Administration Guide—Introduction
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# IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Introduction

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About This Book

The IBM DCE Version 3.2 for AIX and Solaris: Administration Guide provides concepts and procedures that enable you to manage the IBM® for AIX® and Solaris version of the Distributed Computing Environment (DCE). Basic DCE terms are introduced throughout the guide. A glossary for all of the DCE documentation is provided in the IBM DCE Version 3.2 for AIX and Solaris: Introduction to DCE. The IBM DCE Version 3.2 for AIX and Solaris: Introduction to DCE helps you to gain a high-level understanding of the DCE technologies and describes the documentation set that supports DCE.

Audience

This guide is written for system and network administrators who have previously administered a UNIX® environment.

Applicability

This revision applies to the Distributed Computing Environment for AIX and Solaris, Version 3.2 offering and related updates. (See your software license for details.)

Purpose

The purpose of this guide is to help system and network administrators to plan, configure, and manage DCE. After reading the guide, you will understand what the system administrator needs to do to plan for DCE. Once you have built the DCE source code on your system, use this guide to assist you in installing executable files and configuring DCE.

Document Usage

The IBM DCE Version 3.2 for AIX and Solaris: Administration Guide consists of two books:

- The IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Introduction
  - “Part 1. Introduction to DCE System Administration” on page 1
  - “Part 2. Additional Configuration Information” on page 37
- The IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components
  - Part 1. The DCE Control Program
  - Part 2. DCE Administration Tasks
  - Part 3. DCE Host and Application Administration
  - Part 4. DCE Cell Directory Service
  - Part 5. DCE Distributed Time Service
  - Part 6. DCE Security Service

Related Documents

For additional information about the Distributed Computing Environment, refer to the following documents:

- IBM DCE Version 3.2 for AIX: Quick Beginnings
- IBM DCE Version 3.2 for Solaris: Quick Beginnings
Typographic and Keying Conventions

This guide uses the following typographic conventions:

**Bold**  **Bold** words or characters represent system elements that you must use literally, such as commands, options, and pathnames.

*Italic*  *Italic* words or characters represent variable values that you must supply. *Italic* type is also used to introduce a new DCE term.

**Constant width**
Examples and information that the system displays appear in **Constant width** typeface.

[]  Brackets enclose optional items in format and syntax descriptions.

{}  Braces enclose a list from which you must choose an item in format and syntax descriptions.

|  A vertical bar separates items in a list of choices.

< >  Angle brackets enclose the name of a key on the keyboard.

...  Horizontal ellipsis points indicate that you can repeat the preceding item one or more times.

**dcelocal**
The OSF variable **dcelocal** in this document equates to the AIX and Solaris variable **/opt/dcelocal**.

**dcshare**
The OSF variable **dcshare** in this document equates to the AIX and Solaris variable **/opt/dcelocal**.
This guide uses the following keying conventions:

<Ctrl-x> or `x
The notation <Ctrl-x> or `x followed by the name of a key indicates a control character sequence. For example, <Ctrl-C> means that you hold down the control key while pressing <C>.

<Return>
The notation <Return> refers to the key on your terminal or workstation that is labeled with the word Return or Enter, or with a left arrow.

Problem Reporting
If you have any problems with the software or documentation, please contact your software vendor’s customer service department.

Pathnames of Directories and Files in DCE Documentation
For a list of the pathnames for directories and files referred to in this guide, see "Chapter 4. Location of Installed DCE Files" on page 25, and the OSF DCE Testing Guide.
Part 1. Introduction to DCE System Administration
Chapter 1. Introduction to DCE for Administrators

The IBM DCE Version 3.2 for AIX and Solaris: Introduction to DCE introduced you to the IBM AIX and Solaris version of Distributed Computing Environment (IBM DCE 3.2 for AIX and Solaris), describing the major components of its services. This chapter provides an overview of DCE from the perspective of the system or network administrator.

As the IBM DCE Version 3.2 for AIX and Solaris: Introduction to DCE explains, DCE is a set of services that together make up a high-level coherent environment for developing and running distributed applications. These services include a set of tools that support DCE management tasks. DCE applies techniques that you may have learned from working with applications for single machines or other distributed systems. These techniques enable system administrators to manage DCE without having to know about system internals. You can start with a configuration that is appropriate for your initial needs and grow to larger configurations without sacrificing reliability or flexibility. DCE supports large networks with many users, as well as smaller networks.

The following concepts, which are described in the remaining sections of this chapter, are central to DCE system administration:

- Clients and servers to make and respond to requests for a service
- Remote Procedure Calls (RPCs) for client-to-server communications
- Cells, which are groups of users, servers, and machines that share security, administrative, and naming boundaries
- A single namespace that lets client applications identify, locate, and manage objects, including users, machines, servers, groups of servers, and directories
- A single filespace that allows data sharing among users and machines with proper authorization
- Principals, which are entities—including users, servers, and computers—that are capable of communicating securely with other entities
- Access Control Lists (ACLs) to control access to objects
- Caching, which is the technique of using a local copy of information to avoid looking up the centrally stored information each time it is needed
- Replication, which is the process by which copies of information are created and kept consistent.

Clients and Servers

DCE is based on the client/server model. A server is a machine or process that provides a specialized service to other machines or processes. A client is a machine or process that uses a server's specialized service during the course of its own work. Distributed applications consist of a client side that initiates a request for service, and a server side that receives and executes that request, and returns any results to the client. For example, a client can request that a file be printed, and the server where the printer resides carries out that request.

More than one server process can reside on a single machine. Also, one machine can be both a client and a server. For example, a machine can be a client for one DCE component and a server for another.
**Remote Procedure Call**

A Remote Procedure Call (RPC) is a synchronous request and response between a local calling program and a remote procedure. An RPC begins with a request from a local calling program to use a remote procedure. It completes when the calling program receives all the results (or an error status or exception) from the procedure.

**The Cell**

The cell is the basic unit of administration in DCE. A cell usually consists of users, machines, and resources that share a common purpose and a greater level of trust with each other than with users, machines, and resources outside of the cell. Members of a cell are usually located in a common geographic area, but they can also be located in different buildings, different cities, or even different countries, provided they are adequately connected. A cell’s size can range from only one machine to several thousand, depending on the size of the organization. All machines in an organization can be included in one cell, or you can choose to have numerous cells within one organization.

Cells designate security, administrative, and naming boundaries for users and resources. Each cell has a name. Cell names are established during the installation and configuration of DCE components.

Members of an organization who are working on the same project are likely to belong to the same cell. For example, in a large organization with several cells, the sales team could belong to one cell, the engineers working on Project X could belong to a second cell, and the engineers working on Project Y could belong to a third cell. On the other hand, a small organization may have only one cell for both the sales force and the engineers because they share the same level of security and the organization’s small size does not warrant the additional administrative overhead that maintaining additional cells requires.

DCE services are managed within the context of a cell, as described by the following examples:

- Each DCE cell typically consists of at least one Cell Directory Service (CDS) server, three Distributed Time Service (DTS) servers, and one Security Service server.
- Pathnames of DCE objects managed by DCE services can be expressed relative to the cell where the objects reside.
- DTS has both local and global servers. Local servers operate within a Local Area Network (LAN). Global servers provide time services anywhere within the cell.
The Namespace

The namespace is the hierarchical set of names of DCE objects. The top levels of the hierarchy are managed by the Directory Service. Some DCE services (currently the Security Service and Distributed File Service (DFS™)) manage their own portions of the namespace. Each DCE object in the namespace consists of a name with associated attributes, (pieces of information) that describe its characteristics. These objects include resources such as machines or applications.

The namespace contains global namespaces and cell namespaces. A cell namespace includes objects that are registered within a cell. A logical picture of a cell namespace is a hierarchical tree with the cell root directory at the top and one or more levels of directories containing names beneath the cell root. The cell namespace is managed by the Cell Directory Service (CDS) component of the Directory Service. Conversely, the global namespace, as seen from a local DCE cell, contains objects that are registered outside the local cell, such as the names of other cells. A non-DCE service called the Domain Name System (DNS) manages another part of the global namespace.

Administrative tools use the namespace to store information and to locate DCE services. DCE services advertise their locations to the namespace. The namespace provides a means of organizing DCE services into manageable groups.

The Filespace

Part of the cell namespace is the filespace, which consists of files and directories. These can be physically stored on many different machines, but are available to users on every machine, as long as those users have the proper authorization. You manage the filespace in units called filesets which are hierarchical groupings of related files. Although files are distributed throughout the network, located on and managed by different servers, users see a single filespace. DCE provides administrative tools to assist you in backing up, moving, and replicating filesets.

See the IBM DCE Version 3.2 for AIX: Quick Beginnings and IBM DCE for AIX, Version 3.1: DFS Administration Guide and Reference for cell filespace planning guidelines.

Principals

A DCE principal is an identity that is authenticated by the Security Service. When you log into your system, you use your principal name. Principals can be organized into groups and into organizations that contain groups of principals. Information associated with a principal includes information that is traditionally kept in UNIX group and password files, such as the username, group ID, members of a group, and a user's home directory. By default, a principal is known within the bounds of a cell. By creating a special account that indicates you trust another cell's authentication service, you can enable principals from other cells to participate securely within your cell. See “Establishing Trust Relationships” in IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components for information on creating these special accounts.
Access Control Lists

An Access Control List (ACL) is an authorization mechanism that allows you to assign permissions that control access to DCE objects. The following DCE objects are protected by ACLs:

- Principals and groups of principals managed by the Security Service
- Files and file system directories managed by the DFS
- DTS servers
- CDS directories and entries
- CDS clients and servers, which have ACLs restricting the use of their management operations (for example, creating a clearinghouse)

An ACL consists of multiple ACL entries that define the following:

- Who can use an object
- What operations can be performed on the object

In the filesystem, ACLs are an extension of the UNIX system’s file protection model. Whereas UNIX file system permissions are limited to the protection of files and directories, DCE ACLs can also control access to other objects, such as individual database entries, objects registered in the cell namespace, and objects managed by applications.

Caching

Information acquired over the network (for example, through the use of DCE RPC) can be stored in a memory or disk cache on the local machine. This technique reduces network load and speeds up lookups of frequently needed data. For example, information about the namespace and the filesystem is cached by DCE client machines.

Caching can be configured on a service-by-service basis. Different caching mechanisms are used for different components of DCE. Each component has configurable options to improve the performance of your installation.

Replication

Replication increases the availability of resources by having copies of the resource on several machines. For example, with replication you can make database updates on one machine and have them automatically made on other machines in the network. You can replicate data, move replicas, and control the frequency of updates. The Security Service, CDS, and DFS all provide replication facilities that are customized for their particular applications.

Environment Variables

Environment variables are variables used by DCE that customers can set themselves. See the "Appendix B. Environment Variables" on page 47 for more comprehensive information about DCE environment variables.
Chapter 2. Global and Cell Considerations

The purpose of Chapter 2. Global and Cell Considerations through Chapter 5. Overview of DCE Maintenance on page 31 is to assist you in planning for the installation, configuration, and maintenance of DCE. For more detailed information on installing and configuring DCE 3.2 for AIX, see the IBM DCE Version 3.2 for AIX: Quick Beginnings and for more detailed information on installing and configuring DCE 3.2 for Solaris, see the IBM DCE Version 3.2 for Solaris: Quick Beginnings.

This chapter discusses how to establish a DCE cell name. This chapter also describes how the cell namespace is organized and provides guidelines for maintaining security and replicating parts of the cell namespace. The last portion of this chapter discusses what you need to consider as you plan for including DFS in your cell.

You need to answer a number of questions when planning for a distributed system. Your answers to these questions determine the basic requirements of your user environment. Keep in mind the following global considerations as you plan for DCE:

- How much do you think your environment will grow in the next few years? Do you anticipate rapid or relatively slow expansion of your network?

  If you think your environment will grow rapidly, consider setting up several cells representing smaller units of your organization. You can manage these smaller units as your network expands. As explained in the IBM DCE Version 3.2 for AIX and Solaris: Introduction to DCE, members of each cell share a common purpose, and the cell is a unit of administration and security. If you anticipate slow expansion of your network, you may be able to establish one or more cells based on the organization that exists now. Consider how many administrators you will need to maintain your DCE cell, based on anticipated future growth.

- How much information does your environment have that needs to be distributed? How much do the users in your network share information?

  If there is a large volume of information that needs to be shared within your network, consider the amount of disk space you require and the number of DFS File Server machines you need.

- How much information updating do you require? Do the users in your network mainly look up information, or do they create and change information at their workstations?

  If information changes frequently and users in your network depend on the accuracy of that information, you need to consider how much you rely on replication. It is better to go to a central source of information for data that changes frequently. If users look up information but do not need to change the information that is shared with other users, you can rely more on replicated data.

- Is the most important data the most available data? Have you made plans to replicate this data?

  CDS, the Security Service, and DFS maintain master copies of their respective databases. Each CDS directory can be replicated separately. In addition to DFS databases, individual DFS filesets or groups of filesets can be replicated. The Security Service replicates the entire registry database. Because other components depend on the information managed by the Security Service and parts of the CDS namespace, that data needs to be available at all times. For example, the special character string /. (the cell root) is stored in CDS and must always be available.
Keep in mind that, while replicating data improves availability, there is a cost in terms of performance and the amount of administration required.

• If your network has a gateway, are the servers located on the same side of the gateway as the clients that rely on those servers?

CDS servers broadcast messages at regular intervals to advertise their existence to CDS clerks in the network. Clerks learn about servers by listening for these advertisements. Placing the servers and the clients that rely on them on the same side of the gateway facilitates efficient updates of information and a quick response to client requests. Additional administration is required if you rely on servers that are not available through the advertisement protocol, which is effective only in a local area network.

Consider how fast and how expensive links are if you are administering a cell that includes users in different geographic locations. You may want to keep more information locally to reduce your dependence on transmitting information across links.

• Is communication limited to your own cell, or do you need to communicate with other cells?

DCE connects cells with the standard intercell connection in which a cell is registered in a global directory service that DCE supports and communicates with other cells registered in that directory service. A cell can be registered in the DNS directory services. The DNS name is the cell’s alias.

Regardless of which method you choose, in order for your cell to communicate with other cells, you must:

– Establish a unique name for your cell and define it in the appropriate namespace
– Have at least one GDA running in the cell
– Establish a Security Service trust relationship with the other cells with which you wish to communicate

• Do you have LDAP in your environment and do you want to exploit it?

If you need to have your DCE users stored in an LDAP directory because, for example, you have another application that stores and reads users from an existing LDAP directory, you might want to consider using the DCE Security Registry and LDAP Integration feature.

You can configure new DCE cells using LDAP based security, or you can migrate existing cells to LDAP based security. For more information about the DCE Security Registry and LDAP Integration feature, see the IBM DCE Version 3.2 for AIX and Solaris: DCE Security Registry and LDAP Integration Guide.

Establishing a Cell Name

You must establish a name for your cell before you configure it. A uniquely identified cell name is critical to the operation of the Security Service; this name is the basis for authentication in your cell. Whether or not your cell name needs to be globally unique depends on your plans for communication with other cells.

If you plan to create a private cell and never intend for it to communicate with cells outside your organization, you are not required to obtain a globally unique cell name. However, if you plan to communicate with the cells of other organizations, you must obtain a globally unique cell name for your cell before you configure it.

If you plan to communicate with other cells through DNS or CDS, you must obtain a globally unique name for your cell. The next sections describe how to establish
DNS names for your cell. See the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* for a description of the valid characters supported in DNS and CDS.

### Establishing a DNS Cell Name

DCE also supports global directory operations through the use of DNS. If you plan to use DNS to communicate with other cells, you need to obtain a globally unique name for your cell from the DNS global naming authorities before you configure your cell, then define it in the DNS namespace. The name you obtain for your cell will be in DNS syntax. An example of a DNS-style cell name is:

```
/.../seattle.abc.com
```

If you plan to use DNS as your global directory service, your DCE cell name must follow the ARPA Internet Domain System conventions for site names. If you are already an Internet site, you can create one or more cells subordinate to your Internet domain name, depending on how your site is organized. The following conventions govern an Internet-style name:

- The name needs to have at least two levels; for example, `abc.com` or `sctech.edu`. The names in the first two levels are registered with the Network Information Center (NIC), which is the naming authority for DNS names.
- The name cannot be longer than 255 characters.
- The name can contain any number of fields in addition to the two required levels, which are conventionally separated by periods.
- The name needs to end in a suffix that indicates a kind of institution. This last field is the most significant one. A list of commonly used suffixes follows. Because new suffixes are being added, this list is not inclusive.
  - `.com` for businesses and other commercial organizations
  - `.org` for noncommercial organizations
  - `.edu` for educational institutions
  - `.gov` for government institutions
  - `.mil` for military institutions
  - `.net` for network support organizations
  - `.xx` for two-letter country codes (such as `.de` for Germany and `.fr` for France) that conform to the International Organization for Standardization (ISO)

Refer to the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* for further information about naming rules, including valid characters, restrictions, metacharacters, and maximum name sizes for DNS names.

To obtain a unique DNS name, contact the administrator in charge of the subtree under which you want to name your cell. Send registration requests to the NIC at the following Internet address, telephone number, FAX number, or mailing address:

**HOSTMASTER@NIC.DDN.MIL**

Telephone Number: (800) 365-3642 between the hours of 7:00 a.m. and 7:00 p.m. Eastern Standard Time

FAX (703) 802-8376
After you have configured your cell, you need to define it in the DNS global namespace by creating cell entry for it in DNS. To create a cell entry in DNS, an administrator must edit a data file that contains resource records.

You also need to establish cross-cell authentication with any other cells with which you want to communicate.

The Cell Namespace

An integral part of planning for a DCE cell is understanding the organization of your cell namespace. Consider the following as you plan the organization of a cell in your network:

- Are security requirements maintained?
- Does the organization of the cell facilitate network traffic where data sharing needs are the greatest?
- How will you manage the administrative accounts created for each DCE service during the configuration process?
- What are your DFS administrative domains (groups of DFS servers that are administered as a unit)? Can you group servers for more efficient administration?

Determining Cell Boundaries

In DCE, the boundaries of a cell are equivalent to the boundaries of the cell namespace. A small organization can consist of one cell. A large organization can have many cells. The primary factors in determining a cell’s boundaries are the common purpose and trust shared by the cell’s principals. Principals within a cell can belong to groups that share the same privileges. Members of a group share the same level of trust and are authorized to perform certain actions.

Because there is a set of administrative tasks associated with setting up and maintaining each cell, it is reasonable to keep the number of cells in your organization to a minimum. However, the level of trust shared by groups of principals is a more important consideration than administrative overhead.

Keeping Cells Stable

Once you decide how many cells you need and where the boundaries of those cells will be, make an effort to keep your cell structure stable. Servers are not easily moved from one host to another; so, be sure to plan your namespace structure carefully in order to minimize reconfiguration. If you do need to move a machine from one cell to another, you must do the following:

- Move server processes from the host.
- Unconfigure the host from the old cell, using the unconfig.dfs and unconfig.dce commands.
- Use the config.dce and config.dfs commands to reconfigure the host in the new cell.
Types of Cell Namespace Entries

The following subsections describe the different types of entries that comprise the cell namespace. These entries are created when you follow the default configuration path described in the IBM DCE Version 3.2 for AIX: Quick Beginnings or the IBM DCE Version 3.2 for Solaris: Quick Beginnings. The IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components, and the IBM DCE for AIX, Version 3.1: DFS Administration Guide and Reference provide details about the names that the DCE components use. The cell namespace can be divided into these major parts:

- The CDS part of the namespace
- The Security part of the namespace
- The DFS part of the namespace (the filesystem)
- The \texttt{dced} (per host) part of the namespace

Each of the DCE services maintains its own namespace within the cell namespace. DFS maintains its own namespace to ensure consistency among many files. The Security Service maintains its own namespace to ensure that the DCE cell remains secure. Clients of these two services query CDS for binding information that enables them to find Security or DFS servers. The points where the binding information is stored serve as mount points in the CDS namespace for the namespaces that DFS and the Security Service manage. This transition point between two namespaces is called a junction. The \texttt{./sec} directory is the junction from the CDS part to the Security part of the cell namespace, and the \texttt{./fs} directory is the junction from the CDS part to the DFS part of the cell namespace.

