19
1.6.12.1	Using DCL BACKUP	1-20
1.6.12.2	Using RMU/BACKUP	1-20
1.6.13	Backing Up Your System Disk	1-21
1.6.14	Keeping Users Out of the VMS HELP Facility	1-21
1.7	Requirements for Reinstalling CDD/Plus	1-21

2 Installing VAX CDD/Plus

2.1	Running the VMSINSTAL.COM Procedure	2-1
2.2	Answering Installation Procedure Questions	2-2
2.3	Aborting the Installation	2-3
2.4	Phase 1: Copying the Kit to the Installation Device	2-3
2.4.1	Responding to Warning Messages	2-3
2.4.2	Backing Up the System Disk	2-3
2.4.3	Specifying the Device Name	2-4
2.4.4	Specifying the Product Name	2-4
2.4.5	Mounting the Kit Media	2-4
2.4.6	Confirming License Management Facility Registration	2-5
2.4.7	Installing Run-Time Only Rdb/VMS	2-5
2.4.8	Converting Existing Databases	2-5
2.4.8.1	Current Version of Rdb/VMS Incompatible	2-6
2.4.8.2	Current Version of Rdb/VMS Compatible	2-7
2.4.9	Installing the VAX Language-Sensitive Editor	2-8
2.5	Phase 2: Describing Your Installation to VMSINSTAL.COM	2-8
2.5.1	Specifying the Location of the CDD Root Dictionary File	2-9
2.5.2	Specifying the Location of the CDD/Plus Root Dictionary File	2-10
2.5.3	Specifying the Location of the Template Dictionary	2-11
2.5.4	Requesting Language Support Files	2-11
2.5.5	Running the Installation Verification Procedure (IVP)	2-12
2.5.6	Purging Replaced CDD Images and Message Files	2-12
2.5.7	Creating the RDB\$REMOTE Account	2-13
2.6	Phase 3: The Installation	2-13
2.6.1	File Transfer Messages	2-14

2.6.2	Informational Messages	2-14
2.7	Troubleshooting the Installation	2-16

3 After installing VAX CDD/Plus

3.1	Installing Other Products	3-2
3.2	Reinstalling Products That Use CDD/Plus	3-2
3.3	Installing CDD/Plus on a VAXcluster	3-3
3.3.1	Enabling Remote Database Access	3-4
3.4	Running the CDD/Plus Startup Procedure	3-5
3.5	Running the CDD/Plus Shutdown Procedure	3-6
3.6	Editing the System Files	3-6
3.7	Upgrading Protocols	3-7
3.8	Converting Rdb/VMS Databases	3-7
3.9	Converting Rdb/VMS Database Definitions to CDO Format	3-8
3.10	Allowing Users to Access the VMS HELP Facility	3-9
3.11	Adjusting Account Quotas for CDD/Plus Users	3-9
3.12	Managing Lock Conflicts with CDD\$WAIT	3-10
3.13	Assigning an Identifier to Prevent Disk Quota Errors	3-10
3.14	Tuning the Lock-Related Parameters	3-12
3.15	Reporting Problems	3-12

A Sample Installation

A.1	Installing CDD/Plus and Run-Time Only Rdb/VMS	A-1
A.2	Installing CDD/Plus When Rdb/VMS Version 3.0A Is Present on System	A-9

B The Installation Verification Procedure

B.1	Running the IVP	B-2
B.2	Sample IVP Log	B-3

Tables

1-1	Required User Privileges	1-11
1-2	File Size Requirements	1-13
1-3	Required Minimum System Parameters	1-14
1-4	Required Minimum Process Quotas for Installation	1-18
3-1	User Account Quotas for Using CDD/Plus	3-9

Preface

This manual describes the installation procedure for VAX CDD/Plus software, Version 4.1.

Intended Audience

This manual is intended for the system manager responsible for installing and maintaining VAX CDD/Plus software, also referred to in this manual as CDD/Plus.

Operating System Information

Information about the versions of the operating system and related software that are compatible with this version of CDD/Plus is included in the Before You Install letter that is part of the CDD/Plus media kit.

For information on the compatibility of other software products with this version of CDD/Plus, refer to the System Support Addendum (SSA) that comes with the Software Product Description (SPD). You can use the SPD/SSA to verify which versions of your operating system are compatible with this version of CDD/Plus.

Structure

This manual consists of three chapters and two appendices:

- | | |
|-----------|--|
| Chapter 1 | Describes the necessary actions and considerations before the actual installation can begin. |
| Chapter 2 | Provides step-by-step instructions for the installation. |

Chapter 3	Describes actions and considerations after the installation.
Appendix A	Contains logs of some actual installations.
Appendix B	Describes the purpose and actions of the Installation Verification Procedure (IVP) and contains a sample log of an IVP run.

Related Documents

For further information on the topics covered in this manual, you can refer to the following manuals:

- *VMS System Manager's Manual*
Describes the overall process of software installation for the base system (VAX/VMS).
- *VMS Backup Utility Manual*
Describes the options and procedures for backing up disks and tapes.
- *VMS Guide to Setting Up a VMS System*
Provides information on:
 - Changes to SYSGEN parameters
 - Changes to user parameters and quotas

The CDD/Plus documentation set describes the product's features. The CDD/Plus documentation set consists of:

- *VAX CDD/Plus User's Guide*
Provides tutorial material for creating and maintaining CDD/Plus dictionaries.
- *VAX CDD/Plus Common Dictionary Operator Reference Manual*
Provides reference material and syntax for all CDO commands.
- *VAX Common Data Dictionary Data Definition Language Reference Manual*
Describes the VAX Common Data Dictionary Data Definition Language Utility (CDDL), which manipulates definitions in DMU dictionaries.
- *VAX Common Data Dictionary Utilities Reference Manual*
Describes the Dictionary Management Utility (DMU) and the Dictionary Verify/Fix Utility (CDDV), which manipulate DMU dictionaries.

The *VAX CDD/Plus Call Interface Manual* provides reference material for the system administrator on CDO dictionary architecture. This manual is not part of the regular CDD/Plus documentation set, but you can order it separately.

Conventions

The special symbols used in this book are:

Convention	Meaning
<code>RET</code>	This symbol indicates the RETURN key.
<code>CTRL/x</code>	This symbol tells you to press the CTRL (control) key and hold it down while pressing the specified letter key.
\$	The dollar sign is used to indicate the DCL prompt. This prompt may be different on your system.
Color	Color in examples shows user input.
.	Vertical ellipsis in an example means that information not directly related to the example has been omitted.
file-spec, . . .	Horizontal ellipsis indicates that additional parameters, values, or information can be entered.
[logical-name]	Square brackets indicate that the enclosed item is optional. (Square brackets are not, however, optional in the syntax of a directory name in a file specification or in the syntax of a substring specification in an assignment statement.)
quotation marks apostrophes	The term quotation marks is used to refer to double quotation marks ("). The term apostrophe (') is used to refer to a single quotation mark.

The CDD/Plus documentation to which this manual belongs often refers to other Digital products by their abbreviated names.

- VAX ACMS software is referred to as ACMS.
- VAX CDD software—released prior to VAX CDD/Plus—is referred to as CDD.
- VAX COBOL software is referred to as COBOL.
- VAX DATATRIEVE software is referred to as DATATRIEVE.
- VAX RALLY software is referred to as RALLY.
- VAX Rdb/VMS software is referred to as Rdb/VMS.
- VAX TDMS software is referred to as TDMS.
- VAX/VMS software is referred to as VMS.

Planning for Installation

CDD/Plus is a centralized facility for storing and managing data definitions used by many VAX products.

This chapter describes the preparations and requirements necessary for installing CDD/Plus.

Your bill of materials (BOM) and indented bills report (BIL) specify the number and contents of your media. Be sure to verify the contents of your kit with this information. If your kit is damaged or if you find that parts of it are missing, contact your Digital representative.

The CDD/Plus kit installs the shared image, the executable images, and their associated files. The kit also supplies your system's root dictionary file (for DMU format dictionaries) and dictionary template file if these files do not already exist.

This section summarizes the tasks you must perform before installing CDD/Plus. (You can use this section as a checklist to determine if you are ready to begin the installation.)

To prepare your system for installing CDD/Plus, you must:

- Register and load your software license.
- Check that your system has the required hardware and software.
- Check that the account you use to install the software has the required privileges and quotas.
Check privileges at CDD\$TOP, if you have previously installed CDD or CDD/Plus.
- Check that VMS system parameter values are set correctly.
- Check that your system has adequate free disk space.
- Back up existing Rdb/VMS databases.

- Back up CDD/Plus dictionaries.
- Back up your system disk. Use the backup copy as a working copy for the installation.
- Run `SYS$STARTUP:CDDSTRTUP.COM` if you have previously installed CDD/Plus.
- Make sure that users are logged out and batch jobs are completed.
- Shut down the Rdb/VMS monitor and DECnet-VAX.

Most of these tasks require that you be logged in using the `SYSTEM` account, or an account with `SYSTEM` privileges.

This chapter helps you make the required decisions and tells you what actions to take at each step of this planning process.

1.1 Accessing the Online Release Notes

CDD/Plus provides online release notes. Digital strongly recommends that you read the release notes before proceeding with the installation.

To read the *VAX CDD/Plus Release Notes*, complete Phase 1 of the installation procedure (described in Chapter 2) and display or print the file `SYS$HELP:CDD041.RELEASE_NOTES`.

1.2 Required Operating System Components

You can install the CDD/Plus Version 4.1 kit on systems running VMS Version 5.0 or higher. (Do not install CDD/Plus on systems running VMS A5.0 or B5.0, because many products that support CDD/Plus do not allow rolling VMS upgrades.)

For full functionality, CDD/Plus requires the following VMS classes:

- VMS required saveset
- Network support
- Programming support
- System programming support
- Utilities

1.3 Prerequisite and Optional Software

This section describes the software you must install on your system before installing CDD/Plus and also includes information about software that you can use with CDD/Plus. Please refer to the System Software Addendum (SSA) for a complete list of compatible products and their required version numbers. The SSA is part of the Software Product Description (SPD).

1.3.1 Important Notice for Rdb/VMS Users

CDD/Plus requires either of the following:

- Full development kit of Rdb/VMS Version 3.0 or later
- Run-Time Only kit of Rdb/MS Version 3.0A

If you do not have one of the preceding versions of Rdb/VMS already installed on your system, the CDD/Plus installation procedure *replaces* your current version of Rdb/VMS with a Run-Time Only (RTO) kit of Rdb/VMS Version 3.0A.

You will be unable to use RDO (Relational Database Operator) Utility data definition statements if the CDD/Plus installation procedure installs the Rdb/VMS Version 3.0A RTO kit.

If the Rdb/VMS Run-Time Only kit installed by CDD/Plus is inadequate and you have access to a full development kit of Rdb/VMS Version 3.0 or later, install the full development kit *before installing CDD/Plus Version 4.1* to save time.

If, after installing CDD/Plus, you find that the Rdb/VMS RTO kit is inadequate for your needs, you can install a full development kit of Rdb/VMS Version 3.0A to replace the RTO kit.

1.3.2 Installing CDD and CDD/Plus

You do *not* need to install previous versions of the CDD or CDD/Plus before you install this version of CDD/Plus.

1.3.3 Installing the Language-Sensitive Editor (LSE)

If the VAX Language-Sensitive Editor (LSE) is not already installed on your system and you intend to use it with the Data Definition Language Utility (CDDL), you must install it before installing CDD/Plus Version 4.1.

1.4 VMS License Management Facility

The VMS License Management Facility is available with Version 5.0 of the VMS operating system. When you install CDD/Plus Version 4.1, you must register your software license.

The license registration information you need is contained in the Product Authorization Key (PAK) that is shipped with CDD/Plus. The PAK is a paper certificate that contains information about the license you have to run a particular piece of software.

The installation procedure asks if you have registered the CDD/Plus license and loaded the appropriate authorization key. You must register and load your license for CDD/Plus *before* you start the installation, or the installation will fail.

To register a license under VMS Version 5.0, first log in to the system manager's account, SYSTEM. You then have a choice of two ways to perform the registration:

- Invoke the SYS\$UPDATE:VMSLICENSE.COM procedure. When it prompts you for information, respond with data from your Product Authorization Key (PAK):

```
$ @SYS$UPDATE:VMSLICENSE
```

- Type the LICENSE REGISTER DCL command with the appropriate qualifiers that correspond to information on the PAK:

```
$ LICENSE REGISTER CDD-PLUS /ISSUER=DEC /AUTHORIZATION=USA123456 -  
_ $ /PRODUCER=DEC /UNITS=250 /VERSION=4.1 /AVAILABILITY=F -  
_ $ /CHECKSUM=1-ABCD-EFGH-IJKL-MNOP  
$ LICENSE LOAD CDD-PLUS
```

To load a license, log in to the system account and enter a LICENSE LOAD CDD-PLUS command at the DCL prompt (\$). You must load the license on each node of a running VAXcluster. Each system activates licenses when it reboots.

For complete information on using LMF, see the *VMS License Management Utility Manual*.

1.5 Files and Logical Names Installed by CDD/Plus

The installation procedure writes a file to your system that lists all the files CDD/Plus installed on your system. For a copy of this list, print (DCL PRINT) or display (DCL TYPE) the following file after installation:

```
SYS$COMMON:[SYSMGR.VAXINFO$PRODUCTS]CDD041_FILES.DAT
```

An installed CDD/Plus facility consists of:

- The root dictionary file

The CDD\$DICTIONARY system logical name you define in the CDD/Plus startup procedure (CDDSTRTUP.COM) identifies the root dictionary file.

- The compatibility dictionary files

The CDD\$COMPATIBILITY system logical name you define in the CDD/Plus startup procedure (CDDSTRTUP.COM) identifies the anchor directory containing the files for the compatibility dictionary.

- The dictionary template

The CDD\$TEMPLATE system logical name identifies the anchor directory containing the files that CDD/Plus uses as a template when you define a new dictionary.

- An internal program interface providing access to the dictionary files

This program interface consists of a protected, shared image, named CDDSHR.EXE, provided by the installation procedure.

- The Common Dictionary Operator utility (CDO)

This utility enables you to create, manage, and modify definitions in a CDD/Plus dictionary.

- The Dictionary Management Utility (DMU)

This utility enables you to create, manage, and modify the directory hierarchy of dictionaries created without CDO (DMU format dictionaries).

- Assorted subdictionary files (optional)

You can create these subdictionary files by using the Dictionary Management Utility (DMU).

- The Dictionary Verify/Fix Utility (CDDV)

This utility lets you verify, repair, and reorganize DMU format dictionary and subdictionary files.

- The Data Definition Language Utility (CDDL)

This utility enables you to insert data definitions into the DMU format dictionary.

- The startup procedure (CDDSTRTUP.COM)

This is a DCL command procedure to install CDDSHR.EXE. You have to invoke CDDSTRTUP.COM each time you boot your system, so you should run the procedure from your system manager's SYSTARTUP_V5.COM file. CDDSTRTUP.COM is built by the installation procedure.

- The shutdown procedure (CDDSHUTDOWN.COM)
This is a DCL command procedure that is invoked by the site-specific shutdown procedure, SYSHUTDWN.COM.
- Database support files
These files make up the Rdb/VMS Version 3.0A Run-Time Only kit. Without these files, the installation fails.
- Remote support files
These files allow you to access definitions in CDD/Plus dictionaries across a network.
- The Installation Verification Procedure (IVP) files—CDDIVP.COM and CDD\$IVP.COM
The IVP creates or opens the dictionary and checks to make sure that the installation was successful.

