

# **Component Broker for Windows NT and AIX Quick Beginnings Release 2.0**

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Component Broker for Windows NT and AIX

G04L-2375-04

## **Quick Beginnings**

Release 2.0





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**Note**

Before using this information and the product it supports, be sure to read the general information under Appendix C, "Notices" on page 73.

**Fifth Edition (December 1998)**

This edition applies to Release 2.0 of IBM Component Broker and to all subsequent releases and modifications until otherwise indicated in new editions.

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## About This Book

The *Component Broker for Windows NT and AIX Quick Beginnings* provides a brief technical overview of Component Broker and provides information on how to:

- Install, configure, and start Component Broker.
- Verify the product installation by running pre-built Component Broker sample applications.
- Prepare and validate the run time, allowing you to build your first Component Broker application.

Do not use the *Component Broker for Windows NT and AIX Quick Beginnings* as a substitute for the Component Broker library. The library provides detailed information beyond the concepts introduced in this book. Before installing Component Broker, read the README file, located in the CBConnector compact disc root directory, for last minute product information. After completing the tasks and exercises in this book, review the rest of the product library.

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## Who Should Read This Book

The *Component Broker for Windows NT and AIX Quick Beginnings* is intended for administrators and application programmers who want to:

- Understand the basics of the Component Broker for Windows NT and AIX run-time and development environments.
- Plan an initial installation of either the CBConnector package or the CBToolkit package.
- Install Component Broker.
- Prepare and validate the run time in order to build Component Broker applications.

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## How This Book is Organized

Chapter 1, "Introduction" on page 1 provides a introduction to the functions and features of Component Broker as they apply to this document.

Chapter 2, "Planning for the Installation" on page 5 describes system requirements and software prerequisites for installing the CBConnector package and the CBToolkit package.

WIN Chapter 3, "Installing the Prerequisite Software on Windows NT" on page 11 provides procedures for installing the prerequisite products on a Windows NT computer.

AIX Chapter 4, "Installing the Prerequisite Software on AIX" on page 27 provides procedures to verify and install the prerequisite products on an AIX computer.

WIN Chapter 5, "Installing Component Broker for Windows NT" on page 49 provides the procedures to perform a System Manager of Component Broker for Windows NT as a starter environment, then describes the procedure to install the CBToolkit package.

AIX Chapter 6, "Installing Component Broker for AIX" on page 57 provides the procedures for installing, configuring, and uninstalling Component Broker for AIX and the CBToolkit package.

Chapter 7, "Testing the Component Broker Installation" on page 63 describes common processes that use Component Broker system management. These processes include starting and stopping servers, executing samples, and verifying the install. For detailed information on system management, see the *Component Broker for Windows NT and AIX System Administration Guide*.

Appendix A, “Starting and Restarting Servers” on page 69 provides a procedure you can use to manually start or restart one or more servers.

Appendix B, “Stopping Servers” on page 71 provides a procedure for stopping a server.

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## Documentation Conventions

The following conventions distinguish different text elements.

plain	Window titles, folder names, icon names, and method names.
monospace	Programming examples, user input at the command line prompt or into an entry field, directory paths, and user output.
<b>bold</b>	Menu choices and menu names, labels for push buttons, check boxes, radio buttons, group-box controls, drop-down list boxes, combo-boxes, notebook tabs, and entry fields.
<i>italics</i>	Programming keywords and variables, titles of documents, and initial use of terms that are in the glossary.

The following short cut conventions are used to abbreviate menu selections and object expansions within tree views of the System Manager User Interface and Object Builder.

→ The right arrow when used within a menu shows a series of menu selections. For example, “**File** → **New**” is translated to mean: “On the **File** menu, click **New**”.

The right arrow when used within a tree view shows a series of folder (or object) expansions. For example, “Expand Management Zones → Sample Cell and Work Group Zone → Configuration” is translated to mean:

1. Expand Management Zones.
2. Expand Sample Cell and Work Group Zone.
3. Expand Configuration.

**Note:** An object in a view can be expanded when there is a plus sign (+) beside that object. After an object is expanded, the plus sign is replaced by a minus sign (-).

- + Expands a tree structure to show more objects. To expand, click the plus sign (+) beside any object. If you double-click the object, a new tree structure is displayed with that object as the root of the tree.
- Collapses a tree structure to review from view its containing objects. To collapse, click the minus sign (-) beside any object.

### left mouse button

Used for all actions in the application except for opening the pop-up menu of an object. For example, if you click with the left mouse button on an object, it is selected. Click with the left mouse button on a menu option to perform that action.

### right mouse button

Opens the pop-up menu of an object that contains a list of actions that can be performed on that object. The list varies depending on the type of object.



Denotes a section that applies only to the Windows 95 or Windows NT platform. Do not interpret this symbol to denote that an equivalent AIX section exists.

**Note:** The Windows 95 platform only supports the Component Broker Java client.

AIX

Denotes a section that applies only to the AIX platform. Do not interpret this symbol to denote that an equivalent Windows section exists.

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## The Component Broker Documentation

The following information is part of Component Broker for Windows NT and AIX:

- Help information is available from Component Broker product panels.
- The Component Broker online library can be viewed using a frames-compatible Web browser:  
[http://localhost:49213/cgi-bin/cbwebx.exe/en\\_US/cbdoc/Extract/0/index.htm](http://localhost:49213/cgi-bin/cbwebx.exe/en_US/cbdoc/Extract/0/index.htm)
- *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide*, SC09-2798 provides a comprehensive overview of the Component Broker environment, then guides the user through planning considerations including capacity planning, performance tuning, prerequisites, and migration. It also leads the user through installation options for all Component Broker environments.
- *Component Broker for Windows NT and AIX CICS and IMS Application Adaptor Quick Beginnings*, GC09-2703 provides a brief technical overview of the CICS and IMS application adaptor and guides the user through its installation and configuration. Step-by-step instructions guide the user through creating an initial CICS and IMS application using application development tools included in the CBToolkit package.
- *Component Broker for Windows NT and AIX Oracle Application Adaptor Quick Beginnings*, GC09-2733 provides a brief technical overview of the Oracle application adaptor and guides the user through its installation and configuration. Step-by-step instructions guide the user through creating an initial Oracle application using application development tools included in the CBToolkit package.
- *Component Broker for Windows NT and AIX System Administration Guide*, SC09-2704 provides information about configuring and operating one or more hosts managed by Component Broker. It also provides general information about using the System Manager User Interface.
- *Component Broker Application Development Tools Guide*, SC09-2705 explains how to create and test Component Broker applications using the tools provided in the CBToolkit with a focus on common development scenarios such as inheritance and team development.
- *Component Broker Programming Guide*, G04L-2376 describes the programming model including business objects, data objects, and information about MOFW, IDL, and C++ CORBA programming.
- *Component Broker Advanced Programming Guide*, SC09-2708 describes the Component Broker implementation for the CORBA Object Services and the Component Broker Object Request Broker (including remote method invocation and the Dynamic Invocation Interface (DII) procedures), Session Service, Cache Service, Notification Service, Interlanguage Object Model (IOM), and work-load management (WLM).
- *Component Broker Programming Reference*, SC09-2810 contains information about the APIs available to Component Broker application developers.
- *Component Broker for Windows NT and AIX Problem Determination Guide*, SC09-2799-00 explains how to identify and resolve problems within a Component Broker environment using the tools provided with Component Broker. The book includes information on installation problems, run time errors, debugging of applications, and analysis of log messages.
- *Component Broker Glossary*, SC09-2710 contains terms and definitions relating to Component Broker.

- *OS/390 Component Broker Introduction*, GA22-7324 describes the concepts and facilities of Component Broker and the value it has on the OS/390 platform. The audience is a knowledgeable decision maker or a system programmer.
- *OS/390 Component Broker Planning and Installation*, GA22-7331 describes the planning and installation considerations for Component Broker on OS/390.
- *OS/390 Component Broker System Administration*, GA22-7328 describes system administration tasks and operations tasks, as provided in the system administration user interface for OS/390.
- *OS/390 Component Broker Programming: Assembling Applications*, GA22-7326 provides information for assembling applications using Component Broker on OS/390.
- *OS/390 Component Broker Operations: Messages and Diagnosis*, GA22-7329 provides diagnosis information and describes the messages associated with Component Broker on OS/390.

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## Chapter 1. Introduction

This chapter provides an introduction to the major features needed to plan, install, configure, and test a Component Broker installation.

Component Broker is a middleware product that can be used to design, develop, and deploy distributed object-oriented applications. Deployed applications rely on middleware services and interfaces to implement business processes.

Component Broker provides a server run time where object-oriented server applications can be run. Objects can be developed and later installed on the Component Broker servers. These servers support other server applications and non-Component Broker client applications that use the installed classes and objects. Component Broker has integrated system management that supports definition, configuration, installation, operation, and monitoring of Component Broker servers and object-oriented applications installed on servers.

The CBToolkit components provide application development tools that simplify the development process for networked object-oriented applications.

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### The CBConnector

The Component Broker Connector (CBConnector) installable units to be installed using this document are:

- The Component Broker Server
- C++ client
- System Manager
- System Manager User Interface
- DB2 application adaptor
- Documentation

See the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide* for a complete list of installable units shipped on the CBConnector compact disc.

### The Component Broker Server

The Component Broker server manages the objects used by clients running Component Broker applications. Component Broker objects run in conjunction with the Component Broker server in an operating system process like any compiled code.

### Supported Clients

Component Broker provides the following clients.

- C++
- Java
-  ActiveX

**Note:** The ActiveX client can only be installed on the Windows NT platform.

## System Management

Component Broker system management consists of the following parts.

- The System Manager
- The System Management Agent
- The System Manager User Interface

An administrator uses the System Manager User Interface to manage the clients and servers within a management zone. A management zone consists of the following:

- Only one System Manager.
- Zero or more System Management Agents.
- One or more System Manager User Interfaces.
- One or more Component Broker servers.
- Zero or more supported clients.

Within a management zone, a single server may not be able to handle the implementation of a business application. If this occurs, multiple servers could be required to handle the availability, scalability, and performance requirements.

### The System Manager

The System Manager controls the servers and clients within a management zone. The System Manager provides the logic required to manage a configuration of Component Broker servers, clients, associated objects, and applications.

### The System Management Agent

There is one System Management Agent installed on each centrally managed host. The System Management Agent is the way the System Manager communicates with the objects to be managed on that host. The System Management Agent interacts directly with those objects, passing data back to the System Manager and acting on the objects on behalf of the System Manager.

**Note:** A System Management Agent cannot be installed on the host containing the System Manager for the management zone.

### The System Manager User Interface

The System Manager User Interface can be installed on any host and does not need to co-reside with a System Manager or a System Management Agent. There can be multiple System Manager User Interfaces installed and running in an enterprise. However, each System Manager User Interface must be connected to only one System Manager.

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## The CBToolkit

The Component Broker Toolkit (CBToolkit) is a collection of visual application development tools that help to define, implement, deploy, and debug distributed Component Broker applications.

The primary tools of the CBToolkit package are:

- Samples
- Object Builder
- Object Level Trace and Remote Debugger



## Samples

Several sample applications are provided to help demonstrate the features in the CBCConnector. These samples consist of installation verification programs, tutorial samples, and early test function. The installation verification programs and the tutorial samples demonstrate the Object Builder tool. For more information, refer to the “Information About Component Broker Samples” chapter in the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide*.

## Object Builder

Object Builder is a visual programming and application development tool. The data entered in the provided smart guides is used by the code generation templates to emit most of the implementation of a component. With Object Builder, only user-defined methods need to be defined for implementation.