The junction \texttt{./hosts/hostname/config} is the junction from CDS to the \texttt{dced} (per host) part of the namespace.

Figure 2 shows the top level of the cell namespace. In some cases, the names in the cell namespace are fixed (or well known) and cannot be changed. In other cases, you can choose a different name from the one listed. For more information about which names are well known, see the IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components. In Figure 2, \texttt{./} and \texttt{cell-profile} are well-known names.

![Figure 2. Top Level of the Cell Namespace](image)

You can use the DCE control program (\texttt{dcecp}) to view the CDS part of the namespace, including the \texttt{sec} and \texttt{fs} junctions. You can use commands such as \texttt{ls} to see the contents of the DFS part of the namespace and \texttt{dcecp} to see the contents of the Security portion.
CDS Namespace Entries
The CDS namespace contains entries for servers, hosts, CDS clearinghouses (collections of directory replicas stored at a particular server), RPC profiles, RPC groups, and subsystems. The entries have a CDS type of directory or object, indicating the kind of CDS object to which the name refers. A third CDS type, softlink, is an entry that points to another entry. A CDS directory is a container in which objects are stored. CDS uses directories to organize groups of object entries.

In addition, the CDS namespace provides specialized services for other DCE components, such as location information contained in the files set location database (FLDB), which is the database that maps files sets to the file server machines on which they reside.

Profiles cataloged in the CDS namespace specify a search path through the Directory Service. The cell profile (/./cell-profile) stores the location of the servers that are available in the cell, regardless of physical location. In a geographically dispersed cell, servers can be located in different cities or even different countries. The LAN profile defines alternate servers that can be used in situations where geographic proximity is important. For example, /./lan-profile is the default LAN profile used by DTS. This profile contains entries for the DTS server local set. If a cell spans more than one LAN, another layer can be created below /./lan-profile to specify the location of the profile for each part of the cell. For example, in a cell that encompasses two LANs, you can direct hosts on one LAN to lanA-profile and hosts on the other LAN to lanB-profile.

Security Namespace Entries
The types of Security entries are as follows:
• principal: This type of entry contains an individual principal.
• principal directory: This type of entry contains individual principals or one or more principal directories, or both.
• group: This type of entry contains an individual group.
• group directory: This type of entry contains individual groups or one or more group directories, or both.
• org: This type of entry contains an individual organization.
• org directory: This type of entry contains individual organizations or one or more organization directories, or both.
• policy: This type of entry contains Security policy.

When you (or an application) are accessing an entry in the Security part of the namespace, the name of the entry alone provides enough information for the Security Service to work with. For example, the Security server knows that the login name is a principal name that is registered in the Security part of the namespace; /./principal_name, /.../cell_name/principal_name, and principal_name are all valid ways of representing the name you use to log in.

Note: Although DCE supports a principal name up to 1024 bytes long, the AIX and Solaris operating systems have a limit of 8 bytes.

When you use dcecp, you specify the type of object you will operate on before you operate on it. For example, to change account information associated with the principal smith, you specify that you want to operate on a principal, and you then enter the principal name smith. dcecp deals with the following four types of objects:
• Principals
• Groups
• Organizations
• Accounts

The *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* explains how to use `dcecp` to display information related to principals, groups, organizations, and accounts.

In addition to objects registered in the Security space, `dcecp` operates on all objects in the namespace. To operate on these objects, `dcecp` requires the object’s fully qualified pathname, as shown in the following example:

```
/.:/sec/principal/smith
```

and not simply the following:

```
smith
```

The following parts of the namespace comprise the Security namespace:

- `/./sec/principal`
- `/./sec/group`
- `/./sec/org`
- `/./sec/policy`
- `/./sec/xattrschemas`

### CDS Namespace Replication Considerations

Directory replication is the most reliable way to back up the information in your CDS namespace. Because the CDS data is replicated by directory, when you replicate a directory, all of the object and softlink entries in it are automatically replicated. Use `dcecp` to create replicas of directories at a CDS clearinghouse.

Follow these guidelines for replicating parts of the cell namespace:

- The root (`./`) is automatically replicated when you create a clearinghouse.
- You should have at least two copies of each CDS directory to ensure the entire namespace is available at all times. For further information about backing up CDS information, see the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components*.

### Planning for Access Control

When planning for access control, it is important to keep the level of access control in your cell restrictive enough to ensure that security is maintained. A special set of individuals or a special group can be given permission to create accounts and groups in the root directory of the Security space. A group called `acct-admin` is created when you configure DCE. The `acct-admin` group is the only group that can create accounts and groups in the root directory of the Security space.

While maintaining an adequate level of security in your cell, you also need to consider the requirements of administrators who are maintaining DCE services when you set access control levels. For example, if one person is responsible for administration of DFS in your cell, that person may need to add servers to the Security and CDS namespaces. On the other hand, an administrator responsible for the Security Service manages the Security server but does not control the DFS filespace.
Following are some of the groups created when you configure DCE using SMIT or the DCE configuration script:

- **sec-admin**: This group administers Security servers, registry replication, and other Security functions.
- **cds-admin**: This group administers CDS servers, CDS replication, and other CDS functions.
- **dts-admin**: This group administers DTS servers and related DTS functions.
- **dfs-admin**: This group administers DFS file servers and related DFS functions.
- **audit-admin**: This group administers the Audit daemon and related Audit Service functions.

See "The sec/group/subsys Directory" on page 79 for a list of DCE groups created by the DCE configuration script.

In addition to the administrative groups, individual users need permission to control some information kept in the registry database. For example, a user needs to be able to change her or his password, home directory, or login shell.
Chapter 3. Client and Server Considerations

This chapter describes configurations for DCE client machines, the different types of DCE server machines, DCE remote administration machines, and DCE Application Development Environment machines. A DCE client machine can run client code of every DCE service. DCE server machines are configured to run a certain set of the DCE software. A DCE server software package is made up of at least one daemon and, in some cases, one or more additional programs that comprise the server side of the DCE component. DCE server machines also run the DCE client software. DCE remote administration machines, which are client machines specially configured for remote server administration, contain certain administration programs in addition to the DCE client software. The DCE Application Development Environment configuration contains files (such as header files) needed by DCE application programmers, in addition to the DCE client software.

When planning the configuration of your DCE clients and servers, remember space needs. A machine that has a particular configuration of the DCE software will need enough space for both the DCE software and the operating system software. See the IBM DCE Version 3.2 for AIX: Release Notes or the IBM DCE Version 3.2 for Solaris: Release Notes for detailed information on space requirements for the various DCE machine configurations.

The sections of this chapter are presented in the order in which you need to approach configuring DCE machines.

Requirements for DCE Client Machines

The following subsections describe the requirements for setting up DCE client machines. They also discuss some considerations for configuring DCE clients. Remember that all DCE machines, including DCE server machines, are DCE clients. Therefore, be sure to add the appropriate server space requirements to the DCE client space requirements to reach an approximate total space requirement for the client machine.

RPC Client Programs

A DCE client contains the following programs:

- The `dced` daemon must run on any machine that has a DCE RPC server process that exports an interface with dynamic bindings. The `dced` daemon is used to register binding information (among other things).

  The `dced` daemon must be running before you configure any other DCE services because DCE services need to register their endpoints with `dced`. Only one `dced` daemon is needed on a machine. In fact, only one can run on a machine at a time because it uses a well-known port.

  Network interfaces, routing services, and other network services must be available before DCE RPC starts. The `dced` daemon is started by the `start.dce` command. The `start.dce` command can be invoked from `/etc/inittab` for AIX or from `/etc/init.d` for Solaris. The `start.dce` command can also be invoked at boot time by specifying the `-autostart yes` option on the `config.dce` command or (for AIX only) by adding `/etc/dce/rc.dce` to this file. This will allow DCE services to be brought up each time the machine boots. See the IBM DCE Version 3.2 for AIX: Quick Beginnings or IBM DCE Version 3.2 for Solaris: Quick Beginnings for information on starting DCE 3.2 at reboot.
The DCE control program (dcecp) manages and maintains the DCE RPC software. "DCE Administration Utilities" on page 22 describes dcecp. In addition, rpccp is used for operating on local registries.

Security Service Client Programs
Every DCE client machine has, as part of the dceld daemon, the Security Validation Service. This service takes the place of the machine principal. Most principals are interactive users, but the machine principal is not. The Security Validation Service performs the processing necessary so that other daemon processes on the machine appear to be running with the machine’s identity.

The Security Validation Service periodically refreshes the ticket-granting ticket for the machine’s principal. A DCE client machine must have a valid ticket-granting ticket in order for a principal to use DCE services. The Security Validation Service also exports the interface that assures a Security client that it is actually contacting the real Security server when the client requests a ticket-granting ticket from the Security server.

Audit Service Client Programs
There are no Audit service client programs. The clients of this service are the server processes of the DCE services that use auditing, for example, the Security Service’s secd daemon.

CDS Client Programs
The DCE client runs the following CDS processes:
- The CDS advertiser, the cdsadv process, does the following:
  - Allows applications to locate and communicate with cdsd servers
  - Starts any needed CDS clerks (cdsclerk)
  - Creates the cache shared by local CDS clerks
  - Using the –p option, runs as a proxy of the CDS Server so that the advertiser can forward server broadcasts into its own LAN. This is done automatically when the CDS client is configured as a proxy server.
- The cdsclerk is an interface between CDS client applications and CDS servers. A clerk must exist on every machine that runs a CDS client application. One cdsclerk process runs for each DCE principal on a machine that accesses CDS. The CDS clerk handles requests from client applications to a server and caches the results returned by the server. Because the results of the server request are cached, the clerk does not have to go repeatedly to the server for the same information. All CDS clerks on a machine share one cache. One clerk can serve multiple client applications running on the same machine.

DTS Client Programs
The DCE client runs the following DTS processes:
- The dtstd daemon is set to be a client or a server. On a client machine, dtstd synchronizes the local clock.
- The DCE control program (dcecp) for the management and maintenance of the DTS software. "DCE Administration Utilities" on page 22 describes dcecp.

Slim Client Programs
In general, client systems are more likely to be memory constrained than server systems. When configuring the DCE software on a client system, more DCE daemons than might be necessary are started. If a client does not offer DCE
services to other systems in the cell, it might not need all of the functions provided by these daemons. The DFS client and `dceunixd` can run with the slim client.

Since no information about the slim client is kept in the cell, `cell-admin` authority is not required to configure it. Use the `config.dce` command to configure the slim client. Use the `start.dce` and `stop.dce` commands respectively to start and stop the slim client. To unconfigure the slim client, use the `unconfig.dce` command.

The slim client option reduces DCE memory consumption on client systems.

The slim client runs a single instance of the CDS clerk with no other DCE daemons. Running a single instance of the CDS clerk is done by starting the clerk with the `-n` option. This starts a clerk without the CDS advertiser. This can be done automatically by issuing `start.dce` after the configuration of a slim client.

If there are so many other DCE services and functions that can be run, how can a single CDS clerk be sufficient? The answer is that most DCE clients need only the following DCE functions:

- RPC calls (both authenticated and unauthenticated)
- DCE login
- CDS name lookups

For RPC calls and most logins, no DCE daemons are needed. These functions simply use RPC runtime routines and Security runtime routines.

For CDS name lookups, only a CDS clerk is necessary. With full DCE, CDS clerks are started by the CDS advertiser, requiring a CDS advertiser to be present. However, in DCE 3.2 for AIX and Solaris, the `-n` option on the `cdsclerk` command starts a single instance of the CDS clerk without needing the advertiser. This clerk will not terminate after 20 minutes of idle time, as it does in full DCE. Additionally, when the clerk is started in this fashion, it takes over the role of the CDS advertiser in managing the CDS client cache.

Without an advertiser, the `cdsclerk` cannot be managed by `dcecp` or `cdscp`. The following commands will fail:

```
cdscp show clerk
cdscp disable clerk
cdscp show cached clearinghouse
cdscp define cached server
cdscp show cached server
cdscp clear cached server
dcecp -c cdscache create
dcecp -c cdscache delete
dcecp -c cdscache show -server
dcecp -c cdscache show -clearinghouse
```

The services that compose `dced` and the functions that are disabled, because `dced` is not running on a DCE client system, are:

- **dced Endpoint Mapper Service** must run on any system providing a service that can be accessed through Remote Procedure Calls (RPCs). Such a server is called an RPC server. When a system issues an RPC to an RPC service, it uses the RPC runtime routines to send the request to a specific machine address and asks for the desired RPC service by name. After the RPC reaches the machine where the service resides, the Endpoint Mapper Service maps the RPC service name to the endpoint, or port number, of the specific program providing the
service. After the endpoint is known, the client is bound to the specific RPC
service and RPCs can be issued directly to that service.

Although every DCE client system issues RPCs, most do not need the Endpoint
Mapper Service, because they are probably not RPC servers. Therefore, the
RPC-related limitation of not running dced on a client system is that it cannot be
an RPC server.

• Security Validation Service provides the functions listed below. If a client
system does not need these functions, it does not need the dced Security
Validation Service. Note that a dce_login and authenticated RPCs can still be
issued on a system that does not have this service running.
  – Security Server Certification ensures that the client is talking to a valid DCE
  security server during login. This is actually a server-type function, in that
  other DCE components issue RPCs to dced to use it.
  – Third-party pre-authentication during dcelogin In DCE 3.2 for AIX and
  Solaris, the dce_login function assumes the user wants third-party
  pre-authentication, which requires the dced Security Validation Service. (This
  third-party pre-authentication is attempted before verifying that the user
  account is configured to require third-party pre-authentication.) However, if the
  Security Validation Service is not active during dce_login, dce_login avoids
  third-party pre-authentication, and does timestamp pre-authentication. No error
  is issued unless the user is configured at the server to require full third party
  pre-authentication.
  – Keeping the machine context up to date. Every machine that executes
  DCE has a principal name that it logs in as, and under which its DCE
  daemons run. This machine login is required by DCE Server daemons in
  order to acquire Privilege Ticket Granting Tickets (PTGTs) to access other
  DCE components. One role of the dced Security Validation Service is to
  ensure that this machine PTGT does not expire. This process is referred to as
  keeping the machine context up to date. Only DCE servers (when a server is
  something that receives RPCs) need the machine context kept up to date.
  – Password and group overrides One role of the security validation service is
  to process the overrides for DCE user and group information from the
  passwd and group files in /opt/dcelocal/etc/. No error is given if the
  administrator creates these files on the local machine. These files are ignored
  by the slim client.

• Security Integration can run on a slim client. Be aware that because the
  certification service is not available, when a user logs in, the user’s identity
  cannot be certified to have been issued by a legitimate security server and that
  security integration on a slim client cannot use passwd and group overrides.
  Because the machine context is not available, security integration on a slim client
  requires unauthenticated access to the registry.

• System Management Services:
  The system management functions provided by DCE are listed below. Without
  dced, a client system cannot be remotely managed by means of these functions.
  – Host Data Management: This service maintains local files of host data (that
    includes the host name, cell name, and cell aliases) and a post-processor file.
    The post-processor file contains program names that are matched to other
    host data items. dced runs the program if the corresponding host data item
    changes.
  – Server Control: This service maintains data that describes the startup
    configuration and execution state for each server. It can also start or stop
    particular servers, and enable or disable specific services of servers. This
    service is not needed on a client that is not running any RPC servers.
Key Table Management: This service allows for the remote maintenance of a server’s key tables. This service is not needed on a client that is not running any RPC servers.

Requirements for DCE Server Machines

The following subsections describe the considerations involved in setting up DCE server machines.

Files Installed on DCE Server Machines

The following subsections list the files that must be installed on each of the different DCE server machines. Remember that because all DCE servers are also DCE clients, the files described in "Requirements for DCE Client Machines" on page 15 must also be installed on server machines. Therefore, add the appropriate client space requirements to the DCE server machine space requirements to reach an approximate total space requirement for the server machine.

DCE RPC Server Programs

There are no DCE RPC server programs other than the programs that run on the DCE client.

Security Server Processes

Every cell has one master Security Service machine and can also have slave Security Service machines. The following processes run on a Security Service master or slave server machine:

- The Security server, or secd process, implements the Authentication Service, the Privilege Service, and the Registry Service.
- The sec_create_db program initializes the Security database. You give this command an option indicating whether you want to create a master, slave, or LDAP slave Security server on the machine.
- The DCE control program (dcecp) for the registry, management, and maintenance of the Security software. "DCE Administration Utilities" on page 22 describes dcecp.
- The Identity Mapping Server (IDMS), or idmsd process, is a RPC server responsible for mapping a user’s public key certificate to a DCE principal name. At least one IDMS is required in a DCE cell that uses Public Key Certificate Login.
- The password strength server, or pwd_strenghtd process, extends password strength policies in your cell by performing customized password checking and generation.

Keep the following considerations in mind when you are planning for Security servers:

- The node that runs the master Security server must be highly available and physically secure. Consider placing the master Security server machine in a locked room and keeping a log to record who accesses the machine.
- Be sure to move the master Security server before removing the node from the network or shutting down the node for an extended period of time. Modifications are made to the master Security server and propagated to slaves throughout your cell. If the master Security server is unavailable, no updates can be made.
A cell can have only one master Security server. If you plan to make one cell out of several existing cells with independent master Security servers, you must first merge their registries.

If the host that contains the master Security server goes down, hosts that have slave servers can still provide registry information; so, consider having a number of slaves in your network. Use factors such as the number of machines in your cell, the reliability of the machines that run Security servers, and your cell’s available resources to determine how many slave Security servers you need to have.

If you are using LDAP to store security data, see IBM DCE Version 3.2 for AIX and Solaris: DCE Security Registry and LDAP Integration Guide for related planning considerations.

For further information about planning for the Security Service, see the IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components.

### Audit Server Processes

An Audit server provides the other DCE services with access to the DCE auditing facilities. An Audit server runs the `auditd` daemon. When auditing is available in a DCE cell, each machine must run the daemon.

### CDS and GDA Server Processes

A CDS server stores and maintains object names within a cell and handles requests to create, modify, and look up data. There must be a GDA server (the `gdad` daemon) in a cell in order for the cell to communicate with other cells.

The following processes run on a CDS server machine:

- The CDS daemon, `cdsd`, is the CDS server process.
- The `cdsadv` on a DCE client machine, receives server advertisements to find out what servers are available. On a CDS server machine, it also sends server advertisements.
- The Name Service Gateway, also known as the `nsid`, provides access to DCE name services from native Microsoft® RPC applications.
- The DCE control program (`dcecp`) for the management and maintenance of the CDS software. In addition, the `cdscp` program is used for controlling and displaying information about CDS clerks and servers. “DCE Administration Utilities” on page 22 describes `dcecp`.