Section 1.6.8 tells how much free storage disk space your system needs for you to install CDD/Plus files.

1.6 Requirements for Installing CDD/Plus

The following sections describe the various requirements for installing CDD/Plus.

1.6.1 Backing Up Databases

If your system has an installed Rdb/VMS version prior to Version 3.0, you must back up all Rdb/VMS databases *before* you install CDD/Plus.

1.6.1.1 Databases Created with Rdb/VMS Version 2.3 or Earlier You can back up databases on systems running Rdb/VMS Version 2.3 or earlier using the RDO BACKUP statement:

```
RDO> BACKUP 'DISK2:[DEPT3]PERSONNEL.RDB'  
cont> 'BACKUP$DISK:[BACKUP]PERSONNEL.RBR'
```

This statement creates a backup copy of the PERSONNEL database in the directory DEPT3. The copy is stored on BACKUP\$DISK in the directory BACKUP.

1.6.1.2 Databases Created with Rdb/VMS Version 3.0 or Later You can back up databases on systems running Rdb/VMS Version 3.0 or later by using either of two methods:

- RMU/BACKUP and RMU/RESTORE—for regular maintenance backups or disaster recovery.

- RDO IMPORT and EXPORT statements—for unloading and reloading databases, restructuring physical database files, or migrating a database from one DSRI (Digital Standard Relational Interface) system to another.

The RMU/BACKUP command creates a backup copy of an Rdb/VMS database and places it in a file. You can back up the entire database or you can request an incremental backup that backs up only the pages that have changed since the last full backup.

The following command performs a full backup of the PERSONNEL database:

```
$ RMU/BACKUP DISK2:[DEPT4]PERSONNEL.RDB BACKUP$DISK:[BACKUPS]PERS_FULL_BU
```

In the event of subsequent damage to the database, you can specify backup files in an RMU/RESTORE command to restore the database to the condition it was in when you backed it up. The following command restores the database PERSONNEL:

```
$ RMU/RESTORE PERS_FULL_BU
```

The RMU/RESTORE command recreates all the relationships between the database structure and shared definitions individually defined in CDO.

You can use the RDO EXPORT and IMPORT statements to:

- Migrate a database from one DSRI system to another; for example, from Rdb/ELN to Rdb/VMS
- Change parameters, such as storage area definition or page size
- Reload a database (leaving the storage area definitions the same but changing the device specifications)

For more details about RDO IMPORT and EXPORT statements, see the *VAX Rdb/VMS Reference Manual*.

1.6.2 Checking Access Privileges for Previous Versions

If you have previously installed CDD or CDD/Plus on your system, you need the following access privileges at CDD\$TOP:

- EXTEND
- GLOBAL_DELETE
- PASS_THRU (or CONTROL)

To check these access privileges, use the following DMU command:

```
$ DMU
DMU> SHOW PROTECTION CDD$TOP
```

Output similar to the following should appear:

```
_CDD$TOP
Control (C)          -- may control access control list
Local Delete (D)    -- may delete sub-dictionary, directory or object
Global Delete (G)   -- may delete sub-dictionary or directory and its children
History (H)         -- may add entries to history list
Pass Thru (P)       -- may pass thru sub-dictionary or directory
See (S)             -- may see (read) dictionary object
Update (U)          -- may update dictionary object
Extend (X)          -- may create directory children
Forward (F)         -- may create sub-dictionaries
DTR Read (R)        -- may ready DATATRIEVE domain for read
DTR Write (W)       -- may ready DATATRIEVE domain for write
DTR Extend (E)      -- may extend DATATRIEVE table or procedure
DTR Modify (M)      -- may ready DATATRIEVE domain for modify
```

You must also have the CONTROL privilege at CDD\$EXAMPLES, a CDD directory created by the IVP (Installation Verification Procedure). If CDD\$EXAMPLES does not exist, you need CONTROL privilege at CDD\$TOP.

To assign or change these privileges, use the DMU command SET PROTECTION; for example:

```
DMU> SET PROTECTION /USERNAME=SYSTEM -
DMU>_/GRANT=(EXTEND,GLOBAL_DELETE,PASS_THRU) CDD$TOP
```

For more information, see the *VAX Common Data Dictionary Utilities Reference Manual*.

Note *If the root dictionary file does not already exist, you need WRITE access to the device and directory where the root dictionary file is to reside. Section 1.5 describes the root dictionary file and other files that make up the CDD/Plus software kit.*

1.6.3 Preventing Interactive Users from Accessing the System

Digital recommends that you keep interactive users off the system during the installation procedure. Use the DCL REPLY command to inform users of the schedule for the installation. Prevent users from logging in by issuing the DCL SET LOGIN command:

```
$ REPLY/USER "Installation of CDD/Plus in 5 minutes. Please log out."
$ SET LOGINS/INTERACTIVE=0
```

Both of these commands require OPER privilege.

If any batch or device jobs are running, you have two options:

- Wait until the last one finishes.
- Use the DCL DELETE/ENTRY command to stop any job still running.

1.6.4 Shutting Down the Rdb/VMS Monitor

The Rdb/VMS monitor, which tracks database activity, is active whenever CDD/Plus or Rdb/VMS is in use. If a CDD/Plus installation requires that a Run-Time Only kit of Rdb/VMS also be installed, and the monitor is currently running, you must stop the monitor *on each node in the VAXcluster* in order to complete the installation. The installation procedure terminates if the Rdb/VMS monitor is running.

You need CMKRNL, SYSNAM, and WORLD or SETPRV user privilege to shut down Rdb/VMS.

Before starting the installation, make sure that there are no active Rdb/VMS users. Then type the RMU/MONITOR STOP command from DCL command level to stop the Rdb/VMS monitor. For example:

```
$ RMU/MONITOR STOP
```

The RMU/MONITOR STOP command deactivates the Rdb/VMS monitor process (RDMS_MONITOR) normally, either with process rundown or an immediate abort. You can use the RMU/MONITOR STOP command to shut down all database activity on your VAX node, optionally stopping users by forcing an image exit. To use this command, you need the VMS WORLD privilege.

If you enter RMU/MONITOR STOP without a qualifier, the default is /NOABORT. /NOABORT allows current user processes to continue and to run down before stopping. New users on the node will not be allowed to bind to any database, but existing database users will be able to complete their sessions normally. Once existing database users terminate, the database monitor shuts down.

The /ABORT=FORCEX qualifier stops the monitor immediately without allowing current Rdb/VMS users to complete active transactions or unbind from their databases. However, the /ABORT=FORCEX qualifier does not delete user processes. Using /ABORT without a qualifier is equivalent to specifying /ABORT=FORCEX.

The /ABORT=DELPRC qualifier stops the monitor immediately without allowing current Rdb/VMS users to complete active transactions or unbind from their databases. Each user process that was bound to an Rdb/VMS database is deleted immediately.

You can also specify whether the RMU operation completes when the monitor acknowledges the stop request (/NOWAIT), or whether RMU waits until the monitor finishes shutting down (/WAIT).

1.6.5 Shutting Down DECnet

If your system includes DECnet-VAX, you should shut it down. You need OPER user privilege to shut down DECnet-VAX.

To shut down DECnet-VAX:

- 1 Start the Network Control Program (NCP):

```
$ RUN SYS$SYSTEM:NCP
```

- 2 At the NCP prompt (NCP>), enter the following command and press RETURN:

```
NCP> SET EXECUTOR STATE SHUT
```

NCP performs an orderly shutdown. The VMS OPCOM facility notifies the console terminal when DECnet-VAX is off:

```
%%%%%%%% OPCOM, 12-NOV-1987 12:00:00.00 %%%%%%%%%  
Message from user SYSTEM  
DECnet shutting down
```

- 3 At the NCP prompt, type EXIT and press RETURN.

1.6.6 Time

The installation procedure takes approximately 25 minutes on a VAX 780 computer with magnetic tape. Creating the compatibility dictionary, if necessary, requires an additional 15 minutes. If Rdb/VMS Version 3.0A is not already installed on your system, installing the Run-Time Only Rdb/VMS Version 3.0A kit adds 35 minutes to the installation time. The Installation Verification Procedure (IVP) takes less than 15 minutes.

If you have a previous version of CDD/Plus installed on your system, the installation of CDD/Plus Version 4.1 upgrades existing dictionary protocols. The upgrade, which takes 15-20 minutes, takes place automatically the first time you access a dictionary.

1.6.7 Privileges

To prepare your system for CDD/Plus installation, you may have to use the VMS utilities for system management, such as the Authorize Utility (AUTHORIZE) or the System Generation Utility (SYSGEN). Some preparations require that the installing account have specific user privileges, which may not be among the default privileges assigned to your account. This section shows you how to check and change your account's user privileges.

Table 1–1 shows what privileges you need to install CDD/Plus.

Table 1–1 Required User Privileges

Name	Privilege Granted
CMKRNL	Change to kernel mode
EXQUOTA	Allow disk space to exceed established quotas
NETMBX	Allow user to perform network-related functions
OPER	Perform operator functions
SETPRV	Enable any privilege
SYSNAM	Insert system logical names in the name table
SYSPRV	Access resources as if the process has a system UIC
TMPMBX	Create temporary mailbox
WORLD	Allow access to other processes

To install CDD/Plus, you must be logged in to an account that has the user privilege SETPRV. As one of the first actions, the VMSINSTAL command procedure grants all privileges (except BYPASS) to the process that invokes it. (VMSINSTAL turns off BYPASS privilege at the start of the installation.) The command procedure will fail if the installing account does not have SETPRV. On most systems, the SYSTEM account has SETPRV and is used to install software. The procedures described here refer to the SYSTEM account, but they are the same for any account with SETPRV.

Note *This section describes only the process quotas and privileges needed by the account used to install CDD/Plus. Refer to Section 3.11 for a discussion on setting CDD/Plus users' process quotas.*

To check the default privileges of the SYSTEM account, log in as SYSTEM, and type this DCL command:

```
$ SHOW PROCESS/PRIVILEGES
```

If the default privileges of the SYSTEM account that this command shows include all those listed in Table 1–1, go on to the next section.

If the SYSTEM account lacks SETPRV, you cannot finish the installation successfully. You have two options:

- Ask your system manager to use AUTHORIZE to modify the default privileges of the account to include SETPRV.
- Run AUTHORIZE and make the changes yourself, if your account has SYSPRV.

Changes that you make using AUTHORIZE will not take effect until you log out and in again.

If the SYSTEM account has SETPRV but lacks other required privileges, you can temporarily change the account's privileges with the DCL command SET, as shown in the following example:

```
$ SET PROCESS/PRIVILEGES=(CMKRNL,SYSGBL)
```

You should also check that the group number of the SYSTEM user identification code (UIC) is 001. The SYSTEM UIC must look like this: [1,m]. The *m* following the comma is any octal number between 1 and 1,777,776. Many system managers use the UIC [1,4].

To check the UIC of the SYSTEM account, run the Authorize Utility (AUTHORIZE) by typing the following commands and pressing RETURN after each one:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
```

At the UAF prompt (UAF>), type the following command and press RETURN:

```
UAF> SHOW SYSTEM
```

If the group number of the account is not 001, you or your system manager can change it by typing the AUTHORIZE command MODIFY. To change the current group number, type the MODIFY command in the following format and press RETURN:

```
UAF> MODIFY SYSTEM/IDENTIFIER/VALUE=UIC:[1,4]
```

When you have changed the group number, type EXIT at the UAF prompt (UAF>), and press RETURN. This returns you to the dollar sign prompt (\$). Your changes will not take effect until you log out and log in again.

1.6.8 Disk Space

Installing CDD/Plus requires a certain amount of free storage disk space during the installation. Table 1–2 summarizes the storage requirements for CDD/Plus.

Table 1-2 File Size Requirements

File Name	System Logical Name	Blocks Required
CDD/Plus root dictionary	CDD\$DICTIONARY	150
CDD/Plus compatibility dictionary	CDD\$COMPATIBILITY	4800
CDD/Plus dictionary template	CDD\$TEMPLATE	4500

If Rdb/VMS Version 3.0A is already installed on your system, the installation of CDD/Plus requires 26,000 available blocks on your system disk. If Rdb/VMS Version 3.0A is not already installed on your system, the installation of CDD/Plus requires 34,000 available blocks on your system disk.

To determine the number of free disk blocks on the current system disk, type the following command at the DCL prompt:

```
$ SHOW DEVICE SYS$SYSDEVICE
```

1.6.9 System Parameters

Installing CDD/Plus requires certain system parameter settings.

Note *The following table shows the **minimum** system parameters for the installation account. If the values of the installation account parameters currently exceed the values in Table 1-3, no changes are necessary; do **not** lower existing values to the values shown in Table 1-3.*

If the parameter is labeled “dynamic,” you can make a change in the parameter without rebooting the system.

Table 1-3 Required Minimum System Parameters

Parameter Name	Required Minimum	Unit	Type
GBLPAGES	2120 ¹	Pages	
GBLSECTIONS	106 ¹	Sections	
LOCKIDTBL_MAX	2048	Entries	Dynamic
MAXBUF	1200	Bytes	Dynamic
CLISYMTBL	250	Pages	Dynamic
RESHASHTBL	512	Entries	
SRPCOUNT	1024	Packets	
SRPCOUNTV	2048	Packets	
VIRTUALPAGECNT	40000	Pages	
PAGEDYN	1000448	Bytes	
NPAGEDYN	900096	Bytes	
GBLPAGFIL	12200	Pages	
CTLPAGES	32	Pages	

¹For systems where you are performing a reinstallation, this number is the current value of GBLSECTIONS and GBLPAGES when the RMU/MONITOR STOP command has been executed.

Depending on the kinds of programs and applications running at your site, you might need higher values for some settings. You might need to raise the process section count (PROCSECTCNT) to 64. If you encounter installation problems due to insufficient dynamic memory, you may also need to raise the value of the CTLPAGES parameter.

The following sections show you how to check system parameter values, set the LOCKIDTBL_MAX dynamic system parameter with the VMS System Generation Utility (SYSGEN), calculate values for the GBLPAGES and GBLSECTIONS system parameters, and change parameter values with the VMS AUTOGEN command procedure.

1.6.9.1 Checking System Parameter Values To check the values of your system parameters, type the following command at the DCL prompt to invoke the System Generation Utility:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN>
```

At the `SYSGEN>` prompt, type the `USE CURRENT` and `SHOW` commands to display the value of a system parameter. The values displayed should equal or exceed the value of each parameter listed in Table 1–3. The first number on the left is the current parameter value. The following command displays the value for the `LOCKIDTBL_MAX` system parameter:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> USE CURRENT
SYSGEN> SHOW LOCKIDTBL_MAX
```

Parameter Name	Current	Default	Minimum	Maximum	Unit	Dynamic
LOCKIDTBL_MAX	32768	800	200	65535	Entries	D

After you finish checking the parameters with the `SHOW` command, you can type the `EXIT` command at the `SYSGEN>` prompt to return to DCL level.

1.6.9.2 Setting the `LOCKIDTBL_MAX` Dynamic System Parameter Your VAX/VMS system has a fixed number of locks that can exist at any one time. CDD/Plus uses the VMS Lock Manager to coordinate updates to the dictionary files. This assures that many users can access the dictionary without interference from or awareness of each other.

When the system is booted, the `LOCKIDTBL` parameter is used to create the initial size of the Lock ID table and is also the increment by which the Lock ID table grows. Whenever it runs out of locks, the system extends the Lock ID table by using the value of `LOCKIDTBL`. Extensions continue until `LOCKIDTBL_MAX` is reached, in which case VMS returns the `NOLOCKID` error instead of extending the table.

The `LOCKIDTBL_MAX` parameter determines the maximum size of the Lock ID table. If the `LOCKIDTBL_MAX` system parameter value for your system is less than 2048, change the setting with the following series of commands:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> USE ACTIVE
SYSGEN> SET LOCKIDTBL_MAX 2048
SYSGEN> WRITE ACTIVE
SYSGEN> EXIT
```

You can use these commands to set any dynamic parameter. Dynamic parameters changed with the System Generation Utility's `WRITE ACTIVE` command become active immediately, without any need to reboot your system. Rebooting returns dynamic system parameter values to their previous settings. Once you set the `LOCKIDTBL_MAX` value, you should complete the installation before rebooting the system.

