ENTEGRITY *Solutions* ®

DCE and DFS for Linux®

Installation and Configuration Guide

Software Version 2.3

Notices

Contents

Appendix C   Linux Quick Reference   65

Appendix D   GNU GPL Extras   67

Appendix E   CDS Preferencing   69

Appendix F   Multicell Environments   77

Preface

Intended Audience

The audience for this guide includes the following:

- Experienced programmers who want to port existing applications to DCE.
- System managers who manage the distributed computing environment.
- Users who want to run distributed applications.

Experienced system and network administrators responsible for configuring network services. Administrators should have knowledge of Distributed Computing Environment (DCE) concepts as defined by the Open Software Foundation (OSF); this manual is neither a DCE nor a DFS tutorial.

This guide assumes that the supported operating systems have been installed.

Overview of this Guide

The first three chapters of the *DCE and DFS for Linux Installation and Configuration Guide* describe how to install and configure DCE for Linux®.

This guide provides users of the Distributed Computing Environment (DCE) and Distributed File System (DFS) with supplemental information necessary to use Entegrity DCE and DFS and is intended to be used with the documents listed under Related Documentation.

DCE for Linux is a layered product on the Red Hat® Linux operating system. It consists of a DCE implementation for a server and client, as defined by The Open Group. This software includes these components:

- Remote Procedure Call (RPC)
- Cell Directory Service (CDS) Server
- Cell Directory Service (CDS) Client
- Distributed Time Service (DTS)
- DCE Security Server
- DCE Security Client
- DCE Distributed File Service Client

Chapter 5 describes how to configure the DCE Distributed File Service (DFS). Entegrity DFS for Linux consists of the basic DFS server and client. However, Entegrity DFS for Linux servers and clients can operate in a cell with third-party enhanced DFS servers, basic DFS servers, and clients.

Conventions

The following conventions are used in this guide:

UPPERCASE and lowercase	The operating system differentiates between lowercase and uppercase characters. Literal strings that appear in text, examples, syntax descriptions, and function definitions must be typed exactly as shown.
bold	Boldface type in interactive examples indicates typed user input. In general text reference, bold indicates file names and commands.
italics	Italic type indicates variable values, placeholders, and function argument names.
`special type`	Indicates system output in interactive and code examples.
`%`	The default user prompt is your system name followed by a right angle bracket (>). In this manual, a percent sign (%) is used to represent this prompt.
#	A number sign (#) represents the superuser prompt.
Ctrl/*x*	This symbol indicates that you hold down the Ctrl key while pressing the key or mouse button that follows the slash.
<Return>	Refers to the key on your terminal or workstation that is labeled with Return or Enter.

Related Documentation

The following documents are available in HTML and Acrobat format on the Entegrity software CD:

- *DCE and DFS for Linux Installation and Configuration Guide* (this guide) — Describes how to install DCE and configure and manage your DCE cell.

- *DCE and DFS for Linux Release Notes* — Lists new features, bug fixes, and known problems and restrictions.

A complete set of the OSF DCE Release 1.2.2 technical documentation in PDF format is available on the Entegrity Technical Support Web (**http://support.entegrity.com**). The Entegrity software CD contains links to these documents, which include:

- *Introduction to OSF DCE* — Contains a high-level overview of DCE technology including its architecture, components, and potential use.

- *OSF DCE Administration Guide - Introduction* — Describes the issues and conventions concerning DCE as a whole system and provides guidance for planning and configuring a DCE system.

- *OSF DCE Administration Guide - Core Components* — Provides specific instructions on how core components should be installed and configured.

- *OSF DCE Application Development Guide - Introduction and Style Guide* — Serves as a starting point for application developers to learn how to develop DCE applications.

- *OSF DCE Application Development Guide - Core Components* — Provides information on how to develop DCE applications using core DCE components such as RPC and security.

■ *OSF DCE Application Development Guide - Directory Services* — Contains information for developers building applications that use DCE Directory Services.

■ *OSF DCE Application Development Reference* — Provides reference information for DCE application programming interfaces.

■ *OSF DCE Command Reference* — Describes commands available to system administrators.

Contacting Entegrity Solutions

Contact	Address	Phone/Fax/Email
Entegrity Product and Sales Information	Entegrity Solutions Corporation 410 Amherst Street, Suite 150 Nashua, NH 03063 USA	Email: sales@entegrity.com Web: www.entegrity.com Tel: +1-603-882-1306 ext.2700 Toll Free (US): 1-800-525-4343 ext. 2700 Fax: +1-603-882-6092
Technical Support	Entegrity Solutions Corporation 410 Amherst Street, Suite 150 Nashua, NH 03063 USA	Email: support@entegrity.com Web: support.entegrity.com Tel: +1-603-882-1306 ext. 2702 Toll Free (US): 1-888-368-3555 ext. 2702 Fax: +1-603-882-6092
Documentation Comments and Suggestions		Email: docs@entegrity.com
Other Inquiries	Entegrity Solutions Corporation 410 Amherst Street, Suite 150 Nashua, NH 03063 USA	Email: info@entegrity.com Web: www.entegrity.com Tel: +1-603-882-1306 Toll Free (US): 1-800-525-4343 Fax: +1-603-882-6092

The contact information in this table may change. For the most up-to-date information, see our contact page on the Entegrity Solutions web site: http://www2.entegrity.com/corporate/offices.shtml.

Obtaining Technical Support

If you purchased the product directly from Entegrity Solutions Corporation, Inc. you are entitled to 30 days of limited technical support beginning on the day the product is expected to arrive.

You may also purchase a support plan that entitles you to additional services. You *must* register prior to receiving this support. For details, refer to the customer support information package that accompanied your shipment or refer to the Technical Support area of **http://support.entegrity.com**. The web site also contains online forms for easy registration.

If you purchased the product from a reseller, please contact the reseller for information on obtaining technical support.

Obtaining Additional Technical Information

Contact	Address	Phone/Fax/Email
The Open Group™ Developer of DCE (Distributed Computing Architecture) software and standards.	The Open Group 8 New England Executive Park Suite 325 Burlington, MA 01803-5007 USA	Tel: +1 781-425 6733 **http://www.opengroup.org**

Obtaining Additional Documentation

All documentation for the product is provided in electronic format on the same CD on which the product ships. See the product CD for information on accessing this documentation.

Documentation for Entegrity DCE products is available at **http://support.entegrity.com**. Click the Documentation link.

We are always trying to improve our documentation. If you notice any inaccuracies or cannot find information, please send email to **docs@entegrity.com**. We welcome any comments or suggestions.

CHAPTER 1

DCE and DFS for Linux Product Overview

1

This chapter gives an overview of the product and the licensing scheme and contains the following sections:

1.1 Introduction

Distributed computing services, as implemented in the Distributed Computing Environment (DCE), provide an important enabling software technology for the development of distributed applications. DCE makes the underlying network architecture transparent to application developers. It consists of a software layer between the operating system and network interface and the distributed application. It provides a variety of common services needed to develop distributed applications, such as name, time, and security services, and a standard remote procedure call interface.

Entegrity DCE and DFS for Linux® extends the DCE services to Red Hat® Linux Clients. This product is based on OSF DCE Release 1.2.2.

1.2 Product Licensing

Entegrity DCE and DFS for Linux are licensed products that need electronic licenses to run. If you are evaluating the product, you receive licenses that are valid for a short period of time. After you purchase the product, you receive licenses that are valid indefinitely.

There are six license files, supplied on a diskette or available through Entegrity Solutions Technical Support. You receive licences only for those products you purchase. For example, if you did not purchase DFS for Linux, then you will not receive licenses for that product.

The license files are as follows:

- **adk.lic** — License for Application Developer kit.
- **cds.lic** — License for DCE Cell Directory Services.
- **dfsc.lic** — License for DFS Client.
- **dfss.lic** — License for DFS Server.
- **rts.lic** — License for DCE Client Runtime Services.
- **sec.lic** — License for Security Server.

Copy these files into `/opt/dcelocal/bin/` before configuring the DCE software.

The first time you configure the client, a prompt asks you to confirm that you agree that you have read and accepted the license.

CHAPTER 2

Installing DCE and DFS for Linux

2

This chapter describes installation and de-installation of the product and contains the following sections:

2.1 Installation Overview

Follow this sequence to install DCE and DFS and create a cell with servers and client. Details are in the following chapters:

1   Install the DCE software (*Chapter 2*)

2   Install the DFS software (now, or after configuring DCE) (*Chapter 4*)

3   Install the license files (*Section 2.5, Installing Licenses*)

4   Configure a DCE cell (*Chapter 4*)

5   Configure a DFS server (*Chapter 5*)

6   Configure a DFS client *Chapter 5.4.4*

2.2 Prerequisites

For information on what hardware and software is necessary, see the *DCE and DFS for Linux Release Notes.*

2.3 Error Recovery During Installation

If errors occur during the installation, the system displays failure messages. Errors can occur during the installation if any of the following conditions exist:

■   The prerequisite software version is incorrect.
■   The system parameter values (such as disk space) for this system are insufficient for successful installation.

If errors occur, the *Red Hat Linux Getting Started Guide* may be helpful.

2.4 Installing DCE

Procedures are listed for a command line . If you are using another windowing environment, the steps may differ.

The installation procedure creates DCE file directories subordinate to the **/opt/dcelocal** directory and loads DCE software subsets. There are links to those files in **/usr/lib** and **/usr/bin**.

NOTE: If reinstalling, uninstall any DCE package first. See *Section 2.6, Uninstalling DCE.*

To install if no previous version exists:

rpm -i *package name*

For example (from root): rpm -i /misc/dceman-2.3-60.RH.i386.rpm

To update from a previous version:

rpm -U *package name*

For more information on the **rpm -U** command, see the Linux man pages.

2.5 Installing Licenses

License files are supplied on a diskette or are available through Entegrity Solutions Technical Support. You receive licenses only for those products you purchase.

Copy the license files (**adk.lic, cds.lic, dfsc.lic, dfss.lic, rts.lic,** or **sec.lic**) into **/opt/dcelocal/bin/** before configuring the DCE software. (For more information, *Section 1.2, Product Licensing*)

2.6 Uninstalling DCE

NOTE: If you intend to reconfigure, use **dcesetup** option 7, clobber, before you uninstall (see *Section 4.3, Configuring Your System as a DCE Client with Runtime Services*).

Using the command line

From the command line, use **rpm -e** *Packagename*

For example: rpm -e dceman-2.3-60.RH

2.7 Disabling DCE

To disable DCE from starting automatically at reboot:

From command line, type the following:

`/sbin/chkconfig dce off`

For DFS, use the following command:

`/sbin/chkconfig dfs off`

CHAPTER 3

Before Configuring a DCE Cell

3

3.1 Before You Configure DCE

Before configuring, you should obtain the following cell information and password from your cell administrator (for a lightweight client you only need the cell name):

■   Your DCE hostname (your machine)

■   The name of your DCE cell

   If you choose to enter the cell information manually in step 5 of the configuration (*Section 4.3*), also obtain:

   ■   The hostname of the Master CDS server for this cell.
   ■   Whether your host can broadcast to the host where the master CDS server is installed.

■   The principal name and password of an account that has cell administration privileges (Cell administrator name and password).

■   Whether your existing DCE cell is restricted to using TCP only or UDP only.

3.2 Overview of the DCE Cell

A cell is the basic DCE unit. It is a group of networked systems and resources that share common DCE services. Usually, the systems in a cell are in the same geographic area, but cell boundaries are not limited by geography. A cell can contain from one to several thousand systems. The boundaries of a cell are typically determined by its purpose, as well as by security, administrative, and performance considerations.

A DCE cell is a group of systems that share a namespace under a common administration. The configuration procedure allows you to configure your system as a DCE client, create a new DCE cell, add a master Cell Directory

Service (CDS) server, add a replica CDS server, and add a Distributed Time Service (DTS) local server. When you create a new cell, you automatically configure a Security server.

You do not need to create a DCE cell if you are using only the DCE Remote Procedure Call (RPC) and if your applications use only explicit RPC string bindings to provide the binding information that connects server to clients.

If there are other systems in your network already using DCE services, it is possible there may be an existing cell that your system can join. If you are not sure, consult with your network administrator to find out which DCE services may already be in use in your network.

At a minimum, a cell configuration includes the DCE Cell Directory Service, the DCE Security Service, and the DCE Distributed Time Service. One system in the cell must provide a DCE Directory Service server to store the cell namespace database. You can choose to install both the Cell Directory server and the Security server on the system from which you invoked the procedure, or you can split the two servers and put them on different systems.

NOTE: You must run the installation and configuration procedures on the system where you are creating a cell before you install and configure DCE on the systems that are joining that cell.

3.2.1 Creating a Cell

All DCE systems participate in a cell. If you are installing DCE and there is no cell to join, the first system on which you install the software is also the system on which you create the cell. Remember that this system is also the DCE Security server. You can also make this system your Cell Directory server.

When you create a cell, you must name it. The cell name must be unique across your global network. The name is used by all cell members to indicate the cell in which they participate. The configuration procedure provides a default name that is unique and is easy to remember. If you choose a name other than the default, the name must be unique. If you want to ensure that separate cells can communicate, the cell name must follow BIND or X.500 naming conventions.

3.2.2 Joining a Cell

Once the first DCE system is installed and configured and a cell is created, you can install and configure the systems that join that cell. During configuration, you need the name of the cell you are joining. Ask your network administrator for the cell name.