When preparing for CDS, you need to select server nodes that store and maintain the clearinghouses (CDS databases) in the cell. Keep the following guidelines in mind in order to achieve reliability, optimum performance, and data availability:

- Choose dependable nodes. A CDS server wants to avoid downtime as much as possible and needs to be restarted quickly when downtime occurs. The CDS server needs to be one of the first systems available on the network because client applications and other DCE servers rely on the CDS server for up-to-date information. The CDS server initializes the CDS namespace when you configure DCE.
- Use reliable network connections. This helps to ensure that all servers maintaining directory replicas can be reached when CDS performs a skulk. Skulks are periodic updates that check for consistency across all replicas.
Consider the size of your cell and how geographically dispersed the cell is when deciding how many CDS servers you need. You should have at least two copies (one master and one replica) of each CDS directory to ensure access to data if one of the servers becomes unavailable.

Each CDS server in a cell must maintain at least one clearinghouse. All clearinghouses should contain a copy of the root, in addition to other directories replicated there.

Make replication decisions based on where the contents of directories are referenced. Put replicas where the contents are read and put masters where the contents are written. See [Appendix A, Moving an Initial CDS Server] on page 45 for information on moving an initial CDS server.

In a DCE configuration that uses DNS, CDS must be able to contact at least one GDA to access global directory service. CDS contacts the GDA via the gdad daemon, which sends lookup requests for cell names to DNS and returns the results to the CDS clerk in the cell that initiated the request.

The GDA can be on the same machine as a CDS server, or it can exist independently on another machine. You can have more than one gdad daemon running in a cell to ensure GDA availability.

**DTS Server Programs**

The DCE client configuration already contains all the files necessary for a DTS server machine, with the exception of the optional time provider. The necessary files are as follows:

- The dtsd daemon, which can be installed on a DCE client machine, is configured to run as a server when installed on a DTS server machine. As a server process, dtsd synchronizes with other DTS servers, in addition to synchronizing the local clock, as it does on a client machine.

- The dts_device_name_provider specifies the communications between the DTS server process and the time-provider process. For device_name, substitute the device you are using, which can be a radio, clock, or modem, or another source of UTC time for DTS. A time provider is optional. If you use a time provider, it must connect to a server process.

- The DCE control program (dcecp) for management and maintenance of the DTS software. "DCE Administration Utilities" on page 22 describes dcecp.

- If there are less than three time servers configured in the cell, one of the following command should be used:

  ```
  dtscp set servers required n
  (where n is the number of time servers in the cell)
  dcecp dts modify -miniservers n
  (where n is the number of time servers in the cell)
  ```

  This will prevent a warning message from being logged every time the server attempts to synchronize.

Consider the following guidelines when planning your DTS implementation:

- Each cell needs to have at least three DTS servers. At least three DTS servers are needed in order to detect if one of them is faulty when they are queried for the time. It is preferable to have four or more DTS servers to provide redundancy. The additional servers increase the accuracy of time synchronization. However, increasing the number of servers queried for the time...
also increases the activity on the network. The administrator must balance the level of accuracy with the amount of network activity.

- A time provider is optional in DTS; however, cells that must be closely synchronized with a time standard need to have at least one time provider.
- Servers need to be located at the sites with the greatest number of different network connections.

There are many network configuration decisions that affect DTS planning. In the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components*, you can find details about the total DTS planning process, including configuration planning for Local Area Networks (LANs), extended LANs, and Wide Area Networks (WANs). The *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* also explains the criteria you need to use when selecting a time source for your network to use.

**Event Management Service (EMS) Processes**

EMS manages event services in a DCE cell. In EMS, an event is data being transmitted from an event supplier to EMS and from EMS to one or more event consumers. The *emsd* daemon runs EMS. The daemon must be running on the host system in the DCE cell before a consumer can receive events or a supplier can supply events.

**DCE Administration Utilities**

The following subsections describe the utility programs that DCE provides for managing and maintaining the DCE software. The last subsection tells you which utilities to place on a machine that is specially configured for the remote administration of DCE servers.

**DCE Control Program**

The overall administration tool for DCE, *dcecp*, has functions for administering the DCE services. You cannot use the program to administer DFS.

The *dcecp* utility is included in all of the DCE server software packages, except DFS.

**DCE RPC Administration Programs**

The *rpccp* program, which is the RPC-specific administrative tool, allows you to browse, update, add, and delete the DCE RPC attributes of entries stored in the CDS namespace and the endpoints that are managed by local and remote *dced* daemons.

**Security Service Administration Programs**

The Security Service provides the following administration utilities:

- The *dcecp acl* command displays, adds, modifies, and deletes ACL entries for a specific object. The *IBM DCE Version 3.2 for AIX and Solaris: Administration Commands Reference* contains detailed information about using the *dcecp acl* command.
- The *dcecp account, group, organization, principal, registry, user*, and *xattraschema* commands allow you to edit the registry database or the local registry. Almost all editing of the registry database must be done with these commands. The *IBM DCE Version 3.2 for AIX and Solaris: Administration Commands Reference* explains the use of the commands.
The passwd_import command allows you to create registry entries based on the group and password files from machines that do not implement DCE Security.

The passwd_export command allows you to update the UNIX /etc/passwd and /etc/group files with current user information obtained from the registry.

The passwd_override and group_override files allow you to establish overrides to the information contained in the registry.

The rmxcred command purges expired tickets from the credentials directory.

The dcecp registry command helps you manage server replicas of the registry, change the master server site, migrate security servers to LDAP, and reinitialize a slave server. This command also helps you manage the security server and its database. You can perform tasks such as stopping the security server and generating a new master key for the database.

CDS Administration Programs

CDS provides the following administration utilities:

- The CDS control program, cdscp, is a command interface used to control CDS servers and clerks and manage the namespace and its contents. The cdscp command interface was available with previous versions of DCE and is provided to ease migration to the use of the dcecp utility. For more information about the CDS control program, see the IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components.

- The cdsli gives a DCE user the ability to recursively list the namespace of cells.

- The cdsdel deletes recursively the namespace of cells.

- The CDS Advertiser, cdsadv, allows applications to access and communicate with cdsd, starts any needed CDS clerks and creates the cache shared by local CDS clerks.

- The CDS clerk, cdsclerk, is an interface between CDS client applications and CDS servers.

- The DCE control program, dcecp, can be used to browse, update, and delete CDS entries, and to manage the namespace. It replaces cdscp.

- The mkreg.dce command enters information about your DCE cell into the database maintained by your domain name server (the named daemon on AIX; the in.named daemon on Solaris).

- The rmreg.dce command removes information from the database maintained by your domain name server (the named daemon on AIX; the in.named daemon on Solaris) that were added by the mkreg.dce command.

DTS Administration Programs

The DTS control program (dtscp) allows you to administer DTS, including configuring the dtsd daemon as either a client or a server. The dtscp program is included in the DCE client software.

Programs for DCE Remote Administration Machines

A system user can perform administrative tasks from any machine in the cell when logged in as the cell administrator. In order to perform administrative tasks, the user must authenticate and ensure that the tools necessary to perform the tasks are available. The administration utilities that need to be installed, in addition to the DCE client software, are the following:

- The cdscp program for controlling certain operations on CDS clerks and servers.

- The rgy_edit program for maintaining local copies of the Registry.
- The `passwd_override`, `sec_admin`, `sec_create_db`, and `sec_salvage_db` programs must be installed for Security service administration.
- The `cdscp` program for controlling certain operations on CDS clerks and servers.
- The `rgy_edit` program for maintaining local copies of the Registry.

No software other than `dcecp` and the DCE client software is needed for administering DCE RPC, DTS, Security, or CDS.

---

**Application Development Environment Machine**

A DCE machine can also be configured for the development of DCE applications. This involves adding to the basic DCE client configuration several include (.h) and interface specification (.idl) files, along with the `idl` program.
Chapter 4. Location of Installed DCE Files

The files used by DCE are grouped in the following locations:

- The /opt/dcelocal subdirectories
- Conventional UNIX subdirectories.

Some information needs to be kept locally on a machine for reliability and to ensure security is maintained. For example, when you configure DCE, the file that contains the name of your cell must be on the machine that is being configured. This file is stored in the /opt/dcelocal subtree.

The /opt/dcelocal subtree is created when you install DCE components.

In some cases, files are installed into directories such as /usr/lib, /usr/bin, or /bin for performance reasons. In other cases, symbolic links can be used from the conventional UNIX subdirectories to /opt/dcelocal.

This chapter contains the following topics:

- "The /opt/dcelocal Subtree"
- "File Systems" on page 26
- "Conventional UNIX Directories (AIX only)" on page 26
- "File Locations" on page 26
- "DCE Daemon Core Locations" on page 29

The /opt/dcelocal Subtree

In order to initially boot a server and configure the cell, the appropriate files for mandatory servers (CDS and Security) need to be available on that server machine (in the /opt/dcelocal subtree). It is strongly recommended that copies of the minimum set of programs and data files installed during the default DCE installation procedure be kept locally on server machines for stand-alone operation and emergency maintenance.

The contents of the /opt/dcelocal subtree can vary from machine to machine inside a DCE cell to accommodate and serve specific configurations. In addition, every machine must have local access to certain files so each machine can run as a stand-alone system if the machine is disconnected or partitioned from the cell. The appropriate files on DCE servers that have to be local to the server machine must be stored under /opt/dcelocal. Client-related data files are stored below /opt/dcelocal/etc (static configuration data) and /opt/dcelocal/var/adm. All server-specific data files are located in the /opt/dcelocal/var/dce-component-name directory.

The default path for DCELOCAL is set to /opt/dcelocal during the configuration process. This is a fixed path name. Every machine must have local access to the files that are necessary to configure it (up to activating DFS access in the cell). The /opt/dcelocal/dce_cf.db file is the DCE configuration file containing the name of the host to be configured and the cell name. A machine must access this small set of DCE files, which is kept on the machine's local disk, to start up the various DCE components and for local configuration information and log information.

Because DCE configuration takes place after mounting the local file systems, none of these files has to be available in the root partition.
The `/opt/dcelocal` subtree is populated and initialized during DCE installation and configuration.

**Conventional UNIX Directories (AIX only)**

Some files and directories used by DCE are accessible in conventional UNIX directories. These DCE files and directories need to be accessible in conventional locations so users can conveniently access frequently used utilities and data, such as `idl` from the `/usr/bin` directory and `localtime` from the `/etc/zoneinfo` directory. Header files are accessible in `/usr/include` or in its subdirectory, `/usr/include/dce`, and libraries, such as `libdce.a`, are kept in `/usr/lib`.

**File Systems**

All DCE files are kept under `/opt`. If this filesystem fills up, DCE and other subsystems that depend on `/opt` cannot operate correctly.

In addition to the space required to install the DCE product (refer to section xxx - (package size table), reserve the following space:

- Initial configuration 30 megabytes
- CDS server (if it is to be configured on this machine) 30 megabytes
- Security server (if it is to be configured on this machine) 10 megabytes.

**File Locations**

**For AIX**

The installation process for DCE 3.2 for AIX places files in the following locations:

- `/usr/lpp/dce`
  All DCE files except those in the remainder of this list.

- `/usr/lpp/dce/tcl/dcedcf`
  DCE/DFS configuration scripts

- `/usr/lpp/dcedoc`
  All DCE for AIX documentation files and their related tools.

- `/etc/dce`
  The following files:
  - `rc.dce`
  - `dce.clean`
  - `rpc.clean`

- `/etc/dce/rspfiles`
  Configuration response files

- `/etc/zoneinfo`
  Timezone rules for DTS.

- `/tmp/dce`
  Temporary location for configuration processing

- `/usr/lib/nls/msg/en_US`
  English message catalogs.

- `/usr/include`
  Include files (mostly under `/usr/include/dce`)
For Solaris

The installation process for DCE 3.2 for Solaris places files in the following locations:

/opt/dce
DCE binaries (not all DCE files are accessible from /opt/dce, use /opt/dcelocal).

/opt/dcelocal
Some subdirectories are links to /opt/dce. Other subdirectories contain files specific to the local machine (for example: database files and logs). All DCE files are accessible from /opt/dcelocal.

Symbolic links are created to file in /opt/dce and /opt/dcelocal from the following locations:

/usr/bin/
Links for DCE executables are made to files in /opt/dcelocal.

/usr/lib
Links for DCE libraries are made to files in /opt/dcelocal.

/usr/lib/dce
Links for some DCE libraries are made to files in /opt/dcelocal.

/usr/lib/locale/{LANG}/LC_MESSAGES
Links for DCE message catalogs are made to files in /opt/dcelocal
  /usr/lib/locale/en_US/LC_MESSAGES
  /usr/lib/locale/es/LC_MESSAGES
  /usr/lib/locale/it/LC_MESSAGES
  /usr/lib/locale/ja/LC_MESSAGES
  /usr/lib/locale/ja_JP/LC_MESSAGES
  /usr/lib/locale/ko/LC_MESSAGES
  /usr/lib/locale/pt_BR/LC_MESSAGES
  /usr/lib/locale/zh/LC_MESSAGES
  /usr/lib/locale/zh.GBK/LC_MESSAGES

/usr/lib/libpkc.so
A link is made for DCEPKC.

/usr/ccs/lib
Links for some DCE libraries are made to files in /opt/dcelocal
Configuration Files Created at Runtime
The following are files created at runtime:
- **cfg.dat**: contains data about the current configuration state of the DCE/DFS components
- **cfgdce.dat**: contains non-viewable configuration data
- **cfgdce.log**: configuration log
- **cfgdce.bck**: backup of the cfgdce.log - created when the cfgdce.log file exceeds 100000 bytes
- **protseqs.rpc**: lists the protocol being used.
- **dce_cf.db**: contains the cell name and the DCE host name of the local machine.
- **cfgarg.dat**: contains the options that will be used to restart the DCE daemons.

File Systems to Create and Mount (AIX only)
You will probably want to create new AIX JFS file systems in order to use DCE effectively:

**/var/dce**
All DCE components store information in the **/var/dce** directory. If the **/var** file system fills up, DCE and other subsystems that depend on **/var** (such as the mail and spooler subsystems) cannot operate correctly.

You should create a new file system mounted over **/var/dce** before you install DCE. You should reserve about 30 megabytes for **/var/dce** for your initial DCE configuration.

**/var/dce/directory**
Within this directory tree is where the CDS server stores the clearinghouse files, which contain this server’s portion of the namespace, and local data.

If this machine is configured as a CDS server, it is recommended that you create a new file system mounted over **/var/dce/directory** before you install DCE.

You should reserve about 30 megabytes for the server’s use.

If you do not plan to create a separate files system for the CDS server, you should add the additional 30 megabytes to **/var/dce**.

**/var/dce/security**
This is where the Security Server stores the registry, credentials, and local data. If this machine will be a Security Server, you should add an additional 10 megabytes to **/var/dce** for the server’s use.

Files stored in **/var/dce** are any files particular to the individual machine. You should monitor the space usage in **/var/dce** (and any associated separate files systems) to make sure it does not fill up. To clean up expired credentials files in **/var/dce**, use the **/usr/lpp/dce/bin/rmxcred** command. The DCE Auditing facility also uses space in **/var/dce**. See the **IBM DCE Version 3.2 for AIX and Solaris: Administration Commands Reference** for more information on **rmxcred** and DCE Auditing.
DCE Daemon Core Locations

The following list shows the locations of DCE daemons and where they dump core:

- secd - /opt/dcelocal/var/security/adm/secd
- dced - /opt/dcelocal/var/dced
- cdsd - /opt/dcelocal/var/directory/cds/adm/cdsd
- gad - /opt/dcelocal/var/directory/cds/adm/gad
- csdadv - /opt/dcelocal/var/adm/directory/cds/csdadv
- cdsclerk - /opt/dcelocal/var/adm/directory/cds/cdsclerk
- dtsd - /opt/dcelocal/var/time/adm/dtsd
- pwd_strengthd - /opt/dcelocal/var/security/adm/pwd_strength
- idmsd - /opt/dcelocal/var/security/adm/idmsd
- emsd - /opt/dcelocal/var/sysmgmt/adm/emsd
- dceagtd - /opt/dcelocal/var/sysmgmt/adm/dceagtd
- audit - /opt/dcelocal/var/audit/adm
- nsid - /opt/dcelocal/var/directory/cds/adm/nsid
- session_manager - /tmp/sessmgr
- session_manager_control - /tmp/session_control

The following is Solaris specific:
- nss_dce_server - /opt/dcelocal/var/security/adm/nss.

The following is AIX specific:
- dceunixd - /opt/dcelocal/var/security/adm/dceunixd
Chapter 5. Overview of DCE Maintenance

Once you have performed the tasks required for planning, installing, and configuring your DCE system, you can go on to perform the tasks required for maintaining the system. The initial tasks of planning, installing, and configuring are performed infrequently, some only once. Maintenance tasks, however, are performed on a regular basis throughout the lifetime of your system.

Maintenance of a distributed system includes the following areas:

- Performance tuning
- Configuration control
- Security and access control

This chapter summarizes some of the primary DCE administration tasks. The first section of this chapter tells you how to start up DCE. The remaining sections describe tasks that apply to the individual components of DCE. DCE component tasks are documented in detail in the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components*, and *IBM DCE for AIX, Version 3.1: DFS Administration Guide and Reference*.

Changing the Network Address of a DCE Machine

Occasionally, a machine running DCE will need to change its network address. DCE stores the network address in several files which need to be updated. See the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* for information on how to change an IP address.

CDS Maintenance Tasks

CDS components, including clerks, servers, and clearinghouses, are largely self-regulating. Except for routine monitoring, CDS requires little intervention for system administration. When intervention is required, CDS provides system administration tools to help you monitor and manage the CDS namespace and CDS servers.

You can use the DCE control program (*dcecp*) commands described in the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* to create and manage the components of a CDS namespace.

If you have a large organization, you can improve efficiency by having one system administrator responsible for CDS servers and another system administrator responsible for the namespace. You can delegate responsibility for a subtree of the namespace to another administrator by granting access control rights to that person.

For more detailed information on CDS maintenance tasks, see the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components*.
Monitoring CDS

CDS monitoring tasks fall into the following two categories:

• Monitoring the namespace
  – Monitor the size and usage of clearinghouses and determine the need for new CDS servers and clearinghouses. Plan and oversee the configuration of these new servers and clearinghouses.
  – Maintain and monitor a map of the namespace.

• Monitoring CDS servers
  – Enable event logging, monitor CDS events, and solve system-specific problems if they arise. If necessary, notify the namespace administrator of problems that can affect other CDS servers or clerks.
  – Monitor the success of skulks that originate at the server. A skulk is a method of updating all replicas through repeated operations.
  – Monitor the size and usage of the server’s clearinghouse and, if necessary, discuss with the namespace administrator the need to relocate some replicas or create a new clearinghouse.
  – Monitor and tune system parameters that affect or are affected by CDS server operation.

Note: When monitoring memory usage for CDS servers, it is important to understand that memory remains allocated under certain conditions. Memory associated with objects remains allocated until a skulk is successfully completed. Memory associated with directories remains allocated until the server is disabled and restarted.

For detailed discussions of these tasks, see the IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components.

Managing CDS

CDS management tasks fall into the following two categories:

• Managing the namespace
  – Oversee the creation of new directories and assign names according to a standard, or enforce established guidelines in the assigning of names. (Beyond a certain level in the directory hierarchy, you can delegate the responsibility of creating and maintaining directories. You need to keep track of the new directories being created to make sure they are appropriately replicated.)
  – Determine the default access control policy.
  – Administer and enforce the established access control policy for directories and entries.
  – Determine where and when new replicas of a directory are necessary.
  – Create soft links for objects that change locations or for objects that need to be renamed. An object is a resource, such as a disk, an application, or a node, that is given a CDS name. A name plus its attributes make up an object entry. A soft link is a pointer that provides an alternate name for an object entry. Publicize and encourage the use of the new names so that eventually the soft links can be deleted.