After the installation is complete, you can reset `LOCKIDTBL_MAX` to its previous setting or let it be reset automatically when you reboot your system.

After the installation, you should determine a new value for `LOCKIDTBL_MAX`. Select an appropriate value for your system by estimating the expected number of required locks.

Section 3.11 provides guidelines for estimating the number of locks that each user requires, as well as the overall number of locks your system needs to support.

You will be able to tune your VAX/VMS system to provide sufficient resources for CDD/Plus to use the VMS Lock Manager. You may find that you can refine your estimates as you use CDD/Plus. You may also find that your usage changes as you install other products that use CDD/Plus.

Note Refer to the *VMS Guide to Setting Up a VMS System* for detailed explanations of the lock-related parameters. Setting these parameters may affect parameters other than those referred to in this manual.

1.6.9.3 Calculating the Values for GBLPAGES and GBLSECTIONS To install and run CDD/Plus, you must set the correct values for the GBLPAGES and GBLSECTIONS system parameters. You must have at least 2120 unused global pages and 106 unused global sections available on your system for the installation to succeed. To calculate how many unused global pages and global sections your system has, perform the following steps:

- 1 Run the VMS Install Utility (INSTALL), using the following DCL command:

```
$ INSTALL LIST /GLOBAL /SUMMARY
```

The Install Utility displays a summary of global pages and global sections used by your system, as well as the current number of unused global pages. For example:

```
Summary of Local Memory Global Sections
```

```
258 Global Sections Used, 22580/3420 Global Pages Used/Unused
```

- 2 Determine whether the number of unused global pages (3420 in the example) is equal to or greater than 2120. If the number of unused pages is less than 2120, you need to increase the value for GBLPAGES.
- 3 Record the amount shown for Global Sections Used (258 in the example).
- 4 Run the System Generation Utility and use the SHOW command to determine how many global sections have been allocated. For example:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> SHOW GBLSECTIONS
```

Parameter Name	Current	Default	Minimum	Maximum	Unit	Dynamic
GBLSECTIONS	512	250	20	4095	Sections	

- 5 Subtract the amount shown in the summary (258 in the example) from the amount allocated. If the difference is less than 106, you need to increase the value of the GBLSECTIONS parameter. In this example, the difference is 254 (512-258 = 254), so there is no need to increase GBLSECTIONS.

Section 1.6.9.4 describes the procedures for increasing these values as well as those of other system parameters. See the *VMS System Generation Utility Manual* for more information.

1.6.9.4 Changing System Parameter Values with AUTOGEN Use the AUTOGEN command procedure to change system parameters. AUTOGEN automatically adjusts values for parameters that are associated with the ones you reset manually. To change system parameters with AUTOGEN, use a text editor to edit the file SYS\$SYSTEM:MODPARAMS.DAT.

If you need to change a parameter value in the file, simply delete the current value associated with that parameter and enter the new value.

To add a new value, add a line to the MODPARAMS.DAT file. The line contains the name of the parameter and its value. For example:

```
WSMAX = 1024
```

You can also modify incremental parameters in the MODPARAMS.DAT file. The following example increases the global page setting by 2000:

```
ADD_GBLPAGES=2000          !Support CDD/Plus Version 4.1
```

After you have made all your changes, run the AUTOGEN command procedure (included in the operating system) to recalculate your system parameters.

Note *The AUTOGEN command procedure with the REBOOT qualifier performs an orderly system shutdown, then reboots the system. Because the shutdown begins immediately, you may wish to warn any users on the system several minutes in advance, using the DCL REPLY/ALL command, for example:*

```
$ REPLY/ALL/BELL "System going down for reboot in five minutes.  
Please log off."
```

After giving sufficient notice to users, type the following command at the DCL prompt:

```
$ @SYS$UPDATE:AUTOGEN GETDATA REBOOT
```

When you reboot a system, the AUTOGEN procedure automatically adjusts some of the SYSGEN parameters based on the consumption of resources since the last reboot. If you do not want to take advantage of this automatic adjustment, include the NOFEEDBACK qualifier on the AUTOGEN command line.

The *VMS Guide to Setting Up a VMS System* contains detailed instructions on using AUTOGEN to set system parameters.

1.6.10 Process Account Quotas

The account you use to install CDD/Plus must have sufficient quotas to enable you to perform the installation. Table 1–4 summarizes the process quotas required for the installation account. The installation procedure checks these quotas and stops if the quotas of your system do not meet or exceed those listed in the table. Instructions for making the comparison and changing the quotas follow the table.

Note *The following table shows the **minimum** process quotas for the installation account. If the process quota values of the installation account currently exceed the values in Table 1–4, **no changes** are necessary.*

Table 1–4 Required Minimum Process Quotas for Installation

Process Quotas	Required Value	Controlling Qualifier	Defining Utility
Buffered byte count quota limit	25,000	BYTLM	AUTHORIZE
Enqueue quota limit	2000	ENQLM	AUTHORIZE
Open file limit	60	FILLM	AUTHORIZE
Paging file limit	40,000	PGFLQUO	AUTHORIZE

User account quotas are stored in the file SYSUAF.DAT. You use the VMS Authorize Utility to verify and change user account quotas. First set your directory to SYS\$SYSTEM, then run AUTHORIZE:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF>
```

At the Authorize Utility prompt (UAF>), use the SHOW command with an account name to check a particular account. For example:

```
UAF> SHOW SMITH
```

To change a quota, use the MODIFY command at the UAF> prompt. MODIFY has the following format:

```
MODIFY account-name /quota-name=NNN
```

The following example changes the FILLM quota for the SMITH account and then exits from the Authorize Utility:

```
UAF> MODIFY SMITH /FILLM=60
UAF> EXIT
$
```

After you exit from the utility, the VMS system displays messages indicating whether or not changes were made. Once the changes have been made, you must log out and log in again for the new quotas to take effect.

For more information on modifying account quotas, see the *VMS System Manager's Manual*.

1.6.11 VMSINSTAL Requirements

When you invoke VMSINSTAL, it checks the following:

- If you have set your default device and directory to SYS\$UPDATE
- If you are logged in to a privileged account
- If you have adequate quotas for installation
- If DECnet is up and running
- If any users are logged in to the system

VMSINSTAL requires that the installation account have the following minimum quotas:

```
ASTLM = 24
BIOLM = 18
DIOLM = 18
```

If VMSINSTAL detects any problems during the installation, it notifies you of the problem and asks if you want to continue the installation. In some instances, you can enter YES to continue. Section 2.6.2 describes the informational messages you may receive and explains the appropriate responses to them. To stop the installation process and correct the situation, type NO or just press RETURN. Then correct the problem and restart the installation.

1.6.12 Backing Up Dictionaries

You can back up your dictionaries with:

- The DCL BACKUP Utility
- The Rdb/VMS Management Utility (RMU)

1.6.12.1 Using DCL BACKUP The best method for backing up a dictionary is the DCL BACKUP Utility. You can use DCL BACKUP to back up the entire disk where the dictionary resides, but you can only do this *during a period when no one is using the disk*. The following example shows how to use the DCL BACKUP Utility to back up a dictionary to a file called DICT_JUN9.BCK.

```
$ BACKUP DIC$ANCHOR_DIR:*. * DICT_JUN9.BCK/SAVE_SET
```

For more information about the DCL BACKUP Utility, see the *VMS Backup Utility Manual*.

1.6.12.2 Using RMU/BACKUP The RMU/BACKUP command only backs up CDO format dictionaries. You should use RMU/BACKUP if:

- You do not have a time on your system when there are no users accessing the dictionary
- You want the advantages of RMU backup compression

To back up a CDO format dictionary, run RMU/BACKUP on the CDD\$DATABASE in your anchor directory. The following example backs up the dictionary in anchor DIC\$ANCHOR_DIR to a file called DICTIONARY.

```
$ RMU/BACKUP DIC$ANCHOR_DIR:CDD$DATABASE DICTIONARY
```

After backing up a dictionary, you must restore it by using the RMU/RESTORE/NOCDD_INTEGRATE command. Specify the /NOCDD_INTEGRATE qualifier, abbreviated /NOCDD, so that no integration occurs during the restoration. (The RMU/RESTORE command default is /CDD_INTEGRATE, which integrates database metadata into the data dictionary, primarily for those users who are restoring Rdb/VMS databases instead of CDD/Plus dictionaries.) Make sure the directory that you want to restore the dictionary to is empty before you issue the RMU/RESTORE command.

The following command restores the dictionary from the backup file DICTIONARY:

```
$ RMU/RESTORE/NOCDD DICTIONARY
```

For more information about the RMU utility, see the *VAX Rdb/VMS Reference Manual*.

After you restore the dictionary, you must use the CDO VERIFY/REBUILD_DIRECTORY command to recreate the dictionary's directory system. If you change the location of the dictionary you must also do a VERIFY/LOCATION.

```
$ DICTIONARY OPERATOR VERIFY/REBUILD_DIRECTORY DIC$ANCHOR_DIR
```

1.6.13 Backing Up Your System Disk

At the beginning of the installation, VMSINSTAL asks if you have backed up your system disk. Digital recommends that you do a system disk backup before installing any software on the operating system.

Use the backup procedures that have been established at your site. For details on performing a system disk backup, see the *VMS Backup Utility Manual*.

1.6.14 Keeping Users Out of the VMS HELP Facility

The installation procedure inserts a CDD/Plus HELP module into the VMS HELP library. If anyone uses the DCL HELP command while the installation tries to insert the CDD/Plus HELP module, the installation fails. You can prevent other users from using HELP during installation by either of the following methods:

- Running the installation when no one else is logged in
- Limiting access to the help library SYS\$HELP:HELPLIB.HLB to the SYSTEM account during installation:

```
$ SET PROTECTION = (S:RWED, O, G, W) SYS$HELP:HELPLIB.HLB
```

Remember to note the original protection on the library and set the protection back to the original after the installation. For example:

```
$ SET PROTECTION = W:RE SYS$HELP:HELPLIB.HLB
```

1.7 Requirements for Reinstalling CDD/Plus

In addition to meeting the requirements for installing CDD/Plus, if you have previously installed CDD/Plus on your system, you must follow these steps:

- 1 Run the startup procedure, CDDSTRTUP.COM, before you reinstall. To run CDDSTRTUP before installing CDD/Plus Version 4.1, use the following command:

```
$ @SYS$MANAGER:CDDSTRTUP
```

- 2 Delete the startup and shutdown files. CDD/Plus Version 4.1 creates new startup and shutdown files. To avoid duplication of files, delete the following before installation:

- SYS\$COMMON:[SYSMGR]CDDSTRTUP.COM
- SYS\$COMMON:[SYSMGR]CDDSHUTDOWN.COM

For example:

```
$ DELETE SYS$COMMON:[SYSMGR]CDDSTRTUP.COM
```

Installing VAX CDD/Plus

You can begin the installation of CDD/Plus as soon as you have made the proper adjustments to the VMS parameters described in Chapter 1.

The CDD/Plus kit consists of a documentation set and distribution media containing the software. CDD/Plus is available on the following types of distribution media:

- RX33 floppy disks
- TK50 cassettes
- 1600 bpi magnetic tape

Use the `SYS$UPDATE:VMSINSTAL.COM` command procedure to move the software from the supplied media to your system disk. `VMSINSTAL.COM` calls the CDD/Plus installation procedure, which asks you questions about which installation options you want.

2.1 Running the VMSINSTAL.COM Procedure

To install CDD/Plus, you should log in at the console terminal using the `SYSTEM` account, or an account with `SYSTEM` privileges.

The CDD/Plus installation procedure consists of three phases:

- 1 During Phase 1, `VMSINSTAL.COM` copies the CDD/Plus kit from the kit media to the installation device. The installation procedure also purges prior versions of the CDD facility (but not CDD dictionary files) from your system.
- 2 During Phase 2, `VMSINSTAL.COM` asks you questions about the installation. Answer these questions to choose the installation options you want.

- 3 During Phase 3, VMSINSTAL.COM installs the CDD/Plus images, message files, and help files. VMSINSTAL.COM also creates and runs the CDDSTRTUP.COM command procedure, and optionally runs the Installation Verification Procedure. VMSINSTAL.COM deletes the files of the CDD/Plus installation kit from the installation medium.

The preceding three phases are not identified during the installation procedure; this manual uses them for clarity.

Use the following DCL command to run the VMSINSTAL.COM command procedure:

```
$ @SYS$UPDATE:VMSINSTAL CDD041 ddcu:
```

You should enter the name of the physical device on which the kit media will be mounted. The format for this device name is **ddcu:**. For examples of device names that conform to this format, see the installation and operations guides that you receive with your system's media kit. VMSINSTAL.COM prompts you for this parameter during the installation procedure if you do not include it in the command line.

If you specify **OPTIONS N** on the VMSINSTAL.COM command line, the procedure offers you several options regarding the CDD/Plus release notes included in the kit:

Release Notes Options:

1. Display release notes
2. Print release notes
3. Both 1 and 2
4. Copy release notes to SYS\$HELP
5. Do not display, print or copy release notes

* Select option [3]: 2

* Queue name [SYS\$PRINT]:

Job CDD041 (queue SYS\$PRINT, entry 11) started on SYS\$PRINT

* Do you want to continue the installation [N]? Y

The *VMS System Manager's Manual* describes VMSINSTAL.COM options in detail.

2.2 Answering Installation Procedure Questions

Most of the installation procedure questions include a default answer located at the end of the question. The default answer is enclosed by brackets ([]):

* Do you want to continue anyway [NO]?

To take the default answer, press RETURN. If a question accepts a YES answer, you can type "Y" or "YES"; for a NO answer, type "N" or "NO". Press RETURN after typing your answer.

2.3 Aborting the Installation

To abort the installation procedure at any time, press CTRL/Y. When you press CTRL/Y, the installation procedure closes any files it has open and exits. You can then start the installation again. (When you press CTRL/Y, the installation procedure *does not* delete the files it has created up to that point.)