Application development in Object Builder consists of defining, building, and packaging components. These components can be defined in any of the following way:

- From a new design. The design of these components start from the component interface and works down to the component datastore. This type of design is called “top-down.”
- From an existing database. The design of these components start from the datastore and works up to the component interface. This type of design is called “bottom-up.”
- From a combination of the previous design strategies. The design of these components is a combination of creating a new component and data interface with an existing datastore. This type of design is called “meet-in-the-middle.”

Object Builder generates the necessary code for the objects and relationships that are defined, including framework methods and database calls. Additionally, Object Builder handles the building and packaging details for the applications that are created.

## Object Level Trace and Remote Debugger

The toolkit provides both a local debugger and Object Level Trace (OLT), a remote debugging tool for testing deployed applications.

OLT monitors client-server communication and provides a graphical trace display from which breakpoints can be set.

The OLT Remote Debugger debugs server and client applications seamlessly from one machine, as though they were a single application.

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## Summary

This chapter has provided an overview of the various installable units and options available when installing, configuring and using Component Broker. The rest of this book provides an initial configuration that will enable you to begin using Component Broker on a single computer which will be suitable for using Object Builder to explore a sample “claim” application. Much of the complexity and flexibility of Component Broker is simplified and many of the configuration options are made for you to help get you started. Consult the other books for more details on complex topologies and how to best leverage Component Broker.



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## Chapter 2. Planning for the Installation

This chapter provides information you may find useful in planning your Component Broker Standalone Workstation installation. The chapter discusses the following information.

- “System Requirements”
- “Prerequisites”
- “Installation Considerations” on page 7

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### System Requirements

This section lists the optimal system requirements for Component Broker.

#### **WIN** Component Broker Server (run time or development)

- 200 MHz processor or better
- At least 128 MB of memory
- At least 5 GB of disk space
- 800x600 capable display
- At least 300 MB of paging space (500 MB optimal for Object Builder performance)

#### **AIX** Component Broker Server (run time or development)

- 233 MHz processor or better
- At least 320 MB of memory
- At least 6 GB of disk space
- X-Server capable display
- At least 500 MB of paging space

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### Prerequisites

Table 1 on page 6 lists the products that are prerequisites for Component Broker. They are not included with Component Broker unless otherwise noted. Component Broker is only supported with the listed versions and fix levels.

Table 2 on page 7 shows which prerequisite products are required for the Component Broker installation detailed in this document. The prerequisite products must be installed in a specific order to avoid conflicts. See “Installation Order” on page 13 for the correct order of installation.

Table 1. Table 1. Supported Prerequisites for Windows NT and IBM AIX

Function	Windows NT	IBM AIX
1. Operating System	<ul style="list-style-type: none"> <li>Microsoft Windows NT Workstation 4.0</li> <li>Microsoft Windows NT Server 4.0</li> </ul> <p>Note: Component Broker requires Microsoft Windows NT 4.00 Service Pack 3 with either operating system.</p>	IBM AIX, Version 4.2.1
2. Communications	TCP/IP (provided by the operating system)	TCP/IP (provided by the operating system)
3. Web Browser	HTML 3.2-capable and JDK 1.1.5-capable, or later (for example, Netscape Navigator 4.07 or Microsoft Internet Explorer 4.01 SP1)	HTML 3.2-capable and JDK 1.1.5-capable, or later (for example, Netscape Navigator 4.07 or Microsoft Internet Explorer 4.01 SP1)
4. Cell Directory Server	IBM DCE v2.0 server, EC05	IBM DCE v2.2 server, PTF level 2
5. Cell Directory Client	IBM DCE v2.0 server, EC05 (supplied with Component Broker)	IBM DCE v2.2 server, PTF level 2 (supplied with Component Broker)
6. Security Service Server	IBM DCE v2.0 server, EC05	IBM DCE v2.2 server, PTF level 2
7. Security Service Client	IBM DCE v2.0 server, EC05 (supplied with Component Broker)	IBM DCE v2.2 server, PTF level 2 (supplied with Component Broker)
8. Database Service Server	<ul style="list-style-type: none"> <li>IBM DB2 Universal Database Personal Edition, Version 5.0 or 5.2</li> <li>IBM DB2 Universal Database Workgroup Edition, Version 5.0 or 5.2</li> <li>IBM DB2 Universal Database Enterprise Edition, Version 5.0 or 5.2</li> </ul>	<ul style="list-style-type: none"> <li>IBM DB2 Universal Database Enterprise Edition, Version 5.0 or 5.2</li> <li>IBM DB2 Universal Database Workgroup Edition for AIX, Version 5.0 or 5.2</li> </ul>
9. Database Service Client	IBM DB2 Universal Database Client Application Enabler, Version 5.0 or 5.2 (Version 5.0 supplied with Component Broker)	IBM DB2 Universal Database Client Application Enabler, Version 5.0 or 5.2 (Version 5.0 supplied with Component Broker)
10. Database Connection	<ul style="list-style-type: none"> <li>IBM DB2 Connect Personal Edition</li> <li>IBM DB2 Connect Enterprise Edition</li> </ul>	IBM DB2 Connect Enterprise Edition
11. C++ Compiler	<ul style="list-style-type: none"> <li>IBM VisualAge for C++ for Windows, Version 3.5.5 (supplied with Component Broker Toolkit)</li> <li>Microsoft Visual C++, Version 5.0</li> </ul>	IBM CSet++ for AIX, Version 3.1.4 (supplied with Component Broker Toolkit)

The numbers in the following table reference rows in Table 1.

Table 2. Table 3. Typical Machine Configurations and Associated Prerequisites	
Prerequisite	Development Workstation
Operating System	1
Communications	2 (Optional)
Web Browser (optional; required to view on-line documentation)	3
Cell Directory Service	4 or 5
Security Service	6 or 7
DB2	8, 9 or 10
C++ Compiler	11 (Optional: required for C++ application development)

#### Notes:

1. For assistance in obtaining prerequisites not supplied in Component Broker, contact your IBM representative.
2. The IBM DB2 Connect products allow access of Component Broker data stored on DB2 for OS/390, DB2 for MVS/ESA, or DB2 for OS/400. Additional details on the DB2 packaging can be found on the Web at:  
[http://www.software.ibm.com/data/db2/udb/dev1\\_ed.html](http://www.software.ibm.com/data/db2/udb/dev1_ed.html)

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## Installation Considerations

This section includes considerations for planning your installation. Considerations include:

### Installation

- Component Broker must be installed on a local drive (Windows NT) or file system (AIX). However, the install image can be accessed through a network.
- WIN If your system currently includes any of the following software versions, you must uninstall that version and reinstall the currently required version:
  - Component Broker Version 1.3 or earlier.
  - Any version of DCE earlier than Version 2.0.
  - Any version of DB2 earlier than Version 5.0 (client or server) if installed on a system with a Component Broker server.
  - Any version of IBM VisualAge C++ for Windows earlier than Version 3.5.5

In addition, ensure that the JavaSoft Java Development Kit (JDK) 1.1.6 is listed in the classpath before any previous versions of the JDK.

**Note:** Component Broker is supported on and has been tested with JDK 1.1.6. While Component Broker will install with JDK 1.1.7 and above, these levels of the JDK are not currently supported. If you experience problems while using JDK 1.1.7 or above, you must reproduce the problems using JDK 1.1.6 before reporting the problems.

- See the “Installation and Configuration” section of the *Late Breaking News* provided with Component Broker for additional important setup information.

## DB2

- The DB2 client is included on the CBCConnector Supplemental Programs compact disc. The Database Server is part of a separately licensed DB2 package.
- The DB2 SDK can be installed on any system with Component Broker whether it is a DB2 server or a DB2 client. For more information, see “Installing and Configuring DB2” on page 13 (Windows NT) or “Installing and Configuring DB2” on page 30 (AIX).

### WIN VisualAge C++ for Windows

- VisualAge C++ is a prerequisite for developing server applications and C++ client development environments only and is included in the CBToolkit package.
- After installing VisualAge C++ for Windows, you must install the Windows NT Service Pack 3, even if previously installed.

### AIX C Set++

- C Set++ is a prerequisite for developing server applications and the C++ client development environments only and is included as part of the AIX operating system.
- After installing C Set++ for AIX, you must install the PTF which is available on the CBCConnector Supplemental Programs compact disc.

## DCE

- WIN The DCE client and required fix pack are included on the CBCConnector Supplemental Programs compact disc. The DCE Security and the DCE Cell Directory Server are part of a separately licensed DCE package.
- WIN DCE must be stored in a file system with a security protection option (NTFS).
- Unsecure clients cannot access secure servers.
- You must determine which systems will be DCE Security and Naming servers. You can install DCE on a single computer or you can break it up into its component parts and install each server on separate computers.
- All Component Broker servers and clients must be installed in the same DCE cell. Provide the same DCE cell name (the realm name) when configuring your DCE servers and clients.

## TCP/IP

- TCP/IP is a prerequisite for all computers in a Component Broker network. TCP/IP is installed as part of the operating system.

## Component Broker

- Bootstrap Host considerations:
  - Determine which hosts will be bootstrap hosts. A bootstrap host can be any host (with the Component Broker server installed) from which remote clients can bootstrap into the system name space.
  - Determine which bootstrap host each Component Broker computer will use.
  - Determine the port ID to use for each bootstrap host. The port ID supplied during installation must match the port ID configured with the corresponding bootstrap host in its Component Broker TCP/IP Protocol Image. The TCP/IP Protocol Image for a host

can use the default System Management port ID (900). This port ID can be changed after installation if it is used by another system.

- System Manager User Interface consideration:
  - AIX Motif 4.2.1 is required to use the System Manager User Interface.
- AIX Component Broker Application Installation considerations:
  - Before installing a Component Broker Application on a host running a Component Broker server, ensure that there is adequate space for the application on the /var file system. The applications are installed into the /usr/lpp/CBConnector/aixApps directory. This path is a symbolic link to the /var/CBConnector/aixApps directory on the /var filesystem.

An alternative is the creation of a separate /var/CBConnector file system. With the creation of the var/CBConnector file system, there is no need to enlarge the /var file system. The creation of this file system is discussed in Chapter 6, “Installing Component Broker for AIX” on page 57.

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## Using the Prerequisite Checking Tool

The Prerequisite Checker tool is a stand-alone Java program that can be run to display a list of prerequisite software that exists or that needs to be installed on the computer before installing Component Broker. The program, given the Component Broker configuration that is to be installed, cross checks the list of prerequisites and provides the information that the chosen configuration either:

- Will install OK.
- Will not install OK. In this case, the tool lists any prerequisites that are missing and that need to be installed.

You can run the tool in a GUI format or in a non-GUI format. When the GUI version is invoked, the tool displays a list of products and their corresponding packages. By default the **Component Broker Run Time** product is preselected and the list packages for this product are displayed.

For the non-GUI version, the tool checks all the products and their corresponding packages. The output is displayed or you can redirect the results into a logfile.

The tool runs on the AIX, Windows NT, and Windows 95 platforms and is available on the Supplemental CD in the following directories:

- WIN prereq\nt
- AIX prereq/aix

WIN To use the prerequisite checking tool in Windows NT or Windows 95, perform the following steps:

1. Insert the CBConnector Supplemental Programs compact disc into the CD-ROM drive.
2. Make the CD-ROM drive your default drive.
3. Copy the contents of the /prereq/nt directory from the Supplemental CD to a local directory.
4. Run the prereq program to start the tool:

- Change to the directory containing the tool and run the prereq program. Enter:

```
prereq
```

**Note:** This command runs the prerequisite checking tool in a GUI format. To run the tool in a non-GUI format, enter:

```
prereq -nogui
```

The results are displayed. To pipe the output to a file, enter:

```
prereq -nogui [ logfile | path/logfile ]
```

Where *logfile* represents the name of an output file.