• Managing CDS servers
– Manage access control on directories and objects, and monitor the size and usage of directories in the server’s clearinghouse. Create new directories, possibly with the namespace administrator, when necessary.
– Create new objects in directories or oversee their creation. (Beyond a certain level in the directory hierarchy, you also can delegate the responsibility of maintaining directories and the objects in them.)
– Add new administrators to the cds-admin security group.

The IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components provides detailed information about how to perform these tasks.

CDS Security and Access Control
The DCE control program (dcecp) and CDS ACL Manager work together to manage authorization in CDS. To modify, add, delete, or view ACL entries in the CDS namespace, use dcecp acl commands. When dcecp issues a request to perform an operation on a CDS object, the CDS ACL Manager checks permissions, based on ACL entries, and grants or denies the request. The CDS ACL Manager is an integral part of the cdssd and cdsadv processes.

The IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components provides detailed information about handling CDS security and access control, including guidelines for setting up access control in a new namespace.

DTS Maintenance Tasks
Like CDS, DTS is largely self-regulating once configuration of the service is complete. However, there are times when you need to intervene. Use dcecp to perform the following DTS configuration and management tasks:
• Identify system clock problems.
• Adjust the system clocks.
• Change DTS attributes for varying WAN conditions.
• Modify the system configuration when the network environment changes.

For more detailed information on DTS maintenance tasks, see the IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components.

Managing the Distributed Time Service
You can use dcecp to create and enable DTS. Once this is done, you can perform routine management tasks, such as enhancing performance, reconfiguring the network, and changing local time.

Several commands and characteristics modify and improve the performance of your network. The dts modify command changes the values of many of these characteristics. The dts show command displays the values of characteristics at any time. The following are some of the tasks you can accomplish using the DTS commands and the characteristics of DTS that can be set:
• Display or change the number of servers that must supply time values to the system before DTS can synchronize the system clock.
• Display or change the inaccuracy limit that forces the system to synchronize in order to bring the inaccuracy back to an acceptable level.
• Display or change the interval at which you want clock synchronization to occur.
• Display or change the reaction to a faulty system clock.
• Display or change the settings that indicate how often to query servers.
Refer to the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* for more information on these and the following tasks:

- Creating and enabling DTS.
- Assigning the courier role to servers to facilitate communications to other parts of your network.
- Matching the epoch number for servers that you add to your network after the initial configuration. An *epoch number* is an identifier that a server appends to the time values it sends to other servers. Servers only use time values from other servers with whom they share epoch numbers.
- Advertising DTS servers to CDS, thereby registering them as objects in the namespace.

### Modifying System Time

Sometimes you need to modify the system time. You can update time to match the international time standard, Coordinated Universal Time (UTC), from a source such as telephone, radio, satellite, or another external referencer, if your network does not use time providers and the network systems have been running for some time. The `clock set` command accomplishes this task by gradually modifying the time.

The `clock set` command used with the `-abruptly` option and the `dts synchronize` command provide additional methods for adjusting the system clock and synchronizing systems. However, neither the example code nor the external time providers are supported by IBM.

### Security Service Maintenance Tasks

The following subsections summarize the maintenance tasks you perform while administering the Security Service. For more detailed information on Security maintenance tasks, see the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components*.

### Managing the Security Service

The Security Service management tasks include the following:

- Creating and maintaining accounts by using `dcecp`

  `dcecp` provides commands for creating and maintaining registry information, including persons, groups of users, and accounts.

  Keep the following things in mind when administering DCE accounts:
  - If you share files with other systems that do not use the registry, be sure that names, UNIX IDs, and account information are consistent between the registry and the foreign password and group files. Use `passwd_import` to identify and resolve any conflicts that exist. The *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* describes how `passwd_import` works.
  - If you maintain `/etc/passwd` and `/etc/group` files in standard UNIX format, you need to run `passwd_export` to make password, group, and organization files on local machines consistent with the registry. See the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* for more information about the `passwd_export` command.
  - For principals in other cells to access objects in your cell, you need to set up a special account for the foreign cell in your cell's registry. This account
indicates that you trust the Authentication Service in the foreign cell to correctly authenticate its users. Use the `dcecp registry connect` command to create an account for a foreign cell.

- **Using ACLs**

  Use the `dcecp acl` commands to display, add, modify, and delete ACL entries for a specific object in the cell namespace. (See the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* for detailed information on how to use the `dcecp acl` command.)

- **Setting and maintaining registry policies**

  Registry policies include certain password and account information. Policies also include overrides, which are exceptions tied to a specific machine. Use the `dcecp registry` commands to set and maintain registry policies. Details on how to these commands are in the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components*.

  Ticket expiration date, password life span, password format, and password expiration date are examples of registry policies that you can set. If both an organizational policy and a registry policy exist for password format, for example, the more restrictive policy applies.

  You can establish overrides to the information contained in the registry. Override information is stored in the `passwd_override` and `group_override` files on a local machine. The `passwd_override` file contains the home directory, the login shell, entries for overriding the password, and GECOS information, which is general information that is used by users but not required by the system, such as office and phone numbers. For details about how to edit the `passwd_override` file, refer to the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components*.

  **Note:** If the cell policy for password expiration or password lifetime is set to something other than `forever`, it applies to all principals, including `dce_rgy`. If you exceed this limit, `secd` will not be able to authenticate. Thus, your security server will not be operational. It is recommended that you set these limits to `forever` and set other limits on the basis of organizations or accounts.

- **Backing up the registry**

  The *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* describes the back-up procedure to follow for the master registry site. When you restore the database, it is automatically propagated to the slaves. The *IBM DCE Version 3.2 for AIX and Solaris: DCE Security Registry and LDAP Integration Guide* contains information about backing up the registry on an LDAP security server.

- **Administering LDAP security servers**

  See *IBM DCE Version 3.2 for AIX and Solaris: DCE Security Registry and LDAP Integration Guide* for information about administering and troubleshooting a cell that uses LDAP security servers.

- **Setting up and maintaining Audit Service data**

  Audit Service data includes event numbers, event class numbers, event class files, audit filters, and audit trail files. Use the `dcecp aud`, `audevents`, `audfilter`, and `audtrail` commands to manage Audit Service data. The *IBM DCE Version 3.2 for AIX and Solaris: Administration Commands Reference* provides descriptions of audit-related `dcecp` objects and commands. See the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* for more information about Audit Service administration.
• Troubleshooting

When you encounter problems that cannot be resolved through routine management procedures, or when hardware failures stop the registry from operating, there are several troubleshooting procedures you can use. The *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components* describes the following tasks:

- Recreating a registry replica
- Recovering the master registry
- Forcibly deleting a replica
- Adopting registry objects that are orphaned because their owner has been deleted

**Reconfiguring the Registry**

There are two main reconfiguration tasks included in the administration of the Security Service. The following tasks are described in the *IBM DCE Version 3.2 for AIX and Solaris: Administration Guide—Core Components*:

• Changing the master registry site when you plan to remove the machine that runs the master registry server from your network or shut the machine down for an extended period

• Removing a server host from the network when you plan to remove a machine that runs a slave registry server from the network or shut that machine down for an extended period

**Removing Expired Credentials Files**

The `/var` file system may periodically fill up, especially if expired credentials files are not removed. If you are root, you can use the `rmxcred` tool to remove expired tickets from the credentials directory (`dcelocal/var/security/creds`). You should invoke this tool on a regular basis, such as setting up a `cron` job to run the tool daily.
Part 2. Additional Configuration Information
Chapter 6. Configuration Response Files

A response file contains the information that you would normally specify on the command line. Using a response file allows you to automate your configuration process by eliminating the need to enter the information on the command line. Response files can be used with the config.dce and unconfig.dce commands. For more information about these commands see the IBM DCE Version 3.2 for AIX and Solaris: Administration Commands Reference.

If you prefer to automate only part of the process, you can create a partial response file that contains information for only one option or a few options. You can then specify the remaining options on the command line. Options specified on the command line will override the values provided in the response file.

A DCE response file can be very helpful when performing multiple administrative configurations. Global sections can be used to define common information for all machines. Individual host sections can be used to indicate which machines are to have configuration steps performed. With such a response file, the config.dce or the unconfig.dce commands need to be invoked only once.

Each line in the response file contains a keyword and an associated value. The value is used by the configuration program as if it were input on the command line. Consider this example:

dce_hostname=georgia

In this example, the keyword is dce_hostname and the associated value is georgia. The configuration program uses georgia as the value for the -dce_hostname command line option.

The DCE for AIX package includes one sample response file, DCE Client Services. Use this file to create your own response files. Perform the following:

1. Copy /opt/dcelocal/etc/rspfiles/dce_smpl.rsp as XXXXXXXXX.RSP, where XXXXXXXXX is a name that you choose for your new response file.
2. Edit the file by changing the keyword values to fit your installation.

   Note: You can remove keywords and change the values, but do not change the keyword names.

Key words for DCE Response Files

The DCE configuration response file contains two types of information: cell information and host (machine) information. (Typically, cell information is stored in one response file and host information is stored in another response file. The files are then linked together by including one of the files in the other file. This allows the machines in a cell to each use the same cell response file and an individual host file.)

All information in a response file is optional. If the DCE configuration program requires a piece of information that is not included in the response file, the configuration interface informs you that the information is missing.
You can create response files using an ASCII text editor. When you create a response file with an editor, refer to the following formatting rules:

- Every line is either a comment or a response line. Blank lines are treated as comment lines.
- The first nonblank character of a comment line must be and asterisk (*) or a number sign (#). Comments cannot be imbedded in response lines.
- Keywords are not case-sensitive and can begin anywhere on the line. However, a keyword with a single value must be contained entirely on one line.
- Response lines contain information in one of the following formats:

  **Value string**
  The response line contains the keyword, an equals sign (=), and a value. For example,

  ```
  config_type=local
  ```
  A value string must be contained on one line and cannot contain parentheses.

  **Value list**
  The response line contains the keyword, the equals sign (=), and several values contained in parentheses and separated by commas. Each value in the value list can be a single value or a value string. For example,

  ```
  host_id=(
    tcpip_name=chariot.roma.italia.com
  )
  ```
  A value list can also contain other value lists, or it can be empty. The end parenthesis (")) on a line by itself marks the end of the value list.

- Keywords within a section of a response file can be in any order.
- To imbed a response file into another response file, use the `include` keyword. For example:

  ```
  ...
  include /mydir/svrresp2.rsp
  ...
  ```

**Cell Section Keywords**

The cell section of a response file contains keywords and information that apply to the entire cell. For this reason, you may want to create a response file for the cell information only. You can then include this file in several host response files.

The following keywords specify information associated with the cell. Use these keywords in the cell section only.

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>cell_name</td>
<td>PCS (except a space and the @, ;, and - characters)</td>
<td>Maximum length: 220</td>
<td>-cell_name</td>
</tr>
<tr>
<td>cell_administrator</td>
<td>PCS (except a space and the @, ;, and - characters)</td>
<td>Maximum length: 255</td>
<td>-cell_admin</td>
</tr>
</tbody>
</table>
Table 1. DCE Cell Keywords (continued)

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>cell_admin_unix_id</td>
<td>Numeric</td>
<td>Range: 0-2, 147, 483, 647</td>
<td>-cell_admin_unix_id</td>
</tr>
<tr>
<td>max_unix_id</td>
<td>Numeric</td>
<td>Range: 0-2, 147, 483, 647</td>
<td>-max_unix_id</td>
</tr>
<tr>
<td>min_group_unix_id</td>
<td>Numeric</td>
<td>Range: 0-2, 147, 483, 647</td>
<td>-min_group_id</td>
</tr>
<tr>
<td>min_organization_unix_id</td>
<td>Numeric</td>
<td>Range: 0-2, 147, 483, 647</td>
<td>-min_org_id</td>
</tr>
<tr>
<td>min_principal_unix_id</td>
<td>Numeric</td>
<td>Range: 0-2, 147, 483, 647</td>
<td>-min_princ_id</td>
</tr>
<tr>
<td>master_security_server</td>
<td>Value list</td>
<td>Table 4 on page 42</td>
<td>-sec_master</td>
</tr>
<tr>
<td>cds_server</td>
<td>Value list</td>
<td>Table 4 on page 42</td>
<td>-cds_server</td>
</tr>
<tr>
<td>host</td>
<td>Value list</td>
<td>Table 2</td>
<td>(not applicable)</td>
</tr>
</tbody>
</table>

Host Section Keywords

Host information is contained within a host section in a response file. A host section begins with a `host=` keyword and ends with a right parenthesis “)”. The host section of a response file consists of host keywords only; any cell keyword within a host section is ignored.

There are two types of host sections:

**Global**

A response file can contain only one global host section, which is for information that is used to initialize configuration values for subsequent specific host sections. The global section of a response file does not contain the `dce_hostname` or `host_id` keywords. If a global host section is included in a response file, it must be the first host section encountered. If the DCE Configuration program encounters a global host section after the first host section, a warning is written to the log file and the global section is ignored.

**Specific**

Contains the `dce_hostname` or `host_id` keywords. A specific host section contains configuration values for a particular host. The specific host sections override global values by including the keywords and setting them to different values. A response file can contain multiple specific host sections.

The following table describes the host information keywords:

Table 2. DCE Host Keywords

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>config_type</td>
<td>Option</td>
<td>Choices: full, admin, local</td>
<td>-config_type</td>
</tr>
<tr>
<td>cds_replica</td>
<td>Value list</td>
<td>Table 3 on page 42</td>
<td>-cds_replica_list</td>
</tr>
<tr>
<td>dce_hostname</td>
<td>Text</td>
<td>Maximum length: 255</td>
<td>-dce_hostname</td>
</tr>
<tr>
<td>lan_profile</td>
<td>Text</td>
<td>Maximum length: 255</td>
<td>-lan_profile</td>
</tr>
</tbody>
</table>
Table 2. DCE Host Keywords (continued)

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>wrap_audit_trail</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>-wrap_audit_trail</td>
</tr>
<tr>
<td>host_id</td>
<td>Value list</td>
<td>Table 3</td>
<td>(not applicable)</td>
</tr>
<tr>
<td>protocols¹</td>
<td>Option</td>
<td>Choices: tcpip_connection_oriented, tcpip_connectionless, all, none</td>
<td>-protocol</td>
</tr>
<tr>
<td>autostart</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>-autostart</td>
</tr>
<tr>
<td>clean_autostart</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>-clean_autostart</td>
</tr>
<tr>
<td>sync_clock</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>-sync_clocks</td>
</tr>
<tr>
<td>sync_server</td>
<td>Value list</td>
<td>Table 3</td>
<td>-time_server</td>
</tr>
<tr>
<td>components</td>
<td>Value list</td>
<td>Table 4</td>
<td>(not applicable)</td>
</tr>
<tr>
<td>public_key</td>
<td>Value list</td>
<td>Table 7 on page 44</td>
<td>(not applicable)</td>
</tr>
<tr>
<td>ldap_registry</td>
<td>Value list</td>
<td>Table 7 on page 44</td>
<td>-ldap_registry</td>
</tr>
</tbody>
</table>

Note: 1. This keyword has comma-separated values. There cannot be any spaces between the commas and the tokens. For example:

protocols=tcpip_connection_oriented,tcpip_connectionless

Keywords for Identifying Machines

Several cell and host keywords require a value list that contains the network ID of a machine (usually a server) that the host communicates with. The network ID for a machine can be specified using one or more of the following keywords with a value.

Table 3. Host Identification Value

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>tcpip_name</td>
<td>IP host name</td>
<td>Dotted format, maximum length: 255; example: uniqienm.domain.ibm.com</td>
<td>-host_id</td>
</tr>
<tr>
<td>tcpip_addr</td>
<td>IP address</td>
<td>Numeric separated by periods, maximum length: 15; example: 123.45.67.89</td>
<td>-host_id</td>
</tr>
</tbody>
</table>

Values for the Components Keyword

The components keyword identifies the components to configure on a host. The components value list can contain several of the components listed in Table 4.

The following table lists the possible keywords you can use to specify components and the values that each component requires:

Table 4. Components Keywords

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>DESCRIPTION</th>
<th>VALUE TYPE</th>
<th>VALUE</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>client</td>
<td>All client components</td>
<td>Value list</td>
<td>Table 5 on page 43</td>
<td>all_cl</td>
</tr>
</tbody>
</table>
### Table 4. Components Keywords (continued)

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>DESCRIPTION</th>
<th>VALUE TYPE</th>
<th>VALUE</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>nsid</td>
<td>Name service interface daemon</td>
<td>Value list</td>
<td>Table 5</td>
<td>nsid</td>
</tr>
<tr>
<td>pam (Solaris only)</td>
<td>Portable authentication module</td>
<td>Value list</td>
<td>Table 5</td>
<td>pam</td>
</tr>
<tr>
<td>nsswitch (Solaris only)</td>
<td>Name service switch</td>
<td>Value list</td>
<td>Table 5</td>
<td>nsswitch</td>
</tr>
<tr>
<td>slim_client</td>
<td>The slim client component</td>
<td>Value list</td>
<td>Table 5</td>
<td>slim_cl</td>
</tr>
<tr>
<td>sec_cl</td>
<td>Security client</td>
<td>Value list</td>
<td>Table 5</td>
<td>sec_cl</td>
</tr>
<tr>
<td>sec_srv</td>
<td>Master Security server</td>
<td>Value list</td>
<td>Table 5</td>
<td>sec_srv</td>
</tr>
<tr>
<td>sec_rep</td>
<td>Security replica server</td>
<td>Value list</td>
<td>Table 5</td>
<td>sec_rep</td>
</tr>
<tr>
<td>cds_cl</td>
<td>CDS client</td>
<td>Value list</td>
<td>Table 5</td>
<td>cds_cl</td>
</tr>
<tr>
<td>cds_svr</td>
<td>Initial CDS server</td>
<td>Value list</td>
<td>Table 5</td>
<td>cds_svr</td>
</tr>
<tr>
<td>cds_second</td>
<td>Additional DCS server</td>
<td>Value list</td>
<td>Table 5</td>
<td>cds_second</td>
</tr>
<tr>
<td>gda_svr</td>
<td>Global Directory Agent</td>
<td>Value list</td>
<td>Table 5</td>
<td>gda</td>
</tr>
<tr>
<td>dts_client</td>
<td>DTS client</td>
<td>Value list</td>
<td>Table 5</td>
<td>dts_cl</td>
</tr>
<tr>
<td>dts_local</td>
<td>DTS local server</td>
<td>Value list</td>
<td>Table 5</td>
<td>dts_local</td>
</tr>
<tr>
<td>dts_global</td>
<td>DTS global server</td>
<td>Value list</td>
<td>Table 5</td>
<td>dts_global</td>
</tr>
<tr>
<td>rpc</td>
<td>RPC</td>
<td>Value list</td>
<td>Table 5</td>
<td>rpc</td>
</tr>
<tr>
<td>sec_audit</td>
<td>audit</td>
<td>Value list</td>
<td>Table 5</td>
<td>audit</td>
</tr>
<tr>
<td>pw_strength_srv</td>
<td>Password synchronization server (multiples are permitted)</td>
<td>Value list</td>
<td>Table 5</td>
<td>pw_strength_srv</td>
</tr>
<tr>
<td>ems</td>
<td>Event Management Service</td>
<td>Value list</td>
<td>Table 5</td>
<td>ems_srv</td>
</tr>
<tr>
<td>snmp</td>
<td>DCE SNMP Subagent</td>
<td>Value list</td>
<td>Table 5</td>
<td>snmp_srv</td>
</tr>
<tr>
<td>idms</td>
<td>Identity Mapping server</td>
<td>Value list</td>
<td>Table 5</td>
<td>idms</td>
</tr>
<tr>
<td>dceunixd (AIX only)</td>
<td>Integrated Login</td>
<td>Value list</td>
<td>Table 5</td>
<td>dce_unixd</td>
</tr>
</tbody>
</table>