2.4 Phase 1: Copying the Kit to the Installation Device

During Phase 1, VMSINSTAL.COM:

- Gives you warning messages
- Asks you if you need to back up the system disk
- Asks you the name of the device on which the kit media will be mounted (if you did not supply this in the command line)
- Asks you the names of the products you wish to install (if you did not supply this in the command line)
- Copies the kit from the kit media to the installation device

2.4.1 Responding to Warning Messages

You should check any warning messages that may appear and correct any problems before continuing the installation procedure. For example, you may see the following warning message:

```
%VMSINSTAL-W-DECNET, Your DECnet network is up and running.  
* Do you want to continue anyway [NO]?
```

DECnet-VAX does not need to be running when you install CDD/Plus. If you want to shut down DECnet-VAX, type “N” and VMSINSTAL returns you to DCL command level. See Section 1.6.5 for instructions on shutting down DECnet-VAX. After you have shut down the network, you must invoke VMSINSTAL.COM again to begin the installation procedure.

2.4.2 Backing Up the System Disk

VMSINSTAL.COM asks you the following question about backup:

```
* Are you satisfied with the backup of your system disk [YES]?
```

If you have already backed up the system disk, type “Y” and press RETURN, or simply press RETURN to enter the default response.

If you have not backed up your system disk, *you should not continue with the installation until you do so*. If you need to back up the system disk, type “N” in response to this question. VMSINSTAL.COM exits and returns you to the DCL prompt. Back up your system disk, then start VMSINSTAL.COM again.

For information on backups, see the *VMS Backup Utility Manual* and the documentation for installing VAX/VMS on your VAX processor.

2.4.3 Specifying the Device Name

If you did not specify a physical device name on the DCL command line, VMSINSTAL.COM asks you for the name of the device on which the distribution media will be mounted.

* Where will the distribution volumes be mounted:

Type in the physical device name of the appropriate drive and press RETURN. You must enter the physical device name according to the ddcu: format, as in the following example.

mua0:

If you have questions about the device name or format, check with your system manager.

2.4.4 Specifying the Product Name

If you did not specify them on the command line, VMSINSTAL.COM then asks you for the names of the products you wish to install from the first volume of the distribution media:

* Products:

In response to this prompt, type:

CDD041

2.4.5 Mounting the Kit Media

If you are using floppy disks, VMSINSTAL.COM then instructs you to mount the first volume of the distribution volume set on the proper device. Mount Volume 1 (CDD041) in response to this request.

VMSINSTAL.COM next asks:

* Are you ready?

Physically mount the first distribution medium that contains CDD/Plus. If you are copying the kit media from the console device, remove the console medium before mounting the distribution medium. After you have placed the cassette, floppy disk, or magnetic tape in the proper device, type "Y". If you entered the wrong device name when you invoked VMSINSTAL and need to restart the installation, type "N".

VMSINSTAL.COM informs you whether or not the media is mounted correctly, then prints the following messages:

The following products will be processed:

CDD V4.1

Beginning installation of CDD V4.1 at hh:mm

```
%VMSINSTAL-I-RESTORE, Restoring product saveset A...  
%VMSINSTAL-I-REMOVED, The product release notes have been  
successfully moved to SYS$HELP.
```

If your installation kit contains more than one volume, VMSINSTAL prompts you to insert the additional volumes and then asks you to indicate that you are ready for the installation to proceed.

2.4.6 Confirming License Management Facility Registration

Before the installation procedure can continue, you must verify that you have registered and loaded your Product Authorization Key for the VMS License Management Facility.

VMSINSTAL.COM prints the following message:

```
Product:      CDD-PLUS  
Producer:    DEC  
Version:     4.1  
Release Date: 22-MAR-1989
```

* Does this product have an authorization key registered and loaded?

If you have registered and loaded your Product Authorization Key, type "Y".
If you have not registered and loaded your Product Authorization Key, see Section 1.4.

2.4.7 Installing Run-Time Only Rdb/VMS

When you proceed with the installation after confirming your Product Authorization Key, the installation procedure informs you that the CDD/Plus kit requires Rdb/VMS Version 3.0. The installation procedure then displays the version number of Rdb/VMS installed on your system. If you have a full development kit of Rdb/VMS with a version prior to 3.0 or a run-time kit of Rdb/VMS Version 3.0 or earlier, the installation procedure *replaces your kit* with a Run-Time Only kit of Rdb/VMS Version 3.0A. If the installation procedure needs to install the Rdb/VMS Run-Time Only kit, it gives you a message to this effect.

2.4.8 Converting Existing Databases

Next, the installation procedure provides information about the need to convert existing databases. The message content depends on whether or not the currently installed version of Rdb/VMS has a disk structure compatible with the version it is about to install.

2.4.8.1 Current Version of Rdb/VMS Incompatible If the Rdb/VMS version currently installed is incompatible with Rdb/VMS Version 3.0A, the following display appears:

Due to the installation of Rdb/VMS V3.0A, you may need to convert any Rdb/VMS databases present on your system. This should be done once this installation completes but before using any databases.

Use `RMU/CONVERT rdb_database_pathname` to convert RDB databases.

Since the installed version of Rdb/VMS is: Rdb/VMS V2.3-0, which is not compatible with Rdb/VMS V3.0A, it will be necessary for you to convert databases. Rdb/VMS databases may be backed up with RDO backup.

Once you convert the databases, it will not be possible to use them with earlier versions of Rdb/VMS.

* Do you still want to proceed with this installation [YES]?

If you type "Y", the installation procedure continues. The following display appears when the Run-Time Only kit of Rdb/VMS Version 3.0 is installed:

```
%VMSINSTAL-I-RESTORE, Restoring product saveset B...
```

```
*****
```

```
The currently installed version:
```

```
"Rdb/VMS V2.3-0"
```

```
will be replaced by this installation.
```

```
*****
```

* Do you want to proceed [NO]:

Caution Before you can use existing databases, you need to convert them according to the instructions in Section 3.8. After you have converted databases, you can no longer use them with pre-3.0 versions of Rdb/VMS.

If you intend to continue using databases created using Rdb/VMS Version 2.3, and you have not backed them up, you should type "N", and see the instructions in Section 1.6.1. After you have backed up these databases, you can invoke `VMSINSTAL` and begin the installation procedure again.

If you type "Y", the installation procedure continues.

```
*****
```

```
Before You Install Rdb/VMS Software
```

To improve performance, the on-disk structure of Rdb/VMS database files has changed. As a result, databases created under previous versions of Rdb/VMS are incompatible with this software. To use this software with a current Rdb/VMS database, perform the following tasks:

- o Before installing VAX Rdb/VMS V3.0A:
 - Backup each database with your currently installed version of Rdb/VMS using the RDO BACKUP statement. The backup MUST be performed using currently installed software.
 - As a precaution, backup each database with the VMS Backup Utility.
- o After installing VAX Rdb/VMS V3.0A:
 - For any databases created with a version of Rdb/VMS software earlier than V3.0, use RMU/CONVERT.

* Did you back up your current databases [NO]:

If you type "N", the installation procedure terminates. Section 2.1 explains how you can restart the installation procedure.

If you type "Y", the installation procedure continues.

Note *At this point, the Rdb/VMS installation procedure checks the status of the Rdb/VMS monitor. If the Rdb/VMS monitor is operating, the installation displays the following error message and stops the installation.*

The Rdb/VMS monitor must be stopped before Rdb/VMS may be installed. Perform the following operation:

```
$ @SYS$MANAGER:RMONSTOP
```

You may then begin the installation procedure again.

2.4.8.2 Current Version of Rdb/VMS Compatible If the currently installed version of Rdb/VMS is *compatible* with Rdb/VMS Version 3.0A, the following display appears:

Due to the installation of Rdb/VMS V3.0A, you may need to convert any Rdb/VMS databases present on your system. This should be done once this installation completes but before using any databases.

Use RMU/CONVERT rdb_database_pathname to convert RDB databases.

Since the installed version of Rdb/VMS is: Rdb/VMS V3.0, which is compatible with Rdb/VMS V3.0A, it should not be necessary for you to convert any databases which were created, converted, or restored after Rdb/VMS V3.0 was installed.

* Do you want to continue the installation [YES]?

If you type "Y", the installation procedure continues.

If the Run-Time Only kit of Rdb/VMS Version 3.0A is already present on your system, the installation procedure asks if you still want to proceed with the installation. If you type “Y”, the installation continues.

2.4.9 Installing the VAX Language-Sensitive Editor

If the VAX Language-Sensitive Editor (LSE) is not already installed on your system and you intend to use it with the Data Definition Language Utility (CDDL), you must install it before proceeding with the CDD/Plus installation.

LSE support is not available for the new features of CDD/Plus. If you do not plan to use CDDL, you do not need LSE support for CDD/Plus.

The installation procedure prompts you to indicate whether or not you want the installation to proceed:

```
* Do you want to continue the installation [NO]?
```

You can optionally stop the installation at this point to print the release notes file, SYS\$HELP:CDD041.RELEASE_NOTES. If you type “Y”, the installation procedure continues.

After VMSINSTAL.COM copies the kit, Phase 1 is complete and Phase 2 begins automatically.

2.5 Phase 2: Describing Your Installation to VMSINSTAL.COM

VMSINSTAL.COM can:

- Install the CDD/Plus shared image, help and message files, and utilities
- Build the CDDSTRTUP.COM file
- Run the Installation Verification Procedure

Before VMSINSTAL.COM installs the CDD/Plus images, message files, and help files, it asks you several questions. Respond to these questions to describe your installation.

Note *If you are installing CDD/Plus on a VMS cluster, you must install the dictionary files on a device that is accessible to the entire cluster. You should not install the dictionary files on a local disk.*

You should also make sure that CDD\$DICTIONARY, CDD\$COMPATIBILITY, and all other system logical names used by CDD/Plus translate in the same way on each node in the cluster.

2.5.1 Specifying the Location of the CDD Root Dictionary File

The system logical name CDD\$DICTIONARY specifies the location of the root dictionary file for DMU format dictionaries. After the operating system completes all logical name translation, the definition of CDD\$DICTIONARY must include both a device and a directory name. CDD/Plus does not run if either the device or directory name is missing. The default file name for the root dictionary file is CDD.DIC.

You can also specify a search list for CDD\$DICTIONARY. If you did not already create CDD\$DICTIONARY (by installing a previous version of CDD/Plus), CDD/Plus places the root dictionary file in the first location in the search list.

If you define CDD\$DICTIONARY to be SYS\$SYSTEM, the installation procedure automatically moves the dictionary file into SYS\$COMMON.

The directory named in the CDD\$DICTIONARY logical name must specify a directory that already exists on your system. If CDD\$DICTIONARY points to a nonexistent directory, the installation procedure prompts you until you specify an existing directory.

If CDD/Plus has been previously installed and this logical name has already been defined, the installation procedure displays the current translation of CDD\$DICTIONARY and asks:

```
* Is this the correct location for your system's CDD root
  dictionary file [YES]?
```

If you type "Y", you do not have to move your physical dictionary file.

If you type "N", the installation procedure asks you for the new translation of the CDD\$DICTIONARY logical name.

```
*****
```

```
If you are changing the location of the root dictionary file,
you must remember to move the root dictionary file to its new
location. Be certain to do this before you try to run the
Installation Verification Procedure (IVP). Otherwise the IVP
will create a new root dictionary file when it is run.
```

```
*****
```

```
* Enter the root dictionary file's device
  and directory: [SYS$COMMON:[SYSEXE]]:
```

You can then type in a new file specification for the location of the root dictionary file. (For example, you might want to create a new root dictionary file if there is insufficient space on the specified device.)

When you type in the new file specification, you must include both a device name and directory name. You should pick a directory on a device that is always mounted. The new file location must be an existing directory.

Warning *If you choose to type in a new translation for CDD\$DICTIONARY, you **must** move your root dictionary file to the new file location **before** you run the IVP. If you neglect this, the IVP creates a new root dictionary file for you, and you will **not be able to access your existing dictionary**.*

To move your root dictionary file, follow these steps:

- 1 Use the DCL COPY command, specifying your root dictionary file as the source and a directory that already exists as the target:

```
$ COPY DISK1:[SMITH.DICTIONARY]CDD.DIC -
_ $ CDD$DISK:[TAYLOR.DICTIONARY]CDD.DIC
```

- 2 The installation creates a new SYS\$SYSTEM:CDDSTRUP.COM so that the logical name CDD\$DICTIONARY points to the new anchor directory. This will go into effect the next time you reboot.
- 3 Define the logical name CDD\$DICTIONARY for users on the current system so that it points to the new anchor directory:

```
$ DEFINE/SYSTEM CDD$DICTIONARY CDD$DISK:[TAYLOR.DICTIONARY]
```

2.5.2 Specifying the Location of the CDD/Plus Root Dictionary File

After you choose the translation of CDD\$DICTIONARY, the installation procedure displays the default translation of CDD\$COMPATIBILITY and asks you to confirm that this is correct:

```
CDD$COMPATIBILITY is currently defined to be:
SYS$COMMON:[CDDPLUS].
```

- * Is this the correct location for your system's CDD/Plus root dictionary [YES]?

If you type "N", the installation procedure asks you for the new translation of the CDD\$COMPATIBILITY logical name in order to create the CDD/Plus root dictionary in the new location.

```
*****
```

```
If you are changing the location of the CDD/Plus root
dictionary, you must remember to move the CDD/Plus root
dictionary to its new location, or create a new CDD/Plus
root dictionary. Be certain to do this before you try to
run the Installation Verification Procedure (IVP). Otherwise
the IVP will fail to locate the CDD/Plus root dictionary
when it is run.
```

```
*****
```

- * Enter the CDD/Plus root dictionary file's device and directory: [SYS\$COMMON:[CDDPLUS]]:

You can then type in a new directory specification for the location of the root dictionary file. When you type in the new directory specification, you must include both a device name and directory name. You should pick a directory on a device that is always mounted.

2.5.3 Specifying the Location of the Template Dictionary

CDD\$TEMPLATE is the system logical name that identifies the location of the CDD/Plus template dictionary.

The installation procedure displays the current translation of CDD\$TEMPLATE and asks:

```
* Is this the correct location for your system's CDD/Plus template
  dictionary [YES]?
```

If you type "N", the system prompts you to supply the name of a permanently mounted device and a directory that can be used exclusively by CDD/Plus. SYS\$COMMON:[CDD\$TEMPLATE] is the default response. The following display appears:

```
*****
If you are changing the location of the CDD/Plus template
dictionary, you must remember to delete the old CDD/Plus
template dictionary.
*****
```

```
* Enter the CDD/Plus template dictionary file's device
  and directory: [SYS$COMMON:[CDD$TEMPLATE]]:
```

If the installation fails while creating the template dictionary, see Section 2.7.

2.5.4 Requesting Language Support Files

CDD/Plus installation provides description files that you need to call the Version 4.1 programming interface. The installation procedure asks whether or not you want the new language support files installed:

```
* Would you like all the description files provided [YES]?
```

If you answer "Y" to this question, the procedure installs support files for Ada, BLISS, BASIC, C, FORTRAN, MACRO, Pascal, and PL/I. If you answer "N" to this question, the procedure prompts you to specify which language files you want to install. If you choose to install no files, *you cannot use the CDD/Plus call interface*. After you specify the language files you want, the installation procedure lists them and asks for verification, as in the following example.

The following languages have been chosen:
(ADA, BLISS, BASIC, C, PASCAL, PL/I)

* Is this OK [YES]?

If you answer “Y” to this question, the installation procedure continues.

Before running the Installation Verification Procedure (IVP), the installation procedure invokes a procedure that builds the CDDSTRTUP.COM command procedure for you. For details about the CDDSTRTUP.COM procedure, see Section 3.4.

2.5.5 Running the Installation Verification Procedure (IVP)

The installation procedure next asks if you want to run the Installation Verification Procedure (IVP).