3.2.3 Defining a Cell Name

You need to define a name for your DCE cell that is unique in your global network and is the same on all systems that participate in this cell. The DCE naming environment supports two kinds of names: global names and local names. All entries in the DCE Directory Service have a global name that is universally meaningful and usable from anywhere in the DCE naming environment. All Directory Service entries also have a cell-relative name that is meaningful and usable only from within the cell in which that entry exists.

If you plan to connect this cell to other DCE cells in your network either now or in the future, it is important that you choose an appropriate name for this cell. You cannot change the name of the cell once the cell has been created. If you are not sure how to choose an appropriate name for your DCE cell, consult the section on global names in the *OSF DCE Administration Guide — Introduction.*

Entegrity recommends that you use the following convention to create DCE cell names: the Internet name of your host system followed by the suffix **_cell,** and then followed by the Internet address of your organization. For example, if the Internet name of your system is **myhost**, and the internet address of your organization is **smallco.bigcompany.com,** your cell name, in DCE name syntax, would be **myhost_cell.smallco.bigcompany.com**. This convention has the following benefits:

■   The Internet name of your host is unique in your network, so if this convention is followed by all DCE users in your network, your cell name will also be unique.

■   It clearly identifies the system on which the writable copy of the root directory of the cell namespace is located.

■   It does not prohibit intercell communication with outside organizations.

■   It is easy to remember.

If there is already a cell name defined in a previously existing DCE system configuration, do not change it unless you are removing this system from the cell in which it is currently a member and you are joining a different cell.

When the configuration procedure prompts you for the name of your DCE cell, type the cell name without the **/.../** prefix; the prefix is added automatically. For example, if the full global name selected for the cell, in DCE name syntax, is **/.../myhost_cell.smallco.bigcompany.com,** enter **myhost_cell.smallco.bigcompany.com.**

3.2.4 Defining a Hostname

You need to define a name for your system that is unique within your DCE cell. You should use the default hostname, which is the Internet hostname (the name specified before the first dot (.)).

The following example shows the default hostname derived from the Internet name of **myhost.mycompany.com.**

```
Please enter your DCE host name [myhost]:
```

3.2.5 Intercell Naming

This section provides tips on defining a cell name in the Domain Name
System (DNS). Names in DNS are associated with one or more data
structures called resource records. The resource records define cells and are
stored in a data file, called **/etc/namedb/hosts.db.** The data file is used by the
BIND name daemon (named)**.** To create a cell entry, you must edit the data
file and create two resource records for each CDS server that maintains a
replica of the cell namespace root.

The following example shows a cell called **ruby_cell.axpnio.entegrity.com.**
The cell belongs to the BIND domain **axpnio.entegrity.com.** Host
alo010.axpnio.entegrity.com is the master CDS server for the
ruby_cell.axpnio.entegrity.com cell.

The BIND server must be authoritative for the domains of the cell name. The
BIND master server requires the following entries in its **/etc/namedb/
hosts.db** file:

```
alo010.axpnio.entegrity.com.  IN   A    25.0.0.149

ruby_cell.axpnio.entegrity.com.    IN   MX   1 alo010.axpnio.entegrity.com.

ruby_cell.axpnio.entegrity.com.    IN   TXT  "1 c8f5f807-487c-11cc-b499- \
  08002b32b0ee

Master /.../ruby_cell.axpnio.entegrity.com/alo010_ch

c84946a6-487c-11cc-b499-08002b32b0ee alo010.axpnio.entegrity.com"
```

NOTE: TXT records must span only one line. The third entry above incorrectly
occupies four lines to show the information included in the TXT record. You
need to do whatever is required with your text editor of choice to ensure this.
Widening your window helps. You should also ensure that the quotes are
placed correctly, and that the hostname is at the end of the record.

The information to the right of the TXT column in the Hesiod Text Entry (that
is, 1 C8f5f807-48...) comes directly from the **cdscp show cell /.: as dns**
command. For example, to obtain the information that goes in the
ruby_cell.axpnio.entegrity.com text record (TXT), you would go to a host in
the ruby_cell cell, and enter the **cdscp show cell /.: as dns** command. Then,
when the system displays the requested information, cut and paste this
information into the record. This method ensures that you do not have any
typing errors.

To ensure that the records that you have entered are valid, issue a **kill -1**
<named-process-id> command, which causes the named daemon to read in
the new **hosts.db** file. Next, execute the following **nslookup** command to
obtain the host address:

```
alo001.axpnio.entegrity.com> nslookup hostname

Server:  named.yourcompany.com

Address:  21.222.0.10
```

```
Name:    hostname.yourcompany.com

Address:  21.222.0.4
```

3.3 Using the dcesetup Utility

The **dcesetup** command begins the configuration program. The default
responses to prompts in the configuration procedure are based on your
existing configuration, if you have one. Otherwise, defaults appropriate for
the most common DCE system configurations are provided. At each prompt,
press **Return** to take the default displayed in brackets, type a question mark
(**?**) for help, or supply the requested information.

1 You must be logged in as **root** to configure your DCE system. When you
   invoke **dcesetup,** the DCE Setup Main Menu appears.

   # /usr/sbin/dcesetup

```
            ***  DCE Setup Main Menu  ***

               Version V2.3

1) Configure        Configure DCE services on this system
2) Show             Show DCE configuration and active daemons
3) Stop             Terminate all active DCE daemons
4) Start            Start all DCE daemons
5) Restart          Terminate and restart all DCE daemons
6) Clean            Terminate all active DCE daemons and remove
                    all temporary local DCE databases
7) Clobber          Terminate all active DCE daemons and remove
                    all permanent local DCE databases
8) Version          Show DCE Version number
X) Exit
 Please enter your selection:
```

2 If you will be creating a new cell or adding a CDS server, choose option 3
   (Terminate all active DCE daemons) to stop the DCE daemons in a
   controlled manner. Be sure to back up your security and CDS databases
   before proceeding if this has not already been done.

3 Choose option 1 (Configure DCE services on this system), to view the
   Configuration Choice Menu.

```
              ***  Configuration Choice Menu  ***

     1) Configure this system as a DCE Client
     2) Create a new DCE cell
     3) Add Master CDS Server
     4) Configure DCE Distributed File Service (DFS)
     5) Modify DCE cell configuration
     6) Configure this system for RPC only
     R) Return to previous menu
 Please enter your selection (or '?' for help): 1
```

For information on how to configure a DCE cell or add a client, see
Chapter 4, *Configuring DCE*. For information on modifying an existing
configuration, see *Chapter 6*, *Modifying Cell Configuration*.

3.4 Setting Environment Variables in setup_state

The setup_state file sets site parameters at configuration time. You can set
certain site-specific parameters for DCE and DFS by setting environment variables
before running DCE or DFS. These parameters fall into two general catagories: those
that modify the behavior of the cell, and those that modify daemon runtime behavior.
Those that affect the cell must be set before the cell is initially configured. Those
controlling daemons must be set prior to starting the daemons each time.

All of these parameters are modified via environment variables, as set in the
file **/opt/dcelocal/etc/setup_state**. The setup_state file and dfs daemon
manpages explain requirements and syntax.

You may add other behavior-modifying variables as you need them, as long as
DCE or DFS supports them. Currently, the set of parameters you can change
in this way include the following:

Variables that Modify the Behavior of the Cell

These environment variables modify cell creation, and are only used when
creating a new cell:

PERSON_LOW_UID="default" — Sets lowest Unix ID for new
principals at cell creation

GROUP_LOW_UID="default" — Sets lowest Unix ID for new groups at
cell creation

Variables that Modify Daemon Runtime Behavior

These environment variables modify runtime behavior, and are used each time
DCE and DFS start.

RPC_SUPPORTED_NETADDRS="" — Restricts supported network
addresses for RPC operations.

RPC_UNSUPPORTED_NETIFS="" — Prevents RPC from using listed
network interfaces

RPC_RESTRICTED_PORTS="" — Causes RPC to restrict use of
communication ports to those listed

RPC_RESTRICTED_SERVER_PORTS="" — Causes servers to only
advertise on these ports

DFSD_OPTS="" — Passes options to dfsd at startup. (see dfsd man page)

DFSBIND_OPTS="" — Passes options to dfsbind at startup. (see dfsbind
man page)

DFSFXD_OPTS="-mainprocs 7" — Passes options to dfs fxd daemon at
startup. (see fxd man page)

CHAPTER 4

Configuring DCE

4

This chapter describes how to configure DCE and contains the following sections:

4.1 Error Recovery During Configuration

If the procedure encounters any errors during DCE system configuration, it displays error messages. Some errors are not fatal, and the procedure attempts to continue. Other errors are fatal, and the procedure terminates. If a fatal error is encountered while the procedure is starting the DCE daemons, the procedure attempts to stop any daemons that have already been started. This returns the system to its original state, as before you began the configuration.

You can get more detailed information about the cause of the error by examining the associated log file in **/opt/dcelocal/dcesetup.log.** (If **dcesetup** is run without **root** privileges, the log file will be located in **tmp/ dcesetup.username.log**.) This log file contains a record of the operations invoked by the System Configuration utility the last time it was executed, and may help you diagnose the cause of the problem.

Sometimes the cause of an error is transitory and may not recur if you repeat the operation. Use the command **/usr/sbin/dcesetup** restart to retry if errors are encountered during the startup of the DCE daemons.

4.2 Configuring a New Cell

The following steps explain how to create a cell and configure the Security server and CDS server on the same system.

1   To begin your initial cell creation and server configuration, log in as **root** and invoke **dcesetup (/usr/sbin/dcesetup).** If you are not logged in as root, the dcesetup utility can perform only the **Show** and **Version** choices. The **dcesetup** utility displays the following menu:

```
         ***  DCE Setup Main Menu  ***

            Version 2.3


1)  Configure        Configure DCE services on this system
2)  Show             Show DCE configuration and active daemons
3)  Stop             Terminate all active DCE daemons
4)  Start            Start all DCE daemons
5)  Restart          Terminate and restart all DCE daemons
6)  Clean            Terminate all active DCE daemons and remove
                     all temporary local DCE databases
7)  Clobber          Terminate all active DCE daemons and remove
                     all permanent local DCE databases
8)  Version          Show DCE Version number
X)  Exit


Please enter your selection:
```

NOTE: For troubleshooting during configuration, open an additional window after you invoke **dcesetup**, and enter the following command:
tail -f /opt/dcelocal/dcesetup.log
This window allows you to track the configuration procedure as it executes. The file **dcesetup.log** captures most configuration errors. If you are not logged in as root, the log file is named **/tmp/dcesetup .username.log**.

---

2   If you are creating a new cell or adding a CDS server, choose option 3 (Terminate and restart all DCE daemons) to stop the DCE daemons in a controlled manner. Be sure to back up your security and CDS databases before proceeding if this has not been done.

Press **Enter** or Return to continue at the Main Menu

3   Choose option 1 from the DCE Setup Main Menu to configure DCE services on your system. You must have system privileges to modify the DCE system configuration.

You may be prompted to continue with reconfiguration.

The procedure displays the following menu:

```
  ***  Configuration Choice Menu  ***


1) Configure this system as a DCE Client
2) Configure this system as a Lightweight Client
3) Create a new DCE cell
4) Add Master CDS server
5) Configure DCE Distributed File Service (DFS)
6) Modify DCE cell configuration
7) Configure this system for RPC only
R) Return to previous menu


        Please enter your selection (or '?' for help):
```

4 Choose option 3 to create a new DCE cell.

NOTE: At many prompts, you can press **Return** to take the default displayed in brackets or enter a question mark (**?**) for help.

---

5 When prompted, select a cell name and then hostname. You can use defaults. (The names are used again when you configure DCE client systems.)

   The configuration utility asks if you want to configure the host as a CDS server.

6 Answer **yes** to configure the CDS and security servers on the same system

   You would answer **no** to perform a split server installation in which you configure the security server on the current host and the CDS server on a different host. (Continued in *Section 4.4, Split Server Configuration (Adding a Master CDS Server)*)

   If you answered yes to configure the CDS server you may be prompted:

   `Will there be any DCE pre-R1.1 CDS servers in this cell? (y/n/?) [n]:`

7 Press Return to accept the default, "no".

8 You are prompted to confirm the system time; it is important that you check the current time before you respond.

   At the prompts concerning the time service:

   `Do you need the Distributed Time Service? (y/n/?) [y]`

   `Do you want this system to be a DTS Server (y/n/?) [y]:`

   `Do you want this system to be a DTS Global Server (y/n/?) [n]:`

   `Does this cell use multiple LANs? (y/n/?) [n]:`

9 Answer the questions appropriately.

   Next, the screen displays your selections and asks whether to save them as your DCE system configuration.

10 Answer **y**.

   The script prompts that you enter a "keyseed", and explains that you can enter any random text, and need not remember it.

11 Type your own text and press return.

   The script reports that it is configuring a security server, and prompts for a new password.

12 Type your own password and confirm it.

   Configuration proceeds. At completion, the Main Menu is displayed.

   To verify that all requested services are configured, you can choose **option 2 (Show)** from the DCE Setup Main Menu.

4.3 Configuring Your System as a DCE Client with Runtime Services

---

NOTE: During initial DCE client configuration, the client software may have problems locating the Cell Directory Service if the Internet protocol netmask for your client machine is not consistent with the netmask used by other machines operating on the same LAN segment. You might need to ask your network administrator to determine the correct value to use as a netmask on your network.