### Table 5. Components General Keywords

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMPONENTS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>config_state</td>
<td>Option</td>
<td>Choices: configured, not_configured</td>
<td>All components</td>
<td>(not applicable)</td>
</tr>
<tr>
<td>unconfig_depend</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>All components</td>
<td>-dependents</td>
</tr>
<tr>
<td>force_unconfig</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>All components</td>
<td>-force</td>
</tr>
<tr>
<td>name</td>
<td>Text</td>
<td>Maximum length 255</td>
<td>secrep, secsvr</td>
<td>-sec_server_name</td>
</tr>
<tr>
<td>proxy</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>cds_cl</td>
<td>-proxy</td>
</tr>
<tr>
<td>clearinghouse</td>
<td>Text</td>
<td>Maximum length 255</td>
<td>cds_second</td>
<td>-clr_house</td>
</tr>
</tbody>
</table>
Table 5. Components General Keywords  (continued)

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMPONENTS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ldap_server¹</td>
<td>Text</td>
<td>Maximum length 255</td>
<td>gda_svr</td>
<td>-ldap_server</td>
</tr>
<tr>
<td>role</td>
<td>Option</td>
<td>Choices: noncourier, courier, backupcourier</td>
<td>dts_local, dts_global</td>
<td>-courier_role</td>
</tr>
<tr>
<td>server_command</td>
<td>Text</td>
<td>Maximum length 255</td>
<td>pw_strength_svr</td>
<td>-pwdstr_cmd</td>
</tr>
<tr>
<td>command_args</td>
<td>Text</td>
<td>Maximum length 255</td>
<td>pw_strength_svr</td>
<td>-pwdstr_arg</td>
</tr>
<tr>
<td>account</td>
<td>Value list</td>
<td>Table 6</td>
<td>pw_strength_svr</td>
<td>(not applicable)</td>
</tr>
<tr>
<td>no_pesite_update</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>rpc</td>
<td>-no_pesite_update</td>
</tr>
<tr>
<td>pesite_update_time</td>
<td>Numeric</td>
<td>Range: 10-1440</td>
<td>rpc</td>
<td>-pesite_update_time</td>
</tr>
<tr>
<td>num_dce_unixd</td>
<td>Numeric</td>
<td>Range: 1-5</td>
<td>dceunixd</td>
<td>-num_dce_unixd</td>
</tr>
<tr>
<td>cache_lifetime</td>
<td>Numeric</td>
<td>Range: 2-120</td>
<td>dceunixd</td>
<td>-cache_lifetime</td>
</tr>
</tbody>
</table>

Note: 1. If a value is given for the ldap_server keyword in both the gda_svr component value list and the ldap_registry value list, the value given in the ldap_registry value list will override.

Table 6. Account Keywords

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>Text</td>
<td>Maximum length: 255</td>
<td>-pwdstr_principal</td>
</tr>
<tr>
<td>protect_level</td>
<td>Option</td>
<td>Choices: pktprivacy, pktinteg, cdmf</td>
<td>-pwdstr_protect_level</td>
</tr>
</tbody>
</table>

Table 7. Public Key Certificate Keywords

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>certificate_based_login</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>-certificate_based_login</td>
</tr>
<tr>
<td>kdc_ini_file</td>
<td>Text</td>
<td>Maximum length: 511</td>
<td>-kdc_ini_file</td>
</tr>
<tr>
<td>kdc_profile</td>
<td>Text</td>
<td>Maximum length: 255</td>
<td>-kdc_profile</td>
</tr>
<tr>
<td>kdc_passphrase</td>
<td>Text</td>
<td>Maximum length: 511</td>
<td>-kdc_passphrase</td>
</tr>
</tbody>
</table>

Table 8. LDAP Registry Keywords

<table>
<thead>
<tr>
<th>KEYWORD</th>
<th>VALUE TYPE</th>
<th>VALUE RESTRICTIONS</th>
<th>COMMAND LINE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ldap_server¹</td>
<td>Text</td>
<td>Maximum length: 255</td>
<td>-ldap_server</td>
</tr>
<tr>
<td>ldap_dn</td>
<td>Text</td>
<td>Maximum length: 255</td>
<td>-ldap_dn</td>
</tr>
<tr>
<td>ldap_dn_pw</td>
<td>Text</td>
<td>Maximum length: 511</td>
<td>-ldap_dn_pw</td>
</tr>
<tr>
<td>ldap_ssl</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>-ldap_ssl</td>
</tr>
<tr>
<td>ldap_keyring</td>
<td>Text</td>
<td>Maximum length: 511</td>
<td>-ldap_keyring</td>
</tr>
<tr>
<td>ldap_keyring_pw</td>
<td>Text</td>
<td>Maximum length: 511</td>
<td>-ldap_keyring_pw</td>
</tr>
<tr>
<td>ldap_auth</td>
<td>Option</td>
<td>Choices: none, ssl, gssapi, cram-md5</td>
<td>-ldap_auth</td>
</tr>
<tr>
<td>ldap_master_key_in ldap</td>
<td>Option</td>
<td>Choices: yes, no</td>
<td>-ldap_master_key_in_ldap</td>
</tr>
<tr>
<td>ldap_dce_master_key</td>
<td>Text</td>
<td>Maximum length: 511</td>
<td>-ldap_dce_master_key</td>
</tr>
</tbody>
</table>

Note: 1. If a value is given for the ldap_server keyword in both the ldap_registry value list and the gda_svr component value list, the value given in the ldap_registry value list will override.
Appendix A. Moving an Initial CDS Server

Note: This procedure only works if no second CDS server has already been defined. It will not work if one or more CDS servers are active and master replicas are spread over different clearinghouses. When defining the replica set, you need to specify all existing replicas.

1. Create an additional CDS server on the machine that you want to become the initial CDS server. This new CDS server is referred to as BoxB. The machine with the original master CDS server is referred to as BoxA.

```
# config.dce cds_second
or (AIX only)
# smit mkcdssrv
```

2. Log in to DCE as cell_admin on both machines.

3. Use the `cdsl` command to verify the directories in CDS. Copy all directories from BoxA to BoxB.

```
# cdsli -dR
```

4. Verify that the additional CDS server is empty on BoxB.

```
# cdscp
cdscp> set cdscp preferred clearinghouse .:/<BoxB>_ch
cdscp> show dir .:/*
cdscp> quit
```

5. Replicate all CDS directories to the new additional CDS server(s) (BoxB) clearinghouse, and make them the master replicas:

```
# for dir in $(cdsli -R); do
> echo "Creating replica for $dir"
> cdscp create replica $dir clear .:/<BoxB>_ch
> done

# for dir in $(cdsli -R); do
> echo "Swapping master CDS attribute for $dir"
> cdscp set dir $dir to new epoch master .:/<BoxB>_ch readonly .:/<BoxA>_ch
> done
```

6. Verify that the swap worked. You should see that the master replica for everything, including the .:/ directory is located on BoxB’s clearinghouse:

```
# cdscp
cdscp> show dir .:
```

7. Stop and restart DCE to delete the CDS cache on both machines:

```
# stop.dce
# cd /var/dce/adm/directory/cds
# rm cds_cache.*
# start.dce

or

# stop.dce
# clean_up.dce
# start.dce
```
8. If you want to remove the additional CDS server from BoxA.

    # unconfig.dce cds_second

9. Start and restart DCE to perform a CDS client cache refresh on all systems in the cell.

    # stop.dce
    # cd /var/dce/adm/directory/cds
    # rm cds_cache.*
    # start.dce

    or

    # stop.dce
    # clean_up.dce
    # start.dce
Appendix B. Environment Variables

Environment variables are variables used by DCE that customers can set themselves. These variables are described in the following sections on Audit, CDS/XDS, Configuration, IDL, NLS/Security, RPC, and Security variables.

Audit Variables

Setting the DCE Audit Environment variables is discussed in the following topics.

DCEAUDITON

Purpose
Turns auditing on for an application.

Synopsis
DCEAUDITON = <any_value>

Description
If this variable is declared at the time the application is started, auditing is turned on.
The presence or absence of this variable at start time can be used to select which applications use auditing.

Examples
DCEAUDITON=1

DCEAUDITOFF

Purpose
Turns auditing off for an application.

Synopsis
DCEAUDITOFF = <any_value>

Description
If this variable is declared at the time the application is started, auditing is turned off. This takes precedence over DCEAUDITON. If both are declared, auditing is turned off. Auditing is off by default.
The presence or absence of this variable at start time can be used to select which applications use auditing.

Examples
DCEAUDITOFF=1

DCEAUDITFILTERON

Purpose
Turns event filtering on for an application.

Synopsis
DCEAUDITFILTERON = <any_value>
Description
If this variable is declared at the time the application is started, audit filtering is turned on. It is off by default.

The presence or absence of this variable at start time can be used to select which applications use event filtering.

Note: If filtering is turned on in a program that does not export its bindings to the endpoint map (for example, not a RPC-based application server), auditing will fail to process any events generated by that program.

Examples
DCEAUDITFILTERON

DCEAUDITTRAILSIZE
Purpose
Sets the maximum size of an audit trail.

Synopsis
DCEAUDITTRAILSIZE = <size_in_bytes>

Description
If this variable is declared at the time the application is started, its value specifies the maximum size of the audit trails to which it writes.

Examples
DCEAUDITTRAILSIZE=1000000

DCEAUDITWRAP
Purpose
Sets the storage strategy for any application to wrap.

Synopsis
DCEAUDITWRAP = <any_value>

Description
If this variable is declared at the time the application is started, the audit trail to which the application writes will use the wrap storage strategy (aud_c_trl_ss_wrap). When wrapping is turned on, audit starts writing audit records until it reaches the size limit. Then it wraps around to the beginning of the trail and continues writing audit records from there. The save storage strategy (aud_c_trl_ss_store) is the default. This only applies to audit trails to which the application sends audit records.

Examples
DCEAUDITWRAP=1

SECDAUDITWRAP
Purpose
Sets the storage strategy for the security server to wrap.
Synopsis

SECOAUDITWRAP = <any_value>

Description

If this variable is declared at the time the security server is started, it will use the wrap storage strategy (**aud_c_trl_ss_wrap**). When wrapping is turned on, audit starts writing audit records until it reaches the size limit. Then it wraps around to the beginning of the trail and continues writing audit records from there. The save storage strategy (**aud_c_trl_ss_save**) is the default.

Examples

SECOAUDITWRAP = 1

---

**CONFIGURATION**

**DCELOCAL**

**Purpose**

Sets the /opt/dcelocal path.

**DCE_CFG_LOG_MAX**

**Purpose**

Modifies the size of the DCE Configuration Log. The default is 100,000 bytes.

**DCE_CONFIG_LOGPATH**

**Purpose**

Relocates the DCE Configuration Log.

---

**EMS**

Setting the DCE Event Management Service (EMS) variables is discussed in the following topics.

**EMS_QUEUE_SIZE**

**Purpose**

Sets the event queue for the EMS daemon (emsd).

**Synopsis**

export EMS_QUEUE_SIZE=n  (where n > 0)

**Description**

The EMS event queue size can be set using the EMS_QUEUE_SIZE environment variable. If the EMS starts receiving queue full errors, the daemon should be restarted using a larger queue size.

The queue size default is 512. Although the queue size can be set to any integer value greater than zero, you should not make the queue too small or too large. Try increments of 256 until the queue full errors subside.

The changes do not take effect until DCE is restarted.

**Examples**

export EMS_QUEUE_SIZE=768
EMS_EVENTLOG_DIR

Purpose
Sets the directory where the EMS event log will be located.

Synopsis
export EMS_EVENTLOG_DIR=<path to log directory>

Description
The EMS event log is used to store events in case of EMS failures. EMS writes all events to the event log and deletes the event record after event has been transmitted to all consumers that are supposed to receive the event. The event log is kept in a file on the machine where emsd is running.

DCE must be restarted for the change to take effect.

The emslog object represents the EMS event log. For example, dcecp –c emslog show can be used to view the event log from the command line.

Examples
export EMS_EVENTLOG_DIR=/tmp

IDL

Setting the DCE IDL Environment variables is discussed in the following topics.

IDL_GEN_AUX_FILES

Purpose
Generate dummy auxiliary files for compilation purposes.

Synopsis
export IDL_GEN_AUX_FILES=<any value>

Description
The auxiliary files (_caux.c and _saux.c) generated by the IDL Compiler in older releases are no longer being generated. Only the stub and header files are needed. Older application Makefiles may contain references to these files. Users who migrate from an old release of DCE may need to remove references to these auxiliary files from their application Makefiles. Alternatively, the environment variable IDL_GEN_AUX_FILES can be set (to any value) to generate dummy auxiliary files to avoid Makefile errors.

Examples
export IDL_GEN_AUX_FILES=1

IDL_GEN_INTF_DATA

Purpose
Add storage information list to the type vector definition of the generated stub files.

Synopsis
export IDL_GEN_INTF_DATA=<any value>
Description

If the environment variable is not NULL, the IDL Compiler will add the storage information list to the type vector definition within the client stub and server stub files.

Examples

```
export IDL_GEN_INTF_DATA=1
```
non-portable characters should be used only in environments which are, and will remain, homogeneous with respect to the code set. If you are using an Asian locale, but you are restricting names to the portable character set, Directory performance can be improved by setting this environment variable to 0. By default, it is set to 1.

**Examples**

```
DCE_USE_WCHAR_NAMES=0
```

---

### RPC

Setting the DCE RPC Environment variables is discussed in the following topics.

#### DCERPCCHARTRANS

**Purpose**

Point to a file containing replacement ASCII/EBCDIC translation tables.

**Synopsis**

```
export DCERPCCHARTRANS=file name
```

**Description**

The file named in the environment variable `DCERPCCHARTRANS` contains the replacement translation tables for the ASCII to EBCDIC and EBCDIC to ASCII tables. This file replaces the default table contained within the RPC runtime.

**Examples**

```
export DCERPCCHARTRANS=tmp.tab
```

#### RPC_CN_AUTH_SUBTYPE

**Purpose**

Determines the checksum algorithm used when RPC encodes a packet.

**Synopsis**

```
export RPC_CN_AUTH_SUBTYPE=number
/* where number is 0 for DES and 1 for MD5 */
```

**Description**

This environment variable determines the checksum algorithm to be used when RPC encodes a packet. The acceptable values are 0 for an 8 byte DES checksum, or 1 for a 16 byte MD5 checksum. If the variable is not set, the default algorithm is MD5.

**Examples**

```
export RPC_CN_AUTH_SUBTYPE=0
```

#### RPC_DEFAULT_ENTRY

**Purpose**

Specifies the starting point for directory service searches.

**Synopsis**

```
export RPC_DEFAULT_ENTRY=entry name in the namespace
```
Description
Designates the default entry in the name service database that the
import and lookup routines use as the starting point to search for
binding information for a compatible server. Normally, the starting
entry is a profile.

An application that uses a default entry name must define this
environment variable. The RPC runtime does not provide a default.
In particular, the environment variable is required when using the
auto_handle IDL attribute.

For example, suppose that a client application needs to search the
name service database for a server binding handle. The application
can use the rpc_ns_binding_import_begin routine as part of the
search. If so, the application must specify, to the routine’s
entry_name parameter, the name of the entry in the name service
database at which to begin the search. If the search is to begin at
the entry that the RPC_DEFAULT_ENTRY environment variable
specifies, then the application must specify the value NULL to
parameter entry_name in routine rpc_ns_binding_import_begin.

Examples

export RPC_DEFAULT_ENTRY=/./:Servers

RPC_DEFAULT_ENTRY_SYNTAX

Purpose
Specifies the syntax of directory service entries.

Synopsis

export RPC_DEFAULT_ENTRY_SYNTAX=value

Description
Specifies the syntax for the name provided in the
RPC_DEFAULT_ENTRY environment variable. In addition, it
provides syntax for those RPC NSI routines that allow a default
value for the name syntax parameter. Valid values are 0 for default
syntax and 3 for DCE syntax. If the
RPC_DEFAULT_ENTRY_SYNTAX environment variable is not
defined, the RPC runtime defaults to the DCE name syntax.

Examples

export RPC_DEFAULT_ENTRY_SYNATX=3

RPC_DISABLE_EP_RESOLVE_V4

Purpose
Disables support for OS/390® load balancing.

Synopsis

export RPC_DISABLE_EP_RESOLVE_V4=any value

Description
This environment variable causes the RPC runtime to use version 3
of the rpc_ep_resolve_binding interface instead of version 4.
Version 4 returns both an endpoint and an IP address, allowing
OS/390 to return a different IP address for load balancing purposes.
Version 3 returns only an endpoint.
Examples

export RPC_DISABLE_EP_RESOLVE_V4=YES

**RPC_DISABLE_SINGLE_THREAD**

**Purpose**
Disables single-threaded behavior.

**Synopsis**

export RPC_DISABLE_SINGLE_THREAD=any value

**Description**
This environment variable is used to disable single threaded behavior in the client side of connectionless RPC applications. There should normally be no reason to use this environment variable.

**Examples**

export RPC_DISABLE_SINGLE_THREAD=YES

**RPC_EXTRA_INTERFACE**

**Purpose**
Adds an extra IP interface for use by the RPC runtime.

**Synopsis**

export RPC_EXTRA_INTERFACE=ip address

**Description**
This environment variable is used to add an extra IP interface to the list of IP interfaces used by the RPC runtime. This would be used when the RPC runtime is not already detecting the presence of this interface.

**Examples**

export RPC_EXTRA_INTERFACE=111.111.111.111

**RPC_ITIMER_SIGNAL**

**Purpose**
Specifies the type of itimer signal used when RPC is single threaded.

**Synopsis**

export RPC_TIMER_SIGNAL=SIGVTALRM or SIGALRM

**Description**
This environment variable is used to set the type of interval timer used when RPC is single threaded. The acceptable values are SIGVTALRM and SIGALRM. The default is SIGVTALRM. SIGVTALRM specifies a timer of type ITIMER_REAL and SIGVTALRM signals. SIGALRM specifies a timer of type ITIMER_REAL and SIGALRM signals.

**Examples**

export RPC_TIMER_SIGNAL=SIGVTALRM
RPC_MAX_UDP_PACKET_SIZE

**Purpose**
Sets the maximum UDP packet size.

**Synopsis**

```bash
export RPC_MAX_UDP_PACKET_SIZE=number
```

**Description**
The RPC runtime by default will break large RPC calls into 4352 byte UDP packets if the `ncadm_ip_udp` protocol is used. If larger packets should be supported, the `RPC_MAX_UDP_PACKET_SIZE` environment variable can be set to the largest size desired. This environment variable can also be set lower to prevent IP fragmentation of the UDP packets, which may be necessary if the packets are traversing a network with extremely limited resources or a firewall that is misconfigured and dropping fragments.