* Do you want to run the IVP after the installation [YES]?

If you type “N”, you can run the IVP later with the following DCL command:

```
$ @SYS$SYSROOT:[SYSTEST.CDD]CDDIVP
```

If you type “Y”, VMSINSTAL.COM runs the IVP for you and asks:

* Do you want to print the log file from the IVP [NO]?

Type “Y” if you want VMSINSTAL.COM to submit the IVP log file to SYS\$PRINT. Press RETURN if you do not want to print the log file. VMSINSTAL.COM also asks you:

* Do you want to save the log file from the IVP [NO]?

Type “Y” if you want VMSINSTAL.COM to save a copy of CDDIVP.LOG. The log file is stored in SYS\$SYSROOT:[SYSTEST.CDD]. Type “N” if you do not want a copy of the log file.

Appendix B describes the purpose and functions of the Installation Verification Procedure and includes a sample IVP log file.

2.5.6 Purging Replaced CDD Images and Message Files

VMSINSTAL.COM next asks you if you want to purge any files that are superseded by this installation:

* Do you want to purge files replaced by this installation [YES]?

If you type “Y”, VMSINSTAL.COM then deletes old images, help files, message files, and others from previous versions of CDD. Your response to this question does not affect the dictionary files for your existing dictionary.

2.5.7 Creating the RDB\$REMOTE Account

When you are installing CDD/Plus on a system that has an installed Rdb/VMS development version lower than Version 3.0 or a run-time version lower than Version 3.0A, VMSINSTAL.COM installs a run-time only kit that requires the creation of an RDB\$REMOTE account. (Appendix A includes a sample log of an installation that creates RDB\$REMOTE.)

The Rdb/VMS installation procedure, RDBVMSKITINSTALL.COM, prompts you for a User Identification Code (UIC) and a password to be used for the RDB\$REMOTE account:

* Please enter UIC to be used for RDB\$REMOTE account: [300,20]

A valid UIC must contain only octal numbers; therefore, a UIC value containing an "8" or "9" will fail. You should not enter a privilege group UIC number (i.e., from 1 to MAXSYSGROUP). The RDB\$REMOTE account is a captive account accessing RDBSERVER.EXE only.

RDBVMSKITINSTALL.COM then asks you to enter the password for RDB\$REMOTE. As with the DCL SET PASSWORD command, your input does not appear on the terminal, and RDBVMSKITINSTALL.COM prompts you to type it again for verification:

* Please enter PASSWORD to be used for RDB\$REMOTE account:

* Please verify the PASSWORD entered for RDB\$REMOTE:

Note *If you do not verify the password in three attempts, the entire installation fails.*

The installation procedure writes an RDB\$REMOTE_LOGIN.COM to the location SYS\$COMMON:[SYSEXEC]. When a process that uses the RDB\$REMOTE account starts up, it executes the RDB\$REMOTE_LOGIN.COM procedure. If you want product-specific files to be run during the RDB\$REMOTE account login step, you must edit SYS\$COMMON:[SYSEXEC]RDB\$REMOTE_LOGIN.COM and insert the appropriate DCL commands.

2.6 Phase 3: The Installation

VMSINSTAL.COM asks you to confirm that you want the installation to proceed. After you have answered all questions about the installation, VMSINSTAL.COM performs the installation for you.

As VMSINSTAL.COM continues, it displays messages that tell you what it is doing.

2.6.1 File Transfer Messages

File transfer messages appear that tell you when VMSINSTAL.COM transfers files for the product from the distribution medium to your system. For example:

```
%VMSINSTAL-I-RESTORE, Restoring product saveset C...
%VMSINSTAL-I-RESTORE, Restoring product saveset D...
%VMSINSTAL-I-RESTORE, Restoring product saveset E...
```

2.6.2 Informational Messages

After the file transfer messages, VMSINSTAL.COM displays informational messages that:

- Inform you that VMSINSTAL.COM creates three system directories:
 - SYS\$COMMON:[SYSTEST.CDD]
The message actually displays a directory called VMI\$ROOT, a temporary logical name that equates to SYS\$COMMON.
 - SYS\$COMMON:[CDDPLUS]
 - SYS\$COMMON:[CDD\$TEMPLATE]
- Inform you that VMSINSTAL.COM has placed the CDD\$REMOTE object required for remote database access in your system's VAX DECnet object database as number 0.
- Remind you to insert SYS\$SYSTEM:CDD\$REMOTE.COM into the DECnet object database of each node that requires remote access to the cluster common root directory. You must execute the CDD\$REMOTE_NCP.COM procedure once from each VAXcluster node sharing a common root directory.
- Inform you that VMSINSTAL.COM creates a system disk directory called VMI\$ROOT:[SYSMGR.VAXINFO\$PRODUCTS].
- Remind you to edit the SYSTARTUP_V5.COM and SYSHUTDOWN.COM files after the installation completes, to add commands that invoke CDDSTRTUP.COM and CDDSHUTDOWN.COM.
You must edit SYSTARTUP_V5.COM and SYSHUTDOWN.COM on all nodes that run CDD/Plus. CDD/Plus will not be available on any node where you have failed to do this when the system is rebooted. See Chapter 3 for details.
- Inform you that the Installation Verification Procedure has been provided in SYS\$COMMON:[SYSTEST.CDD]CDD\$IVP.COM.
- Display LSE language support.

- Inform you that the installation procedure creates a system disk directory called VMI\$ROOT:[RDB\$REMOTE].
- Inform you if an RDB\$REMOTE account exists. If an RDB\$REMOTE account already exists, RDBVMSKITINSTAL.COM does not change your password and UIC. The installation only modifies the qualifier LGICMD.
- Inform you that the RDBSERVER object required for remote database access has been placed in your system's VAX DECnet object database as number 35.
- Inform you that, in VAXcluster environments, you must run the RDBSERVER_NCP.COM procedure once from each node sharing a common root directory.
- Explain how to invoke a database from a remote node.
- Inform you that VMSINSTAL.COM creates a system directory called SYS\$COMMON:[SYSTEST.RDBVMS]. (The message actually displays a directory called VMI\$ROOT, a temporary logical name that equates to SYS\$COMMON.) RDBVMSKITINSTAL.COM writes the files for the Rdb/VMS IVP to this directory.
- Inform you that VMSINSTAL.COM creates a system directory:


```
SYS$COMMON: [SYSHELP.EXAMPLES.RDBVMS].RDBVMSKITINSTAL.COM
```

This directory copies the sample database PERSONNEL, accompanying programs and files, and the DCL procedure that runs the Rdb/VMS demonstration to this directory.
- Inform you which modules this kit has not installed.

For example, the following informational messages may appear:

```
%CDD-I-NOTINSTALLED, VMI$KWD:RDBBMSG.S.EXE was not installed by this kit
%CDD-I-NOTINSTALLED, VMI$KWD:VIDA_MESSAGE.EXE was not installed by this
kit
```

These messages, provided by Rdb/Dispatch, pertain to a set of files that all DSRI-compliant database management systems must include in their kits. The messages indicate that one of the following is true:

- Versions of the specified message files already on the system are newer than those in the kit you are installing, so they have not been superseded by this installation.
- The image name portion of the image identification on the system does not match that of the file on the kit.

Errors of this kind do not necessarily mean that a problem exists with your system. You should determine the cause of the message and take the appropriate action.

After the informational messages, VMSINSTAL.COM displays the following message:

```
%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target
directories...
```

VMSINSTAL.COM next informs you when it has:

- Started the Rdb/VMS monitor
- Created the CDD/Plus template dictionary
- Created the CDD/Plus compatibility dictionary

If necessary, the installation procedure next displays the following message:

```
If needed, the CDD/Plus compatibility dictionary will now be converted
to be consistent with the installed version of Rdb/VMS.
```

If CDD/Plus needs to convert the compatibility dictionary, the conversion process takes approximately 15 minutes. An informational message appears when the conversion process is completed.

If you asked to run the Installation Verification Procedure (IVP) in phase 2, VMSINSTAL.COM next runs the IVP. If you asked to print the IVP log file, VMSINSTAL.COM submits the log file to the SYS\$PRINT queue. When VMSINSTAL.COM finishes these steps, it displays the following message:

```
Installation of CDD/Plus completed at hh::mm.
```

For more information about the IVP, see Appendix B. After VMSINSTAL.COM completes the installation of CDD/Plus, it asks you to type the names of other products you want to install. If you do not want to install any other products, simply press RETURN.

2.7 Troubleshooting the Installation

If the installation fails, the following VMSINSTAL failure message appears:

```
%VMSINSTAL-E-INSFAIL, The installation of RDBVMSDEV V3.1 has failed.
```

Errors can occur during the installation if any one of the following conditions exists:

- 1 Incorrect operating system version
Unless you have the VMS Version 5.0 operating system installed, the installation will fail.
- 2 Incorrect prerequisite software version
See Section 1.3 for information about prerequisite software.

3 Insufficient privileges

You should run the installation procedure in a SYSTEM account or in an account with the SYSTEM UIC. For a list of specific privileges you need, see Section 1.6.7.

4 Insufficient disk space on system disk

If the system disk does not have enough free blocks available to install CDD/Plus, purge or delete unnecessary files according to the policies of your site. When you have freed enough disk space, you can continue the installation procedure. See Section 1.6.8 for disk space required.

5 Insufficient system parameter values

Check the file SYS\$SYSROOT:[SYSEXE]RDMMON.LOG for messages about insufficient global pages, sections, or global page-file sections. See Section 1.6.9 for information about system parameters.

6 Insufficient quotas

See Section 1.6.10 for information about process account quotas.

7 Rdb/VMS monitor running

If Rdb/VMS needs to be installed, you must turn off the Rdb/VMS monitor on all nodes of your VAXcluster. For information about the Rdb/VMS monitor, see Section 1.6.4.

8 CDD\$TEMPLATE not created

If the Installation Verification Procedure fails, the installation procedure saves the log file in SYS\$COMMON:[SYSTEST.CDD]CDDIVP.LOG. If no log is saved, the installation may have failed trying to create CDD\$TEMPLATE. Information about creating CDD\$TEMPLATE follows.

9 CDD\$TEMPLATE system logical not defined

Use the DCL SHOW LOGICAL command to check, for example:

```
$ SHOW LOGICAL CDD$TEMPLATE
```

If CDD\$TEMPLATE is not defined, check

SYS\$COMMON:[CDD\$TEMPLATE] and see if CDD\$TEMPLATE exists in this directory.

- If the CDD\$TEMPLATE directory does not exist, use the DCL CREATE/DIRECTORY command to create it.
- If the directory exists, run CDDSTRTUP.COM to define the logical CDD\$TEMPLATE.
- If you do not have CDDSTRTUP.COM, restart the installation.

- If the dictionary template does not exist, create it using the following DCL commands:

```
$ SET DEFAULT SYS$COMMON:[CDD$TEMPLATE]
$ DICTIONARY OPERATOR DEFINE DICTIONARY CDD$TEMPLATE.
```

Run the IVP separately after creating the template dictionary.

- If the DICTIONARY OPERATOR command fails, deassign the logical and reinstall. Use the following commands to deassign the logical:

```
$ DEASSIGN/SYSTEM/EXEC CDD$TEMPLATE
```

10 CDD\$TEMPLATE exists, but contains incomplete or incorrect files

The contents of CDD\$TEMPLATE should be similar to the following:

```
$ DIR SYS$COMMON:[CDD$TEMPLATE]

Directory SYS$COMMON:[CDD$TEMPLATE]

00000000.30000000;1 30000000CDD$PROTOCOLS.40000000;1  CDD$DATABASE.RDB;1
CDD$DATABASE.SNP;1  CDD$DIRECTORY.CDD;1

Total of 5 files.
```

If the contents of the template dictionary are incomplete or incorrect (for example, if you have two files with the .RDB extension), delete the contents of the template dictionary and reinstall CDD/Plus.

To delete a duplicate file, use the DCL DELETE command, as follows:

```
$ DELETE CDD$DATABASE.RDB;2
```

If the remaining file is not version 1, use the DCL RENAME command to make it version 1.

11 CDD\$COMPATIBILITY system logical is not defined

Use the DCL SHOW LOGICAL command to check. For example:

```
$ SHOW LOGICAL CDD$COMPATIBILITY
```

- If CDD\$COMPATIBILITY is not defined, check the directory SYS\$COMMON:[CDDPLUS] to see if CDD\$COMPATIBILITY exists.
- If you do not have a CDD\$COMPATIBILITY dictionary, and you have previously installed a version of CDD/Plus, restore a backup copy of the directory SYS\$COMMON:[CDDPLUS] and all the files in it. The procedure to restore the dictionary depends on how you backed it up. See Section 1.6.12 for more information.
- If you have not previously installed CDD/Plus, create a new CDD\$COMPATIBILITY dictionary with the following DCL command:

```
$ DICTIONARY OPERATOR DEFINE DICTIONARY CDD$COMPATIBILITY.
```

12 CDDSTRTUP.COM has not run on all cluster nodes

If CDDSTRTUP.COM has not run on a node, you may see a message like the following when you try to invoke CDO:

```

$ DICTIONARY OPERATOR
%DCL-W-ACTIMAGE, error activating image RPC$SHARE
-CLI-E-IMGNAME, image file NODE1$DUA0:[SYSA.SYSCOMMON.]
[SYSLIB]RPC$SHARE.EXE;2
-SYSTEM-F-PROTINSTALL, protected images must be installed

```

You must run the CDDSTRTUP.COM procedure on all nodes of your cluster after reinstallation. For information about CDDSTRTUP.COM, see Section 3.4.

13 VMS HELP facility currently in use

The installation must have sole access to the VMS help library when it tries to insert the CDD/Plus help module into the library. See Section 1.6.14 for more information about the VMS HELP facility.

14 Product license not registered and loaded

Register and load your product license and start the installation again. See Section 1.4 for more information about the VMS License Management Facility.

After Installing VAX CDD/Plus

After installing CDD/Plus, you need to perform the following tasks:

- Reinstall products that use CDD/Plus
- Adapt CDD/Plus for use in a VAXcluster environment
- Edit the system startup and shutdown files
- Upgrade dictionary protocols
- Convert existing Rdb/VMS databases
- Convert definitions from DMU to CDO format, if desired
- Enable users to access the HELP facility again
- Set user account quotas
- Make CDD/Plus performance enhancements

Note *When you install CDD/Plus, the CDD/Plus startup procedure (CDDSTARTUP.COM) executes automatically on the system from which the IVP runs, but not on other nodes of the cluster. You must run the CDDSTARTUP.COM procedure **from each node that will be accessing the dictionary**. For information about how to run the CDDSTARTUP.COM procedure, see Section 3.4.*

If you do not have Version 3.4 or earlier of CDD, you should plan your dictionary directory structure before you let people use the dictionary. For information on organizing your dictionary's directory structure, see the *VAX CDD/Plus User's Guide*.

3.1 Installing Other Products

If you do not have the following products currently installed, you can install them after installing CDD/Plus:

- ACMS
- Ada
- BASIC
- C
- COBOL
- COBOL GENERATOR
- DATATRIEVE
- VAX DBMS
- DECReporter
- DIBOL
- FORTRAN
- DEC/MMS
- Pascal
- PL/I
- RALLY
- RPG II
- PL/I
- SORT
- TDMS

If you are installing VAX DBMS and any other of these products besides Rdb/VMS, you must install VAX DBMS first. You can install Rdb/VMS either before or after VAX DBMS.