5. When the tool starts, select a product from the **Products** list. For each product selected, a list of packages are displayed. Select the packages from the **Packages** list that you intend to install and click the **Run Check** button.

6. When the tool finishes, the results are:

**GUI format** Displayed in a window. To see the details of these results in the Component Broker Log Window, click the **Show Details** button. To save the details, click the **Save Output** button.

**Non-GUI format** Displayed to the screen or redirected to a logfile. When redirected to a logfile, you can view the details by opening the logfile.

AIX

To use the prerequisite checking tool in AIX, perform the following steps:

1. Login as root (if not already logged in).
2. Insert the CBCConnector Supplemental Programs compact disc into the CD-ROM drive.
3. Mount the CD-ROM. Enter:

```
mount /cdrom
```

4. Copy the tar file `/prereq/aix/prereq.tar` from the CBCConnector Supplemental Programs compact disc to a local directory and from a shell prompt, enter:

```
tar -xvf /cdrom/prereq/aix/prereq.tar
```

5. Run the script file to start the tool:

- Change to the `prereq` directory created by the tar command in the previous step and run the script. Enter:

```
./prereq
```

**Note:** This command runs the prerequisite checking tool in a GUI format. To run the tool in a non—GUI format, enter:

```
./prereq -nogui [ logfile | path/logfile ]
```

Where *logfile* represents the name of your output file.

6. When the tool starts, select a product from the **Products** list. For each product selected, a list of packages are displayed. Select the packages from the **Packages** list that you intend to install and click the **Run Check** button.

7. When the tool finishes, the results are:

**GUI format:**

Displayed in a window. To see the details of these results in the Component Broker Log Window, click the **Show Details** button. To save the details, click the **Save Output** button.

**Non-GUI format:**

Displayed to the screen or redirected to a logfile. When redirected to a logfile, you can view the details by opening the logfile.



---

## Chapter 3. Installing the Prerequisite Software on Windows NT

This section contains information about and procedures for installing the software prerequisites, including:

- “Verifying the Windows NT Version”
- “TCP/IP Considerations”
- “User ID Considerations” on page 12
- “Installation Order” on page 13
- “Installing and Configuring DB2” on page 13
- “Installing VisualAge C++” on page 18
- “Installing and Configuring DCE” on page 19

In addition, you can use the Prerequisite Checking Tool to verify that the prerequisite software is installed and configured correctly to be used by Component Broker. For information about the tool, see “Using the Prerequisite Checking Tool” on page 9.

---

### Verifying the Windows NT Version

All Component Broker components require Microsoft Windows NT 4.0 Workstation or NT 4.0 Server with Service Pack 3 installed.

To verify the level of your Windows NT system, watch for the operating system startup information that displays the NT build level and Service Pack level.

#### Notes:

1. If your computer does not have Service Pack 3 installed, and you plan to perform application development, install VisualAge C++ first, then install Service Pack 3.
2. If your computer already has Service Pack 3 installed, and you plan to perform application development, you must reinstall Service Pack 3 after installing VisualAge C++ and before installing Component Broker. Reinstalling Service Pack 3 ensures that the drivers for accessing databases is back to the correct level.
3. When installing or reinstalling Service Pack 3, a question may display asking if you want to replace newer files with older files. If this occurs, click the **No** button.

---

### TCP/IP Considerations

TCP/IP is a prerequisite of Component Broker. During TCP/IP configuration, ensure that you are configuring TCP/IP with a valid host and domain name. The notation for the host name and the domain name are case sensitive. For example, if the host name is “MYHOST” and you specify “myhost”; you are specifying an invalid host name.

If you realize that you used a host or domain name that is not valid to configure TCP/IP after installing Component Broker, you need to reconfigure TCP/IP, and then you need to reconfigure Component Broker using the configuration tool. Also, if you modify the host name or the domain name after installing Component Broker, you will need to reconfigure Component Broker using the configuration tool.

Dynamic IP Addressing (DHCP) is not supported by Component Broker.

---

## User ID Considerations

This section discusses the User ID considerations for DB2 and Windows NT.

You should install all prerequisite software and the Component Broker software under the same NT user ID. This helps to ensure that the environment variables and necessary authorities are set up so that you can compile programs and access databases.

### For a DB2 Administrator ID

The user ID you select must be acceptable as a DB2 administrator ID and must have NT Administrator rights. A valid DB2 user ID:

- Must contain eight or fewer characters.
- Can include letters, numbers, the at sign (@), the pound sign (#), and the dollar sign (\$).
- Cannot begin with IBM, SYS, SQL, or a number.
- Cannot be a DB2 reserved word (USERS, ADMINS, GUESTS, PUBLIC, or LOCAL) or an SQL reserved word as listed in the *SQL Reference*.

**Note:** DB2 tells you if you attempt to install using an invalid user ID.

### For a Windows NT Administration ID

If the workstation will be used only within a Microsoft Windows Networking Workgroup, use the NT User Manager to define the user ID and ensure that the new user ID is a member of the Administrators group.

If the workstation will be used only within a Microsoft Windows Networking Domain, use the Windows NT User Manager for Domains on the domain controller to define the global user ID and ensure that the new user ID is a member of the Domain Admins group. If the new user ID cannot be a member of the Domain Admins group, log on to the client workstation locally (using the Domain name that matches the host name of the workstation) and ensure that the domain-qualified user ID (without the domain qualifier) is a member of the local Administrators group. After this verification, log on again, but use the domain-qualified user ID.

For more information about Security in a Component Broker environment, see the "Security Administration" topic in the *Component Broker for Windows NT and AIX System Administration Guide*.

---

## Windows NT Configuration Considerations

The following considerations are vital to accurate performance of Component Broker on the Windows NT platform.

### NLS Considerations

Do not change code pages for a server after the server has been started. Doing so will result in INVALID OBJ REF errors. To change your code page, you must first shut down your servers, daemons, and the systems management graphical user interface. You can then change the code page using the LANG environment variable. When you restart, all components will be running under the new code page.

---

## Installation Order

Use the following installation order:

1. Install DB2 using the new user ID (see “User ID Considerations”).
2. Install VisualAge C++ for Windows using the same user ID. For ActiveX clients, install Microsoft Visual C++. For Java clients and Component Broker servers, install JDK 1.1.6.

**Note:** Component Broker is supported on and has been tested with JDK 1.1.6. While Component Broker will install with JDK 1.1.7 and above, these levels of the JDK are not currently supported. If you experience problems while using JDK 1.1.7 or above, you must reproduce the problems using JDK 1.1.6 before reporting the problems.

3. Update the VisualAge C++ cppwbe35.exe file (replacement file is located on the CBCConnector Supplemental Programs compact disc).
4. Install NT Service Pack 3.
5. Install DCE using the same user ID.
6. Install the DCE fix pack (located on the CBCConnector Supplemental Programs compact disc).
7. Update the following DCE files using the files updates located on the CBCConnector Supplemental Programs compact disc:
  - DCE libdce.dll
  - libdce.dbg
  - dcesetup.exe
  - dcesetup.dbg
8. Install Component Broker using the same user ID.

---

## Installing and Configuring DB2

Component Broker supports the following transparent mapping between DB2 NT relational databases and Component Broker applications.

- Integration of Component Broker Object Transaction Service and Object Concurrency Control Service with DB2 transactions and locking.
- Integration of Component Broker Object Query Support with DB2 SQL query processing.
- By using the distributed services of the DB2 family, support for accessing local DB2 NT databases actually provides support for access to remote DB2 databases on AIX, OS/2, and MVS/ESA. This transparent access is achieved by configuring DB2 table aliases that define local tables whose actual implementation is provided by a remote DB2 server.
- A Database Caching service that implements algorithms and policies for optimizing the performance of DB2 databases within Component Broker. This service includes local caching to rows and columns, optimistic read and update policies, optimistic transaction policies, and integration of query and transactional access to data.

If installing the Component Broker server when there is an existing CBSRFCDB database, the existing database is not dropped during the installation because it could contain user data. In addition, the database that is normally created as part of the installation fails because the database already exists.

If this is the case, you may want to drop the database in order to clean it up prior to installation. On the DB2 server system, run the following commands to drop the database:

```
db2cmd db2
drop database CBSRFCDB
```

After dropping the database and extracting your data, either perform the Component Broker server installation (if not already done) or recreate the database following the instructions in the “Advanced DB2 Concerns” section of the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide*.

#### Notes:

1. You can implement transactional applications by using the DB2 transaction interfaces. There are limitations to this technique that include:
  - One active DB2 transaction per Component Broker process.
  - Transactional updates are confined to a single database.
2. DB2 systems use DB2 DDCS to implement distributed transactions. DB2 NT DDCS interacts only with DB2 AIX and DB2 OS/2. Therefore, Component Broker transactional updates of DB2 MVS/ESA require the presence of either a DB2 AIX DDCS or a DB2 OS/2 DDCS gateway. For additional information, see your DB2 documentation.
3. If you uninstall DB2, verify that any residual database directories are deleted before reinstalling DB2. Failure to delete these residual directories may cause errors and subsequent failure during a DB2 reinstallation.

## Installing DB2 NT

From a DB2 perspective, a Component Broker server is a database client. Therefore, the configuration is:

- Component Broker server must have access to a DB2 NT server. Either a DB2 server or a DB2 client needs to be installed on the system before a Component Broker server can be installed.
- You need to install the DB2 SDK as part of the overall installation on a system if you plan to use the system for developing Component Broker applications.

**Note:** The installation of the DB2 SDK places the include and lib paths in the System Environment Variables only. To compile programs using the DB2 SDK, you need to add the DB2 include and lib paths to the User Environment Variables.

This information provides an overview of the steps required to configure DB2 for Component Broker installation. The installation process and considerations for DB2 NT are independent of Component Broker. Therefore, you should follow the DB2 NT installation and configuration information. For additional information on DB2 configuration, see “Installing from a CD-ROM” in the *IBM DB2 Up and Running Guide*.

The installation process results in a Component Broker business object being able to make local SQL calls. The SQL calls could be routed to remote DB2 servers, such as MVS/ESA, through distributed DB2 services.

## Installing the DB2 NT Server

Unless you have an existing DB2 Server, you need to install at least one DB2 Server for all the Component Broker servers. Database Server is part of a separately licensed package and is not part of the Component Broker package.

**Note:** If DB2 will be on a system with a Component Broker server, you must uninstall any version of DB2 earlier than Version 5.0 and reinstall the current version of DB2.

It is useful to install DB2, DCE, and Component Broker on the same Windows NT account. This allows you to have access to all the Component Broker development tools without having to shut down and log on as a different user each time you switch between DB2 tools and Component Broker tools. The DB2

and Component Broker accounts need administrator authority, and you have to create the account using **Programs → Administrative Tools (Common) → User Manager**.