The following steps explain how to configure your system as a DCE client (Steps 9 through 11 are not needed for a Lightweight Client or RPC-Only configuration.)

1 Match the time on your system to that from the Security Server. It should be within four minutes.

    If you are not sure how, see *Appendix Section C.1.2, Setting Time*.

2 At the command line, log in as **root** and invoke **/opt/dcelocal/bin/ dcesetup.** The dcesetup utility displays the Main menu.

3 Choose option 1, Configure.

    If prompted:

```
Do you want to proceed with this reconfiguration (y/n/?) [y]
```

    Press Return.

    dcesetup displays the Configuration Choice menu.

4 Choose option 1, Configure this system as a DCE Client.

    The dcesetup procedure displays the following messages describing how to follow prompts.

```
At each prompt, enter <Return> to take the default displayed in [braces]
or enter '?' for help.
```

```
Press <Return> to continue:
```

    After listing the status of the configuration, dcesetup displays the following question:

```
Would you like to search the LAN for known cells? (y/n) [y] :
```

5 Type **n** and then press Return, to enter answers manually; or Return, to choose from lists.

    To enter manually:

    Having entered **n**, supply the following information at the prompts:

- Your DCE cell
- Your DCE hostname
- The hostname of the Master CDS server for this cell
- Whether your host can broadcast to the host where the master CDS server is installed

To choose from lists:

Having entered **y**, choose the default hostname and cell name or choose from list of available DCE cells as follows:

```
Please enter your DCE hostname[your system's name]:
```

Press Return. The screen lists available cells.

```
Please enter the name of your DCE cell [default_cell]:
```

To choose the default, press Return.

If you enter a name, type it and press Return. Do not add the **/.../** prefix to the cell name; dcesetup automatically adds it.

> The prompt might contain a cell name which is the last configured cell name for this host or the first cell name from the alphabetical list of available cells. If you enter a cell name that is not on the list of cell names, the procedure assumes you are performing a WAN configuration, and asks you to enter the hostname of the master CDS server for your cell, and its IP address.

After listing the status of the configuration, dcesetup asks:

```
What is the hostname of the Master CDS server for this cell
[default hostname]:
```

6 Press Return.

After listing the status of the configuration, dcesetup displays:

```
Found DTS server
```

```
The local system time is: Wed Mar 11 12:01:14 2001
```

```
Is this time correct? (y/n):
```

You may get a prompt, where the DTS in the cell you are joining can correct your system's time.

```
Will you allow this procedure to correct your local time? (y/n/?) [y]:
```

7 You can press Return to accept this.

If the correction is not offered, verify that the correct time is displayed. It should be within four minutes of that on the Security Server. If the time is incorrect, specify **n**, and the procedure exits to the command window to allow you to reset your system time. Correcting the time depends on your system and will require that you restart configuration with **dcesetup**, starting with *Step 1*.

To see how to set the time in Linux, see *Section C.1.2, Setting Time*

After you specify **y**, the time is correct, you are asked:

```
Do you need the Distributed Time Service (y/n/?)[y]
```

8 Press Return to answer yes to connect with the DCE DTS.

After you respond to the prompt, the procedure stops the CDS advertiser and asks you to perform a **dce_login** operation, as follows:

```
This operation requires that you be authenticated as a member of the
sec-admin group. Please login.

Enter Principal Name:

Password:
```

9 Enter the Principal Name and Password (as obtained earlier, in *Section 3.1, Before You Configure DCE*).

After you perform the **dce_login** operation, dcesetup begins configuring the security client software.

10 When prompted to delete the principals, answer [**y**].

After the prompt:

```
Do you wish to delete these objects? (y/n) [y]
```

11 Press Return.

When the process is complete it returns to the dcesetup main menu.

12 You can verify configuration by choosing option **2 Show**.

13 Press **X** to exit dcesetup**.**

The DCE components that you have configured are added to your system startup procedure so the daemons restart automatically whenever the system is rebooted (unless you opted to disable DCE at boot time). If the client system and a CDS server are on the same subnet, the client can automatically locate the CDS server. In this case, the client configuration is complete.

4.3.1 To Update the Client's CDS Cache

If the client system does not share a subnet with a CDS server, you must manually enter a CDS server's location information into the client's CDS cache.

If processing is unreasonably slow, updating the CDS cache may help. This is not usually necessary.

At the command line, enter CDS server location information into the client's CDS cache.

```
# dcecp -c cdscache create <name> -binding <protseq>:<ip_addr>
```

where

<name> is the simple name of the cached server machine.

<protseq> is a CDS server's protocol sequence, either
ncacn_ip_tcp if you want to use only TCP connections or
ncadg_ip_udp if you want to use only UDP connections

<ip_addr> is the Internet Protocol address of the server machine's *<name>,* obtainable through the command **ping <name>**.

For example:

```
 # dcecp -c cdscache create pelican \
-binding ncacn_ip_tcp:16.20.15.25
```

4.4 Split Server Configuration (Adding a Master CDS Server)

This section discusses a split server installation in which a new cell and the master security server are created on one system and the master CDS server is configured on another system. The master CDS server maintains the master replica of the cell root directory.

NOTE: Another Entegrity DCE product, PC-DCE, uses a similar term with a different meaning. In that case, a cell administrator can grant cell configuration privileges to local administrators. They can configure clients into a cell without the administrator's password.

A split server configuration has three phases:

- Begin creating the new cell and master security server on one system.
- Create the master CDS server on another system.
- Complete configuring the master security server on the first system.

4.4.1 Creating a New Cell and Master Security Server

This is the first phase of a split server configuration. Begin this phase by creating the new cell on the machine where the master security server will reside.

1 At the DCE Setup Main Menu, choose **option 1 (Configure)**.

2 At the Configuration Choice menu, choose **option 3 (Create a new DCE cell)**. Answer the prompts appropriately for the cellname and hostname.

At the prompt,

```
Please enter the name of your DCE cell [default_cell]
```

3 Press **Return** to accept the default, or assign a name following OSF conventions.

At the prompt,

```
Please enter your DCE hostname [default]
```

4 Press **Return** to accept the default.

At the prompt,

```
Do you wish to configure <hostname> as a CDS server?  (y/n/?) [y]: n
```

5 Answer **n**. (the other machine will be the CDS server)

The system will ask to verify system times:

```
System time for <myhost>: Wed Jun 12 13:39:24 EDT 1998

Is this correct? (y/n/?):
```

6 Make sure you verify the time before you specify **y**. If the system time is incorrect, answer **n**; the configuration procedure exits to the operating system to allow you to correct the system time. You can then reconfigure.

After the prompts:

```
Do you need the Distributed Time Service? (y/n/?) [y]:

Do you want this system to be a DTS Server (y/n/?) [y]:

Do you want this system to be a DTS Global Server (y/n/?) [n]:
```

7 Answer the prompts about using this system as a DTS local or global server. You can follow the defaults.

8 The screen displays your selections and asks whether to save them as your DCE system configuration. Press **Return** to answer **y** to accept your selections, or **n** and then **Return** to change your selections.

The procedure configures the host machine as a security server and then prompts that you enter a "keyseed", and explains that you can enter any random text, and need not remember it.

9 Type your own text as the keyseed, and press Return.

The script reports that it is configuring a security server, and prompts for a new password.

10 Type your own password and confirm it.

The procedure configures security services and then pauses for you to configure the master CDS server on another system. It displays:

```
**********************************************************************

This system has now been configured as a security server.

Since you chose not to configure this system as a CDS server, you

must now configure another system as the Master CDS Server for this

cell (Option 1 on the dcesetup Main Menu, Option 3 on the

Configuration Choice Menu.)


When the Master CDS server has been installed and configured,

press the  <RETURN>  key to continue configuring this system.

**********************************************************************

Press <RETURN> to continue:
```

11 Don't press Return until after you create the CDS server on another system. Leave the dcesetup script and the security server machine running.

12 Go to the machine where you will configure the master CDS server.

4.4.2 Creating a Master CDS Server on Another System

This is the second phase of a split server configuration. You must have created a new cell and begun configuring the security server on another machine.

1 Log on to the system on which you want to install the CDS master server, and install DCE.

2 Use the **dcesetup** command to get the Main Menu and choose **option 1 (Configure)**.

3 from the Configuration Choice Menu choose **option 4 (Add Master CDS Server)**.

4 When prompted, verify the system time, to be within 4 minutes of the time on the security server, and accept the defaults for other time questions.

At the prompt:

```
Please enter the name of your DCE cell []
```

5 Type the name of the DCE cell you created on the first machine and press Return.

At the prompt:

```
Please enter your DCE hostname [2nd machine's name]:
```

6 Accept the default, the name of the machine you are configuring as CDS server, and press Return. If not available, name it according to OSF conventions.

At the prompt:

```
Will there be any DCE pre-R1.1 CDS servers in this cell? (y/n/?) [n]:
```

7 Accept the default.

At the prompt:

```
What is the hostname of the security Server for this cell? []:
```

8 Enter the hostname of the security server that you just configured

---

NOTE: If the procedure cannot find the IP address for the host, you will be prompted for the address. Usually, when the procedure cannot find the IP address of the host, it indicates that you may have misspelled the name.

At the prompts:

```
Enter Principal Name:
Password:
```

9 Enter the Principal Name and Password you assigned in the security server.

At the prompt:

```
Do you need the Distributed Time Service? (y/n/?) [y]:
```

10 Press Return

You may need to configure your LAN into multiple LANS

At the prompt:

```
Does this cell use multiple LANs? (y/n/?) [n]:
```

11 Accept the default.

If you answer **y**, you are prompted:

```
Please enter the name of your LAN (or  '?' for help) []:
```

Enter the name of the LAN.

If your LAN has not been defined in the namespace, you are asked whether you want to define it.

The procedure configures the requested services, and then prompts you to complete the configuration of the security server on the other machine before continuing:

```
********************************************************************

*    This system has now been configured as the Master CDS Server. *

*                                                                  *

*    Before continuing, complete the configuration of the Security *

*    Server...                                                     *

********************************************************************

Press  <RETURN>  to continue:
```

12 Press Return

The DCE Setup Main Menu is displayed.

13 Return to the system on which you configured the security server.

4.4.3 Completing the Master Security Server Configuration

This is the third, and final, phase of a split server configuration. You must have created a new cell and begun configuring the master security server on one machine. Then you created a master CDS server on another machine. Now you will complete the security server configuration on the first machine.

1 Return to the system on which you configured the security server and press the **Return** key. The following prompt appears:

```
What is the hostname of the Master CDS Server for this cell [ ]:
```

2 Provide the hostname of the system you just configured as the master CDS server for this cell. After you enter the hostname of the master CDS server, the following prompt is displayed:

```
Can myhost broadcast to cds_master_server? (y/n/?) [y]:
```

If you respond **n** to this prompt, the procedure asks you to specify the IP address of the CDS server. You can find the IP address by performing an **nslookup** operation for the hostname.

3 At prompts, enter the Principal Name and Password

The script displays the configuration status, then returns to the DCE Setup Main Menu. The split server configuration is complete. You can verify each server's configuration using the Main Menu's **option 2 (Show)**.

CHAPTER 5

Configuring DFS

5

This chapter describes how to configure DFS and contains the following sections:

5.1 Before You Configure DFS

This section describes the preparations you must make before you configure DFS for Linux.

5.1.1 Verifying That the DCE and DFS Packages Have Been Installed

Before you can configure DCE or DFS for Linux, the DCE product must be installed and configured on the system. See the appropriate chapters in this guide for information on installing and configuring DCE and installing the DFS packages.

5.1.2 Verifying Necessary Privileges

To configure DFS for Linux, you need root privileges on that system.

5.2 Identifying Your System's Role in the DFS Environment

A system can have the following roles in a DCE DFS environment:

- System Control Machine — Updates other machines in the domain with common configuration files, such as administrative lists. Typically, the Each DCE cell using DFS requires at least one Fileset Location Database Server (FLDB) is also the System Control Machine and is configured as such when you configure the FLDB Server. However, if you want to configure a separate system as a System Control Machine, configure the System Control Machine first, and then configure the FLDB Server.

- Fileset Location Database Server — Maintains the Fileset Location Database for the DCE cell. The FLDB contains the locations of all DFS filesets for a DCE cell. Each cell must have at least one FLDB server. By

default, the FLDB Server is also the System Control Machine and a DFS File Server, exporting the DFS root fileset **root.dfs**, and can also be a DFS client.

- DFS File Server — Any system that exports DFS filesets and directories.

- DFS Client — Runs the cache manager and associated processes that enable it to access and perform file operations on DFS files. This machine can also be a DFS File Server.

See *Understanding DCE*, *Introduction to OSF DCE*, and *OSF DCE DFS Administration Guide and Reference* for more information.

5.3 Preparing for the Configuration: Worksheet

After the DFS package is installed, configure the DFS services by running **/usr/sbin/dfssetup**, a script that generates the initial configuration using default information and information you provide.

Appendix A contains the DFS Configuration Worksheet for you to copy and use as you prepare to configure DFS. Before you begin, write the cell name on the top line of each worksheet completed. This enables you to keep all worksheets for a particular cell together.

The following sections explain the additional information to record on the worksheet. Choose the sections that apply to your particular machine.

5.3.1 Information for DFS System Control Machine Configuration

A DFS System Control Machine updates other machines in the cell domain with common configuration files such as administrative lists. *Figure 5-1* shows the System Control Machine part of the DFS Configuration Worksheet. *Table 5-1* describes the worksheet.