**Examples**

```bash
export RPC_MAX_UDP_PACKET_SIZE=16384
```

RPC_NETADDRS_ORDER

**Purpose**
Defines an order to the IP interfaces that the RPC runtime uses.

**Synopsis**

```bash
export RPC_NETADDRS_ORDER=ipaddress:ipaddress
```

**Description**
This environment variable specifies the order that the configured TCPIP network interfaces are used. It controls the order that the local TCPIP interfaces are used by the RPC runtime. The default is to use all configured TCPIP interfaces in the order they are returned. It controls how a server registers itself in the CDS database and endpoint map by ordering the interfaces. Any interfaces that are not included in this environment variable are added to the end of the list of available interfaces. This is useful in a machine that has multiple network adapters where the DCE traffic is either targeted for or kept from using some of the network interfaces. For example, if there is high traffic on one interface, ordering that interface at the end causes DCE to use the other less-used interfaces. Because you are not excluding the interface, if there is a problem with all other interfaces, DCE can still use this least-preferred interface.

Suppose the machine described above has the following interfaces:

<table>
<thead>
<tr>
<th>Interface</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>eno</td>
<td>125.46.78.91</td>
</tr>
<tr>
<td>en1</td>
<td>125.46.125.91</td>
</tr>
<tr>
<td>tr0</td>
<td>9.25.47.91</td>
</tr>
</tbody>
</table>

The following example uses the `RPC_NETADDRS_ORDER` environment variable to order the token ring and both Ethernet networks by address:

```bash
RPC_NETADDRS_ORDER=9.25.47.91:125.46.78.91:125.46.125.91
```
**Examples**

export RPC_NETADDRS_ORDER=125.46.125.91:9.25.47.91:125.46.78.91

**RPC_NETIFS_ORDER**

**Purpose**

Defines an order to the IP interfaces that the RPC runtime uses.

**Synopsis**

export RPC_NETIFS_ORDER=if_0:if_1

**Description**

This environment variable specifies the order that the configured TCPIP network interfaces are used. It controls the order that the local TCPIP interfaces are used by the RPC runtime. The default is to use all configured TCPIP interfaces in the order they are required. It controls how a server registers itself in the CDS database and endpoint map by ordering the interfaces. Any interfaces that are not included in this environment variable are added to the end of the list of available interfaces. This is useful in a machine that has multiple network adapters where the DCE traffic is either targeted for or kept from using some of the network interfaces. For example, if there is high traffic on one interface, ordering that interface at the end causes DCE to use the other less-used interfaces. Because you are not excluding the interface, if there is a problem with all other interfaces, DCE can still use this least-preferred interface.

**Examples**

export RPC_NETIFS_ORDER=tr0:en0:en1

**RPC_RESTRICTED_PORTS**

**Purpose**

Restricts TCPIP port numbers used by RPC to a certain range.

**Synopsis**

export RPC_RESTRICTED_PORTS=1stprotseq[port#-port#]:2ndprotseq[port#-port#]

**Description**

This environment variable restricts the TCPIP port numbers used by RPC to a certain range. The problem is that RPC applications such as DFS will not work between sites which use router filtering as a security measure. These filters restrict incoming network packets to specific addresses on specific ports. Since RPC dynamically determines port numbers for its services it will not work in this environment. When this environment variable is used, RPC will only use port numbers in the specified ranges. Then the filters can be opened up over those ranges.

If **RPC_RESTRICTED_PORTS** and **RPC_RESTRICTED_SERVER_PORTS** both exist and RPC is running on Solaris, the **RPC_RESTRICTED_PORTS** is ignored.

If **RPC_RESTRICTED_PORTS** and **RPC_RESTRICTED_SERVER_PORTS** both exist and RPC is running on AIX, the **RPC_RESTRICTED_SERVER_PORTS** is ignored.
Examples
export RPC_RESTRICTED_PORTS=ncadg_ip_udp[5000-5500]:ncacn_ip_tcp[6000-6500]
export RPC_RESTRICTED_PORTS=ncacn_ip_tcp[5000-5500,5800-6000]

RPC_RESTRICTED_SERVER_PORTS

Purpose
Restricts TCPIP port numbers used by DCE servers to a certain range.

Synopsis
export RPC_RESTRICTED_SERVER_PORTS=1stprotseq[port#-port#]:2ndprotseq[port#-port#]

Description
This environment variable restricts the TCPIP port numbers used by DCE servers to a certain range. This can help support firewalls by restricting the ports available for use by DCE servers, such as cdsd, cdsav, secd, and gdad. These filters restrict incoming network packets to specific addresses on specific ports.

If RPC_RESTRICTED_PORTS and RPC_RESTRICTED_SERVER_PORTS exist and RPC is running on Solaris, the RPC_RESTRICTED_PORTS is ignored.

If both RPC_RESTRICTED_PORTS and RPC_RESTRICTED_SERVER_PORTS both exist and RPC is running on AIX, the RPC_RESTRICTED_SERVER_PORTS is ignored.

Examples
export RPC_RESTRICTED_SERVER_PORTS=ncadg_ip_udp[5000-5004]

RPC_SUPPORTED_PROTSEQS

Purpose
Limits the protocol sequences used by the RPC runtime.

Synopsis
export RPC_SUPPORTED_PROTSEQS=protseq:protseq

Description
This environment variable is used to tell the RPC runtime to limit the set of supported protocol sequences to those specified. The syntax is to list the desired protocol sequence strings, separated by colons (not semicolons). The default is to use all protocol sequences, for example, ncacn_ip_tcp and ncadg_ip_udp. This environment variable should be used with caution. It will remove support for the protocol sequences which are not specified, and can cause communication failures when a client attempts to contact a server via a protocol sequence that it does not support.

Examples
export RPC_SUPPORTED_PROTSEQS=ncadg_ip_udp

RPC_UNSUPPORTED_NETADDRS

Purpose
Prevents the RPC runtime from using the specified IP interfaces.
Synopsis

export RPC_UNSUPPORTED_NETADDRS=ipaddress:ipaddress

Description

This environment variable is to be used in situations where TCP/IP network interfaces are configured which you do not want DCE to use. It controls which of the local TCPIP interfaces will be used by the RPC runtime. The default is to use all configured TCPIP interfaces. The effect is that it controls how a server registers itself in the CDS database and endpoint map by masking out one or more networks through TCP/IP addresses.

This is useful in a machine that has multiple network adapters where the DCE traffic should be excluded from some of the networks. For example, consider a server machine that has one FDDI network connection for normal day-to-day traffic and is also connected to two Ethernet networks that are used only for X-station traffic. If a DCE server is started on this machine, it will register all three addresses in the CDS namespace and also in the dced endpoint map. This means that all machines on the FDDI network that want to communicate with this server have to have valid routing interfaces to the Ethernet networks because when querying CDS for an address to the server, CDS could return one of the Ethernet addresses to a machine that is only on the FDDI ring.

Suppose the machine described above has the following interfaces:

<table>
<thead>
<tr>
<th>Interface</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>en0</td>
<td>125.46.78.91</td>
</tr>
<tr>
<td>en1</td>
<td>125.46.125.91</td>
</tr>
<tr>
<td>fi0</td>
<td>9.25.47.91</td>
</tr>
</tbody>
</table>

The following example uses the RPC_UNSUPPORTED_NETADDRS environment variable to eliminate both Ethernet networks by address:

RPC_UNSUPPORTED_NETADDRS=125.46.78.91:125.46.125.91

Examples

export RPC_UNSUPPORTED_NETADDRS=129.46.78.9

RPC_UNSUPPORTED_NETIFS

Purpose

Prevents the RPC runtime from using the specified IP interfaces.

Synopsis

export RPC_UNSUPPORTED_NETIFS=if_0:if_1

Description

This environment variable is to be used in situations where TCP/IP network interfaces are configured which you do not want DCE to use. It controls which of the local TCPIP interfaces will be used by the RPC runtime. The default is to use all configured TCPIP interfaces. The effect is that it controls how a server registers itself in the CDS database and endpoint map by masking out one or more networks through TCP/IP interfaces.
Example:

```
export RPC_UNSUPPORTED_NETIFS=en0:en1
```

---

**SECURITY**

Setting the DCE Security Environment variables is discussed in the following topics.

**KRB5CCNAME**

**Purpose**

Specifies the default credentials cache file.

**Synopsis**

```
KRB5CCNAME=FILE:/var/dce/security/creds/dcecred_[XXXXXXXX]
```

**Description**

This environment variable is set when you login to DCE, for example when using the `dce_login` command, or when using AIX/DCE security integration. `KRB5CCNAME` points to a file where your DCE credentials obtained during login are cached. The `XXXXXXXX` portion of the file name is generated randomly each time you login.

Once you login and `KRB5CCNAME` is set, other programs you run can use these the cached DCE credentials (for as long as they are valid), without the need to re-authenticate to DCE to get your credentials. This is why `KRB5CCNAME` is said to refer to the default credentials cache.

By explicitly changing the value of `KRB5CCNAME` you can change your default DCE credentials (providing you have previously logged in to DCE and obtained another credentials file). Note, however, that changing the value of `KRB5CCNAME` does not change your DCE credentials for DFS -- these can only be changed by another login to DCE.

For more information on DCE credentials files, refer to the article on `dcecred_*` files in the *IBM DCE Version 3.2 for AIX and Solaris: Administration Commands Reference*.

**Examples**

```
KRB5CCNAME=FILE:/var/dce/security/creds/dcecred_34210983
```

**BIND_PE_SITE | TRY_PE_SITE**

**Purpose**

Controls how a DCE client looks up the names of security replicas.

**Synopsis**

```
BIND_PE_SITE=[0] [1]
TRY_PE_SITE=[0] [1]
```

**Description**

When a DCE client needs to communicate with a security replica, it customarily looks up a replica name in the cds namespace. However, if the client contacts a replica frequently, the overhead of performing these cds lookups can be significant.
To improve performance, the `BIND_PE_SITE` and `TRY_PE_SITE` environment variables allow the client to lookup security replica names in the `/opt/dcelocal/etc/security/pe_site` file. The `pe_site` file contains the names and locations of the security replicas in the cell. Generally, locating a security replica using the `pe_site` file will be faster than looking in `cds`.

If neither `BIND_PE_SITE` or `TRY_PE_SITE` are set, or are set to 0, then the client will locate a security replica using the traditional method of looking in the `cds` namespace.

If `TRY_PE_SITE` is set to 1, the client will attempt to locate a security replica using the `pe_site` file. If no replica can be contacted, the client will next try to locate a replica by looking in the `cds` namespace.

If `BIND_PE_SITE` is set to 1, the client will attempt to locate a security replica using only the `pe_site` file. If this fails, the client will not look in the `cds` namespace. Rather, the attempt to contact a security replica will fail.

If both `TRY_PE_SITE` and `BIND_PE_SITE` are set to 1, the `TRY_PE_SITE` behavior takes precedence.

The `pe_site` file contains the names and locations of the security replicas in the cell. It is created when the DCE client is first configured into the cell. As security replicas become available and unavailable, the information on security replicas in the `pe_site` file may not be as current as in the `cds` namespace. For this reason, `BIND_PE_SITE` or `TRY_PE_SITE` should only be set when running programs which must contact a security replica frequently (for example, for frequent DCE login or registry operations).

The `pe_site` file is updated with current information on security replicas by the `dced` daemon, which updates it at regular intervals. It can also be updated by running the `chpesite` command.

**Examples**

```
BIND_PE_SITE=1
TRY_PE_SITE=0
```
Appendix C. The DCE Cell Namespace

This appendix describes the names that CDS and the DCE Security Service use within the DCE cell namespace. These namespace entries are created during initial DCE configuration.

In the tables that follow, the CDS Class field is either used internally by the CDS_Clearinghouse entry and the RPC NSI. The Well Known field specifies whether the last component of a name is an architecturally required name. The Default ACLS field specifies the ACLs created by running the DCE configuration script.

The hostname, lclhostname, cellname, and creator entries are defined as follows:

- **hostname**
  This is a cell-relative hostname. For example, the hostname for a host named machine1.abc.com is machine1. Note that for cells with subdomains, a directory structure is possible. For example, the host apollo.mercury.acs.cmu.edu can have a hostname of acs/mercury/apollo.

- **lclhostname**
  This is the single component hostname. This name is always the least significant component of the hostname. The lclhostname for the examples given previously are machine1 and apollo.

- **cellname**
  This is the global name of the cell, without the special character string /.../; for example, seattle.abc.com or C=US/O=ABC/OU=Seattle.

- **creator**
  This is the name of the principal that created the cell.

The CDS Space

Figure 3 and Figure 5 on page 72 illustrate the CDS namespace of a DCE cell namespace. The subsections that follow provide a description of each entry.

![Figure 3. The Top-Level CDS Directory](image-url)
The Top-Level CDS Directory

The following tables describe the namespace entries for /.; the top-level CDS directory.

<table>
<thead>
<tr>
<th>Name</th>
<th>/.;/cell-profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Type</td>
<td>Object</td>
</tr>
<tr>
<td>CDS Class</td>
<td>RPC_Profile</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This is the master default profile for the cell. Ultimately, all other profiles should link to this profile. This profile is created at cell creation and must include the following entry: LAN-Services-UUID /.../cellname/lan-profile Note that like all profile entries, only global names can be used. This profile must include interfaces for the Privilege Server, the Registry Server, and the Authentication Server. In multi-LAN cells this is the profile in which the DTS global set entries are entered.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td>{unauthenticated r– – t– }</td>
</tr>
<tr>
<td>Object ACL</td>
<td>{user creator rwdtc}</td>
</tr>
<tr>
<td></td>
<td>{group subsys/dce/cds-admin rwdtc}</td>
</tr>
<tr>
<td></td>
<td>{group subsys/dce/cds-server rwdtc}</td>
</tr>
<tr>
<td></td>
<td>{group subsys/dce/dts-admin rw– t– }</td>
</tr>
<tr>
<td></td>
<td>{group subsys/dce/dts-servers rw– t– }</td>
</tr>
<tr>
<td></td>
<td>{group subsys/dce/sec-servers : rw_t–}</td>
</tr>
<tr>
<td></td>
<td>{any_other r– – t– }</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.;/fs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Type</td>
<td>Object</td>
</tr>
<tr>
<td>CDS Class</td>
<td>RPC_Group</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
</tbody>
</table>

Figure 4. The CDS hosts Directory
### Name: /.:/fs

**Description:** This is the junction to the DFS filespace within the cell namespace. The character string /: is a CDS soft link to /.:/fs. The RPC bindings of all Fileset Database machines housing the FLDB are listed in this group. This group consists of RPC entries of the following form: /.../cellname/hosts/hostname/self. This object has a single object UUID attached to it.

**Default ACLs**

**Object ACL**

```plaintext
{unauthenticated r-- t-- }
{user creator rwtc}
{group subsys/dce/cds-admin rwtc}
{group subsys/dce/cds-server rwtc}
{group subsys/dce/dfs-fs-servers rwtc}
{group subsys/dce/dfs-admin rwtc}
{any_other r-- t-- }
```

---

### Name: /.:/hosts

**CDS Type:** Directory

**Well Known:** No

**Description:** The host directories are cataloged here.

**Default ACLs**

**Object ACL**

```plaintext
{unauthenticated r-- t-- -- }
{user creator rwtcia}
{user hosts/hostname/cds-server rwtcia}
{user hosts/hostname/self rwtcia}
{group subsys/dce/cds-admin rwtcia}
{group subsys/dce/cds-server rwtcia}
{group subsys/dce/cds-server rwtcia}
{any_other r-- t-- -- }
```

**Initial Object ACL**

```plaintext
{unauthenticated r-- t-- -- }
{group subsys/dce/cds-admin rwtc-- }
{group subsys/dce/cds-server rwtc-- }
{any_other r-- t-- -- }
```

**Initial Container ACL**

```plaintext
{unauthenticated r-- t-- -- }
{group subsys/dce/cds-admin rwtcia}
{group subsys/dce/cds-server rwtcia}
{any_other r-- t-- -- }
```

---

### Name: /.:/lan-profile

**CDS Type:** Object

**CDS Class:** RPC_Profile

**Well Known:** No

**Description:** This is the default LAN profile used by DTS, and potentially by other services. In single LAN cells, this is the profile in which entries for the DTS local set entries are entered.

**Default ACLs**

**Object ACL**

```plaintext
{unauthenticated r-- t-- }
{user creator rwtc}
{group subsys/dce/cds-admin rwtc}
{group subsys/dce/cds-server rwtc}
{group subsys/dce/dts-admin rwtc}
{group subsys/dce/dts-servers rwtc}
{any_other r-- t-- }
```
### Name: 

<table>
<thead>
<tr>
<th>Name: /.:/lan-profile</th>
<th></th>
</tr>
</thead>
</table>

### Name: /.:/hostname_ch

<table>
<thead>
<tr>
<th>CDS Type</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Class</td>
<td>CDS_Clearinghouse</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>All clearinghouses are cataloged in the cell root. This name is only fixed for the first CDS Server you configure. You can choose different names for any additional CDS Servers you configure.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object ACL</td>
</tr>
<tr>
<td>{unauthenticated r-- t--}</td>
</tr>
<tr>
<td>{group subsys/dce/cds-admin rwdtc}</td>
</tr>
<tr>
<td>{group subsys/dce/cds-server rwdtc}</td>
</tr>
<tr>
<td>{any_other r-- t--}</td>
</tr>
</tbody>
</table>

### Name: /.:/sec

<table>
<thead>
<tr>
<th>CDS Type</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Class</td>
<td>RPC_Group</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the RPC group of all Security Servers for this cell. It contains the entries /.:/cellname/subsys/dce/sec/master and (for example) /.:/cellname/subsys/dce/sec/rep_1. This is the junction into the Security namespace.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object ACL</td>
</tr>
<tr>
<td>{unauthenticated r-- t--}</td>
</tr>
<tr>
<td>{user creator rwdtc}</td>
</tr>
<tr>
<td>{user dce-rgy rwdtc}</td>
</tr>
<tr>
<td>{user hosts/rep_1_hostname/self rwdtc}</td>
</tr>
<tr>
<td>{group subsys/dce/cds-admin rwdtc}</td>
</tr>
<tr>
<td>{group subsys/dce/cds-server rwdtc}</td>
</tr>
<tr>
<td>{group subsys/dce/sec-admin rwdtc}</td>
</tr>
<tr>
<td>{group subsys/dce/sec-servers:rwdtc}</td>
</tr>
<tr>
<td>{any_other r-- t--}</td>
</tr>
</tbody>
</table>

### Name: /.:/subsys

<table>
<thead>
<tr>
<th>CDS Type</th>
<th>Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This directory contains directories for different subsystems in this cell. It contains the dce subdirectory. It is recommended that companies adding subsystems to DCE conform to the convention of creating a unique directory below subsys by using their trademark as a directory name (/./subsys/trademark). These directories are used for storage of location-independent information about services. Server entries, groups, and profiles for the entire cell should be stored in directories below subsys.</td>
</tr>
</tbody>
</table>

| Default ACLs |
The CDS hosts Directory

The following tables describe the namespace entries for `/.:/hosts`, the CDS hosts directory.