To install the DB2 NT server:

1. Insert the DB2 Version 5.0 server compact disc into the CD-ROM drive. Autoplay starts the setup program (or you can run Setup.exe from the Windows NT Explorer).
2. On the welcome screen, click the **Next** button to continue.
3. Select one of the following DB2 editions, based on your needs:
  - Workgroup** Can employ up to four processors on Intel platforms only; each Web user is considered to be a DB2 user; Connect Enterprise functionality is needed to work.
  - Enterprise** Can employ tiered processors with no maximum number on multiple platforms; Web users are not considered to be users; Connect Enterprise functionality is included as part of the product.
  - Client Application Enabler** The DB2 Client Application Enabler (CAE) enables a client workstation to access the DB2 server. By default, if you select the Workgroup or Enterprise options, it is not necessary to install the CAE.
- Note:** Either the Workgroup selection or the Enterprise selection is acceptable to Component Broker. See your DB2 documentation for more information.
4. Select the install directory.
5. Select Typical Install.
6. Type the user name and password for DB2 servers log on.
7. Click the **Next** button to continue.
8. When the installation has completed, restart your computer.
9. Optional, create or view the SAMPLES database to verify the install using **DB2 First Steps** menus that automatically start after restarting your computer.
10. From the Services folder (Control Panel → Services), ensure that the DB2 and the DB2 security services are set to automatic. These services are denoted as:
  - DB2 Security Server
  - DB2 - DB2

## Configuring the DB2 Server for Remote Client Access

If your Component Broker server is to be installed on the same computer as your DB2 server, no additional configuration is required. If you want DB2 clients to be able to access your DB2 server, perform the following steps:

1. Add the DB2COMM system environment variable with a value of TCPIP.
2. Configure the DB2 server to accept TCP/IP clients. Edit the x:\Winnt\system32\drivers\etc\Services file (where x:\Winnt represents the drive on which Windows NT is installed) and add entries for the connection and interrupt ports. Pick port numbers larger than 1024 that are not already used. The connection port name must be the same as the instance name. For example, add the following lines to the Services file:

```
DB2      3700/tcp
DB2I     3701/tcp
```

**Notes:**

- a. The fourth character in the DB2I port name is difficult to read in some browsers. The character is the letter “I” as in “IBM.”
  - b. Port names are case sensitive and must match the server settings exactly.
3. Open the DB2 command line processor and enter:  

```
update database manager configuration using svcname DB2
```

This updates the service name with the connection port name (DB2), which is also the instance name.
  4. Restart the computer.
  5. Log on and restart the servers. DB2 is now ready to start accepting client requests. There are some TCP/IP parameters that you might want to modify. See the *IBM DB2 Up and Running Guide* for more details.

## Installing the DB2 Client

If your Component Broker server is to be installed on a computer that does not have a DB2 server installed, you need to install the DB2 client. The DB2 client is included on the CBCConnector Supplemental Programs compact disc as part of the Component Broker package.

**Note:** If DB2 will be on a system with a Component Broker server, you must uninstall any version of DB2 earlier than Version 5.0 and reinstall the current version of DB2.

To install the DB2 client for DB2 5.0 Universal Database Server:

1. Insert the CBCConnector Supplemental Programs compact disc into the CD-ROM drive.
2. Display the contents of the compact disc.
3. Double-click the nt folder.
4. Double-click the db2 folder.
5. Double-click the db2v5cli folder to display its contents.
6. Double-click the Setup object to display the installation window.
7. Click the **Next** button to continue.
8. Optional, select components to administer remote servers.
9. Select Typical Install
10. Select the install directory.
11. When the install completes, restart your computer.

## Configuring the DB2 Client

To configure the DB2 client:

1. Configure the client to use TCP/IP to connect to the server. Edit the `x:\Winnt\system32\drivers\etc\Services` file (where `x:\Winnt` represents the drive on which Windows NT is installed) and add entries for the connection and interrupt ports. Pick port numbers larger than 1024 that are not already used. The connection port name must be the same as the instance name. For example, add the following lines to the Services file:

```
DB2      3700/tcp
DB2I     3701/tcp
```

**Notes:**

- a. The fourth character in the DB2I port name is difficult to read in some browsers. The character is the letter “I” as in “IBM.”
  - b. Port names are case sensitive and must match the server settings exactly.
2. Add the DB2COMM System environment variable with a value of TCPIP.
  3. Add the path x:\SQLLIB\HELP to the HELP User environment variable.
  4. Catalog the server node and the remote database:

- a. Open a DB2 command line processor.
- b. To catalog the server node enter:

```
catalog tcpip node db2node remote hostname server  
          service_name system systemname
```

You can choose any unused DB2 name-node in place of *db2node*, *hostname* in this example is the IP name of the DB2 NT server, *service\_name* is the connection port name name (as defined in the Services file), and *systemname* can be the name of an existing system or it can be an arbitrary name that does not already exist, for example, CBServer1.

- c. To catalog the remote database, enter:

```
catalog database sample as rsample at node db2node
```

Where *sample* represents the name of the remote database, *rsample* represents the name to which the database is being cataloged, and *db2node* represents the DB2 name-node.

**Note:** You can also perform these steps through the Client Setup application in the DB2 folder.

5. Restart your computer.
6. Start the DB2 security servers from the Services folder and set it to automatic. This service is denoted as:

DB2 security server

7. Open a DB2 command line processor and enter:

```
connect to rsample user userid using pw
```

Where *userid* represents your DB2 administrative user ID and *pw* is your administrative password.

**Note:** With only the DB2 CAE (Client Application Enabler) is installed, the DB2 command line does not provide list and select functions. If you need these functions, you need to add the DB2 SDK (from the DB2 server package) to the DB2 client installation.

8. If you have your own NT user ID on the server, you can use it to connect also. See your DB2 documentation for more details.

If you plan to use the system as a DB2 client installed to develop Component Broker application, you need to install the DB2 SDK. With version 5.0, you can install the DB2 SDK using the IBM Universal Database Server SDK compact disc.

## Configuring a DB2 TCPIP Connection to an MVS Host

You can make a TCP/IP connection to or from an MVS database using a TCP/IP connection with a DDCCS gateway. To make the connection, perform the following procedure:

1. Open a DB2 command line processor and enter:

```
catalog tcpip node NodeName remote MVSHostName/MVSIPAddr server TCPServiceName/TCPPortNumber
```

Where:

*NodeName* Represents the name of a node.

*MVSHostName/MVSIPAddr*  
Represents the name or IP address of the MVS host.

*TCPServiceName/TCPPortNumber*  
Represents either the TCP service name or its port number defined in the services file. If the service name is used, its port number must be defined in the services file.

2. On the command line, enter:

```
catalog dcs database DCSDBName as MVSDBName
```

Where:

*DCSDBName* Represents any valid DB2 name.

*MVSDBName* Represents any valid DB2 name.

3. On the command line, enter:

```
catalog database DCSDBName as AliasDBName at node NodeName authentication dcs
```

Where:

*DCSDBName* Represents any valid DB2 name.

*AliasDBName* Represents any valid DB2 name.

*NodeName* Represents the name of a node.

4. On the command line, enter:

```
update dbm cfg using spm_name SPMName
```

Where:

*SPMName* Represents any valid DB2 name.

5. On the command line, enter:

```
update dbm cfg using spm_log_file_sz 1000
```

6. Refresh the db server.

7. On the command line, enter:

```
connect to AliasDBName user userid using password
```

Where:

*AliasDBName* Represents any valid DB2 name.

*userid* Represents the DB2 database user ID on the MVS host.

*password* Represents the valid password associated with the user ID.

---

## Installing VisualAge C++

IBM VisualAge C++ for Windows is required for any Component Broker server or C++ client that will be used to develop Component Broker applications.

Use the following procedure to install the IBM VisualAge C++ for Windows, Version 3.5.5 development environment.



**Note:** If Component Broker is installed prior to the installation of VisualAge C++, you must reinstall the Component Broker package after VisualAge C++ is installed.

Before installing VisualAge C++ on a drive with greater than one gigabyte capacity, check the amount of free space. (The VisualAge C++ installation program displays incorrect information about the available space.) When selecting options to install, ensure that the required space is less than the free space available. Ignore warnings that insufficient space is available and proceed with the installation.

1. Uninstall any version of VisualAge C++ for Windows that is earlier than 3.5.5.
2. Install VisualAge C++ for Windows, Version 3.5.5 according to the instructions provided with the product. You should perform a "Typical install."
3. Replace the installed version of the cppwbe35.exe file (located in the \bin directory) with the version supplied on the CBCConnector Supplemental Programs compact disc (the file is located in the \nt\fixes\vacpp directory).
4. When the installation completes, restart the computer.

**Note:** You must reinstall Windows NT Service Pack 3 after installing VisualAge C++ and before installing Component Broker. For information about Service Packs, see "Verifying the Windows NT Version" on page 11.

---

## Installing and Configuring DCE

This section explains how to install DCE 2.0 and the ECO5 fix pack. There are two versions of DCE available, based on cryptographic capability:

- Data Encryption Standard (DES)
- Commercial Data Masking Facility (CDMF)

The DES version has stronger encryption and is available in the United States and Canada; the CDMF version is available in other geographic regions. The installation instructions are the same for both versions.

### Notes:

1. Migrating from DCE 1.1c to DCE 2.0 could lead to DCE GSS API errors. If your existing installation is DCE 1.1c, you must first uninstall DCE, then perform a complete (new) installation of DCE 2.0.
2. The version of DCE packaged in the Supplemental Programs compact disc is a DCE 2.0 run-time only package that allows you to install and configure a DCE client. To install and configure a DCE server, you need the IBM DCE for Windows NT version 2.0 compact disc.
3. The DCE Security and Cell Directory servers can be installed on separate computers. Each server requires the DCE run-time services to be installed first. Unlike DCE 1.1c or DCE 1.1.1, there is a single install program for installing DCE 2.0.
4. Before installing DCE 2.0, ensure that your system has Windows NT and Service Pack 3 installed.
5. DCE must be stored in a file system with a security protection option (NTFS).
6. Do not start any other process until DCE installation is complete. Starting another process could cause DCE installation to end prematurely.

## Installing the DCE 2.0 Server and Client

Perform the following procedure to install the DCE 2.0 server or the DCE 2.0 client:

1. Uninstall any previous versions of DCE:
    - a. To uninstall DCE version 1.1c, enter:

```
dinstall
```

This program stops all DCE services and removes DCE from the computer.
    - b. Manually remove the di\_rmdir.bat file.
    - c. Remove the C:\OPT\DIGITAL\DCE\BIN directory from the PATH system environment variable.
    - d. Manually remove the c:\opt directory and its subdirectories. Because some of the .dll files are in use, you must restart your computer before performing this step.
  - Note:** If, after uninstalling a previous version of DCE, you restart your computer before uninstalling your previous version of Component Broker, a message displays stating that the libdce.dll file cannot be found. You can disregard this message.
  2. Insert the IBM DCE for Windows NT version 2.0 compact disc into your CD-ROM drive. If your system autoloads the compact disc, skip to step 5.
  3. Display the contents of the compact disc.
  4. Double-click the Setup object to display the installation window.
  5. In the Choose Setup Language window, click the **Next** button to accept English as the install language.
  6. In the Welcome window, click the **Next** button.
  7. In the Select Components window:
    - a. Select components to install. For a DCE server installation, consider one or more of the following components:
      - DCE Runtime Services (required)
      - DCE Cell Directory Server (CDS)
      - DCE Security Server (SS)
      - Additional documentation, optional
- For a DCE client installation select only the DCE Runtime Services.

**Note:** The DCE Cell Directory Server (CDS) and the DCE Security Server (SS) must be available in your cell or, if you are performing a stand-alone server installation, must be installed on your computer.

- b. Accept the default directory in the **Destination Directory** box or use the **Browse** button to specify a new destination directory. You can use the same directory as your earlier DCE release. For this document, the DCE install directory is denoted as "DCE\_PATH".
- c. Verify that there is sufficient disk space to install DCE. If not, choose another disk drive or cancel the installation to free additional disk space.
- d. Click the **Next** button.

### Notes:

- a. Service Files component contains the debugging files, not the fix pack.
- b. During the install, the message:

```
failure renaming DCE to dce.old
```

indicates that a window is open, which points to a directory within the current DCE install. To resolve, close any such window and restart the install.