Figure 5-1: System Control Machine Section of the DFS Configuration Worksheet

Table 5-1: System Control Section of the DFS Configuration Worksheet

Cell Administrator's Principal Name	The principal name for the DCE cell administrator. This is the same default principal name used in DCE installation and Configuration, **cell_admin**.
Password	The password for **cell_admin**. This is the same password that is specified in the DCE cell configuration.

5.3.2 Information for FLDB Server Configuration

Each DCE cell using DFS requires at least one Fileset Location Database (FLDB) Server. This machine is also usually the System Control Machine. *Figure 5-2* shows the server section of the DFS Configuration Worksheet. *Table 5-2* explains how to use this form when configuring FLDB Servers.

If the FLDB Server is also going to be a DFS Client or a DFS Server, see *Section 5.3.4, Information for DFS Client Configuration* and *Section 5.3.3, Information for DFS File Server Configuration*, respectively, after filling out this part of the worksheet.

Figure 5-2: Server Section of the DFS Configuration Worksheet

DFS Configuration Worksheet
Cell name: _____
DFS Server (FLDB and File)
Cell Administrator's Principal Name: _____
Password: _____
System Control Machine Name: _____
Device Name (LFS): _____
Fileset Mount Point: _____
Aggregate ID: _____

Table 5-2: DFS Configuration Worksheet for FLDB Servers

Cell Administrator's Principal Name	The principal name for the DCE cell administrator. This is the same default principal name used in DCE installation and configuration, **cell_admin**.
Password	The password for cell_admin. This is the same password that is specified in the DCE cell configuration.
System Control Machine Name	The name of the machine that distributes common configuration files to other server machines in the cell or administrative domain. The default is the name of the FLDB Server or another machine, depending on how you chose to set up your DFS environment.
Device Name	The block device name of the DFS root fileset. For example, **/dev/hdb1**.
Fileset Mount Point	The local mount point for the DFS root fileset. Enter 1 to 31 alphanumeric characters. For example, **/dfs.root**.
	Caution: Do not specify the local system root directory (/\) as the mount point for the DFS root fileset. If you do, serious data corruption might occur.

Aggregate ID	A positive integer to identify the root aggregate. This ID is unique for each DFS server and cannot be used by any other entries in the **dfstab** file.

5.3.3 Information for DFS File Server Configuration

A DFS File Server receives requests from DFS clients and serves the requested DFS filesets to them. *Figure 5-2* shows the File Server part of the DFS Configuration Worksheet. *Table 5-3* explains how to use this form when configuring File Servers.

Table 5-3: DFS Configuration Worksheet for File Servers

Cell Administrator's Principal Name	The principal name for the DCE cell administrator. This is the same default principal name used in DCE installation and configuration, **cell_admin**.
Password	The password for cell_admin. This is the same password that is specified in the DCE cell configuration.
System Control Machine Name	The name of the machine that distributes common configuration files to other server machines in the cell or administrative domain. The default is the name of the FLDB Server or another machine, depending on how you chose to set up your DFS environment.
File System Type	The file system type for the exported DFS fileset. This is the Episode (LFS) file system
Device Name	The block device name of the exported DFS fileset. For example, **/dev/hdb1**.
Fileset Mount Point	The local mount point for the exported **DFS** fileset.
Aggregate ID	A positive integer to identify the exported aggregate. This ID is unique and cannot be used by any other entries in the **dfstab** file.

5.3.4 Information for DFS Client Configuration

DFS client machines are those machines that request DFS filesets from DFS File Servers, import the filesets, and keep track of operations on those filesets. *Figure 5-3* shows the DFS Client part of the DFS Configuration Worksheet. *Table 5-4* describes what you need to know before you configure a DFS client.

Figure 5-3: Client Section of the DFS Configuration Worksheet


```
DFS Client

                              Cache Type:  [ ]  Memory
                                           [ ]  Local Disk

                              Cache Size:  _____

              Cache Directory (Local Disk):  _____
```

Table 5-4: DFS Configuration Information for Client.

Cache Type	The type of cache your system will use for DFS caching. The choices are disk or memory. If you choose a memory cache, the system will not perform disk caching even if there is disk space available. In addition, a memory cache is permanently allocated from system memory and is typically smaller than a disk cache.
Cache Size	The size of the DFS cache in kilobytes. For disk caching, the default is 10,000 kilobytes (10 MB). For memory caching, the default is 1000 kilobytes (1 MB).
Cache Directory	The name of the caching directory. The default is **/opt/dcelocal/ var/adm/dfs/cache**. Entegrity recommends that you dedicate a disk partition for DFS caching and use that directory name as the cache directory (for disk caching only).

5.4 Configuring Servers and Clients

Use the steps in this section to configure your machine depending on its role: System Control, FLDB Server, DFS File Server, or DFS Client.

You need superuser privileges to configure DFS on the system. You should have already configured into a DCE cell that has a DFS server and installed the DFS software on your machine.

Answer the prompts based on the DFS Configuration Worksheet.

5.4.1 Configuring the System Control Machine

If System Control is part of the FLDB Server, follow the directions in the next section.

If System Control is on a different machine than the FLDB server, configure the software, as follows:

1   At the command line, enter **/opt/dcelocal/bin/dfssetup.** The DFS Setup Main Menu is displayed as follows:

```
 *** DFS Setup Main Menu ***
        DCE/DFS for Linux 2.3

1)  Configure   Configure DFS services on this system
2)  Show        Show DFS configuration and active daemons
3)  Stop        Terminate all active DFS daemons
4)  Start       Start all DFS daemons
5)  Clobber     Terminate all active DFS daemons
                  and remove all permanent local DFS databases
6)  Version     Show DFS Version number
X)  Exit

Please enter your selection: 1 <Return>
```

2   Choose option 1, Configure. The screen displays the DFS Configuration Choice Menu as follows:

```
    *** DFS Configuration Choice Menu  ***

1)  Configure this system as a DFS Client
2)  Configure a new cell: DFS Primary FLDB Server
3)  Configure this system as a DFS File Server
4)  Configure this system as a DFS System Control Machine
R)  Return to previous menu


    Please enter your selection (or '?' for help):
```

3   Choose option 4, Configure this system as a DFS System Control Machine.

The installation script displays a message indicating that it is configuring.

4   When the installation script prompts you, enter the Cell Administrator's principal name and password.

The installation script displays the following initialization messages:

    Modifying the registry database for DFS server operation...
    Starting bosserver...
    Waiting for bosserver to sync up...
    Creating BOS admin lists...
    Starting upserver...

The installation script displays the DFS Configuration Choice menu.

5.4.2 Configuring the DFS Primary FLDB Server

If you chose to configure the FLDB server, use your worksheet section for the DFS Server (FLDB and File) to configure, as follows.

1   At the command line, enter **/opt/dcelocal/bin/dfssetup** to display the DFS Setup Main Menu.

2   Choose option 1, Configure. The screen displays the DFS Configuration Choice Menu.

3   Choose option 2, Configure a New Cell: DFS Primary FLDB Server.

The installation script displays a message indicating that it is configuring.

4   When the installation script prompts you, enter the Cell Administrator's principal name and password. If DCE has been configured, the current cell administrator's principal name is displayed as the default. Press **Return** to accept the default.

The installation script displays some configuration messages.

5   When prompted, enter the name of the system control machine (for example, foobar).

If a System Control Machine (SCM) has already been configured, the current SCM is the default. If no SCM is configured, the current system name is the default. Press **Return** to accept the default.

6   When prompted, enter the Episode device to be used for the DFS root (for example, /dev/hdb1).

7   You are asked if you want to format the partition as an Episode aggregate. Answer y or n. Press **Return** to accept the default.

The installation script displays numerous configuration messages.

8 If you have not already configured a DFS client, you are asked if you want to configure one now. Answer y or n. Press **Return** to accept the default.

If you answer **y**, the system prompts you for DFS client configuration information.

If you do not want to configure this system as a DFS client, enter **n** and press **Return**; the configuration is completed and the DFS Configuration Choice menu is displayed.

5.4.3 Configuring a DFS File Server

Answer the prompts based on your worksheet section for the DFS File Server.

> **NOTE**: If you are reconfiguring, use dfssetup option 5, Clobber, before you reconfigure.

1 At the command line, enter **/opt/dcelocal/bin/dfssetup** to display the DFS Setup Main Menu.

2 Choose option 1, Configure. The screen displays the DFS Configuration Choice Menu.

3 Choose option 3, Configure This System as a DFS File Server.

The installation script displays a message indicating that it is configuring the DFS File Server.

4 The following prompt appears:

Cell Administrator's principal name [cell_admin]: <Return> **1**

If DCE is configured, the current cell administrator's principal name is displayed as the default. Press **Return** to accept the default.

5 The script prompts:

Password:

Enter the cell administrator's password. This is identical to the password entered during DCE configuration.

6 The script displays initialization messages and then prompts:

Enter the name of the system control machine:

Enter the name of the system control machine and press **Return**. There is no default.

7 The script prompts:

Enter the Episode fileset to be exported:

Enter the name of the Episode fileset (for example, /dev/hda5).

8 The script prompts:

Enter the LFS fileset name: (lfs_set):

Enter an LFS fileset name or press **Return** to accept the default.

9   The script asks if you want to format the Episode fileset as an Episode aggregate. Answer y or n.

10 After displaying some status messages, the script prompts:

    `Enter the LFS aggregate name: (lfs_aggr):`

    Enter an LFS aggregate name or press **Return** to accept the default.

11 The script prompts:

    `Enter the LFS aggregate ID: (1):`

    Enter an LFS aggregate ID or press **Return** to accept the default.

12 After displaying some status messages, the script prompts:

    `Press <RETURN> to continue:`

    Press **Return**. The script displays status messages.

13 If you have not already configured a DFS client, you are asked if you want to configure one now.

    If you do not want to configure this system as a DFS client, enter **n** and press **Return**; the configuration is completed and the DFS Configuration Choice menu is displayed.

14 If you answer **y**, the script prompts.

    `Enter cache type: <Return>`

    Enter the type of cache your system will use for DFS caching:
    1 for memory caching or **2** for local disk caching. Press **Return**.

NOTE: The memory value you use for the DFS cache is not available to your operating system and applications.

If you chose Memory, 1:

   At the prompt:

   `Enter RAM cache size (KB) [1000]: <Return>`

   Press **Return** to accept the default, or enter a new value and press **Return.** Configuration begins.

If you chose Local Disk, 2:

   After the prompts:

   `Enter disk cache size (KB) [10000]: <Return>`
   `Enter disk cache directory`
   `[/opt/dcelocal/var/adm/dfs/cache]: <Return>`

   A. Enter the cache size.

   The default is [10000] kilobytes (10MB). Press **Return** to accept the default, or enter a new value and press **Return**.

B. Enter the name of the cache directory. The default is **/opt/dcelocal/ var/adm/dfs/cache**. Press **Return** to accept the default. To change the default value, enter a new value and press **Return**. Entegrity recommends that you dedicate a disk partition for DFS caching and use that directory name as the cache directory (for disk caching only).

When the DFS file server configuration is complete, the DFS Configuration Choice menu is displayed.

5.4.4 Configuring a DFS Client

Answer the prompts based on your worksheet section for the DFS Client.

1 At the command line enter **/opt/dcelocal/bin/dfssetup.** The DFS Setup Main Menu is displayed as follows:

```
1)  Configure   Configure DFS services on this system
2)  Show        Show DFS configuration and active daemons
3)  Stop        Terminate all active DFS daemons
4)  Start       Start all DFS daemons
5)  Clobber     Terminate all active DFS daemons and remove all permanent
                local DFS databases
6)  Version     Show DCE DFS Version number
X)  Exit

Please enter your selection: 1 <Return>
```

2 Choose option 1, Configure.

The Configuration Choice Menu is displayed as follows:

```
1) Configure this system as a DFS Client
2) Configure a new cell: DFS Primary FLDB Server
3) Configure this system as a DFS File Server
4) Configure this system as a DFS System Control Machine
R) Return to previous menu

Please enter your selection (or ? for help): 1 <Return>
```

3 From the Configuration menu, choose option 1, Configure this system as a DFS Client.

After starting to configure, the following choices are displayed:

```
1) Memory
```

```
2) Local Disk
```

```
Enter cache type: <Return>
```

4 Enter the type of cache your system will use for DFS caching: **1** for memory caching or **2** for local disk caching. Press **Return**.

NOTE: The memory value you use for the DFS cache is not available to your operating system and applications.

If you chose Memory, 1:

At the prompt:

```
Enter RAM cache size (KB) [1000]: <Return>
```

Press Return to accept the default, or enter a new value and press Return**.**

Configuration begins.

If you chose Local Disk, 2:

After the prompts:

```
Enter disk cache size (KB) [10000]: <Return>
Enter disk cache directory
[/opt/dcelocal/var/adm/dfs/cache]: <Return>
```

A. Enter the cache size.

The default is [10000] kilobytes (10MB). Press **Return** to accept the default, or enter a new value and press Return.

B. Enter the name of the cache directory. The default is **/opt/dcelocal/var/adm/dfs/cache**. Press **Return** to accept the default. To change the default value, enter a new value and press **Return**. Entegrity recommends that you dedicate a disk partition for DFS caching and use that directory name as the cache directory (for disk caching only).

When the DFS client configuration is complete,the DFS Configuration Choice menu is displayed.