3.2 Reinstalling Products That Use CDD/Plus

- 1 If CDD/Plus replaces CDD Version 1.x, the following considerations apply:
 - You must reinstall the following products:
 - ACMS
 - BASIC

- COBOL
 - DATATRIEVE
 - VAX DBMS
 - DIBOL
 - Pascal
 - PL/I
 - RPG II
 - TDMS
- If you have VAX DBMS, reinstall it before reinstalling other products that use the dictionary. Rdb/VMS, which you can install at any time, is the *only* exception. For example, reinstall BASIC, C, COBOL, DIBOL, Pascal, PL/I, RPG II, and DATATRIEVE after installing VAX DBMS. You must also recompile all programs that call DATATRIEVE.
 - Reinstall BASIC and COBOL before you install TDMS.
 - Install TDMS before you install ACMS.
- 2 If CDD/Plus replaces CDD Version 2.x or Version 3.x, there is no need to reinstall VAX DBMS, DATATRIEVE, COBOL, FORTRAN, Pascal, PL/I, DIBOL, BASIC, TDMS, or ACMS.
 - 3 If CDD/Plus does not replace a Version 3.4 or earlier of CDD, the following considerations apply:
 - If you are installing VAX DBMS, install it before any other product that uses the dictionary. Rdb/VMS, which you can install at any time, is the only exception. If you already have COBOL on your system, COBOL must be reinstalled after VAX DBMS.
 - BASIC, PL/I, and DIBOL do not need to be reinstalled.
 - If you are not installing VAX DBMS, it does not matter when you install DATATRIEVE and COBOL.
 - You must install TDMS before you install ACMS.

3.3 Installing CDD/Plus on a VAXcluster

If you are installing CDD/Plus on a processor that is a member of a VAXcluster, you need to take the following steps to make CDD/Plus available to other cluster members:

- 1 Check that you have a software license to run CDD/Plus for each node. Load the license on each node licensed to use CDD/Plus. See Section 1.4 for information about loading the software license.

- 2 Run the CDD/Plus startup procedure (CDDSTRTUP.COM) on each node of the cluster. The installation procedure ran this startup procedure on the processor where you originally installed CDD/Plus, so you do not need to rerun it on the CPU node. See Section 3.4 about running the CDDSTRTUP.COM procedure.
- 3 After running the startup procedure, you can optionally run the IVP on all other cluster members to verify that CDD/Plus is accessible from each node. See Appendix B about running the IVP.
- 4 Edit the system startup and shutdown file of each cluster member on which you want to run CDD/Plus so that they invoke the CDD/Plus startup and shutdown procedures. See Section 3.4 about editing the startup and shutdown files.
- 5 Make sure the SYSGEN parameters listed in Section 1.6.7 are properly set.
- 6 Enable remote database access for each node in the cluster by running the RDBSERVER_NCP.COM procedure.

3.3.1 Enabling Remote Database Access

Because the installation procedure creates the RDB\$REMOTE account, it also assigns the password you supply to the RDBSERVER.EXE image. (RDBSERVER.EXE is the image supplied by Rdb/VMS to manage remote database access.) If the RDB\$REMOTE account already exists on your system, the installation does not modify the UIC and password.

In a VAXcluster environment, the installation procedure assigns the same password to RDB\$REMOTE and RDBSERVER.EXE *only* on the node from which the installation took place. You must insert the RDBSERVER object in each remaining VAXcluster node's permanent DECnet object database to enable remote database access on nodes that share this cluster common directory.

Follow these steps:

- 1 Log in to each node.
- 2 Invoke the procedure SYS\$COMMON:[SYSMGR]RDBSERVER_NCP.COM.
- 3 Answer the questions asked by the procedure.

The RDBSERVER_NCP.COM procedure prompts for the password to assign to the RDBSERVER object. For remote database access to work, you must assign the password entered during the CDD/Plus installation procedure. For example, if XBIG_SECRETZ was the password you assigned to the RDB\$REMOTE account during the installation on VAXcluster node NODE1, and if the VAXcluster also includes NODE1 and NODE3, you must log in to NODE2 and NODE3 and enter:

```
$ SET DEFAULT SYS$COMMON:[SYSMGR]
$ @RDBSERVER_NCP
```

Please enter the password for object name RDBSERVER: XBIG_SECRETZ

Please verify password: XBIG_SECRETZ

Note *The password just shown was used for example purposes only. Do not use this password on your system.*

As with the DCL SET PASSWORD command, your password does not appear on the terminal. To protect against typing errors that you cannot see when you enter the password, you must enter the password twice. If you are not able to verify the password correctly after three attempts, the RDBSERVER_NCP.COM procedure fails and the RDBSERVER object is not inserted into the node's DECnet object database.

You only need to execute RDBSERVER_NCP.COM once for each VAXcluster node.

3.4 Running the CDD/Plus Startup Procedure

You must run the CDDSTRTUP.COM command procedure each time you boot your VAX/VMS system, to ensure that the file CDDSHR.EXE is installed. If you are installing CDD/Plus on a cluster, you need to run CDDSTRTUP.COM each time you boot an individual node.

To invoke CDDSTRTUP.COM from DCL, you need CMKRNL, PRMGBL, SYSGBL, SYSNAM, and SYSPRV privileges. You can use the following to run the CDDSTRTUP command procedure:

```
$ @SYS$STARTUP:CDDSTRTUP
```

The startup procedure (CDDSTRTUP.COM) performs the following tasks:

- Defines the logical name CDD\$DICTIONARY
- Defines the logical name CDD\$COMPATIBILITY
- Defines the logical name CDD\$TEMPLATE
- Defines the logical name CDD\$CALLBACK_VALIDATIONS
- Uses the VMS INSTALL utility to install CDDSHR.EXE as a protected, shared image and CDDEXC.EXE as an open message file
- Installs a Run-Time Only kit of Rdb/VMS Version 3.0A if the system does not have the version of Rdb/VMS required by CDD/Plus.

Note *When you install CDD/Plus, the startup procedure (CDDSTRTUP.COM) executes automatically on the system from which the IVP runs, but not on other nodes of the cluster. You must run the CDDSTRTUP.COM procedure **from each node that will be accessing the dictionary.***

If you use Rdb/VMS with CDD/Plus, Digital recommends that you run the Rdb/VMS startup command procedure *before* the CDD/Plus startup command procedure. You run the CDD/Plus shutdown command procedure *before* the Rdb/VMS shutdown command procedure.

If you use TEAMDATA with CDD/Plus, you should run the CDD/Plus startup procedure again after each time you run the TEAMDATA shutdown procedure. The TEAMDATA shutdown procedure shuts down a remote support file, RPC\$SHARE.EXE, that CDD/Plus requires to run.

3.5 Running the CDD/Plus Shutdown Procedure

To invoke the CDD/Plus shutdown procedure (CDDSHUTDOWN.COM) from DCL, you need CMKRNL, PRMGBL, SYSGBL, SYSNAM, and SYSPRV privileges. You can use the following to run the CDDSHUTDOWN command procedure:

```
$ @SYS$STARTUP:CDDSHUTDOWN
```

If you are using Rdb/VMS with CDD/Plus, Digital recommends that you run the CDD/Plus shutdown command procedure *before* the Rdb/VMS shutdown command procedure.

3.6 Editing the System Files

By adding the following line to your system startup file, you can invoke the CDDSTRUP.COM procedure automatically.

```
$ @SYS$STARTUP:CDDSTRUP
```

On most systems, SYS\$STARTUP:SYSTARTUP_V5.COM is the system startup file. You can modify SYSTARTUP_V5.COM with any text editor.

You can edit your system shutdown file (SYS\$STARTUP:SYSHUTDWN.COM) to invoke the CDD/Plus shutdown procedure (CDDSHUTDOWN.COM) when your VAX/VMS system aborts. To invoke CDDSHUTDOWN.COM, add the following line to the system shutdown file:

```
$ @SYS$STARTUP:CDDSHUTDOWN
```

Be sure to place this line before the line that invokes the Rdb/VMS shutdown procedure.

300-
236-EE 2

3.7 Upgrading Protocols

The installation of CDD/Plus Version 4.1 introduces new protocols. You must upgrade the protocols in your existing dictionaries, or you cannot use any CDO commands except VERIFY. The installation automatically upgrades the protocols in the CDD\$TEMPLATE dictionary, and the IVP procedure automatically upgrades the protocols in the CDD\$COMPATIBILITY dictionary. To upgrade protocols in other dictionaries on your system, use the following CDO command:

```
CDO> CONVERT/Dictionary [anchor_directory]
```

The anchor is the VMS directory that contains your dictionary files. For example:

```
CDO> CONVERT/Dictionary DISK1:[JONES]
```

When you use the CONVERT/Dictionary command, CDO asks if you are satisfied with the backup of your dictionary. If you have *not* backed up your dictionary, type “N”. Exit from CDO and back up your dictionary. (See Section 1.6.12 for instructions on backing up a dictionary.) If you are satisfied with the backup of your dictionary, type “Y”.

After CDD/Plus successfully upgrades the protocols in your dictionary, the following message appears, followed by the CDO> prompt:

```
%CDO-I-UPGRADE_SUCCEED, dictionary successfully upgraded to new
protocols
CDO>
```

If the protocols in a dictionary need to be upgraded, all attempts to use this dictionary (except for the VERIFY command) return the following error message:

```
-CDD-F-NO_AUTOMATIC_UP, upgrade protocols using CONVERT/Dictionary
CDO>
```

If you issue the VERIFY command followed by the CONVERT/Dictionary command in the same CDO session, CDD/Plus *does not* upgrade the protocols in your dictionary, even though it displays the success message.

3.8 Converting Rdb/VMS Databases

Once the installation completes, you must convert existing databases so that they have the correct format for Rdb/VMS Version 3.0 or later, if you have not already done so. To convert databases, use the RMU/CONVERT command to invoke the RMU utility. The format for the command is:

```
$ RMU/CONVERT DEVICE:[DIRECTORY]FILENAME
```

For example:

```
$ RMU/CONVERT DISK1:[JONES]PERSONNEL.RDB
```

3.9 Converting Rdb/VMS Database Definitions to CDO Format

Rdb/VMS users who currently store metadata in CDD dictionaries created prior to CDD/Plus Version 4.0 must convert these definitions in order to store them in CDD/Plus dictionaries. CDD/Plus tracks the usage of definitions in CDO format only.

Note *If you use products that do not support the new features of CDO dictionaries, these products continue to have read access to your converted definitions but do not have write or delete access to CDO definitions.*

*To determine the CDO support currently provided by a VAX product, consult the documentation for that product. **Do not convert** definitions if you need to have write or delete access to them from such products.*

To convert database definitions from DMU to CDO format:

- 1 Use the RDO DELETE PATHNAME statement to delete the DMU definitions from the database structure.
- 2 Use the RDO INTEGRATE IN statement to copy the definitions to the CDO compatibility dictionary.
- 3 Use the CDO ENTER command with the FROM DATABASE keywords to create directory names for those converted field or record definitions that need to be shareable.

The following example converts the dictionary definitions for the DEPT1 database to CDO format, then creates a directory name for the field EMPLOYEE_ID.

```
RDO> DELETE PATHNAME 'CDD$TOP.PERSONNEL.DEPT1' .
RDO> INTEGRATE DATABASE DEPT1
cont> IN PATHNAME 'CDD$TOP.PERSONNEL.DEPT1'
RDO> $
$ DICTIONARY OPERATOR
CDO> SET DEFAULT CDD$TOP.PERSONNEL
CDO> ENTER FIELD EMPLOYEE_ID
cont> FROM DATABASE DEPT1
```

CDD/Plus places the converted definitions in the compatibility dictionary with exactly the same path as before the conversion, so you can continue to use established applications for the database. When your converted definitions are stored in the compatibility dictionary, CDD/Plus tracks usage of the shared definitions, and all products that access CDD/Plus can read these definitions. For more information, see the *VAX CDD/Plus User's Guide*.

3.10 Allowing Users to Access the VMS HELP Facility

When installation completes, set access to the HELP facility back the way it was before installation. The following example gives WORLD access to the HELP library:

```
$ SET PROTECTION = W:RE SYS$HELP:HELPLIB.HLB
```

3.11 Adjusting Account Quotas for CDD/Plus Users

To work with CDD/Plus, user accounts on your system must have certain quotas, which are described in this section. The values suggested are *minimum* settings; the settings required by users on your system might differ substantially. The suggested values are specific only to the use of CDD/Plus. You should add the values required for other VAX/VMS layered products to the value you choose to use for CDD/Plus and modify the values for each user as needed. Table 3-1 summarizes the required user account quotas.

Table 3-1 User Account Quotas for Using CDD/Plus

Account Quota	Value
BYTLM	25,000
ENQLM	2000
FILLM	60
PGFLQUO	40,000 ¹
LOCKIDTBL_MAX	2
REHASHTBL	3

¹For large applications, you may need to raise the value of this quota to 50,000

²This quota must be at least as high as the highest ENQLM setting in the system authorization file (SYSUAF.DAT). A larger LOCKIDTBL_MAX is recommended to allow for several processes simultaneously using CDD/Plus.

³As a general guideline, there should be one resource hash table entry for every 4 locks in the system, so you should set the resource hash table parameter equal to the value of LOCKIDTBL_MAX divided by 4.

User account quotas are stored in the file SYSUAF.DAT. You use the VMS Authorize Utility to verify and change user account quotas. First set your directory to SYS\$SYSTEM, then run AUTHORIZE:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF>
```

At the Authorize Utility prompt (UAF>), use the SHOW command with an account name to check a particular account. For example:

```
UAF> SHOW SMITH
```

To change a quota, use the MODIFY command at the UAF> prompt. MODIFY has the following format:

```
MODIFY account-name /quota-name=NNN
```

The following example changes the FILLM quota for the SMITH account and then exits from the Authorize Utility:

```
UAF> MODIFY SMITH /FILLM=60
UAF> EXIT
$
```

After you exit from the utility, the VMS system displays messages indicating whether or not changes were made. Once the changes have been made, you must log out and log in again for the new quotas to take effect.

For more information on modifying account quotas, see the *VMS System Manager's Manual*.

3.12 Managing Lock Conflicts with CDD\$WAIT

CDD/Plus supports both queued and nonqueued locking. You can specify whether you want CDD/Plus to abort a command in the event of a lock conflict or to wait until the existing lock is released. The logical name CDD\$WAIT is the mechanism for controlling how CDD/Plus handles lock conflicts.

If you define CDD\$WAIT as YES, CDD/Plus waits until all conflicting locks are released and then continues execution. For example, when CDD\$WAIT translates to YES, jobs running in batch do not abort if CDD/Plus encounters a lock conflict.

If CDD\$WAIT is undefined or defined as anything other than YES, CDD/Plus immediately stops execution of commands when lock conflicts occur.

If you wish to take advantage of queued locking, define CDD\$WAIT as YES in the appropriate logical name table:

```
$ DEFINE CDD$WAIT "YES"
```

3.13 Assigning an Identifier to Prevent Disk Quota Errors

Using the SYSMAN Utility, system managers can create disk quota files to limit the disk consumption of users. The quota file records the current usage and the maximum disk consumption for all users.

A problem can occur if there are disk quotas set on the disk where the compatibility dictionary or any CDO dictionary resides, but CDD/Plus users do not have disk quotas enabled for them on that disk. When the users without disk quotas try to define something in the compatibility dictionary, they might receive an error message, as in the following example:

```
$ DICTIONARY OPERATOR
CDO> DEFINE FIELD LAST_NAME
cont> DATATYPE IS TEXT
cont> SIZE IS 20.
%CDO-E-ERRDEFINE, An error occurred while trying to define something.
%CDD-F-NOJNLCRE, CDD/Plus was unable to create its journal file in
the given anchor
-RMS-E-OCRE, ACP FILE CREATE FAILED
-NONAME-W-NOMSG MESSAGE NUMBER 00000000
```

To prevent this problem, use the following steps to control access to the CDD/Plus compatibility dictionary's VMS directory:

- 1 Use the Authorize Utility (AUTHORIZE) to create a rights identifier called CDD_USER. (For more information about AUTHORIZE, see the *VMS System Manager's Manual*.) Create the CDD_USER identifier with the RESOURCE attribute so that holders of the identifier can charge resources to it. To create the CDD_USER identifier, use the following commands:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF> ADD/IDENTIFIER CDD_USER/ATTRIBUTES=RESOURCE
```

After you add the identifier, type EXIT at the UAF prompt (UAF>) and press RETURN. This returns you to the DCL prompt (\$).