8. In the DCE Translations window, click the **Next** button (unless you need to install additional DCE Translations).
9. In the Cultural Conventions window:
  - a. Select **Do not modify LANG environment variable** (from the top of the list), regardless of which country you are in. The selection in this window is single choice, so any other selection is unchecked automatically.
  - b. Click the **Next** button.
10. In the Start Copying Files window, click the **Next** button to confirm all your choices and to begin installing the DCE files to your system.
11. Click the **Yes** button to view the README file.
12. Click the **Finish** button to restart your system.

**Note:** If you encounter any problems outside this document, see the DCE README file (README.TXT), or the documentation shipped with DCE, or visit the following Web site:  
<http://service.software.ibm.com/dssdce/winnt>.

## Installing the DCE Fix Pack

Perform the following procedure to install the DCE ECO5 fix pack:

1. Insert the CBConnector Supplemental Programs compact disc into your CD-ROM drive.
2. Display the contents of the compact disc.
3. Double-click the nt folder to display its contents.
4. Double-click the fixes folder to display its contents.
5. Double-click the dce folder to display its contents.
6. Double-click the v20\_eco5 folder to display its contents.
7. Double-click the Setup.exe object to start the install.

**Note:** You will not see the following window if all the DCE services are stopped. If the A DCE component is in use window is displayed:

- a. Select **Continue the installation**.
- b. Click the **Next** button.

You do not need to shut down DCE; however, DCE needs to be restarted after you install the fix pack.

8. When the installation completes, click the **Finish** button.

**Note:** The fix for a CDS user cache corruption problem is available but is not included in fixpack ECO5. To apply the fix, you must replace the libdce.dll and (optionally) libdce.dbg files, located in the dce\dcelocal\bin directory on your computer. In addition, you must replace the dcesetup.exe and dcesetup.dbg files.

There are two versions of the files (CDMF and DES versions) included on the appropriate CBConnector Supplemental Programs compact disc in the following locations:

```
nt\fixes\dce\v20_eco5\patches\libdce.dll
nt\fixes\dce\v20_eco5\patches\libdce.dbg
nt\fixes\dce\v20_eco5\patches\dcesetup.exe
nt\fixes\dce\v20_eco5\patches\dcesetup.dbg
```

You should replace the libdce.dll file after you have installed the DCE ECO5 fixpack. To replace the files:

1. Stop all the DCE daemons and any other products that might be using the libdce.dll file.
2. Insert the CBCConnector Supplemental Programs compact disc into your CD-ROM drive.
3. Display the contents of the compact disc.
4. Double-click the nt folder to display its contents.
5. Double-click the fixes folder to display its contents.
6. Double-click the dce folder to display its contents.
7. Double-click the v20\_eco5 folder to display its contents.
8. Double-click the patches folder to display its contents.
9. Copy the libdce.dll and (optionally) the libdce.dbg files to the dce\dcelocal\bin directory on your computer.
10. Restart the DCE daemons and any other products you previously stopped.

## Configuring DCE

All Component Broker server installs and all security enabled Component Broker client installs must have either the DCE client or the DCE server installed. If the DCE client is installed, an existing DCE cell with Security Server and Cell Directory Server must be accessible.

DCE requires your system to have TCP/IP active and connected to a network. If you want to configure DCE and Component Broker on a stand-alone system, configure a local network by installing the Microsoft Loopback Adaptor and configuring TCP/IP to use it. To configure this adaptor, open the Control Panel and select Network.

## Configuring the DCE Server

To configure the DCE server:

1. Start DCEsetup.

A window containing two panels is displayed. The left panel is a message panel, which displays the status of the setup process. The right panel is a table, which indicates the running status of all daemons that are available in DCE. You can use this window at any time to determine the run status of the DCE system and services.

2. From the **Configuration** menu, select **Create** → **Server**.
3. In the resulting dialog, click the **Yes** button to overwrite the existing configuration, if any. This opens the Server Configuration Wizard.
4. On the first page of the Server Configuration Wizard:
  - a. The default host name in the **Host Name** field is your computer name. Do not change this information.
  - b. The default cell name in the **Cell Name** field is in the format *hostname\_cell* where *hostname* is your computer name. Assign an appropriate cell name, if desired.
  - c. In the CDS Server group box:
    - 1) Ensure that the **CDS Server** check box is set.
    - 2) The **Master Server** radio button is set by default. Do not change this setting.

- d. In the Security Server group box:
    - 1) Ensure that the **Security Server** check box is set.
    - 2) The **Master Server** radio button is set by default. Do not change this setting.
    - 3) In the **Principal Account Name** field, accept `cell_admin` (the default administrator name, which is the administrator ID for the cell being configured) or type a different cell administrator (account) name. The remainder of this document assumes a principal account name of `cell_admin`.
    - 4) In the **Principal Password** field, type a password. The remainder of this document assumes a principal password of `cell_passwd`.
    - 5) In the **Confirm Password** field, type the password again.

**Important:** You need your cell administrator (account) name and password to administer your DCE cell. Record this information in a secure location for future reference.
  - e. In the Distributed Time Service group box:
    - 1) Verify that the **Distributed Time Service** check box is set.
    - 2) Set the **DTS Global Server** radio button if you want your DCE clients to sync up the time with the server or accept the default **DTS Local Server** radio button.
  - f. Click the **Next** button to continue.
5. On the second page of the Server Configuration Wizard:
- a. The Security Master Server and the CDS Server group boxes are disabled.
  - b. If any of the clients (C++, ActiveX or Java) is located in a different LAN domain, set **The cell spans multiple LANs** check box and type the LAN name in the **Name of your LAN** field.
  - c. Disable **Integrated Login** and enable **Automatically start DCE services during system startup**.

**Note:** Integrated Login cannot be enabled unless your NT user ID and password and your DCE user ID and password are the same.
  - d. Do not set the **GDA** check box. Enable this option only if you will be configuring a Global Directory Agent.
  - e. Click the **Next** button to start the configuration process.
6. On the Confirm Server Configuration page, click the **Finish** button to start the configuration process.
7. After the configuration is finished, verify that all services in the configured state are running by viewing the right panel of the DCE Setup window.

**Notes:**

- a. The DCE Autostart service does not display whether its status is either running or not running. This is normal.
- b. If any of DCE processes or daemon processes are not shown as Running in the Status pane of the DCEsetup window, perform the following steps:
  - 1) Restart DCE. Enter the following commands:

```
dcecp stop.dce
dcecp start.dce
```

This may start the processes or daemons that were not running previously. If this does not fix the problem, continue with the following steps.
  - 2) Run the `dcecp show.cfg` command.

- 3) If the running state of the DCE process is not Running, run the `dcesetup` command to reconfigure the DCE services on your computer.
8. View the Configured Hosts in the DCE Director for any Component Broker systems that are on LAN domains different from the server and that will be running Component Broker clients communicating with an application on the server.
9. Close the DCE Setup window.
10. Log in to DCE from the command line. Enter:  
`dce_login cell_admin cell_passwd`

### Additional Information:

1. When performing a login on a new DCE installation, after entering your password you may see the following message:  
`Password must be changed!`  
Changing the password is not required at this time, but the message could reappear the next time you login. To prevent the message from appearing, perform the following steps:
  - a. Open the `dcecp` control program shell. At a command prompt, enter:  
`dcecp.exe`  
You must be logged in as a DCE administrator.
  - b. At the `dcecp` command prompt, enter:  
`account modify cell_admin -pwdvalid yes`
  - c. End the DCE command session. Enter:  
`exit`
  - d. Login to DCE again to verify that the message does not appear.
2. DCE and its services are started during NT startup. Complete initialization can take two or three minutes after a restart (depending on the CPU speed of the computer). When you restart NT, you should wait until the DCE services are active before attempting to start or administer Component Broker components. The DCE Setup window displays the running status of the DCE services.
3. To use DCE between any client and a Component Broker server located in a different LAN domain, you need to change your DCE server configuration to set **The cell spans multiple LANs** check box.
4. If you run a remote client with security enabled but without DCE credentials, you may be prompted to authenticate yourself to DCE. In this security dialog, enter the login name, realm name, and password. The login name is your DCE User ID, the realm name is the cell name (in the format `/.../cellname`), and password is your DCE User password.
5. If you reconfigure the DCE server, you must *clobber* and reconfigure all the DCE clients connected to this server. Each time you perform *clobber/clean*, if the command is successful, exit and restart `DCESSETUP`. This prevents the setup program from picking up any unwanted information that could remain in the cache.

## Configuring the DCE Client

To configure the DCE client:

1. Start `DCESetup`.

A window containing two panels is displayed. The left panel is a message panel, which displays the status of the setup process. The right panel is a table, which indicates the running status of DCE on

this computer. You can use this window at any time to determine the run status of the DCE system and services.

2. From the **Configuration** menu, select **Create** → **Full Client**.
3. In the resulting dialog, click the **Yes** button to overwrite the existing configuration, if any. This opens the Full Client Configuration Wizard.
4. On the first page of the Full Client Configuration Wizard:
  - a. The default host name in the **Host Name** field is your computer name. Do not change this information.
  - b. Type the DCE cell name (the DCE realm name) of your services machine in the **Cell Name** field if it is incorrect or empty.
  - c. In the Security Master Server group box:
    - 1) In the **Security Master Server Host Name** field, type the fully-qualified host name where you configured the Security Server.
    - 2) In the **Principal Account Name** field, type `cell_admin`.
    - 3) In the **Principal Password** field, type `cell_passwd` (where `cell_passwd` represents your DCE administrator password).
  - d. If the **CDS Server is within Broadcast Range** check box is set, continue to the next step; otherwise, type the fully-qualified host name of the CDS Master Server where you configured the DCE Cell Directory Server in the **CDS Server Host Name** field.
  - e. In the Distributed Time Service group box:
    - 1) Verify that the **Distributed Time Service** check box is set.
    - 2) Set the **DTS Client** radio button.
  - f. Click the **Next** button to continue.
5. On the second page of the Full Client Configuration Wizard:
  - a. In the **Security Master Server Host IP Address** field, type the IP address of the host where you configured the Security Server.
  - b. The **CDS Server** host name box is disabled.
  - c. If any of the clients (C++, ActiveX or Java) is located in a different LAN domain, set **The cell spans multiple LANs** check box and type the LAN name in the **Name of your LAN** field.
  - d. Ensure that the **Automatically sync local time with cell time** check box is not set unless the Cell Server is configured to be a DTS Global Server. If configured as a DTS Global Server, set this check box and verify the server name.
  - e. Disable **Integrated Login** and enable **Automatically start DCE services during system startup**.

**Note:** Integrated Login cannot be enabled unless your NT user ID and password and your DCE user ID and password are the same.
  - f. Click the **Next** button.
6. On the Confirm Full Client Configuration page, click the **Finish** button to start the configuration process.
7. After the configuration is finished, verify that all services are running by viewing the right panel of the DCE Setup window.
8. Close the DCE Setup window.
9. Log in to DCE from the command line. Enter:

```
dce_login cell_admin cell_passwd
```

### Additional Information:

1. When performing a login on a new DCE installation, after entering your password you may see the following message:

```
Password must be changed!
```

Changing the password is not required at this time, but the message could reappear the next time you login. To prevent the message from appearing, perform the following steps:

- a. Open the dcecp control program shell. At a command prompt, enter:

```
dcecp.exe
```

You must be logged in as a DCE administrator.

- b. At the dcecp command prompt, enter:

```
account modify cell_admin -pwdvalid yes
```

- c. End the DCE command session. Enter:

```
exit
```

- d. Login to DCE again to verify that the message does not appear.

2. The following DCE message could appear on the client console:

```
PID XXXX ERROR gss authentication  
msgID = 0x0DCEA113  
Can't get server ticket in gss_init_sec_ctx
```

You can ignore this message.