5.4.5 Removing DFS

From the DFS Setup Main Menu, use option 5, Clobber, and then reboot.

5.5 Modifying the Configuration for Startup

Most DFS configurations use default settings when starting DFS processes on various machines. Thus, most users can skip the information in this section and proceed to the configuration instructions

DFS for Linux provides a configuration file called **/opt/dcelocal/etc/setup_state**. This file lets advanced users specify non-default options for commands (**dfsd**, **dfsbind**, and **fxd**) that **dfssetup** executes to start DFS processes on the local server or client machine.

The rpm process that installs the DCE software packages checks whether the **setup_state** file is present, and installs it if it is not present. The unmodified **setup_state** file includes the following default settings:

```
DFSD_OPTS=""
DFSBIND_OPTS=""
DFSFXD_OPTS="-mainprocs 7"
```

Use any ASCII editor to modify the file. The following example shows a modified **setup_state** file.

```
DFSD_OPTS="-mainprocs 2 -tokenprocs 2 -files 300"

DFSBIND_OPTS="-expressprocs 1 -regularprocs 1 -junctionlife 86400
-prefixlife 86400 -notfoundlife 3600"
```

CHAPTER 6

Modifying Cell Configuration

6

6.1 Overview of Cell Re-Configuration

This chapter describes how to modify the configuration of a DCE cell, and contains the following sections:

From the DCE Setup Main Menu, go to the Configuration Choice Menu, and choose option **6 (Modify DCE Cell Configuration)**. The choices are outlined in *Table 6-1*.

```
***  Modify Configuration Menu  ***


        1) Add Replica CDS Server
        2) Add Replica Security Server
        3) Change from DTS Local Server to DTS Clerk
        4) Change from DTS Local Server to DTS Global Server
        5) Add Null Time Provider
        6) Add NTP Time Provider
        7) Enable Auditing
        8) Add Password Management Server
        R) Return to previous menu


Please enter your selection (or '?' for help):
```

NOTE: The operations in the following table require superuser (root) privileges.

Table 6-1: Modify Configuration Menu

Menu Option	Description
1) Add Replica CDS Server / Remove Replica CDS Server	Creates or removes a replica of the master CDS server on the current machine. If your machine already has a replica of the master CDS server, the menu option shows "Remove Replica CDS Server."
2) Add Replica Security Server / Remove Replica Security Server	Creates or removes a replica of the master security server on the current machine. If the machine already has a replica of the master security server, the menu option shows "Remove Replica Security Server."
3) Change from DTS Local Server to DTS Clerk /Add DTS Local Server/	Adds a DTS local server to the current machine. If your machine is already configured as a DTS Local Server, this menu option is Change from DTS Local Server to DTS Clerk. If so, you can choose that option to configure the current machine as a DTS Clerk. DTS Server is installed on the same host as the Security Server and This can be changed and other local servers can be added.
4) Add DTS Global Server / Change from DTS Global Server to DTS Clerk	Adds a DTS global server to the current machine. If your machine is already configured as a DTS global Server, this menu option is Change from DTS Global Server to DTS Clerk. If so, you can choose that option to configure the current machine as a DTS Clerk.
5) Add Null Time Provider/Remove Null Time Provider	Sets the time inaccuracy value but prevents DTS from setting the time. Choose this option if you do not want DTS to set the system time.
6) Add NTP Time Provider/ Remove NTP Time Provider	Directs the current machine to get the time from an NTP server.
7) Enable Auditing/ Disable Auditing	Enables or disables DCE security auditing on the system.
8) Add Password Management Server / Add Password Management Server	Adds or removes a Password Management Server.
R) Return to previous menu	Returns you to the DCE Setup Main Menu.

6.2 Adding a Replica CDS Server

You can create a replica of the master CDS server on your machine, if your machine has already been configured as a client, or has not yet been configured for DCE.

This example is for a system not configured for DCE. If already a client, steps 3-8 are not needed.

1   Get to the Modify Configuration Menu from the DCE Setup Main Menu, choosing **option 1 Configure**, then **option 6 Modify**.

2   Choose **option 1 (Add Replica CDS Server)**. At the prompt:

    Would you like to search the LAN for known cells? (y/n) [y] :

3   -If you know the name of your DCE cell, answer **no**.

    -To view a list of available DCE cells, answer **yes** to view a list of available DCE cells.

    While it prepares the list, another prompt is displayed:

    Please enter your DCE hostname [myhost]:

4   Take the default or enter your DCE hostname.

    At the prompt:

    Please enter the name of your DCE cell:

5   Enter the name of the cell as listed in step 3, or from your own sources.

    At the prompt:

    Is this time correct? (y/n):

6   Be sure that the correct time is displayed before you continue with the configuration. If the time is incorrect, specify **n**, and the procedure exits to the operating system to allow you to reset the system time.

    After you correct or verify the time, specify **y**,

    At the prompt(s):

    Do you want this system to be a DTS Server (y/n/?) [y]:

    Do you need the Distributed Time S Service (y/n/?) [y]:

7   Accept the defaults.

    After the prompts:

    Enter Principal Name:

    Password:

8   Enter the Principal Name and Password

    The procedure begins to configure the system as a client.

    If you get the prompt:

    Do you wish to delete this principal now (y/n/?) [y]:

9   Answer **y** to delete the principal.

At the prompt:

```
Do you wish to delete these objects? (y/n/?) [y]:
```

10 Answer **y** to delete the objects.

If you get the prompt:

```
Do you wish to delete these principal now (y/n/?) [y]:
```

11 Answer **y** to delete the principals.

At the prompt:

```
What is the name for this clearinghouse? (Type '?' for help) [myhost_ch]:
```

12 Accept the default or specify a name for this clearinghouse that is unique in this cell, using OFS conventions.

The root directory from the CDS master server is replicated.

At the prompt:

```
Do you wish to replicate more directories? (y/n/?):
```

13 You can replicate more directories, if you want, by answering **y**.

At the prompt:.

```
Enter the name of a CDS directory to be replicated (or '?' for help):
```

14 Enter the name of a CDS directory existing in the master CDS namespace that you want to replicate on this system. Type the directory name without the **/.:/** prefix (it is added automatically). When you are done, press only the **<Return >** key.

6.2.1 Removing a Replica CDS Server

1 From the DCESetup Main Menu, choose **option 1 Configure**.

When asked:

```
Do you want to proceed with this configuration? (y/n/?) [y]:
```

2 Press Return.

At the Configuration Choice Menu:

3 Choose **option 6 Modify DCE cell configuration**.

If your system is configured as a Replica CDS Server, the first option on the Modify Configuration Menu will show as "Remove Replica CDS Server" instead of as "Add Replica CDS Server".

```
             ***  Modify Configuration Menu  ***

      1) Remove Replica CDS Server
      2) Add Replica Security Server
      ...
```
At the prompts:

```
Enter Principal Name:

Password:
```

4   Enter the Principal Name and Password.

At the prompt:

```
Are you sure you want to continue (y/n) [y]:
```

5   Press Return.

You will not affect the rest of your system's DCE configuration.

The Configuration Choice Menu is displayed after the Security Replica is removed.

6.3 Adding a Replica Security Server

1   To add a replica security server to your system, choose option 2 (Add Replica Security Server) from the Modify Configuration Menu.

```
Would you like to search the LAN for known cells (y/n) [y]:
```

At the prompt:

```
Please enter your DCE hostname [myhost]:
```

2   Take the default or enter your DCE hostname.

At the prompt:

```
Please enter the name of your DCE cell (or '?' for help) [first listed]:
```

3   Enter the name of the cell as listed, or from your own sources.

At the prompts:

```
The local system time is: Wed Jul 12 11:38:14 1998

Is this time correct?  (y/n): y
```

4   Make sure you check that the correct time is displayed before you continue with the configuration. If the time is incorrect, specify **n**, and the procedure exits to the operating system to allow you to reset the system time.

After you correct or verify the time, specify **y**, and the procedure continues with the following messages (if you have DECnet/OSI installed and configured). After the prompts:

```
Do you need the Distributed Time Service? (y/n/?) [y]:
```

5   Answer the prompts about using this system as a DTS server. Defaults should be adequate.

At the prompts:

```
Enter Principal Name:

Password:
```

6   Enter the Principal Name and Password.

Obtain the password from your cell administrator.

At the prompt:

```
Do you wish to delete this principal now? (y/n/?) [y]:
```

7 Press Return to delete the principal.

At the prompt:

```
Do you wish to delete these objects? (y/n/?) [y]:
```

8 Press Return.

At the prompt:

```
Enter the security replica name (without subsys/dce/sec) [this host]:
```

9 Accept the default or name the security replica.

A screen describes a 'keyseed' and prompts you to enter a keyseed.

```
*************************************************************
*    Starting the security server requires that you supply    *
*    a 'keyseed.'  When asked for a 'keyseed,' type some      *
*    random, alphanumeric keystrokes, followed by RETURN.     *
*    (You won't be required to remember what you type.)       *
*************************************************************


Enter keyseed for initial database master key:
```

10 Enter random numbers and letters, as the keyseed.

11 The Configuration Choice Main Menu is displayed when the Replica Security Server is configured.

6.3.1 Removing a Replica Security Server

1 From the DCESetup Main Menu, choose **option 1 Configure**.

When asked:

`Do you want to proceed with this configuration? (y/n/?) [y]:`

2 Press Return.

At the Configuration Choice Menu:

3 Choose **option 6 Modify DCE cell configuration**.

If your system is configured as a Replica Security Server, option 2 in the
Modify Configuration Menu will show as `Remove Replica Security Server`
instead of as `Add Replica Security Server`.

```
***  Modify Configuration Menu  ***

   1) Add Replica CDS Server
   2) Remove Replica Security Server
   3) Add DTS Local Server
   .) ...
```

4 Choose **option 2 Remove Replica Security Server**. Its removal does not
affect the rest of your system's DCE configuration.

At the prompts:

`Enter Principal Name:`

`Password:`

5 Enter the Principal Name and Password.

The Configuration Choice Menu is displayed after the Security Replica is
removed.

6.4 Adding a DTS Local Server

If you want to add a DTS server to your machine, you can do so on a system that has already been configured as a client, or on a system that has not yet been configured for DCE. The following example assumes no prior configuration. If already a client, steps 4-9 are not needed.

1 From the DCESetup Main Menu, choose **option 1 Configure**.

At the Configuration Choice Menu:

2 Choose **option 6 Modify DCE cell configuration**.

3 from the Modify Configuration Menu, choose **option 3 (Add DTS Local Server)**. At the prompt:

At the prompt:

```
Would you like to search the LAN for known cells? (y/n) [y]
```

4 Press Return.

At the prompt:

```
Please enter your DCE hostname [myhost]:
```

5 Press Return.

The procedure displays an alphabetical list of the cells within broadcast range. At the prompt:

```
Please enter the name of your DCE cell (or '?' for help) [first_cell]:
```

6 Supply the name of the DCE cell from the list. Type the cell name without the /.../ prefix; it is added automatically.

After the prompts:

```
The local system time is: Thu Jul 13 10:32:25 1998

Is this correct?  (y/n):
```

7 Check the time on your server and the your host, and respond to this prompt.

8 At the prompts, enter your principal name and password

At the prompt:

```
Do you wish to delete this principal now? (y/n/?) [y]:
```

9 Press Return.

dcesetup configures your machine as a security client and a CDS client.

At the prompt:

```
Do you wish to delete these objects? (y/n/?) [y]:
```

10 Press Return.

At the prompt:

```
Press <RETURN> to continue:
```

11 Press Return.

When configured the script returns to the Configuration Choice Menu.

6.4.1 Change from DTS Local Server to DTS clerk

After your system is configured as a DTS Local Server, option 3 shows as:
"Change from DTS Local Server to DTS clerk."

1 From the Configuration Choice Menu, Choose **option 6**.

```
       ***  Modify Configuration Menu  ***

       1) Add Replica CDS Server
       2) Add Replica Security Server
       3) Change from DTS Local Server to DTS clerk
       4) Add DTS Global Server
       ...
```

2 Choose **option 3 Change from DTS Local Server to DTS clerk**. This
changes the configuration from server to back to clerk, but does not affect
the rest of your system's DCE configuration.

6.5 Adding a DTS Global Server

1 From the DCESetup Main Menu, choose **option 1 Configure**.

When asked:

Do you want to proceed with this configuration? (y/n/?) [y]:

2 Press Return.

At the Configuration Choice Menu:

3 Choose **option 6 Modify DCE cell configuration**.

4 Choose **option 4 Add DTS Global Server**.

At the prompt:

Would you like to search the LAN for known cells? (y/n) [y]

5 Press Return.

At the prompt:

Please enter your DCE hostname [myhost]:

6 Press Return.

After you enter your DCE hostname, the procedure displays an
alphabetical list of cells it has found within broadcast range of your
system. At the prompt:

Please enter the name of your DCE cell (or '?' for help) []:

7 Choose the name of the DCE cell that you want to join. If you do not
know the name of the cell, consult your network administrator. Do not add
the **/.../** prefix to the cell name; the procedure automatically adds it.

If you enter a cell name that is not on the list of cell names, the procedure assumes you are performing a WAN configuration, and asks you to enter the hostname of the master CDS server for your cell.

At the prompt:

```
The local system time is: Thu Jul 13 10:36:36 1998

Is this time correct?  (y/n):
```

8   Make sure you check that the correct time is displayed before you continue with the configuration. If the time is incorrect, specify **n**, and the procedure exits to the operating system to allow you to reset the system time.