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/hosts/hostname</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Type</td>
<td>Directory</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>Each host has a directory in which RPC server entries, groups, and profiles associated with this host are stored. This is simply a CDS directory. No bindings are present in the directory object itself; entries exist beneath the directory.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td><code>{unauthenticated r– t– t– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td></td>
<td><code>{user creator rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{user hosts/hostname rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-admin rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-server rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{any_other r– t– t– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td>Initial Object ACL</td>
<td><code>{unauthenticated r– t– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-admin rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-server rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{any_other r– t– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td>Initial Container ACL</td>
<td><code>{unauthenticated r– t– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-admin rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-server rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{any_other r– t– t– t– t– t– t– }</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/hosts/hostname/cds-clerk</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Type</td>
<td>Object</td>
</tr>
<tr>
<td>CDS Class</td>
<td>RPC_Entry</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This entry contains the binding for a CDS clerk.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td><code>{unauthenticated r– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td></td>
<td><code>{user creator rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{user hosts/hostname/cds-clerk rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-admin rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-server rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{any_other r– t– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td>Initial Object ACL</td>
<td><code>{unauthenticated r– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-admin rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-server rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{any_other r– t– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td>Initial Container ACL</td>
<td><code>{unauthenticated r– t– t– t– t– t– }</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-admin rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/cds-server rwdtcia}</code></td>
</tr>
<tr>
<td></td>
<td><code>{any_other r– t– t– t– t– t– t– }</code></td>
</tr>
</tbody>
</table>
### Name: /.:/hosts/hostname/cds-clerk

<table>
<thead>
<tr>
<th>Object ACL</th>
</tr>
</thead>
<tbody>
<tr>
<td>{unauthenticated r-- t-- }</td>
</tr>
<tr>
<td>{user creator rwdtc}</td>
</tr>
<tr>
<td>{user hosts/hostname/self rw- t- }</td>
</tr>
<tr>
<td>{group subsys/dce/cds-admin rwdtc}</td>
</tr>
<tr>
<td>{group subsys/dce/cds-server rwdtc}</td>
</tr>
<tr>
<td>{any_other r-- t-- }</td>
</tr>
</tbody>
</table>

### Name: /.:/hosts/hostname/cds-server

<table>
<thead>
<tr>
<th>CDS Type</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Class</td>
<td>RPC_Entry</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This entry contains the binding for a CDS Server.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td>{unauthenticated r-- t-- }</td>
</tr>
<tr>
<td>{user creator rwdtc}</td>
</tr>
<tr>
<td>{user hosts/hostname/self rw- t- }</td>
</tr>
<tr>
<td>{group subsys/dce/cds-admin rwdtc}</td>
</tr>
<tr>
<td>{group subsys/dce/cds-server rwdtc}</td>
</tr>
<tr>
<td>{any_other r-- t-- }</td>
</tr>
</tbody>
</table>

### Name: /.:/hosts/hostname/config

<table>
<thead>
<tr>
<th>CDS Type</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Class</td>
<td>RPC_Entry</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This is the server entry for the dced on the given host. It is also the top of the naming tree for that dced. Programs obtain this name by using the call dce_cf_dced_entry_from_host( ).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td>{unauthenticated r-- t-- }</td>
</tr>
<tr>
<td>{user hosts/hostname/self rwdtc- -}</td>
</tr>
<tr>
<td>{group subsys/dce/cds-admin rwdtc- -}</td>
</tr>
<tr>
<td>{group subsys/dce/cds-server rwdtc- -}</td>
</tr>
<tr>
<td>{any_other r-- t-- }</td>
</tr>
</tbody>
</table>

### Name: /.:/hosts/hostname/profile

<table>
<thead>
<tr>
<th>CDS Type</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Class</td>
<td>RPC_Entry</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the default profile for host hostname. It must contain a default that points (possibly indirectly) at /.:/cell-profile. Programs obtain this name by using the call dce_cf_profile_entry_from_host( ).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td>{unauthenticated r-- t-- }</td>
</tr>
<tr>
<td>{user creator rwdtc}</td>
</tr>
<tr>
<td>{user hosts/hostname/self rw- t- }</td>
</tr>
<tr>
<td>{group subsys/dce/cds-admin rwdtc}</td>
</tr>
<tr>
<td>{group subsys/dce/cds-server rwdtc}</td>
</tr>
<tr>
<td>{any_other r-- t-- }</td>
</tr>
</tbody>
</table>
### /hosts/hostname/profile

**Name** | /hosts/hostname/profile
---|---

### /hosts/hostname/self

| CDS Type | Object |
| CDS Class | RPC_Entry |
| Well Known | Yes |
| Description | This entry contains a binding to the dced daemon on host hostname. The dce Cf_binding_entry_from_host() call returns either the name of this entry when handed a hostname or the current host when a hostname is not provided. |

**Default ACLs**

**Object ACL**

{unauthenticated r– – t– }
{user creator rwdtc}
{user hosts/hostname/self rwdtc}
{group subsys/dce/cds-admin rwdtc}
{group subsys/dce/cds-server rwdtc}
{any_other r– – t– }

### The Host Daemon Directory

The following tables describe the dced namespace entries for /hosts/hostname/config, the host daemon directory. These are all created by dced as part of configuration.

#### /hosts/hostname/config

<table>
<thead>
<tr>
<th>Name</th>
<th>/hosts/hostname/config</th>
</tr>
</thead>
<tbody>
<tr>
<td>dced Type</td>
<td>dced object</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>The dced server itself.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{user hosts/hostname/self crws}</td>
</tr>
</tbody>
</table>

#### /hosts/hostname/config/hostdata

<table>
<thead>
<tr>
<th>Name</th>
<th>/hosts/hostname/config/hostdata</th>
</tr>
</thead>
<tbody>
<tr>
<td>dced Type</td>
<td>dced container</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>The container for hostdata objects on the given host.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{user hosts/hostname/self cril}</td>
</tr>
<tr>
<td>Initial Object ACL</td>
<td>{user hosts/hostname/self cdprw}</td>
</tr>
</tbody>
</table>

#### /hosts/hostname/config/keytab

<table>
<thead>
<tr>
<th>Name</th>
<th>/hosts/hostname/config/keytab</th>
</tr>
</thead>
<tbody>
<tr>
<td>dced Type</td>
<td>dced container</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>The container for keytab objects on the given host.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{user hosts/hostname/self cril}</td>
</tr>
<tr>
<td>Initial Object ACL</td>
<td>{user hosts/hostname/self acdepr}</td>
</tr>
</tbody>
</table>
### The CDS subsys Directory

The following tables describe the namespace entries for `/./subsys`, the CDS subsys directory.

<table>
<thead>
<tr>
<th>Name</th>
<th>/./hosts/hostname/config/keytab</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/./hosts/hostname/config/secval</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>dced</strong> Type</td>
<td><strong>dced</strong> object</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>The name of the secval service.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>{user hosts/hostname/self csux}</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/./hosts/hostname/config/srvrconf</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>dced</strong> Type</td>
<td><strong>dced</strong> container</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>Container for the configured servers registered with dced.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>{user hosts/hostname/self criI}</code></td>
</tr>
<tr>
<td></td>
<td><code>{user hosts/hostname/self cdfrwx}</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/./hosts/hostname/config/srvrexe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>dced</strong> Type</td>
<td><strong>dced</strong> container</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>Container for the running servers registered with dced.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>{user hosts/hostname/self criI}</code></td>
</tr>
<tr>
<td></td>
<td><code>{user hosts/hostname/self crws}</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/./hosts/hostname/config/xattrschema</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>dced</strong> Type</td>
<td><strong>dced</strong> container</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>The container of extended attribute schema definitions.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>{user hosts/hostname/self criI}</code></td>
</tr>
<tr>
<td></td>
<td><code>{user hosts/hostname/self crwd}</code></td>
</tr>
</tbody>
</table>
### Name: /.:/subsys/dce

<table>
<thead>
<tr>
<th>Well Known</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>This directory contains DCE-specific names.</td>
</tr>
</tbody>
</table>

#### Default ACLs

**Object ACL**

```
{unauthenticated r-- t-- t--
{user creator rwdtcia}
{user hosts/hostname/cds-server rwdtcia}
{group subsys/dce/cds-admin rwdtcia}
{group subsys/dce/cds-server rwdtcia}
{any_other r-- t-- t--}
```

**Initial Object ACL**

```
{unauthenticated r-- t-- t--
{group subsys/dce/cds-admin rwdtc--
{group subsys/dce/cds-server rwdtc--
{any_other r-- t-- t--
```

**Initial Container ACL**

```
{unauthenticated r-- t-- t--
{group subsys/dce/cds-admin rwdtcia}
{group subsys/dce/cds-server rwdtcia}
{any_other r-- t-- t--}
```

### Name: /.:/subsys/dce/dfs

<table>
<thead>
<tr>
<th>CDS Type</th>
<th>Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This directory contains all of the DFS-specific names.</td>
</tr>
</tbody>
</table>

#### Default ACLs

**Object ACL**

```
{unauthenticated r-- t-- t--
{user creator rwdtcia}
{user hosts/hostname/cds-server rwdtcia}
{group subsys/dce/cds-admin rwdtcia}
{group subsys/dce/cds-server rwdtcia}
{group subsys/dce/dfs-admin rwdtcia}
{any_other r-- t-- t--}
```

**Initial Object ACL**

```
{unauthenticated r-- t-- t--
{group subsys/dce/cds-admin rwdtc--
{group subsys/dce/cds-server rwdtc--
{any_other r-- t-- t--
```

**Initial Container ACL**

```
{unauthenticated r-- t-- t--
{group subsys/dce/cds-admin rwdtcia}
{group subsys/dce/cds-server rwdtcia}
{group subsys/dce/dfs-admin rwdtcia}
{any_other r-- t-- t--}
```

### Name: /.:/subsys/dce/dfs/bak

<table>
<thead>
<tr>
<th>CDS Type</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Class</td>
<td>RPC_Entry</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>The RPC bindings of all Backup Database machines that are storing the Backup Database are listed in this entry. This entry is similar to the /.:/fs group in that its members are RPC entries of the /.:/cellname/hosts/hostname/self form. In addition, this group must have a single object UUID attached to it.</td>
</tr>
<tr>
<td>Name</td>
<td>/.:/subsys/dce/dfs/bak</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r– – t– } {user creator rwdtc} {user hosts/hostname/cds-server rwdtc} {group subsys/dce/cds-admin rwdtc} {group subsys/dce/cds-server rwdtc} {any_other r– – t– }</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/subsys/dce/sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Type</td>
<td>Directory</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This directory contains Security-specific names.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r– – t–––} {user creator rwdtcia} {user hosts/hostname/cds-server rwdtcia} {user dce-rgy rwdtci–} {user hosts/rep_1_hostname/self rwdtia} {group subsys/dce/cds-admin rwdtcia} {group subsys/dce/cds-server rwdtcia} {group subsys/dce/sec-admin rwdtcia} {group subsys/dce/sec-servers:rwtcia} {any_other r– – t–––}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/subsys/dce/sec/sec_svr_name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS Type</td>
<td>Object</td>
</tr>
<tr>
<td>CDS Class</td>
<td>RPC_Entry</td>
</tr>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the server entry for the master Security Server for this cell. The bindings for the Registry Server, the Privilege Server, and the Authentication Server are exported by the Registry Server to this entry.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Initial Object ACL</td>
<td>{unauthenticated r– – t– – – } {user dce-rgy rwdt–––} {user hosts/rep_1_hostname/self rwdtc} {group subsys/dce/cds-admin rwdtcia} {group subsys/dce/cds-server rwdtcia} {group subsys/dce/sec-admin rwdtcia} {group subsys/dce/sec-servers:rwtcia} {any_other r– – t– – – }</td>
</tr>
<tr>
<td>Initial Container ACL</td>
<td>{unauthenticated r– – t– – – } {unauthenticated r– – t– – – } {user hosts/rep_1_hostname/self rwdtia} {group subsys/dce/cds-admin rwdtcia} {group subsys/dce/cds-server rwdtcia} {group subsys/dce/sec-admin rwdtcia} {group subsys/dce/sec-servers:rwtcia} {any_other r– – t– – – }</td>
</tr>
</tbody>
</table>
The Security Space

Figure 5 on page 72 through Figure 7 on page 73 illustrate the Security namespace within the DCE cell namespace. The subsections that follow provide a description of each entry. The subdirectories that comprise the Security namespace are principal, group, org, policy, replist, and xattrschema.

To operate on the ACLs on any of these namespace entries, you need to include the name of the Security junction. For example, when you use the DCE control program’s (dcecp) acl commands, the group name acct-admin is referenced as ./sec/group/acct-admin, its database object name.

However, when you use the dcecp principal, group, or organization commands, operate on a principal, group, or organization name without ./sec and principal, group, or organization included as part of the name. For example, to view the attributes of the group acct-admin, you issue the group show command specifying the group name acct-admin without this path.
Figure 5. The Top-Level Security Directory

Figure 6. The sec/group Directory
In the following subsections, descriptions of entries in an initial Security namespace are given. Included is the suggested UNIX user identifier (UNIX UID) or group identifier (UNIX GID) that they are assigned to. Vendors should use these values if possible. The password and group override files can replace them with correct local values, if necessary. Some entries are assigned the next available identifier, starting with 100; therefore, these may vary from cell to cell. They are indicated as “Generated.”

The Top-Level Security Directory

The following tables describe the namespace entries for /./sec, the top-level Security directory.

<table>
<thead>
<tr>
<th>Name</th>
<th>/./sec/group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes. This name is not architecturally defined, but is defined by the implementation. This is the Security directory that holds all the groups.</td>
</tr>
<tr>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{any_other r- - - - - }</td>
</tr>
<tr>
<td>Initial Object ACL</td>
<td>{unauthenticated r- t-- - - -}</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnmM}</td>
</tr>
<tr>
<td></td>
<td>{group_obj r- t-- - - -}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rctDnmM}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r- t-- - - -}</td>
</tr>
<tr>
<td></td>
<td>{any_other r- t-- - - -}</td>
</tr>
<tr>
<td>Initial Container ACL</td>
<td>{unauthenticated r- - - - -}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r- - - - -}</td>
</tr>
<tr>
<td></td>
<td>{any_other r- - - - -}</td>
</tr>
<tr>
<td>Name</td>
<td>/.:sec/org</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Well Known</td>
<td>Yes. This name is not architecturally defined, but is defined by the implementation.</td>
</tr>
<tr>
<td>Description</td>
<td>This is the Security directory that holds all the organizations.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r– t–––––}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r– t–––––}</td>
</tr>
<tr>
<td></td>
<td>{any_other r– t–––––}</td>
</tr>
<tr>
<td>Initial Object ACL</td>
<td>{unauthenticated r– t–––––}</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r– t–––––}</td>
</tr>
<tr>
<td></td>
<td>{any_other r– t–––––}</td>
</tr>
<tr>
<td>Initial Container ACL</td>
<td>{unauthenticated r– t–––––}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r– t–––––}</td>
</tr>
<tr>
<td></td>
<td>{any_other r– t–––––}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:sec/org/none</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This is the default organization.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r– t–––––}</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r– t–––––}</td>
</tr>
<tr>
<td></td>
<td>{any_other r– t–––––}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:sec/policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes. This name is not architecturally defined, but is defined by the implementation.</td>
</tr>
<tr>
<td>Description</td>
<td>This entry provides the ability to set Security policies on a cell-wide basis.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r– }</td>
</tr>
<tr>
<td></td>
<td>{user creator rcmas}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcma-}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r– }</td>
</tr>
<tr>
<td></td>
<td>{any_other r– }</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:sec/principal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes. This name is not architecturally defined, but it cannot be changed in DCE 1.1.</td>
</tr>
<tr>
<td>Description</td>
<td>This is the Security directory that holds all of the principals.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
</tbody>
</table>
### Name: /.:/sec/principal

<table>
<thead>
<tr>
<th>Object ACL</th>
<th>Initial Object ACL</th>
<th>Initial Container ACL</th>
</tr>
</thead>
<tbody>
<tr>
<td>{unauthenticated r- - - - - }</td>
<td>{unauthenticated r- - - - - }</td>
<td>{unauthenticated r- - - - - }</td>
</tr>
<tr>
<td>{user creator rcidDn}</td>
<td>{user creator rcDnm}</td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td>{group acct-admin rcidDn}</td>
<td>{group acct-admin rcDnm}</td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td>{other obj r- - - - - }</td>
<td>{other obj r- - - - - g}</td>
<td>{other obj r- - - - - }</td>
</tr>
<tr>
<td>{any_other_obj r- - - - - }</td>
<td>{any_other r- - - - - }</td>
<td>{any_other r- - - - - }</td>
</tr>
</tbody>
</table>

### Name: /.:/sec/replist

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Object ACL</strong></td>
</tr>
<tr>
<td>{user creator cidmA- }</td>
</tr>
<tr>
<td>{user hosts/hostname/self - i- m- I}</td>
</tr>
<tr>
<td>{group: subsys/dce/sec-servers: -i-m-I}</td>
</tr>
</tbody>
</table>

### Name: /.:/sec/xattrschema

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Object ACL</strong></td>
</tr>
<tr>
<td>{unauthenticated r- - - - }</td>
</tr>
<tr>
<td>{user creator rcidm}</td>
</tr>
<tr>
<td>{other obj r- - - - }</td>
</tr>
<tr>
<td>{any_other r- - - - }</td>
</tr>
</tbody>
</table>

### The sec/group Directory

The following tables describe the namespace entries for `/./sec/group`, the Security sec/group directory.

#### Name: /.:/sec/group/acct-admin

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Well Known</strong></td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
</tbody>
</table>
| This is the only group of principals that can create accounts.
<table>
<thead>
<tr>
<th>Name</th>
<th>/./sec/group/acct-admin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r= t= }</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{group_obj r= t= }</td>
</tr>
<tr>
<td></td>
<td>{other_obj r= t= }</td>
</tr>
<tr>
<td></td>
<td>{any_other r= t= }</td>
</tr>
<tr>
<td>UNIX GID</td>
<td>Generated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/./sec/group/bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the group for system binaries.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r= t= }</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{group_obj r= t= }</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r= t= }</td>
</tr>
<tr>
<td></td>
<td>{any_other r= t= }</td>
</tr>
<tr>
<td>UNIX GID</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/./sec/group/daemon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the group for daemons.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r= t= }</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{group_obj r= t= }</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r= t= }</td>
</tr>
<tr>
<td></td>
<td>{any_other r= t= }</td>
</tr>
<tr>
<td>UNIX GID</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/./sec/group/kmem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the group that has read access to kernel memory.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r= t= }</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{group_obj r= t= }</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r= t= }</td>
</tr>
<tr>
<td></td>
<td>{any_other r= t= }</td>
</tr>
<tr>
<td>UNIX GID</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/./sec/group/mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td></td>
</tr>
<tr>
<td>UNIX GID</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>/.:/sec/group/mail</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Description</td>
<td>This is the group for the mail subsystem.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r- t- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{group_obj r- t- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r- t- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{any_other r- t- - - - - }</td>
</tr>
<tr>
<td>UNIX GID</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/group/nogroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This is the default group for NFS access; it goes with user ID nobody.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r- t- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{group_obj r- t- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{other_obj r- t- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{any_other r- t- - - - - }</td>
</tr>
<tr>
<td>UNIX GID</td>
<td>-2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/group/none</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This member does not belong to a group; it is the default group.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r- t- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{user creator rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{group_obj r- t- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rctDnfmM}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r- t- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{any_other r- t- - - - - }</td>
</tr>
<tr>
<td>UNIX GID</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/group/subsys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This directory contains dce. (See /.:/subsys in the CDS namespace.)</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r- - - - - }</td>
</tr>
<tr>
<td></td>
<td>{any_other r- - - - - }</td>
</tr>
<tr>
<td>Name</td>
<td>/.:sec/group/subsys</td>
</tr>
<tr>
<td>------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>
| Initial Object ACL | {unauthenticated r– t––––––}  
{user creator rctDnfmM}  
{group_obj r– t––––––}  
{group acct-admin rctDnfmM}  
{other_obj r– t––––––}  
{any_other r– t––––––} |
| Initial Container ACL | {unauthenticated r– t––––––}  
{user creator rcidDn}  
{group acct-admin rcidDn}  
{other_obj r– t––––––}  
{any_other r– t––––––} |

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:sec/group/system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the group for system accounts.</td>
</tr>
</tbody>
</table>
| Default ACLs | Object ACL {unauthenticated r– t––––––}  
{user creator rctDnfmM}  
{group_obj r– t––––––}  
{group acct-admin rctDnfmM}  
{other_obj r– t––––––}  
{any_other r– t––––––} |
| UNIX GID | 0 |

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:sec/group/tcb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the group used by security policy daemons on OSF/1 C2/B1 secure systems.</td>
</tr>
</tbody>
</table>
| Default ACLs | Object ACL {unauthenticated r-t-----}  
{user creator rctDnfmM}  
{group_obj r-t-----}  
{group acct-admin rctDnfmM}  
{other_obj r-t-----}  
{any_other r-t-----} |
| UNIX GID | 18 |

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:sec/group/tty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the group that has write access to terminals.</td>
</tr>
</tbody>
</table>
| Default ACLs | Object ACL {unauthenticated r– t––––––}  
{user creator rctDnfmM}  
{group_obj r– t––––––}  
{group acct-admin rctDnfmM}  
{other_obj r– t––––––}  
{any_other r– t––––––} |
| UNIX GID | 7 |
Name | /.:/sec/group/uucp
Well Known | No
Description | This is the group for the UUCP subsystem.
Default ACLs
Object ACL | {unauthenticated r- t-- - - - - }
{user creator rctDnfmM}
{group_obj r- t-- - - - - }
{group acct-admin rctDnfmM}
{other_obj r- t-- - - - - }
{any_other r- t-- - - - - }

UNIX GID | 2

The sec/group/subsys Directory

The following tables describe the namespace entries for /.:/sec/group/subsys, the Security sec/group/subsys directory.