3. DCE and its services are started during NT startup. Complete initialization can take two or three minutes after a restart (depending on the CPU speed of the computer). When you restart NT, you should wait until the DCE services are active before attempting to start or administer Component Broker components. The DCE Setup window displays the running status of the DCE services.
4. To use DCE between any client and a Component Broker server in a different LAN domain, you need to change your DCE server configuration to set **The cell spans multiple LANs** check box.
5. If you run a remote client with security enabled but without DCE credentials, you may be prompted to authenticate yourself to DCE. In this security dialog, enter the login name, realm name, and password. The login name is your DCE User ID, the realm name is the cell name (in the format `/.../cellname`), and password is your DCE User password.
6. The maximum DCE certificate lifetime value for an authentication policy is 24 days. Do not set this value greater than 24 days.
7. If you reconfigure the DCE server, you must *clobber* and reconfigure all the DCE clients connected to this server. Each time you perform clobber/clean, if the command is successful, exit and restart DCESETUP. This prevents the setup program from picking up any unwanted information that could remain in the cache.



---

## Chapter 4. Installing the Prerequisite Software on AIX

This section includes the following topics:

- “Verifying the AIX Version”
- “AIX Configuration Considerations” on page 28
- “The User ID and \$HOME” on page 29
- “Installing and Configuring DB2” on page 30
- “Installing and Configuring DCE” on page 38
- “Installing C Set++” on page 45
- “Installing the Fixes for the Prerequisite Products” on page 45

In addition, there is a tool you can use to verify that the prerequisite software is installed and configured correctly to be used by Component Broker. For information about the tool, see “Using the Prerequisite Checking Tool” on page 9.

The following products are prerequisites for Component Broker for AIX.

- JavaSoft Java Development Kit (JDK) version 1.1.6.
- IBM AIX version 4.2.1
- IBM DB2 for AIX Version 5.0 with PTF or 5.2.
- IBM DCE for AIX Version 2.2 with PTF level 2.
- IBM C Set++, Version 3.1.4 with PTF

To complete the instructions in this chapter, you must be logged in as root (unless otherwise specified). Additionally, the instructions specify the installation, configuration, and uninstallation using the ASCII version of SMIT (using the `smitty` command from the shell prompt). To use the GUI version of SMIT, use the `smit` command from the shell prompt and modify the instructions as appropriate.

**Note:** See the “Installation and Configuration” section of the *Late Breaking News* provided with Component Broker for additional important setup information.

---

### Verifying the AIX Version

Component Broker requires AIX 4.2.1. Ensure that the machine on which Component Broker is installed is at this level. To check the level, enter `oslevel` at the command prompt. If you need to upgrade your machine to AIX 4.2.1, contact your IBM service representative.

#### Notes:

1. Component Broker for AIX requires a complete installation of AIX 4.2.1. If during the installation of Component Broker you receive any prerequisite file set notices, install these file sets from the AIX 4.2.1 compact discs.
2. The System Manager User Interface for Component Broker for AIX requires Motif to be installed on the system prior to installing Component Broker. Verify that motif is installed by entering:

```
lslpp -l | grep X11.motif.mwm
```

If motif is installed, you should see the following output:

```
X11.motif.mwm      4.2.1.0  COMMITTED
```

If you do not see the X11.motif.mwm 4.2.1.0 file set, install it from the AIX 4.2.1 installation compact discs.

For any Component Broker installation, you must apply the following AIX PTFs in the following order:

1. The AIX PTF located on the CBCConnector Supplemental Programs compact disc in the aix/fixes directory.
2. The AIX PTF located on the CBCConnector Supplemental Programs compact disc in the aix/dce2.2cli directory.

After installing the prerequisite products, you must repeat step 1 (above). This installs additional PTFs that could not be installed previously.

For installation instructions, see “Installing the Fixes for the Prerequisite Products” on page 45.

---

## AIX Configuration Considerations

The following considerations are vital to accurate performance of Component Broker on the AIX platform.

### Paging Space

The paging space should be set to at least the same amount as the physical memory. You may want to increase the paging space above that amount if your machine does not have a lot of physical memory.

### /tmp and /var File Systems

The /tmp and /var file systems should be defined to a minimum of 60 MB.

### NLS Considerations

Do not change code pages for a server after the server has been started. Doing so will result in INVALID OBJ REF errors. To change your code page, you must first shut down your servers, daemons, and the systems management graphical user interface. You can then change the code page using the LANG environment variable. When you restart, all components will be running under the new code page.

### Component Broker File System

You should create a file system for Component Broker before you install. This file system will be used by the Component Broker run time. This file system is required only for Component Broker server machines. Perform the following steps:

1. Log in as root (if not already logged in).
2. Enter:  

```
smitty jfs
```

The Journaled File Systems screen is displayed.
3. On this screen, select **Add a Journaled File System**. The Add a Journaled File System screen is displayed.
4. On this screen, select **Add a Standard Journaled File System**. The Volume Group Name window is displayed.
5. In this window, select the volume group and press the **Enter** key. The Add a Standard Journaled File System screen is displayed.
6. On this screen:
  - a. Set the **SIZE** of file systems to 131672 512-byte blocks.
  - b. Set the **MOUNT POINT** to /var/CBCconnector.
  - c. Set the **Mount AUTOMATICALLY at system restart?** to Yes.

Press the **Enter** key to create the /var/CBCconnector file system.

7. Press the **F10** key to exit SMIT.

After creating the file system, you need to mount it. To mount this journaled file system, enter:

```
mount /var/CBConnector
```

**Note:** The file system may have to be increased when applications are added using **Load Application** through System Management. When the applications are loaded, the application libraries are copied to the `/var/CBConnector/aixApps` directory. If there is not enough space on `/var/CBConnector`, it will have to be increased using `smitty chjfs`.

---

## TCP/IP Considerations

TCP/IP is a prerequisite for Component Broker. During TCP/IP configuration, ensure that you are configuring TCP/IP with a fully-qualified host name that includes both the host name and the domain name. The notation for the host name and the domain name are case sensitive. For example, if the host name is `myhost` and your domain name is `austin.ibm.com`, the hostname should be specified as `myhost.austin.ibm.com` when configuring TCP/IP.

If you realize that you configured TCP/IP with an invalid host or domain name, after installing Component Broker, you need to:

1. Re-configure TCP/IP.
2. Re-configure DCE.
3. Re-configure the Component Broker run time.

In addition, if you modify the host name or the domain name after installing Component Broker, you must perform the same re-configuration steps.

---

## The User ID and \$HOME

For simplicity, create a user ID and use the same user ID for configuring DB2 and Component Broker. For the remainder of this document, it is assumed that the user ID is “`cbuser`.” If you select another user ID, modify the instructions as appropriate.

This document uses `cbuser` to configure DB2. The DB2 instance files will be created in the home directory of `cbuser`. Therefore, the file system where the home directory of `cbuser` is should be increased to a minimum of 120 MB. (During certain test cases, the database instance can grow to over 100 MB.) This file system size assumes that there are no other users or systems consuming this space. If there are other users or system in `/home`, compensate as needed.

**Note:** Once a file system is increased, it cannot be reduced.

To avoid having 120 MB as the `/home` file system, you can create a journaled file system that can serve as `/home` file system for user `cbuser`. To create this journaled file system:

1. Log in as root (if not already logged in).
2. Enter `smitty jfs`. The Journaled File Systems screen is displayed.
3. On this screen, select **Add a Journaled File System**. The Add a Journaled File System screen is displayed.
4. On this screen, select **Add a Standard Journaled File System**. The Volume Group Name window is displayed.
5. In this window, select the volume group and press the **Enter** key. The Add a Standard Journaled File System screen is displayed.
6. On this screen:
  - Set the **SIZE of file systems** to 524888 512-byte blocks.

- Set the **MOUNT POINT** to `/cbfs`.
- Set the **Mount AUTOMATICALLY at system restart?** to `yes`.

Press the **Enter** key. The `/cbfs` file system is created. Exit SMIT.

After creating the `/cbfs` file system, it needs to be mounted. To mount this journaled file system, enter:

```
mount /cbfs
```

With this file system mounted, user `cbuser` can be created and assigned this new home.

To create user `cbuser` and its initial password, enter:

```
mkuser home=/cbfs/cbuser cbuser  
passwd cbuser
```

The system prompts you for the initial system password for `cbuser`.

**Note:** The first time the `cbuser` user logs in, the system prompts for the password to be changed.

---

## Installing and Configuring DB2

This section describes the steps necessary to install and configure DB2 Version 5.0 or Version 5.2. If you are developing applications that use DB2, you need the Developer's Edition of DB2. See "Prerequisites" on page 5 for more information on the supported versions of DB2.

For more information on DB2, you can visit the following Web site:

```
http://www.software.ibm.com/data/db2/udb/dev1\_ed.html
```

If you had databases previously installed on your machine at version 2.1, you must either migrate your databases to the new version of DB2 or remove your old databases and recreate them.

When migrating to the new version of DB2 there are tasks that must be done before and after the installation. These tasks are documented in the *IBM DB2 Universal Database for UNIX Quick Beginnings Version 5*. Follow the steps in the "Migrating from Previous Versions" topic to migrate the database instance and the databases within that instance to the new version of DB2.

If you choose to remove your old databases and re-create them, there are several steps you must follow. You must drop your databases and your database instances, uninstall the old version of DB2 and then install the new version of DB2.

If you are using DB2 Version 5.0, a PTF is required to operate with Component Broker. This PTF is available to you on the CBConnector Supplemental Programs compact disc. If you are migrating your databases, you must perform the migration steps mentioned above to migrate to the UDB version of the database. You must then follow the steps in the `fixpack.readme` in the `aix/fixes` directory of the CBConnector Supplemental Programs compact disc. This guides you through the migration of your databases to DB2 5.0.0.20.

If you are using DB2 Version 5.0 and you are creating your databases for the first time or if you are removing and recreating your existing databases, you should apply the PTF on the CBConnector Supplemental Programs compact disc before configuring DB2. This avoids the migration steps required with the DB2 PTF. If you apply the PTF after you have configured DB2, you will have to follow the migration steps in the `fixpack.readme` on the CBConnector Supplemental Programs compact disc.

For instructions on installing the DB2 Version 5.0 PTF, see "Installing the Fixes for the Prerequisite Products" on page 45.

## Installing the DB2 Server

The steps in the following sections were taken from the “Other Methods to Install DB2 for AIX” topic in the *IBM DB2 Universal Database for UNIX Quick Beginnings Version 5*. For additional information, refer to that topic and to the “Installing and Configuring DB2” topic in the same book.

Installing the DB2 Server is a two step process.

1. Install the bundle definitions
2. Install the software

### Step 1: Installing the Bundle Definitions

To install the bundle definitions:

1. If you are not already logged in, log in as root.
2. Insert the DB2 Universal Database compact disc into your CD-ROM drive.
3. From a shell prompt, enter:  

```
smitty easy_install_bundle
```

The Install Software Bundle (Easy Install) screen is displayed.
4. On this screen:
  - a. Press the **F4** key to receive a prompt for the input device.
  - b. Highlight the CD-ROM drive containing the DB2 compact disc and press the **Enter** button. The Select Fileset Bundle screen is displayed.
5. On this screen, highlight Media-Defined and press the **Enter** key to continue.
6. Press the **Enter** key. The ARE YOU SURE? screen is displayed.
7. Press the **Enter** key to begin the install.
8. Press the **F10** key to exit SMIT and return to the shell prompt.