After you correct or verify the time, specify **y**.

At the prompts:

```
Enter Principal Name: cell_admin

    Password:
```

9   Enter the Principal Name and Password. (Obtain from your cell administrator)

At the prompt:

```
Do you wish to delete this principal now? (y/n/?) [y]:
```

10   Press Return.

dcesetup configures your machine as a security client and a CDS client.

At the prompt:

```
Do you wish to delete these objects? (y/n/?) [y]:
```

11   Press Return.

The DCE components that you have configured are added to your system startup procedure so the daemons restart automatically whenever the system is rebooted. When the procedure is completed, the DCE Configuration Choice Menu is redisplayed.

6.5.1 To change from DTS Global Server to DTS Clerk

If your system is configured as a DTS Global Server, option 4 becomes "`Change from DTS Global Server to DTS clerk.`"

1   From the Configuration Choice Menu, choose **option 6 Modify DCE cell configuration**.

```
***  Modify Configuration Menu  ***


1) Add Replica CDS Server
2) Add Replica Security Server
3) Add DTS Local Server
4) Change from DTS Global Server to DTS clerk
5) Add Null Time Provider
```

...

2 Choose **option 4 Change from DTS Global Server to DTS clerk**.

When the procedure is completed, the Configuration Choice Menu redisplays.

6.6 Adding a Null Time Provider

The null time provider allows DTS to set the inaccuracy without setting the time or modifying the host system time. You can configure Null Time Provider on a configured server OR CLIENT, not on an unconfigured system.To add a null time provider to your system:

1 From the DCESetup Main Menu, choose **option 1 Configure**.

When asked:

```
Do you want to proceed with this configuration? (y/n/?) [y]:
```

2 Press Return.

At the Configuration Choice Menu:

3 Choose **option 6 Modify DCE cell configuration**.

4 There, choose **option 5 Add Null Time Provider**.

The configuration adds and starts the null time provider, displaying the following messages:

```
Starting Null Time Provider (dts_null_provider)...

Press  <RETURN>  to continue:
```

5 Press **Return**. When the procedure is completed, the Configuration Choice Menu redisplays.

6.6.1 Removing a Null Time Provider

1 From the Modify Configuration Menu, choose **option 5,** now labeled **Remove Null Time Provider**

The Configuration Choice Menu appears at completion.

6.7 Adding an NTP Time Provider

If your site uses Network Time Protocol (NTP) to set system time, you can use those time signals to synchronize DTS. One DTS server uses the NTP time provider software to synchronize with NTP. That DTS server synchronizes with other DTS servers using DTS time signals. NTP cannot be configured on a client. Refer to the *OSF DCE Administration Guide — Core Components* volume for further information about getting time from NTP time sources.

1   From the DCESetup Main Menu, choose **option 1 Configure**.

When asked:

```
Do you want to proceed with this configuration? (y/n/?) [y]:
```

2   Press Return.

At the Configuration Choice Menu:

3   Choose **option 6 Modify DCE cell configuration**.

4   There, choose **option 6 Add NTP Time Provider**.

```
Enter the hostname where the NTP server is running:
```

5   Enter your system's hostname using the fully qualified machine name.

At:

```
Press  <RETURN>  to continue:
```

6   Press **Return**. The Configuration Choice Menu appears at completion.

6.7.1 Removing an NTP Time Provider

1   From the Modify Configuration Menu, choose **option 6,** now labeled **Remove NTP Time Provider**

At:

```
Press  <RETURN>  to continue:
```

2   Press **Return**. The Configuration Choice Menu appears at completion.

6.8 Enabling Auditing

DCE auditing facilities detect and record critical events in distributed applications. To enable auditing on your system:

1   From the DCESetup Main Menu, choose **option 1 Configure**.

When asked:

```
Do you want to proceed with this configuration? (y/n/?) [y]:
```

2   Press Return.

At the Configuration Choice Menu:

3   Choose **option 6 Modify DCE cell configuration**.

4   There, choose **option 7 Enable Auditing**.

The procedure begins configuring the Audit daemon and prompts you to log in to the cell.

5   At prompts, enter the Principal Name and Password

After you log in, the procedure creates default filters and configures the Audit daemon.

At:

```
Press  <RETURN>  to continue:
```

6   Press **Return**. The Configuration Choice Menu appears at completion.

6.8.1 Disabling Auditing

If auditing was previously enabled on your system, option 7 displays as "Disable Auditing."

At the Configuration Choice Menu:

1   Choose **option 6 Modify DCE cell configuration**.

2   There, choose **option 7**, now labeled **Disable Auditing**.

At:

```
Press  <RETURN>  to continue:
```

3   Press **Return**. The Configuration Choice Menu appears at completion.

6.9 Adding Password Management Server

Password Management Server is a tool for managing passwords

1   From the DCESetup Main Menu, choose **option 1 Configure**. When asked:

```
Do you want to proceed with this configuration? (y/n/?) [y]:
```

2   Press Return.

At the Configuration Choice Menu:

3   Choose **option 6 Modify DCE cell configuration**.

4   There, choose **option 8 Add Password Management Server**.

At:

At the prompts:

```
Enter Principal Name: cell_admin

    Password:
```

5　Enter the Principal Name and Password. (Obtain from your cell administrator)

At the prompt:

```
Do you wish to delete this principal now? (y/n/?) [y]:
```

6　Press Return.

At the prompt:

```
Do you wish to delete these objects? (y/n/?) [y]:
```

7　Press Return.

At

```
Press  <RETURN>  to continue:
```

8　Press **Return**. The Configuration Choice Menu appears at completion.

6.9.1　Removing a Password Management Server

1　From the Modify Configuration Menu, choose **option 8,** now labeled **Remove Password Management Server**

At the prompts:

```
Enter Principal Name: cell_admin
Password:
```

2　Enter the Principal Name and Password. (Obtain from your cell administrator)

At:

```
Press  <RETURN>  to continue:
```

3　Press **Return**. The Configuration Choice Menu appears at completion.

APPENDIX A

DFS Configuration Worksheet

A

A.1 Blank Worksheet

This appendix contains a blank DFS Configuration Worksheet, *Figure A-1*, for you to copy and use when you prepare to configure the DCE DFS service.

Section 5.1, Before You Configure DFS explains, section by section, all the information you need to complete the worksheet on the following page.

Figure A-1: DFS Configuration Worksheet

DFS Configuration Worksheet

Cell name: _____

DFS Server (FLDB and File)

Cell Administrator's Principal Name: _____

Password: _____

System Control Machine Name: _____

Device Name (LFS): _____

Fileset Mount Point: _____

Aggregate ID: _____

System Control Machine

Cell Administrator's Principal Name: _____

Password: _____

DFS Client

Cache Type: ☐ Memory

☐ Local Disk

Cache Size: _____

Cache Directory (Local Disk): _____

APPENDIX B

DFS Commands

B
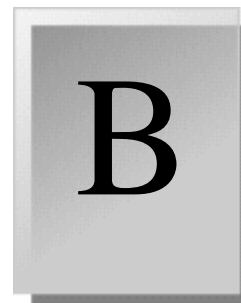
This appendix describes the DFS setup configuration commands and what to do in case an error occurs during the DFS configuration process.

B.1 DFS Setup Configuration Commands

Table 2-1 describes the DCE and DFS configuration setup commands. This information is available by running **/usr/sbin/dcesetup** or **/usr/sbin/dfssetup**

Table 2-1: DCE and DFS Setup Configuration Commands

Command	Description
config	Displays the DCE or DFS Configuration Choice Menu.
show	Displays the current DCE or DFS configuration in read-only mode. You do not need special privileges to execute this command.
stop	Terminates all active DCE or DFS daemons, except for fxd and dfsd. To terminate those daemons, reboot the system.
start	Starts all DCE or DFS daemons based on the current DFS configuration. You must have superuser privileges to use this command.
restart (DCE only, not DFS)	Terminates all active DCE daemons (except for fxd and dfsd and restarts the daemons based on the current DCE configuration. You must have superuser privileges to use this command.
clobber	Terminates all active DFS daemons (except for fxd and dfsd and deletes all permanent local databases associated with DCE services on this system. You must have superuser privileges to use this command.
	After you execute this command, you must reconfigure the DCE or DFS Services on this system because **clobber** returns the system to the state it was in during the installation before the initial DCE or DFS configuration was performed. To restart the daemons after executing the **clobber** command, reboot the system, then use **dfssetup config**.
Version	Displays the DFS version number.
exit	Allows you to exit from the DCE or DFS Setup Main Menu.

APPENDIX C

Linux Quick Reference

C
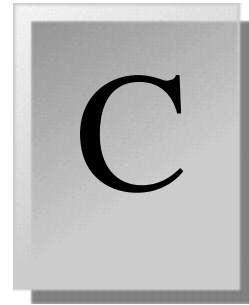
For those new to the Linux operating system, this appendix lists some Linux Red Hat commands and concepts you might find useful when installing the product. For complete details on any of the concepts or commands listed here, see the Red Hat or GNOME documentation.

C.1 The GNOME Desktop Environment

To start the GNOME desktop environment, at a command line, type **startx**.

C.1.1 Accessing the GNOME Main Menu

In the GNOME desktop environment, access the Main Menu by clicking the the icon that looks like a footprint.

C.1.2 Setting Time

To set the time from the GNOME desktop environment, follow these steps:

1   From the Main Menu, select **Programs > System >Time Tool**.

2   Set the time.

3   Click System Clock.

4   Exit the GNOME environment.

5   Reboot.

C.1.3 Other GNOME Tips

See *Logging Out on page 66* and *Search Tools on page 66* for more GNOME tips.

C.2 Packages and Files

A package can contain subfiles.

A package can be referred to by its longer package filename or the shorter package name.

For example, the command **rpm -i** uses *package filename*:

```
rpm -i dcerts-1.0-27.i386.rpm
```

The command **rpm -e**, however, uses the *package name*:

```
rpm -e dcerts
```

C.3 Logging Out

If the machine will not respond, sometimes you may still be able to log out.

To log out from the GNOME Main Menu:

1 Select **logout**, and click **Yes**.

   You return to the command line.

2 From the command line, enter the following commands:

   sync <Return>

   logout <Return>

C.4 Search Tools

You may find the following search tools useful when trying to find packages or other files.

■ In the GNOME Desktop Environment, select **Main Menu > Programs > Utilities > Search**.

■ At a command line, enter **locate**.

APPENDIX D

GNU GPL Extras

D

This appendix describes extra components that can increase the functionality of your DCE/DFS environment, and contains the following sections:

All extra components described here are offered under the GNU Public License. Extras include the modules and the source code for them. Entegrity did not develop these modules but may have modified them to work correctly with the Entegrity DCE/DFS product. To view the GNU General Public License (GNU GPL, GPL or LGPL),
see http://www.gnu.org/licenses/gpl-howto.html) http://www.gnu.org/licenses/gpl-howto.html

Use these extra components at your own risk. Entegrity does not promise support for them. However, if you do find a bug, we will try to fix it. If you enhance the components on your own, and you notify us, we can include your enhancements.

As we add and modify extras, we will list them in this appendix, with descriptions and locations.

D.1 PAM

PAM (Pluggable Authentication Module) provides a way to develop programs, independent of authentication scheme. The local system administrator decides which authentication module to attach to a program at runtime, depending on the local system setup. For more information, see

http://www.kernel.org/pub/linux/libs/pam/FAQ

and http://www.kernel.org/pub/linux/libs/pam/) http://www.kernel.org/pub/linux/libs/pam/FAQ

and http://kernel.org/pub/linux/libs/pam/

The Entegrity code is installed in the **EXTRAS** tree on your CD. In that directory you will find general and configuration information in README, and build instructions in BUILDING. All the source code is located in the **src** directory. A Makefile is included, for building the code on your target platform.

You can download the PAM code from:

http://support.entegrity.com/private/dcelinux.asp

D.2 Name Service Switch

There is a Name Service Switch module available for Entegrity DCE on Linux. With nss_dce, you can specify dce as a source in the nsswitch.conf file and retrieve naming service information directly from the DCE registry. Paul Henson at California State Polytechnic University, Pomona developed the switch. For more detail and to see other DCE projects see http://www.csupomona.edu/~henson/www/projectshttp://www.csupomona.edu/~henson/www/projects.

APPENDIX E

CDS Preferencing

E

E.1 Controlling CDS Cache Operations

This appendix is copied and modified from the Entegrity *PC-DCE Administrator's Guide*.

E.1.1 CDS Cache Overview

The CDS cache is a collection of information about servers, clearinghouses, and other CDS resources that a CDS clerk establishes on the local system for its reference. When the CDS clerk receives a CDS server's response to a query, it stores the response in its cache. The next time the clerk needs this information, the clerk retrieves it from the cache rather than issuing a network request to a CDS server.

E.1.1.1 Cache Implementation

The CDS Cache is maintained in two areas: common (global) cache and per-user cache.

■ The common cache contains information available to everyone (for example cell name, directory entries, and clearinghouses). This file, called **cds_cache.000000000X** (X represents a number that increments), is located in **opt/dcelocal/var/adm/directory/cds.**

The common CDS cache information is protected by DCE ACLs.

■ The per-user cache contains user-specific information (softlinks, groups, etc.). This file, called *cds_server_name_***cache.00000000X** (X represents a number that increments), is located in **opt/dcelocal/var/adm/directory/cds/***machine name*.