Name | /.:/sec/group/subsys/dce
Well Known | Yes
Description | This directory contains the groups used by DCE.
Default ACLs
Object ACL | {unauthenticated r-- - - - - }
{user creator rctDnfmM}
{group acct-admin rctDnfmM}
{other_obj r-- - - - - }
{any_other r-- - - - - }

Initial Object ACL | {unauthenticated r- t-- - - - - }
{user creator rctDnfmM}
{group_obj r- t-- - - - - }
{group acct-admin rctDnfmM}
{other_obj r- t-- - - - - }
{any_other r- t-- - - - - }

Initial Container ACL | {unauthenticated r-- - - - - }
{user creator rctDnfmM}
{group acct-admin rctDnfmM}
{other_obj r-- - - - - }
{any_other r-- - - - - }

Name | /.:/sec/group/subsys/dce/cds-admin
Well Known | No
Description | This is the administrative group that is on the default ACLs for administrative objects. Clearinghouses have this group on their ACLs with all rights. The first user of the cell must be added to this group immediately after creation.
Default ACLs
Object ACL | {unauthenticated r- t-- - - - - }
{user creator rctDnfmM}
{group_obj r- t-- - - - - }
{group acct-admin rctDnfmM}
{other_obj r- t-- - - - - }
{any_other r- t-- - - - - }

UNIX GID | Generated
<table>
<thead>
<tr>
<th>Name</th>
<th>.:/sec/group/subsys/dce/cds-server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This is the group of all CDS Servers for the local cell. As each new server is added to the cell, it must be added to this group. CDS Server authentication consists of checking for the server's membership in this group.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
</tbody>
</table>
| Object ACL | {unauthenticated r– t–––}  
{user creator rctDnfnM}  
{group_obj r– t–––}  
{group acct-admin rctDnfnM}  
{group subsys/dce/cds-admin rctDnfnM}  
{group subsys/dce/cds-server rctDnfnM}  
{other_obj r– t–––}  
{any_other r– t–––} |
| UNIX GID | Generated |

<table>
<thead>
<tr>
<th>Name</th>
<th>.:/sec/group/subsys/dce/dfs-admin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the DFS administrator's group. Members of this group have full permissions to alter the DFS configuration within the cell.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
</tbody>
</table>
| Object ACL | {unauthenticated r– t–––}  
{user creator rctDnfnM}  
{group_obj r– t–––}  
{group acct-admin rctDnfnM}  
{other_obj r– t–––}  
{any_other r– t–––} |
| UNIX GID | Generated |

<table>
<thead>
<tr>
<th>Name</th>
<th>.:/sec/group/subsys/dce/dfs-bak-servers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This is the Security group to which all DFS Backup Database Servers belong. A server entry in the CDS group .:/subsys/dce/fs is checked for authorization to act as a Backup Database Server by determining whether it belongs to this Security group.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
</tbody>
</table>
| Object ACL | {unauthenticated r– t–––}  
{user creator rctDnfnM}  
{group_obj r– t–––}  
{group acct-admin rctDnfnM}  
{group:subsys/dce/dfs-admin:rctDnfnM}  
{other_obj r– t–––}  
{any_other r– t–––} |
<p>| UNIX GID | Generated |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/group/subsys/dce/dfs-fs-servers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>Abbreviated forms of the DFS Server principals of all Fileset Database machines are listed in this group. The abbreviated form of a machine’s DFS Server principal stored in the group is of the form <code>hosts/hostname/dfs-server</code>. A server entry obtained from the CDS group <code>/:.fs</code> is checked for authorization to act as a Fileset Location Server by determining if it belongs to this group.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td><code>{unauthenticated r- t-- -- -- }</code></td>
</tr>
<tr>
<td></td>
<td><code>{user creator rctDnfmM}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group_obj r- t-- -- -- }</code></td>
</tr>
<tr>
<td></td>
<td><code>{group acct-admin rctDnfmM}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/dfs-admin rctDnfmM}</code></td>
</tr>
<tr>
<td></td>
<td><code>{other_obj r- t-- -- -- }</code></td>
</tr>
<tr>
<td></td>
<td><code>{any_other r- t-- -- -- }</code></td>
</tr>
<tr>
<td>UNIX GID</td>
<td>Generated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/group/subsys/dce/dts-admin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the DTS administrator’s group. Members of this group have full permissions to administer DTS by adding servers and so forth.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td><code>{unauthenticated r- t-- -- -- }</code></td>
</tr>
<tr>
<td></td>
<td><code>{user creator rctDnfmM}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group_obj r- t-- -- -- }</code></td>
</tr>
<tr>
<td></td>
<td><code>{group acct-admin rctDnfmM}</code></td>
</tr>
<tr>
<td></td>
<td><code>{other_obj r- t-- -- -- }</code></td>
</tr>
<tr>
<td></td>
<td><code>{any_other r- t-- -- -- }</code></td>
</tr>
<tr>
<td>UNIX GID</td>
<td>Generated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/group/subsys/dce/dts-servers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This is the group of DTS Servers.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td><code>{unauthenticated r- t-- -- -- }</code></td>
</tr>
<tr>
<td></td>
<td><code>{user creator rctDnfmM}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group_obj r- t-- -- -- }</code></td>
</tr>
<tr>
<td></td>
<td><code>{group acct-admin rctDnfmM}</code></td>
</tr>
<tr>
<td></td>
<td><code>{group subsys/dce/dts-admin rctDnfmM}</code></td>
</tr>
<tr>
<td></td>
<td><code>{other_obj r- t-- -- -- }</code></td>
</tr>
<tr>
<td></td>
<td><code>{any_other r- t-- -- -- }</code></td>
</tr>
<tr>
<td>UNIX GID</td>
<td>Generated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/group/subsys/dce/sec-admin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
</tbody>
</table>
### The sec/principal Directory

The following tables describe the namespace entries for `./sec/principal`, the Security `sec/principal` directory.

#### Name `./sec/group/subsys/dce/sec-admin`

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is the Security administrator’s group. Members of this group have full permissions to administer the Security database.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Object ACL</strong></td>
</tr>
<tr>
<td><code>{unauthenticated r- t- - - - - - }</code></td>
</tr>
<tr>
<td><code>{user creator rctDnfmM}</code></td>
</tr>
<tr>
<td><code>{group_obj r- t- - - - - - }</code></td>
</tr>
<tr>
<td><code>{group acct-admin rctDnfmM}</code></td>
</tr>
<tr>
<td><code>{other_obj r- t- - - - - - }</code></td>
</tr>
<tr>
<td><code>{any_other r- t- - - - - - }</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIX GID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generated</td>
</tr>
</tbody>
</table>

#### Name `./sec/group/subsys/dce/audit-admin`

<table>
<thead>
<tr>
<th>Well Known</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Object ACL</strong></td>
</tr>
<tr>
<td><code>{unauthenticated r- t- - - - - - }</code></td>
</tr>
<tr>
<td><code>{user creator rctDnfmM}</code></td>
</tr>
<tr>
<td><code>{group_obj r- t- - - - - - }</code></td>
</tr>
<tr>
<td><code>{group acct-admin rctDnfmM}</code></td>
</tr>
<tr>
<td><code>{other_obj r- t- - - - - - }</code></td>
</tr>
<tr>
<td><code>{any_other r- t- - - - - - }</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIX GID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generated</td>
</tr>
</tbody>
</table>

#### Name `./sec/principal/bin`

<table>
<thead>
<tr>
<th>Well Known</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Object ACL</strong></td>
</tr>
<tr>
<td><code>{unauthenticated r- - - - - - - }</code></td>
</tr>
<tr>
<td><code>{user_obj r- - - f- - ug}</code></td>
</tr>
<tr>
<td><code>{user creator rcDnfmMaug}</code></td>
</tr>
<tr>
<td><code>{group acct-admin rcDnfmMaug}</code></td>
</tr>
<tr>
<td><code>{other_obj r- - - - - - - g}</code></td>
</tr>
<tr>
<td><code>{any_other r- - - - - - - }</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIX UID</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

#### Name `./sec/principal/cell_admin`

<table>
<thead>
<tr>
<th>Well Known</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default ACLs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Object ACL</strong></td>
</tr>
<tr>
<td><code>{unauthenticated r- - - - - - - }</code></td>
</tr>
<tr>
<td><code>{user_obj r- - - f- - ug}</code></td>
</tr>
<tr>
<td><code>{user creator rcDnfmMaug}</code></td>
</tr>
<tr>
<td><code>{group acct-admin rcDnfmMaug}</code></td>
</tr>
<tr>
<td><code>{other_obj r- - - - - - - g}</code></td>
</tr>
<tr>
<td><code>{any_other r- - - - - - - }</code></td>
</tr>
<tr>
<td>Name</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Name</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Name</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Name</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Appendix C. The DCE Cell Namespace**

83
<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/principal/hosts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This directory contains all DCE host principals.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r–––––}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r–––––}</td>
</tr>
<tr>
<td></td>
<td>{any_other r–––––}</td>
</tr>
<tr>
<td>Initial Object ACL</td>
<td>{unauthenticated r-–––––––}</td>
</tr>
<tr>
<td></td>
<td>{user_obj r-–f–u–g}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcDnfmaug}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcDnfmaug}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r-––––––g}</td>
</tr>
<tr>
<td></td>
<td>{any_other r-––––––}</td>
</tr>
<tr>
<td>Initial Container ACL</td>
<td>{unauthenticated r-––––}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r-––––}</td>
</tr>
<tr>
<td></td>
<td>{any_other r-––––}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/principal/krbtgt (also known as /... )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This is the architecturally specified name of the Security namespace where foreign cell names are cataloged. All cells that this cell communicates with appear here.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r-––––}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r-––––}</td>
</tr>
<tr>
<td></td>
<td>{any_other r-––––}</td>
</tr>
<tr>
<td>Initial Object ACL</td>
<td>{unauthenticated r- – – – – – – – }</td>
</tr>
<tr>
<td></td>
<td>{user_obj r- – – f – – u g}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcDnfmaug}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcDnfmaug}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r- – – – – – – g}</td>
</tr>
<tr>
<td></td>
<td>{any_other r-––––}</td>
</tr>
<tr>
<td>Initial Container ACL</td>
<td>{unauthenticated r-–––––}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcidDn}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r-–––––}</td>
</tr>
<tr>
<td></td>
<td>{any_other r-–––––}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/principal/krbtgt/cellname (also known as /.: )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the principal of the Authentication Server of the cell named /.:/cellname. In the local cell, this is the principal for /.:</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>&quot;/:/sec/principal/krbtgt/cellname (also known as &quot;::&quot;&quot;)</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td><strong>Object ACL</strong></td>
<td>{unauthenticated r--w------- g} {user_obj r--w f--ug} {user_creator rcDnfmaug} {group acct-admin rcDnfmaug} {other_obj r--w------- g} {any_other r--w------- }</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>&quot;/:/sec/principal/mail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Well Known</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>This is the user for the mail subsystem.</td>
</tr>
<tr>
<td><strong>Default ACLs</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Object ACL</strong></td>
<td>{unauthenticated r--w------- } {user_obj r--w f--ug} {user_creator rcDnfmaug} {group acct-admin rcDnfmaug} {other_obj r--w------- g} {any_other r--w------- }</td>
</tr>
<tr>
<td><strong>UNIX UID</strong></td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>&quot;/:/sec/principal/nobody</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Well Known</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>This is the default user for NFS access.</td>
</tr>
<tr>
<td><strong>Default ACLs</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Object ACL</strong></td>
<td>{unauthenticated r--w------- } {user_obj r--w f--ug} {user_creator rcDnfmaug} {group acct-admin rcDnfmaug} {other_obj r--w------- g} {any_other r--w------- }</td>
</tr>
<tr>
<td><strong>UNIX UID</strong></td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>&quot;/:/sec/principal/root</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Well Known</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>This is the local operating system superuser.</td>
</tr>
<tr>
<td><strong>Default ACLs</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Object ACL</strong></td>
<td>{unauthenticated r--w------- } {user_obj r--w f--ug} {user_creator rcDnfmaug} {group acct-admin rcDnfmaug} {other_obj r--w------- g} {any_other r--w------- }</td>
</tr>
<tr>
<td><strong>UNIX UID</strong></td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>&quot;/:/sec/principal/sys</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Well Known</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>This is a user who is permitted to read devices but is not a superuser.</td>
</tr>
</tbody>
</table>
### Name: `/./sec/principal/sys`

**Default ACLs**

**Object ACL**

- `unauthenticated r---`  
- `user_obj r-- f-- ug`  
- `user creator rcDnfmaug`  
- `group acct-admin rcDnfmaug`  
- `other_obj r-- g`  
- `any_other r--`  

**UNIX UID**

2

---

### Name: `/./sec/principal/tcb`

**Well Known**

No

**Description**

This is the user for security policy daemons on OSF/1 C2/B1 secure systems.

**Default ACLs**

**Object ACL**

- `unauthenticated r---`  
- `user_obj r-- f-- ug`  
- `user creator rcDnfmaug`  
- `group acct-admin rcDnfmaug`  
- `other_obj r-- g`  
- `any_other r--`  

**UNIX UID**

9

---

### Name: `/./sec/principal/uucp`

**Well Known**

No

**Description**

This is the user for the UUCP subsystem.

**Default ACLs**

**Object ACL**

- `unauthenticated r---`  
- `user_obj r-- f-- ug`  
- `user creator rcDnfmaug`  
- `group acct-admin rcDnfmaug`  
- `other_obj r-- g`  
- `any_other r--`  

**UNIX UID**

4

---

### Name: `/./sec/principal/who`

**Well Known**

No

**Description**

This is the user for remote *who* access.

**Default ACLs**

**Object ACL**

- `unauthenticated r---`  
- `user_obj r-- f-- ug`  
- `user creator rcDnfmaug`  
- `group acct-admin rcDnfmaug`  
- `other_obj r-- g`  
- `any_other r--`  

**UNIX UID**

5
### The sec/principal/hosts Directory

The following tables describe the namespace entries for `/.:/sec/principal/hosts`, the Security sec/principal/hosts directory.

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/principal/hosts/hostname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This directory contains Security principals for host hostname.</td>
</tr>
</tbody>
</table>

#### Default ACLs

**Object ACL**

- `{unauthenticated r-- -- -- --}`
- `{user creator rcidDn}
- `{group acct-admin rcidDn}"
- `{other_obj r-- -- -- --}`
- `{any_other r-- -- -- --}`

**Initial Object ACL**

- `{unauthenticated r-- -- -- -- g}`
- `{user_obj r-- -- f-- u g}
- `{user creator rcDnfmaug}`
- `{group acct-admin rcDnfmaug}`
- `{other_obj r-- -- -- -- g}`
- `{any_other r-- -- -- -- g}`

**Initial Container ACL**

- `{unauthenticated r-- -- -- -- g}`
- `{user creator rcidDn}
- `{group acct-admin rcidDn}"
- `{other_obj r-- -- -- -- g}`
- `{any_other r-- -- -- -- g}`

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/principal/hosts/hostname/cds-server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>The CDS Server on node hostname runs as this principal. This principal must be a member of the /./sec/group/subsys/dce/cds-server security group.</td>
</tr>
</tbody>
</table>

#### Default ACLs

**Object ACL**

- `{unauthenticated r-- -- -- -- g}`
- `{user creator rcDnfmaug}`
- `{group acct-admin rcDnfmaug}`
- `{other_obj r-- -- -- -- g}`
- `{any_other r-- -- -- -- g}`

**UNIX UID Generated**

Generated

### Name

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:/sec/principal/hosts/hostname/dfs-server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>This is the principal name of the DFS Servers on node hostname.</td>
</tr>
</tbody>
</table>

#### Default ACLs

**Object ACL**

- `{unauthenticated r-- -- -- -- g}`
- `{user creator rcDnfmaug}`
- `{group acct_admin rcDnfma-- g}`
- `{other_obj r-- -- -- -- g}`
- `{any_other r-- -- -- -- g}`

**UNIX UID Generated**

Generated
<table>
<thead>
<tr>
<th>Name</th>
<th>/.:sec/principal/hosts/hostnamelgda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>The GDA on node <em>hostname</em> runs as this principal. This principal must be a member of the /.:sec/group/subsys/dce/cds-servers security group.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r––––––––– g}</td>
</tr>
<tr>
<td></td>
<td>{user_obj r–––– f––– ug}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcDnmaug}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcDnmaug}</td>
</tr>
<tr>
<td></td>
<td>{group subsys/dce/cds-admin rcDnmaug}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r––––––––– g}</td>
</tr>
<tr>
<td></td>
<td>{any_other r––––––––– }</td>
</tr>
<tr>
<td>UNIX UID</td>
<td>Generated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>/.:sec/principal/hosts/hostnamelsel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Known</td>
<td>Yes</td>
</tr>
<tr>
<td>Description</td>
<td>This entry is the principal for host <em>hostname</em>. The security validation service of the dc ed daemon uses this principal. This is also the identity that local root processes can inherit.</td>
</tr>
<tr>
<td>Default ACLs</td>
<td></td>
</tr>
<tr>
<td>Object ACL</td>
<td>{unauthenticated r––––––––– }</td>
</tr>
<tr>
<td></td>
<td>{user_obj r–––– f––– ug}</td>
</tr>
<tr>
<td></td>
<td>{user creator rcDnmaug}</td>
</tr>
<tr>
<td></td>
<td>{group acct-admin rcDnmaug}</td>
</tr>
<tr>
<td></td>
<td>{group subsys/dce/cds-admin rcDnmaug}</td>
</tr>
<tr>
<td></td>
<td>{other_obj r––––––––– g}</td>
</tr>
<tr>
<td></td>
<td>{any_other r––––––––– }</td>
</tr>
<tr>
<td>UNIX UID</td>
<td>Generated</td>
</tr>
</tbody>
</table>
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