### Step 2: Installing the Software

To install the software for DB2, which uses the bundle definitions:

1. If you are not already logged in, log in as root.
2. From the shell prompt, enter:  

```
smitty easy_install_bundle
```

The Install Software Bundle (Easy Install) screen is displayed.
3. On this screen:
  - a. Press the **F4** key to receive a prompt for the input device.
  - b. Highlight the CD-ROM drive containing the DB2 compact disc and press the **Enter** key to continue. The Select Fileset Bundle screen is displayed.
4. On this screen and depending of your needs, highlight one of the following DB2 bundles to install and press the **Enter** key to select it.  

```
DB2V5-UDB-Enterprise
```

```
DB2V5-UDB-WorkGroup
```
5. Press the **Enter** key to continue. The ARE YOU SURE? screen is displayed.

6. Press the **Enter** key to begin the install.
7. Press the **F10** key to exit SMIT and return to the shell prompt.

## Installing the DB2 Software Developer's Kit

If you will be developing Component Broker applications that use DB2, you should install the DB2 Software Developer's Kit (SDK) at this time. The following procedure presents one method of installing the SDK. For another method of installation and for additional information see the "Installing and Configuring DB2" topic in the *IBM DB2 Universal Database for UNIX Quick Beginnings Version 5*.

Installing the SDK is a two step process:

1. Install the bundle definitions
2. Install the software

### Step 1: Installing the Bundle Definitions

To install the bundle definitions:

1. If you are not already logged in, log in as root.
2. Insert the DB2 Universal Database compact disc into your CD-ROM drive.
3. If you do not have a defined CD-ROM file system, see the section "Creating a CD-ROM File System" on page 46 for instructions on how to do this. These instructions assume that the CD-ROM file system is mounted as /cdrom. Mount the CD-ROM file system:

```
mount /cdrom
```

4. Change to the AIX installation directory on the CD-ROM:

```
cd /cdrom/db2/aix/db2
```

5. From a shell prompt, enter:

```
smitty easy_install_bundle
```

The Install Software Bundle (Easy Install) screen is displayed.

6. On this screen, highlight Media-Defined and press the **Enter** key to continue.
7. Press the **Enter** key. The ARE YOU SURE? screen is displayed.
8. Press the Enter key to begin the install.
9. Press the **F10** key to exit SMIT and return to the shell prompt.

### Step 2: Installing the Software

To install the SDK for DB2, which uses the bundle definitions:

1. If you are not already logged in, log in as root.
2. If the /cdrom/db2/aix/db2 directory is not your current directory on the CD-ROM, change to that directory:

```
cd /cdrom/db2/aix/db2
```

3. From the shell prompt, enter:

```
smitty easy_install_bundle
```

The Install Software Bundle (Easy Install) screen is displayed.

4. On this screen:

- a. Press the **F4** key to receive a prompt for the input device.
  - b. Highlight the CD-ROM drive containing the DB2 compact disc and press the **Enter** key to continue. The Select Fileset Bundle screen is displayed.
5. On this screen, highlight DB2V5-SDK and press the **Enter** key to continue.
  6. Press the **Enter** key to continue. The ARE YOU SURE? screen is displayed.
  7. Press the **Enter** key to begin the install.
  8. Press the **F10** to exit SMIT and return to the shell prompt.

## Configuring DB2 Server

If you are installing DB2 Version 5.0 for the first time or you are reconfiguring your server, you should install the DB2 PTF before continuing. Refer to the instructions in “Installing the Fixes for the Prerequisite Products” on page 45. If this is a new installation, it is not necessary to migrate your database after installing the DB2 PTF.

If you are migrating your databases from a previous version of DB2, you do not need to perform the following configuration steps. These steps were done when you first installed and configured DB2. But, if you install the DB2 Version 5.0 PTF, you must perform the steps documented in the  `aix/fixes/fixpack.readme`  file on the CDBConnector Supplemental Programs compact disc. These steps are necessary to migrate your database to the new version of DB2 after the PTF is applied.

To configure DB2:

1. If you are not already logged in, log in as root.
2. Change directory to  `/usr/lpp/db2_05_00/cfg` .
3. Create library and include links. Enter:

```
./db2ln
```

This command creates symbolic links for the DB2 libraries and headers in  `/usr/lib`  and  `/usr/include`  respectively.

4. Create a new group (cbadmin). Enter:

```
mkgroup cbadmin
```

This group becomes the system administration group for the database instance.

5. Make cbadmin the primary group for  `cbuser` .

```
chuser pgrp=cbadmin groups='cbadmin,staff' cbuser
```

**Note:** If user  `cbuser`  is not created, create this user ID as explained in “The User ID and \$HOME” on page 29.

6. Change directory to  `/usr/lpp/db2_05_00/instance` .

7. Create a database instance. Enter:

```
./db2icrt -u cbuser cbuser
```

This command creates an instance by:

- Assigning a name to the instance.
- Copying and customizing the files required to run the instance into  `INSTHOME/sql1lib` .
- Establishing the primary group of the instance as the system administration group (cbadmin).
- Adding the instance to the list of instances on the system.

**Note:** To prevent data loss if an instance is deleted, do not add files or directories under \$HOME/sqllib. Where \$HOME refers to the home directory for *cbuser*.

8. Log out as root and log in as user *cbuser*.

### Important

You must source the file `sqllib/db2profile` or add the statements in this file to the file `.profile` of user *cbuser*. To source `db2profile`, enter:

```
. $HOME/sqllib/db2profile
```

## Setting up the DB2 License

Refer to the “Getting Started with the DB2 Universal Database” topic in the *IBM DB2 Universal Database for UNIX Quick Beginnings Version 5* for information on the DB2 license. In particular, it contains information on upgrading from a Try-and-Buy license.

## Configuring the DB2 Server for Remote Client Access

If your Component Broker server is to be installed on the same computer as your DB2 server, no additional configuration is required. If you want a separate DB2 server, the Component Broker server will act as the DB2 client. You will need to configure your DB2 server to allow remote clients to access the database by performing the following procedure.

1. As the root user, configure the client to use TCP/IP to connect to the server. Edit the `/etc/services` file and add entries for the connection and interrupt ports. Pick port numbers larger than 1024 that are not already used. The same numbers should be used on both the server and the client. The connection port name must be the same as the instance name. For example, add the following lines to the `services` file:

```
DB2 3700/tcp
DB2I 3701/tcp
```

### Notes:

- a. The fourth character in the DB2I port name is difficult to read in some browsers. The character is the letter “I” as in “IBM.”
  - b. The port names are case sensitive and must match the server settings exactly.
2. As your DB2 user ID, add the `DB2COMM` System environment variable with a value of `TCPIP` to `db2profile`. Add the following line to `db2profile`:

```
export DB2COMM=TCPIP
```

3. As your DB2 *userid*, enter the following on the command line:

```
db2 update database manager configuration using svcename DB2
```

This command updates the service name with the connection port name. The connection port name must match the name used in 1. In this example, `DB2` is used as the connection port name.

4. As your DB2 *userid*, enter:

```
db2stop
db2start
```

These commands stop and restart DB2 so that your changes take effect.



DB2 is now ready to start accepting client requests. There are some TCP/IP parameters that you may want to modify. See your DB2 product documentation for additional details.

## Installing the DB2 Client

To install the DB2 client software from the CBCconnector Supplemental Programs compact disc, you need to mount a file system, create a temporary file system, and untar the DB2 client files. After installing the bundle definitions and software, you need to remove the temporary file system.

### Mounting and Creating the File Systems

1. If you are not already logged in, log in as root.
2. Insert the CBCconnector Supplemental Programs compact disc into the CD-ROM drive.
3. Mount the file system. To mount, enter:

```
mount /cdrom
```

4. Create a temporary file system to use during the installation and change directory to that file system.

```
crfs -v jfs -g rootvg -a size=155000 -m /db2v5cli
mount /db2v5cli
cd /db2v5cli
```

5. From a shell prompt, enter:

```
tar -xvf /cdrom/aix/db2/db2v5cli/db2v5cli.tar
```

Now you are ready to install the DB2 client. Installing the DB2 client is a two-step process:

1. Install the bundle definitions
2. Install the software

**Step 1: Installing the Bundle Definitions:** To install the bundle definitions:

1. If you are not already logged in, log in as root.
2. From a shell prompt, enter:

```
smitty easy_install_bundle
```

The Install Software Bundle (Easy Install) screen is displayed.

3. On this screen:
  - a. Type `/db2v5cli/db2/aix/db2` as the input device.
  - b. Press the **Enter** key to continue. The Select Fileset Bundle screen is displayed.
4. On this screen:
  - a. Select Media-Defined
  - b. Press the **Enter** key to continue.
5. Press the **Enter** key. The ARE YOU SURE? screen is displayed.
6. Press the **Enter** key to begin the install.
7. Press the **F10** key to exit SMIT and return to the shell prompt.

**Step 2: Installing the Software:** To install the software for the DB2 client, which uses the bundle definitions:

1. If you are not already logged in, log in as root.
2. From the shell prompt, enter:

```
smitty easy_install_bundle
```

The Install Software Bundle (Easy Install) screen is displayed.

3. On this screen:
  - a. Type `/db2v5c1i/db2/aix/db2` as the input device.
  - b. Press the **Enter** key to continue. The Select Fileset Bundle screen is displayed.
4. On this screen, select DB2V5-Client.
5. Press the **Enter** key to continue.
6. Press the **Enter** key on the Install Software Bundle (Easy Install) screen. The ARE YOU SURE? screen is displayed.
7. Press the **Enter** key to begin the install.
8. Press the **F10** key to exit SMIT and return to the shell prompt.

**Removing the Temporary File System:** After installing the bundle definitions and software, you can remove the temporary file system `/db2c5cli`. To remove this file system, perform the following procedure.

1. If you are not already logged in, log in as root.
2. Ensure that you are not in the temporary file system. Change directory to the root directory. From a command prompt, enter:

```
cd /
```

3. Unmount the file system. From a command prompt, enter:

```
umount /db2v5c1i
```

4. Remove the temporary file system. From a command prompt, enter:

```
rmfs -r /db2v5c1i
```

5. Unmount the CD-ROM to eject the CBConnector Supplemental Programs compact disc from the CD-ROM drive. From a command prompt, enter:

```
umount /cdrom
```

## Installing the DB2 Software Developer's Kit

If you will be developing Component Broker applications that use DB2, you should install the DB2 Software Developer's Kit (SDK) at this time. For more information, see "Installing the DB2 Software Developer's Kit" on page 32.

## Configuring the DB2 Client

If you are installing DB2 Version 5.0 for the first time or you are reconfiguring your client, you should install the DB2 PTF before continuing. Refer to the instructions in "Installing the Fixes for the Prerequisite Products" on page 45. If this is a new installation, it is not necessary to migrate your database after installing the DB2 PTF.

If you are migrating your databases from a previous version of DB2, you do not need to perform the following configuration steps. These steps were done when you first installed and configured DB2. But, if you install the DB2 Version 5.0 PTF, you must perform the steps documented in the `aix/fixes/fixpack.readme` file on the CBConnector Supplemental Programs compact disc. These steps are necessary to migrate your database to the new version of DB2 after the PTF is applied.

Before configuring the DB2 client, you need to setup your DB2 environment and create a database instance. These steps are similar to the steps performed to set up the server.

To configure the DB2:

1. If you are not already logged in, log in as root.
2. Change directory to the `/usr/lpp/db2_05_00/cfg` directory.

```
cd /usr/lpp/db2_05_00/cfg
```

3. Create a library and include links.

```
./db2ln
```

This command creates symbolic links for the DB2 libraries and headers in the `/usr/lib` and `/usr/include` directories respectively.

4. Create a new group (cbadmin).

```
mkgroup cbadmin
```

This group becomes the system administration group for the database instance.