Per-user information is protected against unauthorized access by DCE ACLs and, if the machine is using the NTFS file system, by NTFS file security.

In DCE, the CDS Clerk is implemented as a DLL whereas the CDS Advertiser is a separate process (**cdsadv**). The cache and advertiser interconnect using an Windows-specific interprocess communications protocol.

The cache is periodically dumped to disk in the set of files stored in *install_directory/***opt/dcelocal/var/adm/directory/cds/*.*.**

E.1.1.2 Lifetime of Cached Information

Information remains stored in the cache until either of the following occurs:

■ The lifetime (roughly 8-10 hours) of the cached entry expires.

■ The user establishes new credentials (probably through a new **dce_login**). This updates both the common and per-user cache files.

For example, if a user accesses a CDS server first thing in the morning to locate the services, subsequent lookups during the remainder of the day take advantage of the cache. The next morning, this whole process takes place again because the cached data has become stale or the user has logged into DCE again.

None of the CDS cache information stays fresh indefinitely.

E.1.1.3 CDS Cache Size

The CDS Cache Size is tunable. To set the CDS Cache Size, use the CDS_CACHE_SIZE system environment variable. If this variable does not already exist, you must create it.

See **/opt/dcelocal/etc/setup_state,** for examples of environment variables. You can add the environment variable **CDS_CACHE_SIZE=<size in bytes>** there.

The increased cache will be available the next time you start your computer.

E.1.1.4 How a Client Selects a Clearinghouse

When a client needs to read data from CDS, it contacts a clearinghouse. Because a cell can contain many clearinghouses, the client needs a mechanism to help it choose a clearinghouse based on clearinghouse performance and availability. For example, for performance reasons the client ideally uses a clearinghouse connected to the local LAN, but may need to connect to another clearinghouse when the local clearinghouse is down.

The client selects a clearinghouse from a list of clearinghouses stored in the client's CDS cache. The client keeps the list sorted in an order that keeps clearinghouses that are both local (on the same LAN) and available at the top of the list. The client attempts to contact clearinghouses in the order that they appear in the list.

E.1.1.5 How a Client Builds the Clearinghouse List

The CDS cache contains a section with entries for each clearinghouse that it knows about. It learns about clearinghouses in the following ways:

■ Configuration. A client's cache always contains the clearinghouse of the preferred CDS server, which is the CDS Server Host Name that you enter when running the configuration program.

■ Advertisements. Full clients learn about a new clearinghouse when the CDS server that maintains that clearinghouse issues broadcast advertisements. This works only for full clients, and only for new servers on the same LAN.

■ Root Directory. A client generally reads the CDS root directory when it initializes its cache, and thereafter when this cached information expires. This is how full clients learn about off-LAN clearinghouses, and how lightweight clients learn about all new clearinghouses.

E.1.1.6 How a Client Sorts the Clearinghouse List

Each clearinghouse entry in the cache is marked with two flags: *OK* and *OnLAN*. The OK flag indicates whether or not the clearinghouse was last known to be responding to requests (available), and the OnLAN flag indicates whether or not the clearinghouse is located on the local LAN.

The client sorts the list in the following order:

1 OK and OnLAN

2 OK and not OnLAN

3 Not OK

The client keeps the OK and OnLAN flags updated using the following methods:

■ The CDS advertiser (**cdsadv**) sets the OnLAN flag for a clearinghouse if it receives a broadcast from that clearinghouse. This makes sense because broadcasts do not go beyond the local LAN.

■ Also, at configuration time, the CDS clerk sets the OnLAN flag for the clearinghouse associated with the preferred CDS server. If a user is running the lightweight client (no **cdsadv** or **dced**), then this becomes the only server that is flagged as OnLAN.

Note that, at configuration time, the CDS clerk sets the OnLAN flag for the preferred CDS server, even if the preferred CDS server is outside of the LAN. **cdsadv** pings servers that are marked Not OK. If the preferred server (outside the LAN) goes down, **cdsadv** continues to ping it, allowing the server to be sorted to the top of the cache again when the server comes back up.

When a clearinghouse entry is added to the cache, the entry is initially flagged as OK. The CDS clerk flags the entry as Not OK if it tries to reach the clearinghouse but there is no response. The entry gets set to OK again in one of the following ways:

■ The CDS advertiser receives a broadcast from the clearinghouse. This only works for full clients, and only if the clearinghouse is located on the local LAN.

■ The CDS clerk has tried all of the clearinghouses flagged as OK, starts trying clearinghouses in the Not OK section of the list, and receives a response from the clearinghouse.

E.1.2 Using CDS Preferencing to Control Sorting of the Clearinghouse List

The CDS preferencing feature lets you assign integer ranks to clearinghouses. The ranks affect the sorting of the cached clearinghouse list.

E.1.2.1 How CDS Preferencing Works

You assign ranks to clearinghouses in a *preference file*, which DCE reads at startup. Ranks with lower values are preferred.

If the file does not contain an entry for a particular clearinghouse, DCE calculates a rank. The calculation is based on IP address:

- Clearinghouses with same IP address as local host: rank = 5000
- Clearinghouses on same IP subnet as local host: rank = 20000
- Clearinghouses on same IP network as local host: rank = 30000
- All other clearinghouses: rank = 40000

If the file *does* contain an entry for a particular clearinghouse, this is considered an *override*. Clearinghouses with override ranks are sorted a little differently from clearinghouses with calculated ranks, as described below.

Section E.1.1.6, How a Client Sorts the Clearinghouse List stated that the client sorts the cached clearinghouse list in the following order:

1 OK and OnLAN

2 OK and Not OnLAN

3 Not OK

Ranks affect this sorting as follows:

1 OK and OnLAN, as well as OK and Not OnLAN clearinghouses with override ranks. This section of the list is not sorted any further.

2 OK and Not OnLAN. This section of the list is sorted by rank.

3 Not OK. This section of the list is not sorted any further.

E.1.2.2 Creating the Preference File

The preference file is a text file named **cds_serv_pref** located in *install_directory***/opt/dcelocal/etc**. The file contains a series of one-line entries, where each entry consists of a clearinghouse name and the rank for that clearinghouse.

Specify the clearinghouse name (*name_ch*) using one of the following formats:

`/.../cellname/name_ch`

`/name_ch`

`name_ch`

`/.:/name_ch`

If the clearinghouse's cellname is not specified, the local cell is assumed.

The rank is a 16-bit unsigned integer (range 0x0000 [0] - 0xffff [65535]). A lower number indicates a stronger preference. A rank of 65535 specifies that the clearinghouse is never to be contacted.

Specify the rank in decimal, octal (with leading "0") or hex (with leading "0x").

Blank lines are ignored. You can include comments after the "#" character.

Example file:

```
# This is an example preference file
/.:/foo_ch                50  # most preferred clearinghouse
/.:/bar_ch               100
/.../mycellname/baz_ch    100
```

When you create or edit the preference file, you must:

1 Stop DCE.

2 Delete the CDS cache file (*install_directory***/opt/dcelocal/var/adm/ directory/cds/*.***).

3 Restart DCE.

E.1.2.3 Viewing Ranks

You can view the rank of a cached clearinghouse on a full client using the following commands:

```
dcecp -c cdscache show -clearinghouse /.:/name_ch
```

```
cdscp show cached clearinghouse /.:/name_ch
```

E.1.2.4 CDS Preferencing Example

Suppose a client's preference file is as follows:

```
/.:/a_ch                 100  # most preferred clearinghouse
/.:/b_ch                 200  # preferred local backup
/.:/c_ch                 500  # preferred off-LAN backup
```

Table 6-1 demonstrates cache sorting based on clearinghouse flags and ranks:

Table 5-1: Demonstration of Cache Sorting

Sort Order	Clearinghouse	Flags	Rank
1	a_ch	OK, OnLAN	100 (override)
2	c_ch	OK, Not OnLAN	500 (override)
3	d_ch	OK, OnLAN	20000
4	e_ch	OK, Not OnLAN	30000
5	f_ch	OK, Not OnLAN	40000
6	g_ch	OK, Not OnLAN	40000

Table 5-1: Demonstration of Cache Sorting

Sort Order	Clearinghouse	Flags	Rank
7	h_ch	Not OK, Not OnLAN	40000
8	i_ch	Not OK, Not OnLAN	40000
9	j_ch	Not OK, Not OnLAN	40000
10	b_ch	Not OK, OnLAN	200 (override)
11	l_ch	Not OK, Not OnLAN	40000

The first section of the sorted cache includes all OK and OnLAN clearinghouses, as well as OK and Not OnLAN clearinghouses with override ranks. In the example, this section contains three clearinghouses: a_ch, c_ch, and d_ch. Clearinghouse a_ch is the client's most preferred clearinghouse according to its override rank of 100. Clearinghouse c_ch is sorted next even though it is off-LAN because of its override rank of 500. The final entry in the first section is clearinghouse d_ch, which has an automatically assigned rank.

The second section of the sorted cache includes OK and Not OnLAN clearinghouses sorted by rank. In this example, all clearinghouses in this section have automatically assigned ranks. Notice that clearinghouse e_ch is sorted to the top of this section because it is on the client's subnet and therefore has a rank of 30000.

The third section of the sorted cache includes all Not OK clearinghouses and is unsorted. Notice that clearinghouse b_ch appears in this section despite its low rank. When b_ch comes back online and the client detects this, the client will move b_ch to the first section of the cache.

E.1.3 Refreshing Cached Application Server Data

If you are concerned your client is using stale CDS information, you can update the cache as follows:

■ Stop DCE services, delete the cache files, and restart DCE services. Global cache and per-user cache are stored in separate files (see *Section E.1.1.1, Cache Implementation*) so you can refresh them individually or delete both files at once.

This is a brute-force method that effectively resets the cache. However, once you reset the cache using this method, the new cache will initially contain only a single clearinghouse reference (the preferred CDS server, which is the CDS Server Host Name you entered for this client at configuration time). If this server is down or fails before the cache has been repopulated, the client will not be able to fail over to another clearinghouse. Repopulation of the cache occurs when the cache re-initializes (after 8 hours or when the user logs in again), or gradually as on-LAN servers issue broadcasts.

Programmatically reduce the expiration age to a small value using **rpc_ns_mgmt_set_exp_age()** and then restore the default value.

This can be useful in a dynamic environment like a development test lab where cache entries may become stale before they are refreshed. For example, if a server uses Object UUID's and is stopped and restarted while its clients are bound, that new instance of the server is not known to the local client cache. The client cache is stale and the client will not be able to find the server.

You can use **rpc_ns_mgmt_set_exp_age()** to refresh the cache every time your client application is started or after trapping the case where **rpc_mgmt_is_server_listening()** fails. In each case, you can use the call to immediately refresh your cache and then if necessary return to the default cache expiration (usually several hours).

For details on using this call, refer to the *OSF DCE Application Development Guide*.

You can use the CDS Preferencing feature to control which CDS clearinghouses that the client runtime queries.

APPENDIX F

Multicell Environments

F

This appendix is copied and modified from the Entegrity *PC-DCE Administrator's Guide*. That entire guide will be available in a later release.

You may want to create an environment in which DCE principals can interact across different cells. For example, an administrator may want to perform DCE administration for several cells from one system. Or, one company may want to grant access to an in-house database to a subset of people at a different company.

This chapter describes how to configure intercell communication in a multicell environment and contains the following sections:

F.1 Understanding Trust Relationships
F.2 Pros and Cons of Intercell Trust Relationships
F.3 Establishing Intercell Communications

F.1 Understanding Trust Relationships

Trust relationships between cells grant access to principals from one cell to objects in another cell and vice versa. To permit principals in one cell to have authenticated access to objects in another cell, you must establish a trust relationship between the two cells.

Two kinds of trust relationships allow principals in a foreign cell to engage in authenticated access to objects in a local cell. These relationships are:

■ *Direct trust relationships*

■ *Transitive trust relationships* (not supported by OSF DCE Version 1.2.1)

F.1.1 Direct Trust Relationships

A direct trust relationship involves only two cells. The two cells' authentication services share authentication keys and trust each other to authenticate principals from their respective cells. Each cell considers users from the other cell to be authenticated if the user is marked as authenticated by the other cell's authentication service.

Figure F-1 illustrates the concept of direct trust between two cells. Members of Cell 1 have access to services in Cell 2, on the basis of their membership in the trusted Cell 1, through the account *krbtgt/cell 1*. Likewise, members of

Cell 2 have access to services in Cell 1 through the account *krbtgt/cell 2*. The trust relationship also allows users in the foreign cell to log into accounts in the local cell and vice versa.