- 2 Grant the CDD_USER identifier the same quotas as any other user of CDD/Plus. To prevent problems with running out of journal file space, you should allow CDD_USER the amount of disk space equal to the amount of disk space you want the dictionary to take up. Any user holding the CDD_USER identifier can use this disk space. Since an empty dictionary takes up approximately 5,000 blocks, Digital recommends that you allow between 20,000 and 100,000 blocks, depending on how much the dictionary is used. To add the entry for the CDD_USER rights identifier, issue the following commands:

```
$ SET DEFAULT SYS$SYSTEM:
$ RUN SYSMAN
SYSMAN> DISKQUOTA ADD CDD_USER/DEVICE=YOURDISK/PERMQUOTA=50000
```

- 3 Create the CDD/Plus compatibility dictionary's anchor with the CDD_USER identifier as the owner. For example, if your compatibility dictionary's anchor is SYS\$SYSROOT:[000000]CDDPLUS.DIR, execute the following command:

```
$ CREATE/DIRECTORY/OWNER=CDD_USER SYS$SYSROOT:[000000]CDDPLUS.DIR
```

4 Grant the CDD_USER identifier with the resource attribute to all users of the dictionary.

```
$ SET DEFAULT SYSSYSTEM:  
$ RUN AUTHORIZE  
UAF> GRANT/IDENTIFIER CDD_USER/ATTRIBUTE=RESOURCE user-name  
UAF> EXIT
```

If you follow these steps, the CDD_USER identifier owns all the space allocated to the dictionary files in the compatibility dictionary, so no individual user needs quotas on the system disk. The only people who can use the dictionary if these steps are followed are users with the CDD_USER identifier and users with quotas explicitly set for them on the compatibility dictionary's disk.

For more information about setting disk quotas, see the *Guide to VMS System Security*.

3.14 Tuning the Lock-Related Parameters

During the first few weeks that CDD/Plus is installed, check the actual number of locks your system is using with the VMS utility MONITOR:

```
$ MONITOR LOCK
```

This displays the maximum number of locks outstanding during the monitor period. You can use this value to fine-tune the LOCKIDTBL_MAX and RESHASHTBL parameters.

For a complete description of the MONITOR Utility, see the *VMS Monitor Utility Manual*. For more tuning information, see the *Guide to VMS Performance Management*.

3.15 Reporting Problems

If you encounter a problem while using CDD/Plus, report it to Digital. Depending on the nature of the problem and the type of support you have, you can take one of the following actions:

- Call Digital if your Software Product Services (SPS) contract or warranty agreement entitles you to telephone support.
- Submit a Software Performance Report (SPR).
- Fill out and submit a Reader's Comments form if the problem has to do with the CDD/Plus documentation. There are Reader's Comments forms at the back of each manual. Use the form from the manual in which you found the error. Include the section and page number.

Review the Software Product Description (SPD) and Warranty Addendum for an explanation of the warranty. If you encounter a problem during the warranty period, report the problem as indicated previously or follow alternate instructions provided by Digital for reporting SPD nonconformance problems.

Sample Installation

This appendix provides sample log files from:

- Installing CDD/Plus and the Run-Time Only Rdb/VMS Version 3.0A Kit
- Installing CDD/Plus when Rdb/VMS Version 3.0A is already present on your system

A.1 Installing CDD/Plus and Run-Time Only Rdb/VMS

```
$ SET DEF SYS$UPDATE
$ @VMSINSTAL
```

```
VAX/VMS Software Product Installation Procedure V5.0-1
```

```
It is 17-JAN-1989 at 16:23.
```

```
Enter a question mark (?) at any time for help.
```

```
* Are you satisfied with the backup of your system disk [YES]?
```

```
* Where will the distribution volumes be mounted: MTA2:
```

```
Enter the products to be processed from the first distribution
volume set.
```

```
* Products: CDD041
```

```
* Options:
```

```
Please mount the first volume of the set on MTA2:.
```

```
* Are you ready? Y
```

```
%MOUNT-I-MOUNTED, CDD mounted on _URNODE$MTA2:
```

```
The following products will be processed:
```

```
  CDD V4.1
```

```
Beginning installation of CDD V4.1 at 16:23
```

```
%VMSINSTAL-I-RESTORE, Restoring product saveset A...
```

```
%VMSINSTAL-I-REMOVED, The products release notes have been
successfully moved to SYS$HELP.
```

Product: CDD-PLUS
Producer: DEC
Version: 4.1
Release Date: 22-MAR-1989

* Does this product have an authorization key registered and loaded? Y

This kit requires RUN TIME ONLY (RTO) Rdb/VMS V3.0A.

This kit will install RTR Rdb/VMS V3.0A, because it is not present on your system.

The installed version of Rdb/VMS is: RDB/VMS V2.3-0.

Due to the installation of Rdb/VMS V3.0A, you may need to convert any Rdb/VMS databases present on your system. This should be done once this installation completes but before using any databases.

Use RMU/CONVERT rdb_database_pathname to convert RDB databases

* Do you still want to proceed with this installation [YES]?

%VMSINSTAL-I-RESTORE, Restoring product saveset B ...

The currently installed version:

"Rdb/VMS V2.3-0"

will be replaced by this installation.

* Do you want to proceed [NO]: Y

Following are questions about the location of system dictionaries.

Please take note that the following terms are used by this procedure in referring to system dictionaries:

'CDD root dictionary' The system dictionary for the pre-V4.0 CDD product.

'CDD/Plus root dictionary' The system's CDD/Plus compatibility dictionary.

'CDD/Plus template dictionary' The CDD/Plus dictionary used to create other dictionaries.

Together, the 'CDD root dictionary' and the 'CDD/Plus root dictionary' form one logical 'system' dictionary, although it is recommended that they reside in different physical locations.

The 'CDD/Plus template dictionary' is used to create CDD/Plus dictionaries.

The CDD\$DICTIONARY system logical name is used to identify the location of the CDD root dictionary file.

The equivalence string for CDD\$DICTIONARY must resolve to a device and directory (e.g. DBA0:[SYSEXE]). You should pick a directory on a disk that is always mounted. We suggest the [SYSEXE] directory on your system disk.

Simply press the RETURN key for the following question if you want the dictionary to be placed in SYS\$COMMON:[SYSEXE]. Note that SYS\$COMMON:[SYSEXE] refers to SYS\$SYSTEM whether you are installing on a cluster or a stand alone system.

* Enter the CDD root dictionary file's device and directory: [SYS\$COMMON:[SYSEXE]]:

The CDD\$COMPATIBILITY system logical name is used to identify the location of the CDD/Plus root dictionary.

The equivalence string for CDD\$COMPATIBILITY must resolve to a device and directory (e.g. DBA0:[CDDPLUS]). You should pick a directory on a disk that is always mounted. You must pick a directory that can be used by CDD/Plus exclusively: that is, a directory that is currently empty, or does not exist. If the directory you choose does not exist, this procedure will create it for you.

We recommend that the CDD/Plus root dictionary be placed in SYS\$COMMON:[CDDPLUS]. Simply press the RETURN key for the following question if you want the dictionary to be placed in SYS\$COMMON:[CDDPLUS].

* Enter the CDD/Plus root dictionary file's device and directory: [SYS\$COMMON:[CDDPLUS]]:

The CDD\$TEMPLATE system logical name is used to identify the location of the CDD/Plus template dictionary.

The equivalence string for CDD\$TEMPLATE must resolve to a device and directory (e.g. DBA0:[CDD\$TEMPLATE]). You should pick a directory on a disk that is always mounted. We recommend that you pick a directory that can be used by CDD/Plus exclusively: that is, a directory that is currently empty, or does not exist. If the directory you choose does not exist, this procedure will create it for you.

We recommend that the CDD/Plus template dictionary be placed in SYS\$COMMON:[CDD\$TEMPLATE]. Simply press the RETURN key for the following question if you want the dictionary to be placed in SYS\$COMMON:[CDD\$TEMPLATE].

* Enter the CDD/Plus template dictionary file's device and directory: [SYS\$COMMON:[CDD\$TEMPLATE]]:

This installation provides description files that are needed when using the VAX CDD/Plus V4.1 programming interface.

* Would you like all the description files provided [YES]?

The following languages have been chosen:
(ADA,BLISS,BASIC,C,FORTRAN,MACRO,PASCAL,PLI)

* Is this OK [YES]?

* Do you want to run the IVP after the installation [YES]?

When you run the IVP from VMSINSTAL, the IVP creates the log file CDDIVP.LOG. After the IVP runs successfully the log file is deleted, unless you explicitly request that it be saved. If an error occurs while running the IVP, the log file is saved in SYS\$COMMON:[SYSTEST.CDD].

* Do you want to print the log file from the IVP [NO]?

* Do you want to save the log file from the IVP [NO]? Y

* Do you want to purge files replaced by this installation [YES]?

This installation requires the creation of the RDB\$REMOTE account. You MUST choose a UIC and password for this account. PLEASE NOTE that your password for the RDB\$REMOTE account and the network object RDBSERVER MUST be exactly the same. The password you supply for the RDB\$REMOTE account will be used for the network object as well IF the account is created by this installation.

The installation procedure will not proceed until you enter a valid user identification code (UIC) for the RDB\$REMOTE account.

* Please enter UIC to be used for RDB\$REMOTE account (e.g. [ggg,mmm]): [200,200]

The entire installation will FAIL if you do not enter a valid password for the RDB\$REMOTE account. You will be given 3 chances to verify your password. This installation procedure requires at least 6 characters for the RDB\$REMOTE password. Valid characters for a password are:

- A through Z
- a through z
- 0 through 9
- \$ (dollar sign)
- _ (underscore)

As with the DCL SET PASSWORD command, your input will not appear on the terminal. And to protect against typing errors that are not seen when entering the password, you must enter the password twice.

* Please enter PASSWORD to be used for RDB\$REMOTE account: PASSWORD

* Please verify the PASSWORD entered for RDB\$REMOTE: PASSWORD

To complete the installation on a standalone VAX 11/780 will take approximately:

- 1 hour and 15 minutes to install
- 15 minutes to run the IVP

All required questions have been asked.
You can terminate the installation procedure at this time.

```

* Do you want to continue the installation [YES]?
%VMSINSTAL-I-RESTORE, Restoring product saveset C...
%VMSINSTAL-I-RESTORE, Restoring product saveset D...
%VMSINSTAL-I-RESTORE, Restoring product saveset E...
%VMSINSTAL-I-SYSDISK, This product creates system disk directory
  VMI$ROOT:[SYSTEST.CDD].
%VMSINSTAL-I-SYSDISK, This product creates system disk directory
  SYS$COMMON:[CDDPLUS].
%VMSINSTAL-I-SYSDISK, This product creates system disk directory
  SYS$COMMON:[CDD$TEMPLATE].

```

CDD\$REMOTE has been placed in the DECnet object database as number 0.

```
*****
```

SYSTEM MANAGER:

If your DECnet object database is not configured to be in the cluster common directory, then you will need to perform the following:

In order to have remote access on another node which shares this cluster common root directory, you must insert SYS\$SYSTEM:CDD\$REMOTE.COM into that node's DECnet object database by:

- a) Logging into that node, and
- b) Invoking SYS\$COMMON:[SYSMGR]CDD\$REMOTE_NCP.COM.

This command procedure inserts CDD\$REMOTE into the node's permanent DECnet object database. This procedure only needs to be executed ONCE per node.

```
*****
```

```
%VMSINSTAL-I-SYSDISK, This product creates system disk directory
  VMI$ROOT:[SYSMGR.VAXINFO$PRODUCTS].

```

```
*****
```

A startup file, CDD\$STARTUP.COM, has been placed in the system directory SYS\$STARTUP. This command procedure will need to be invoked every time a system is rebooted. This is most easily done by adding the line

```
$ @SYS$STARTUP:CDD$STARTUP
```

to SYS\$STARTUP:SYSTARTUP_V5.COM

```
*****
```

```
*****
```

A shutdown file, CDD\$SHUTDOWN.COM, has been placed in the system directory SYS\$STARTUP. This command procedure will need to be invoked every time a system is shut down. This is most easily done by adding the line

```
$ @SYS$STARTUP:CDD$SHUTDOWN
```

to SYSHUTDOWN.COM.

The VAX CDD/Plus V4.1 Installation Verification Procedure (IVP) has been provided and can be run after the installation is complete. It is invoked as follows:

```
$ @SYS$COMMON:[SYSTEM.CDD]CDDIVP
```

Creating the CDD\$SYSTEM identifier in the rights database

If the CDD\$SYSTEM identifier exists then an error message will follow. Ignore this error message.

CDD\$SYSTEM has been added to the rights database as a non-resource, non-dynamic identifier. All dictionary files are protected by this identifier.

Providing the following LSE language(s):

```
CDDL
```

%VMSINSTAL-I-SYSDISK, This product creates system disk directory VMI\$ROOT:[RDB\$REMOTE].

%CDD-I-ACCOUNT, This installation creates an account named RDB\$REMOTE.

RDBSERVER has been placed in the DECnet object database as number 35.

SYSTEM MANAGER:

If your DECnet object database is not configured to be in the cluster common directory, then you will need to perform the following:

In order to have remote access on another node which shares this cluster common root directory, you must insert RDBSERVER.EXE into that node's DECnet object database by:

- a) Logging into that node, and
- b) Invoking SYS\$COMMON:[SYSMGR]RDBSERVER_NCP.COM.

This command procedure inserts RDBSERVER into the node's permanent DECnet object database. This procedure only needs to be executed ONCE per node.

This command procedure will prompt for a password for the object RDBSERVER. This password must match the password established for the account.

The RDBSERVER object automatically uses the RDB\$REMOTE account created by this installation procedure.

Invoking a database should look like:

```
$DEFINE MYDB "<node>::<dev>:<dir><db-name>"
$RDO
RDO> DATABASE FILE MYDB
```

%VMSINSTAL-I-SYSDISK, This product creates system disk directory VMI\$ROOT:[SYSHLP.EXAMPLES.RDBVMS].

%VMSINSTAL-I-SYSDISK, This product creates system disk directory VMI\$ROOT:[SYSTEST.RDBVMS].