Figure F-1: Direct Trust Relationship
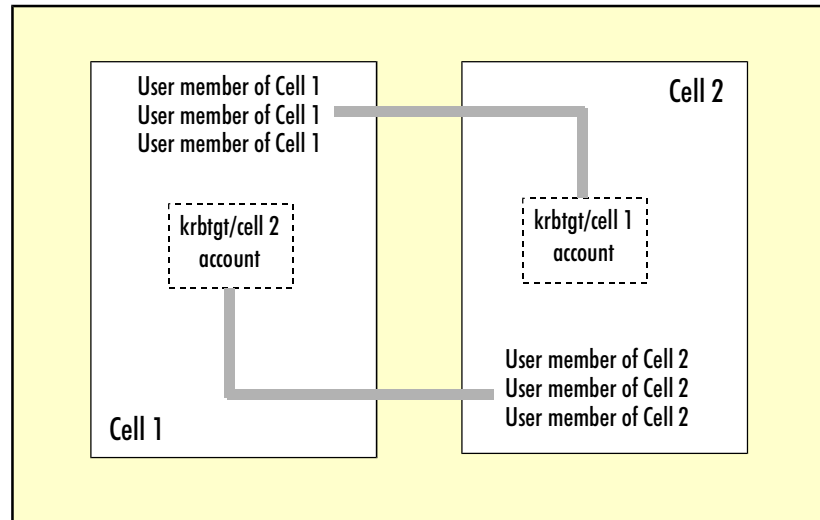
F.1.1.1 User Access to the Foreign Cell

From the user's perspective, access to objects and services in the other cell is transparent and automatic. Once users log into their own cell, they also have access to the foreign cell. No additional login to the cross-cell authentication (krbtgt) account is required.

F.1.1.2 Controlling Authorization for Objects in the Cell

Once trust is established, you can control individual foreign principals' access to specific objects by editing the ACL entries of local resources. DCE ACLs support three levels of trust for foreign principals:

- **foreign_cell** — Grants or denies access to all users from the foreign cell.

- **foreign_group** — Grants or denies access to foreign users based on group membership.

- **foreign_user** — Grants or denies access to a particular user from the foreign cell.

If you do not specifically grant a foreign cell access to a resource, foreign principals are granted the rights specified by the **any_other** entry (if it exists) in the ACL. You should check the **any_other** rights on any sensitive resources to ensure the resources are sufficiently protected.

F.2 Pros and Cons of Intercell Trust Relationships

Before configuring intercell trust, review the benefits and security implications described in this section.

F.2.1 Simplified Administration

Intercell trust relationships can simplify administration of users by allowing a trusted cell to manage its own security information. For example, Company A allows a cell from Company B to access Company A's services, and Company B manages the membership of the cell that has privileges to Company A's services.

Because the cell consists of employees of Company B, Company B is best able to manage cell membership and security (user id and password management, organizational and personnel changes).

F.2.2 Simplicity for the User

For end users, intercell trust provides transparent access between their own cell and the cell to which they have access via the trust relationship. For example, Cell B users can access services from Cell A on the basis of their membership in the trusted Cell B. They are not required to enter a login ID and password for Cell A.

F.2.3 Security Implications

In an intercell trust relationship, one organization is trusting another to manage security information. By administering DCE ACLs, Cell A is able to set access privileges for its resources based on foreign cell membership, foreign cell group membership, or for individual foreign principals (see *Section F.1.1.2, Controlling Authorization for Objects in the Cell,* on page 78).

However, Cell A is still relying on Cell B to properly authenticate the end user. Cell B clients present privileges to the Cell A server that were generated by the security server in Cell B. These privileges include the client's DCE identity and the groups to which the client belongs; no further challenges related to the principal's idenetity are issued by the Cell A server. Thus, setting up an intercell environment makes sense only if Cell A trusts Cell B to properly administer cell membership and security.

F.3 Establishing Intercell Communications

For intercell communication to be successful:

■　Both cells must use the same DNS server.

■　The master systems must be able to contact each other over the network (to test, ping each system from the other system).

Establishing intercell communications requires you to do the following in the order shown:

F.3.1 Establishing Intercell Lookup

To establish intercell lookup, add entries for each of the two cells to the DNS server:

1 Ensure that the names of the two cells between which you will establish
communication include the domain name that the DNS server will use.
The cell names should look similar to the following:

```
groucho.eng.entegrity.com
harpo.eng.entegrity.com
```

Here, `eng.entegrity.com` is the domain name.

2 In the local cell, enter `show cell as dns` from the **cdscp** prompt.

Any system in the cell will supply the correct output for **show cell as dns**;
you do not have to use the master system.

The following example shows the output of this command for the cell
`harpo.eng.entegrity.com`:

```
cdscp> show cell as dns

        SHOW

        CELL      /.../harpo.eng.entegrity.com

        AT        2000-06-25-12:40:33

        TXT =     1 002cb551-d2d8-b154-00104b9afb74 Master /.../ \
        harpo.eng.entegrity.com/MA1_ch 00282170-d2d8-b9afb74
```

3 Refer to the output of the **show cell as dns** command to create two new
entries — an MX record and a TXT record — for the local cell in the DNS
management program you are using.

NOTE: When you initially configure intercell lookup, include entries for
master servers only. After intercell communication is established and
running correctly, add DNS entries for replica servers.

- **MX Record** – Gives the entry a preference. Use the cell name, not the
  machine name, as the hostname of the master server (for example,
  `harpo.eng.entegrity.com`). Use a preference of 1 for master servers and a
  lower preference for replica servers.

  The following example shows a set of MX resource records for the cell,
  csq.tech.edu, in which two replicas of the root directory exist

```
;First Replica:
;Name            TTL       Class    Type    Preference   Exchange
csq.tech.edu.    604800    IN       MX      1            fox.csq.tech.edu.
```

```
;Name               TTL       Class     Type    Rdata
                    604800    IN        TXT     (1              ;version
                    fd3328c4-2a4b-11ca-af85-09002b1c89bb       ;ns uuid
                    Master                                     ;Replica1 type
                    /.../csq.tech.edu/cs1_ch                   ;ch name
                    fd3328c5-2a4b-11ca-af85-09002b1c89bb       ;ch uuid
                    fox.csq.tech.edu)                          ;host
;Second Replica:
                    604800    IN        MX      2
rox.csq.tech.edu.
                    604800    IN        TXT     (1              ;version
                    fd3328c4-2a4b-11ca-af85-09002b1c89bb       ;ns uuid
                    Read-only                                  ;Replica2 type
                    /.../cqs.tech.edu/cs2_ch                   ;ch name
                    fd3429c4-2a4b-11ca-af87-09002b1c89bb       ;ch uuid
                    rox.csq.tech.edu)
;host
```

- **TXT Record** – Enter the hostname (for example, `harpo`).

  Complete the text field. Use the `TXT =` output from the **`show cell as dns`** command, and add the system hostname at the end of the entry. For example, a text entry might read:

  ```
  1 002cb551-d2d8-b154-00104b9afb74 Master /.../harpo.eng.entegrity.com/
  harpo_ch 00282170-d2d8-b9afb74 harpo.eng.entegrity.com
  ```

  In this example, `harpo.eng.entegrity.com` is the system hostname that you add to the end of the entry.

  NOTE: Ensure that you enter the information exactly as it is displayed in the `TXT =` output of the **`show cell as dns`** command.

  ---

4 In the foreign cell, enter **`show cell as dns`** from the **cdscp** prompt. Repeat step 3 to create an MX record and a TXT record for the foreign cell.

F.3.2 Establishing Intercell Trust

Establishing a direct intercell trust relationship between a foreign and local cell indicates that you trust the foreign cell's authentication service to correctly authenticate users in its own cell, and that you consider all users from the foreign cell to be authenticated if they are so marked by the foreign cell's authentication service.

To establish intercell trust, use **rgy_edit** or **dcecp registry connect** to create an account for the foreign cell in the local cell.

NOTE: If you mistype the parameters for these commands, the account may be created as a local, rather than foreign, account and you will receive error messages when you try to establish the intercell connection.

NOTE: You must create the local and foreign groups and organizations before you run **rgy_edit** or **dcecp registry connect**.

Supply the following parameters with these **rgy_edit** or **dcecp registry connect**:

Foreign cell host name

Foreign account — The foreign account must have the permissions required to create principals and accounts (for example, **cell_admin**). The account accesses the foreign registry to create the account that represents the local cell in the foreign account's registry.

Foreign account's current password

Local group name — Group name to be associated with the account in the local cell (the registry requires all accounts to be associated with a group).

Foreign group name — Group name to be associated with the account in the foreign cell.

Local organization name — Organization name to be associated with the account in the local cell (the registry requires all accounts to be associated with an organization).

Foreign organization name — Organization to be associated with the account in the foreign cell.

Expiration date (optional) — Time and date that both the local and the foreign cell's accounts expire, and the peer-to-peer relationship is ended, prohibiting any further authenticated communications between principals in the two cells. To renew the account, change the date in this field. The default is **none**.

Your password

Example

The following example uses **rgy_edit** to create an account in the local cell for the foreign cell. In this example, the administrator associates the new account with the default group **none** and the default organization **none**. These associations can be changed later.

```
rgy_edit=> cell /.../harpo.eng.entegrity.com
Enter group name of the local account for the foreign cell: none
Enter group name of the foreign account for the local cell: none
Enter org name of the local account for the foreign cell: none
Enter org name of the foreign account for the local cell: none
Enter your password:-dce-
Enter account id to log into foreign cell with: cell_admin
Enter password for foreign account:-dce-
Enter expiration date [yy/mm/dd or "none"]: <none>
Principals and Accounts have been created.
```

The following example shows the same procedure using **dcecp**
registry_connect:

```
dcecp> registry connect /.../harpo.eng.entegrity.com -facct cell_admin \
-facctpw -dce- -group none -fgroup none -org none -forg none -mypwd -dce-
dcecp>
```

F.3.2.1 What Happens When You Create an Account for the Foreign Cell

Entering the **rgy_edit** or **registry connect** command does the following:

■ Creates two cross-cell authentication accounts and the accounts'
principals. One account is created in the local cell's registry to represent
the foreign cell, and another account is created in the foreign cell's registry
to represent the local cell.

New account principals are named according to the original cell name and
the prefix **krbtgt**; for example, **krbtgt/**<*foreign_cell_name*>.

■ Assigns a UUID that is shared by all principals in the foreign cell. Each
user in the foreign cell is now identified with the shared cell UUID as well
as its own user UUID. The ACL manager uses the cell UUID/user UUID
pair to determine access.

The new accounts have the default account attributes except for the following
differences:

■ **acctvalid** — set to no
■ **client** — set to no
■ **dupkey** — set to yes
■ **postdatedtkt** — set to yes
■ **proxiabletkt** — set to yes

These attributes apply to all foreign principals when they access objects in the
local cell. Similarly, the attributes of the account created in the foreign cell for
the local cell apply to all principals in the local cell when they access objects
in the foreign cell.

F.3.3 Verifying Account Creation

To view the new accounts, enter the **dcecp** command **principal catalog**. Each
cell now includes two **krbtgt** accounts: its own account (krbtgt/
harpo.eng.entegrity.com) and the new foreign cell's account (krbtgt/
groucho.eng.entegrity.com):

```
dcecp> principal catalog
/.../harpo.eng.entegrity.com/nobody
/.../harpo.eng.entegrity.com/root
/.../harpo.eng.entegrity.com/daemon
/.../harpo.eng.entegrity.com/sys
/.../harpo.eng.entegrity.com/bin
/.../harpo.eng.entegrity.com/uucp
/.../harpo.eng.entegrity.com/who
/.../harpo.eng.entegrity.com/mail
/.../harpo.eng.entegrity.com/tcb
/.../harpo.eng.entegrity.com/dce-ptgt
```

```
/.../harpo.eng.entegrity.com/dce-rgy
/.../harpo.eng.entegrity.com/cell_admin
/.../harpo.eng.entegrity.com/krbtgt/harpo.eng.entegrity.com
/.../harpo.eng.entegrity.com/hosts/harpo/self
/.../harpo.eng.entegrity.com/hosts/harpo/cds-server
/.../harpo.eng.entegrity.com/hosts/harpo/gda
/.../harpo.eng.entegrity.com/krbtgt/groucho.eng.entegrity.com
```

F.3.4 Modifying the Account Valid Flag

For accounts that represent foreign cells, the account valid flag is set to **no** by default.

After you establish intercell lookup and trust, do the following:

1 Log into the local cell as **cell_admin**.

2 Use **dcecp** to change the **acctvalid** flag of the new account that represents the foreign cell to yes.

3 Log into the foreign cell as **cell_admin**.

4 Use **dcecp** to change the **acctvalid** flag of the new account that represents the local cell to yes.

This establishes that the new accounts are valid. If one or both accounts are invalid, no intercell communications can take place.

For example, log into the cell, groucho, and modify the account valid flag for the **krbtgt/harpo** account as follows:

```
c:\dce_login cell_admin -dce-
Password must be changed!
c:\dcecp
dcecp> account modify krbtgt/harpo.eng.entegrity.com -acctvalid yes
```

To verify that the account valid flag has been changed to yes:

Enter the **dcecp account show** command. This command displays the attributes assigned to the new accounts.

```
dcecp> account show krbtgt/harpo.eng.entegrity.com
{acctvalid yes}
{client no}
{created /.../groucho.eng.entegrity.com/cell_admin\
2000-07-02-10:12:11.000-04:00I-----}
{description {}}
{dupkey yes}
{expdate none}
{forwardabletkt yes}
{goodsince 2000-07-02-10:11:53.000-04:00I-----}
{group none}
{home {}}
{lastchange /.../groucho.eng.entegrity.com/cell_admin\
2000-07-02-10:12:13.000-04:00I-----}
{organization none}
{postdatedtkt yes}
{proxiabletkt yes}
```

```
{pwdvalid yes}
{renewabletkt yes}
{server yes}
{shell {}}
{stdtgtauth yes}
```

F.3.5 Adding Entries for Replica Servers to DNS

After you have verified that intercell communication has been successfully established, use the information in *Section F.3.1, Establishing Intercell Lookup,* on page 80 to add entries for replica servers to DNS.

Index