The VAX CDD/Plus V4.1 installation procedure will now move files to their final directories. When finished, the the CDD/Plus template and root dictionaries will be created and the installation will be complete.

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...

Rdb/VMS monitor (RDMS_MONITOR) started

The CDD/Plus template dictionary is now being created.

The CDD/Plus compatibility dictionary is now being created.

Executing IVP for: VAX CDD/Plus V4.1

VAX CDD/Plus V4.1

IVP COMPLETED SUCCESSFULLY

IVP completed for: VAX CDD/Plus V4.1

Installation of CDD V4.1 completed at 17:09

Enter the products to be processed from the next distribution volume set.

* Products:

VMSINSTALL procedure done at 17:10

A.2 Installing CDD/Plus When Rdb/VMS Version 3.0A Is Present on System

```
$ SET DEF SYS$UPDATE
```

```
$ @VMSINSTALL
```

VAX/VMS Software Product Installation Procedure V5.0-1

It is 17-JAN-1989 at 16:23.

Enter a question mark (?) at any time for help.

* Are you satisfied with the backup of your system disk [YES]?

* Where will the distribution volumes be mounted: MTA2:[CDD041]

Enter the products to be processed from the first distribution volume set.

* Products: CDD041

The following products will be processed:

CDD V4.1

Beginning installation of CDD V4.1 at 16:23

%VMSINSTALL-I-RESTORE, Restoring product saveset A...

%VMSINSTALL-I-REMOVED, The products release notes have been successfully moved to SYS\$HELP.

Product: CDD-PLUS
Producer: DEC
Version: 4.1
Release Date: 22-MAR-1989

* Does this product have an authorization key registered and loaded? Y

The Language-Sensitive Editor is not installed on your system. To have the Language-Sensitive Editor support, you must:

1. Install the Language-Sensitive Editor
2. Install or reinstall this product

* Do you want to continue the installation [NO]? Y

Following are questions about the location of system dictionaries.

Please take note that the following terms are used by this procedure in referring to system dictionaries:

- 'CDD root dictionary' The system dictionary for the pre-V4.0 CDD product.
- 'CDD/Plus root dictionary' The system's CDD/Plus compatibility dictionary.
- 'CDD/Plus template dictionary' The CDD/Plus dictionary used to create other dictionaries.

Together, the 'CDD root dictionary' and the 'CDD/Plus root dictionary' form one logical 'system' dictionary, although they must reside in different physical locations.

The 'CDD/Plus template dictionary' is used to create CDD/Plus dictionaries.

The CDD\$DICTIONARY system logical name is used to identify the location of the CDD root dictionary file.

CDD\$DICTIONARY is currently defined to be:
SYS\$COMMON:[SYSEXE].

* Is this the correct location for your system's CDD root dictionary file [YES]?

The CDD\$COMPATIBILITY system logical name is used to identify the location of the CDD/Plus root dictionary.

CDD\$COMPATIBILITY is currently defined to be:
SYS\$COMMON:[CDDPLUS].

* Is this the correct location for your system's CDD/Plus root dictionary [YES]?

The CDD\$TEMPLATE system logical name is used to identify the location of the CDD/Plus template dictionary.

This procedure will delete all files in the current template dictionary directory and re-create the template dictionary. The template dictionary directory should have no other files.

CDD\$TEMPLATE is currently defined to be:
SYS\$COMMON:[CDD\$TEMPLATE].

* Is this the correct location for your system's CDD/Plus template dictionary [YES]?

This installation provides description files that are needed when using the VAX CDD/Plus V4.1 programming interface.

* Would you like all the description files provided [YES]?

The following languages have been chosen:
(ADA, BLISS, BASIC, C, FORTRAN, MACRO, PASCAL, PLI)

* Is this OK [YES]?

* Do you want to run the IVP after the installation [YES]?

When you run the IVP from VMSINSTAL, the IVP creates the log file CDDIVP.LOG. After the IVP runs successfully the log file is deleted, unless you explicitly request that it be saved. If an error occurs while running the IVP, the log file is saved in SYS\$COMMON:[SYSTEST.CDD].

* Do you want to print the log file from the IVP [NO]?

* Do you want to save the log file from the IVP [NO]? Y

* Do you want to purge files replaced by this installation [YES]?

To complete the installation on a standalone VAX 11/780 will take approximately:

25 minutes to install
15 minutes to run the IVP

All required questions have been asked.
You can terminate the installation procedure at this time.

```

* Do you want to continue the installation [YES]?
%VMSINSTAL-I-RESTORE, Restoring product saveset C...
%VMSINSTAL-I-SYSDIR, This product creates system disk directory
VMI$ROOT:[SYSTEST.CDD].
%CREATE-I-EXISTS, VMI$ROOT:[SYSTEST.CDD] already exists
%VMSINSTAL-I-SYSDIR, This product creates system disk directory
SYS$COMMON:[CDDPLUS].
%CREATE-I-EXISTS, SYS$COMMON:[CDDPLUS] already exists
%VMSINSTAL-I-SYSDIR, This product creates system disk directory
SYS$COMMON:[CDD$TEMPLATE].
%CREATE-I-EXISTS, SYS$COMMON:[CDD$TEMPLATE] already exists

CDD$REMOTE has been placed in the DECnet object database as number 0.

```

```

*****

```

SYSTEM MANAGER:

If your DECnet object database is not configured to be in the cluster common directory, then you will need to perform the following:

In order to have remote access on another node which shares this cluster common root directory, you must insert SYS\$SYSTEM:CDD\$REMOTE.COM into that node's DECnet object database by:

- a) Logging into that node, and
- b) Invoking SYS\$COMMON:[SYSMGR]CDD\$REMOTE_NCP.COM.

This command procedure inserts CDD\$REMOTE into the node's permanent DECnet object database. This procedure only needs to be executed ONCE per node.

```

*****

```

```

*****

```

A startup file, CDDSTRTUP.COM, has been placed in the system directory SYS\$STARTUP. This command procedure will need to be invoked every time a system is rebooted. This is most easily done by adding the line

```

$ @SYS$STARTUP:CDDSTRTUP

```

```

to SYS$STARTUP:SYSTARTUP_V5.COM

```

```

*****

```

```

*****

```

A shutdown file, CDDSHUTDOWN.COM, has been placed in the system directory SYS\$STARTUP. This command procedure will need to be invoked every time a system is shut down. This is most easily done by adding the line

```

$ @SYS$STARTUP:CDDSHUTDOWN

```

```

to SYSHUTDWN.COM.

```

```

*****

*****

The VAX CDD/Plus V4.1 Installation Verification Procedure
(IVP) has been provided and can be run after the installation
is complete. It is invoked as follows:

    $ @SYS$COMMON:[SYSTEM.CDD]CDDIVP
*****

%UAF-I-RDBADDMMSG, identifier CDD$SYSTEM value: %X80010000 added to
RIGHTSLIST.DAT

*****

CDD$SYSTEM has been added to the rights database as a
non-resource, non-dynamic identifier. All dictionary files
are protected by this identifier.

*****

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target
directories...
Rdb/VMS (RDBS_MONITOR) has been previously started

*****

The CDD/Plus template dictionary is now being created.

*****

Executing IVP for: VAX CDD/Plus V4.1
*****

VAX CDD/Plus V4.1
IVP COMPLETED SUCCESSFULLY
*****

IVP completed for: VAX CDD/Plus V4.1

    Installation of CDD V4.1 completed at 17:08

Enter the products to be processed from the next distribution
volume set.
* Products:
    VMSINSTAL procedure done at 17:09
$ logo
SYSTEM      logged out at 17-JAN-1989 17:22:07.78

```

The Installation Verification Procedure

The CDD/Plus kit includes an Installation Verification Procedure (CDDIVP.COM), which takes approximately 55 minutes to run. The IVP runs each component to make certain the installation is successful. The IVP:

- Checks each executable image
- Creates the root dictionary file if it does not already exist
- Upgrades the protocols in the CDD\$COMPATIBILITY dictionary
- Tests the Data Definition Language Utility (CDDL) by creating the sample dictionary structure in a directory named CDD\$EXAMPLES
- Tests the CDO utility by creating CDD\$EXAMPLES and CDD_ PLUS\$EXAMPLES directories and defining fields and records in them
- Reports whether or not the installation is successful

As the IVP tests each component of CDD/Plus, it creates a log file for you in SYS\$COMMON:[SYSTEST.CDD]. The log file, CDDIVP.LOG, describes each of the four tests and whether it passed or failed.

If the IVP fails, you can inspect the log file to help diagnose the problem. However, the IVP is not a comprehensive test package. Its sole purpose is to verify that CDD/Plus is installed correctly.

B.1 Running the IVP

To run the IVP, you need the following privileges:

- VMS privileges

- CMKRNL
 - PRMGBL
 - SYSGBL
 - SYSNAM
 - SYSPRV

- CDD/Plus privileges

- CONTROL privileges to entities at CDD\$TOP and CDD\$TOP.CDD\$EXAMPLES

The installation procedure asks you if you want to run the IVP. If you type “YES”, the installation procedure runs the IVP automatically and sends the output to the file CDDIVP.LOG. You can also run the IVP at any time from the DCL command level with the following command:

```
$ @SYS$SYSROOT:[SYSTEST.CDD]CDDIVP
```

When you run the IVP with this command, your terminal displays the output from the procedure, as shown in Section B.2.

When the IVP runs, it may generate error messages such as the following:

```
%CDO-E-ERRDELETE, error deleting object
-CDO-E-NOTFOUND, entity _CDD$TOP.CDD_PLUS$EXAMPLES.SALES.SALES_
RECORD;* not found in dictionary
%CDO-E-ERRDELETE, error deleting object
-CDO-E-NOTFOUND, entity _CDD$TOP.CDD_PLUS$EXAMPLES.SALES.JONES.LEADS_
RECORD;* not found in dictionary
```

These messages appear because a cleanup procedure is running. The IVP will complete successfully in spite of these messages, and you do not need to take any corrective action.

To avoid conflicts, it is best to run the IVP when no one else is using CDD/Plus or a product that uses it.

B.2 Sample IVP Log

VAX Common Data Dictionary/Plus
Version V4.1

Installation Verification Procedure

18-JAN-1989 14:54:08.40

This command file is used to assure that the installation of VAX CDD/Plus V4.1 succeeded. It runs each component of the product to see if it functions properly.

This is NOT a comprehensive test package. It merely assures that the installation produced a working copy of VAX CDD/Plus V4.1.

```
*****  
*****  
*****  
***** Begin Installation Verification Procedure *****  
*****
```

Test 1.

Verify that SYS\$SYSTEM:DMU.EXE executes. Initialize the root dictionary file if it does not already exist.

DMU Version: V4.1-1

Test 1 succeeded.

Test 2.

Verify that SYS\$SYSTEM:CDDV.EXE executes.

CDDV Version: V4.1

Test 2 succeeded.

Test 3.

Verify that SYS\$SYSTEM:CDDL.EXE executes.

This test will place sample record definitions into the dictionary (CDD) using CDDL.

Test 3 succeeded.

Test 4.

Verify that SYS\$SYSTEM:CDO.EXE executes.

This test will place sample record definitions into the dictionary using CDO.

Upgrading CDO compatibility cdd\$compatibility.

This upgrade will take about 40 minutes on an 11/780

```

Directory SYS$COMMON:[CDDPLUS]
CDD_PLUS$EXAMPLES                                DIRECTORY
Welcome to CDO T1.1-0
The CDD/Plus X4.1 User Interface
Type HELP for help
Definition of record SALES_RECORD
|   Contains field          CUSTOMER_NAME
|   Contains field          ACCOUNT_NUMBER
|   Contains field          TRANSACTION_COUNT
|   Contains record         TRANSACTION

Welcome to CDO T1.1-0
The CDD/Plus X4.1 User Interface
Type HELP for help
Definition of record ADDRESS
|   Contains field          STREET
|   Contains field          CITY
|   Contains field          STATE
|   Contains record         ZIP_CODE

Definition of record INVENTORY
|   Contains record         STOCK

Definition of record EMPLOYEE
|   Contains field          ID
|   Contains record         NAME
|   Contains record         ADDRESS
|   Contains field          DEPT_CODE

Definition of record SALARY
|   Contains field          EMPLOYEE_ID
|   Contains record         PAY

Definition of record ADDRESS_RECORD
|   Description             'This record contains the standard
|                           format for addresses.'
|   Contains field          STREET
|   Contains field          CITY
|   Contains field          STATE
|   Contains record         ZIP_CODE

Definition of record EMPLOYEE_LIST
|   Description             'This record contains the master list
|                           of all employees.'
|   Contains field          ID
|   Contains record         NAME
|   Contains record         ADDRESS_RECORD
|   Contains field          DEPT_CODE

```

```

Definition of record PRODUCT_INVENTORY
| Description 'This record is the primary location of
| inventory status information.'
| Contains field RECORD_IDENTIFIER
| Contains variants
| | Variant
| | Expression is (RECORD_IDENTIFIER IN PRODUCT_INVENTORY EQ "S")
| | | IN_STOCK
| | End variant
| | Variant
| | Expression is (RECORD_IDENTIFIER IN PRODUCT_INVENTORY EQ "B")
| | | BACK_ORDER
| | End variant
| | Variant
| | Expression is (RECORD_IDENTIFIER IN PRODUCT_INVENTORY EQ "O")
| | | OUT_OF_STOCK
| | End variant
| End variants

```

```

Definition of record SALARY_RANGE_REC
| Description 'This record stores minimum salaries.'
| Contains field SALARY_RANGE_FIELD

```

```

Definition of field SALARY_RANGE_FIELD
| Datatype unsigned numeric 8 digits scale 2
| Array 1:150 1:5

```

```

Definition of record SALARY_RECORD
| Description 'This is the record containing salary
| information for all employees.'
| Contains field EMPLOYEE_ID
| Contains record PAY

```

```

Definition of record SALARY_RECORD
| Description 'This is the record containing salary
| information for all employees.'
| Contains field EMPLOYEE_ID
| Contains record PAY

```

```

Definition of record CUSTOMER_RECORD
| Description 'This record is of primary use to the
| marketing department.'
| Contains field NAME
| Contains field ACCOUNT_NUMBER
| Contains record ADDRESS_RECORD
| Contains record TELEPHONE

```

```

Definition of record LEADS_RECORD
| Description 'This record contains information about
| prospective customers and revenues.'
| Contains field CONTACT_NAME
| Contains field COMPANY
| Contains record ADDRESS_RECORD
| Contains record TELEPHONE
| Contains field POTENTIAL_ANN_SALES

```

```
Definition of record SALES_RECORD
| Contains field      CUSTOMER_NAME
| Contains field      ACCOUNT_NUMBER
| Contains field      TRANSACTION_COUNT
| Contains record     TRANSACTION
```

Welcome to CDO T1.1-0

The CDD/Plus X4.1 User Interface

Type HELP for help

```
Directory SYS$COMMON:[CDDPLUS]CDD_PLUS$EXAMPLES.SALES
SALES_RECORD;1                                RECORD
```

```
ADDRESS_RECORD;1 <CDD$RECORD>
EMPLOYEE_LIST;1 <CDD$RECORD>
PRODUCT_INVENTORY;1 <CDD$RECORD>
SALARY_RECORD;2 <CDD$RECORD>
SALARY_RECORD;1 <CDD$RECORD>
```

Test 4 succeeded.

```
****
**** Installation Verification Procedure Successfully Completed ****
****
*****
*****
```

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