5. Make cbadmin the primary group for cbuser.

```
chuser pgrp=cbadmin groups='cbadmin,staff' cbuser
```

**Note:** If cbuser is not created, create this user ID as explained in “The User ID and \$HOME” on page 29.

6. Change directory to the `/usr/lpp/db2_05_00/instance` directory.

```
cd /usr/lpp/db2_05_00/instance
```

7. Create a database instance.

```
./db2icrt cbuser
```

This command creates an instance by:

- Assigning a name to the instance.
- Copying and customizing the files required to run the instance into the `INSTHOME/sql1lib` directory.
- Establishing the primary group of the instance as the system administration group (cbadmin).
- Adding the instance to the list of instances on the system.

**Note:** To prevent data loss if an instance is deleted, do not add files or directories under `$HOME/sql1lib`. Where `$HOME` refers to the home directory for *cbuser*.

#### Important

You must source the file `sql1lib/db2profile` or add the statements in this file to the file `.profile` of user *cbuser*. To source `db2profile`, enter:

```
. $HOME/sql1lib/db2profile
```

## Additional Configuration for Communication with the Server

Perform the following steps to set up the communications with the DB2 server.

1. As the root user, configure the client to use TCP/IP to connect to the server. Edit the `/etc/services` file and add entries for the connection and interrupt ports. Pick port numbers larger than 1024 that are not already used. The same numbers should be used on both the server and the client. The connection port name must be the same as the instance name. For example, add the following lines to the `services` file:

```
DB2 3700/tcp
DB2I 3701/tcp
```

**Notes:**

- a. The fourth character in the DB2I port name is difficult to read in some browsers. The character is the letter “I” as in “IBM.”
  - b. The port names are case sensitive and must match the server settings exactly.
2. As your DB2 user ID, add the DB2COMM System environment variable with a value of TCPIP to \$HOME/sqllib/db2profile. Add the following line to db2profile:

```
export DB2COMM=TCPIP
```

3. As your DB2 user ID, catalog the server node and the remote database:

- a. To catalog the server node:

```
db2 catalog tcpip node db2node remote hostname server service_name
```

You can choose any unused DB2 name-node in place of *db2node*, *hostname* in this example is the IP name of the DB2 server, and *service\_name* is the connection port name (as defined in the services file).

- b. If you already created a database on the DB2 server, you can now catalog that database on your client. In the following example, the database sample was created on the DB2 server. Enter the following command to catalog the remote database sample:

```
db2 catalog database sample as rsample at node db2node
```

Where *sample* represents the name of the remote database, *rsample* represents the name to which the database is being cataloged, and *db2node* represents the DB2 name-node.

4. Restart your client computer.
5. To test the connections, logon to your DB2 client as your DB2 *userid*. Open a command line processor and enter:

```
db2 connect to rsample user userid using pw
```

Where *rsample* is your cataloged remote database, *userid* represents your DB2 administrative user ID and *pw* is your administrative password.

6. To end the database connection, enter:

```
db2 connect reset
```

---

## Installing and Configuring DCE

## Important

Before installing DCE 2.2 (either client or server), ensure that the `bos.rte.libpthreads` (the libpthread library) is at the following level:

**For AIX 4.2** `bos.rte.libpthreads 4.2.1.1`

To check your `bos.rte.libpthreads` version, run the following command:

```
lspp -l bos.rte.libpthreads
```

If the `bos.rte.libpthreads` is not at the correct level, apply all PTFs using the `smitty update_all` command. The PTFs are located on the CBConnector Supplemental Programs compact disc in the `aix/dce2.2cli` directory or on the DCE Server installation compact disc.

You may see a requisite failure message stating that you cannot install the `bos.*` filesets for AIX version 4.3. You can ignore the message and continue with the installation.

After installing the PTFs, you must reboot your system using the `shutdown -Fr` command.

For additional information about installing the PTFs, see "Installing the PTFs" on page 46

For AIX, the supported DCE version is 2.2 with PTF level 2. Before installing DCE:

1. Ensure that there is no DCE installation on the machine. If there is, unconfigure and remove the earlier installation. To use DCE with Component Broker for AIX, at least one machine needs to be configured as Security Server and Cell Directory Service (CDS) Server. Additional machines can be configured as DCE Clients by installing DCE Client components only.

**Note:** For detailed information on the differences between DCE Client and DCE Server, see *Directory and Security Server for AIX, Up and Running, Version 4*.

2. If the DCE product contains README files or other instructions, read them.
3. You should create a `/var/dce` file system with a minimum of 50 megabytes before you install DCE. To create the file system, perform the following steps:
  - a. Log in as root (if not already logged in).
  - b. Enter:

```
smitty jfs
```

The Journaled File Systems screen is displayed.
  - c. On this screen, select **Add a Journaled File System**. The Add a Journaled File System screen is displayed.
  - d. On this screen, select **Add a Standard Journaled File System**. The Volume Group Name window is displayed.
  - e. In this window, select the volume group and press the **Enter** key. The Add a Standard Journaled File System screen is displayed.
  - f. On this screen:
    - 1) Set the **SIZE** of file systems to 100000 512-byte blocks.
    - 2) Set the **MOUNT POINT** to `/var/dce`.
    - 3) Set the **Mount AUTOMATICALLY at system restart?** to Yes.Press the **Enter** key to create the `/var/dce` file system.
  - g. Press the **F10** key to exit SMIT.

After creating the file system, you need to mount it. To mount this journaled file system, enter:

```
mount /var/dce
```

## Installing and Configuring the DCE Server

This section contains information on installing and configuring the DCE Server. Typically, the Component Broker server is installed on a DCE server system.

### Installing the DCE Server

To install the server software:

1. Log in as root (if not already logged in).
2. Insert the DCE compact disc into the CD-ROM drive.
3. At a shell prompt, enter:

```
smitty install_latest
```

The Install and Update from LATEST Available Software screen is displayed.

4. On this screen:
  - a. In the **INPUT device / directory for software** field, press the **F4** key to display a list of available devices of which you can select the appropriate input device (/dev/cd0) and press the **Enter** key. This screen is redisplayed with additional fields.
  - b. In the **SOFTWARE to install** field, press the **F4** key to display a list of the software packages contained on the compact disc.
  - c. In the SOFTWARE to install list, scroll down and select:
    - dce.cds
    - dce.client
    - dce.compat
    - dce.pthreads
    - dce.security
    - dce.tools

**Note:** You can optionally install the documentation.

  - d. Press the **Enter** key. The Install and Update from LATEST Available Software screen is redisplayed, but the software packages selected are in the **SOFTWARE to install** field.
  - e. Ensure that the **AUTOMATICALLY install requisite software?** and **EXTEND file systems if space needed?** fields are yes.
  - f. Press the **Enter** key. The ARE YOU SURE? screen is displayed.
5. On the ARE YOU SURE? screen, press the **Enter** key to continue.

#### Notes:

- a. If any prerequisite failure messages are displayed, install the prerequisite software and reinstall the failed DCE packages.
  - b. You may see a requisite failure message stating that you cannot install the bos.rte.install 4.3.0.4 fileset. You can ignore the message and continue with the installation.
6. Exit SMIT.
  7. Log off as root.

**Note:** After installing the DCE Server software, you need to install the DCE PTF. This PTF is provided on the CBConnector Supplemental Programs compact disc. For installation details, see “Installing the Fixes for the Prerequisite Products” on page 45.

## Configuring DCE Server

To configure the DCE Server:

1. Log in as root (if not already logged in).
2. Run the `mkdce` command to configure the DCE cell with Security and CDS servers. From a command prompt, enter:

```
/usr/lpp/dce/bin/mkdce -n cellname sec_srv cds_srv dts_global
```

Where *cellname* is the name of your local one-machine cell. For *cellname*, use “*hostname\_cell*”; for example, `myhost_cell`.

**Note:** During configuration, you are asked for the default password for DCE accounts. Do not use `cell_admin` as the password. Remember this password.

As `mkdce` runs, output is displayed. This output indicates that the configuration was successful with messages similar to:

```
Component Summary for Host: cbtest2.austin.ibm.com
Component      Configuration State  Running State
Security Master server  Configured           Running
Security client         Configured           Running
RPC                   Configured           Running
Initial Directory server Configured           Running
Directory client       Configured           Running
DTS Global server      Configured           Running
```

```
The component summary is complete.
Configuration of DCE Host, cbtest.austin.ibm.com, was successful.
```

```
Configuration completed successfully.
```

3. At a shell prompt, enter:  

```
smitty dce
```

The DCE (Distributed Computing Environment) window is displayed.
4. Select **Configure DCE/DFS** and press the **Enter** key. The Configure DCE/DFS window is displayed.
5. Select **DCE/DFS Start Options** and press the **Enter** key. The DCE/DFS Start options window is displayed.
6. In the DCE/DFS Start options window:
  - a. Set **Start DCE now** to yes.
  - b. Set **Start DCE at system restart** to yes.
  - c. Press the **Enter** key.

## Installing and Configuring the DCE Client

This section contains information on installing and configuring the DCE Client. If your Component Broker server or client is to be installed on a computer that does not have a DCE server installed, you need to install the DCE client. Typically, the Component Broker client is installed on a DCE client system.

## Installing the DCE Client

**Note:** Before installing the DCE client, non-English users should untar the `dcd_dup_msg.tar` file. The tar file (located on the CBConnector Supplemental Programs compact disc) contains additional code pages for non-English countries and includes the necessary message files as part of the installation images.

To install the DCE Client:

1. Log in as root (if not already logged in).
2. Insert the DCE compact disc into the CD-ROM drive.

**Note:** The DCE client can also be installed from the CBConnector Supplemental Programs compact disc, from the  `aix/dce2.2cli` directory.

3. At a shell prompt, enter:

```
smitty install_latest
```

The Install and Update from LATEST Available Software screen is displayed.

4. On this screen:
  - a. In the **INPUT device / directory for software** field, press the **F4** key to display a list of available devices of which you can select the appropriate input device (`/dev/cd0`) and press the **Enter** key. This screen is redisplayed with additional fields.
  - b. In the **SOFTWARE to install** field, press the **F4** key to display a list of the software packages contained on the compact disc.
  - c. In the SOFTWARE to install list, scroll down and select:
    - `dce.client`
    - `dce.compat`
    - `dce.pthreads`
  - d. Press the **Enter** key. The Install and Update from LATEST Available Software screen is redisplayed, but the software packages selected are in the **SOFTWARE to install** field.
  - e. Ensure that the **AUTOMATICALLY install requisite software?** and **EXTEND file systems if space needed?** fields are yes.
  - f. Press the **Enter** key. The ARE YOU SURE? screen is displayed.
5. On the ARE YOU SURE? screen, press the **Enter** key to continue.

**Notes:**

- a. If any prerequisite failure messages are displayed, install the prerequisite software and reinstall the failed DCE packages.
- b. You may see a requisite failure message stating that you cannot install the `bos.rte.install 4.3.0.4` fileset. You can ignore the message and continue with the installation.

**Note:** After installing the DCE client software, you need to install the DCE PTF. This PTF is provided on the CBConnector Supplemental Programs compact disc. For installation details, see “Installing the Fixes for the Prerequisite Products” on page 45.



## Configuring the DCE Client

Typically, many clients are configured to a single DCE cell. Configuring clients entails two distinct sets of operations. These tasks are separated into a split configuration of clients because a DCE cell administrator is unlikely to have root user access to every workstation in a cell. If you are both the cell administrator and the root user, you can combine these procedures as a single task, see “Full Configuration” on page 44.

If you are not the cell administrator and the root user, configure the DCE client using the split configuration. The two distinct sets of operations are:

- One required with cell administrator authority within the DCE cell. The cell administrator runs the administration portion from any machine in the cell to update the DCE CDS name space and security registry.
- One required with root user authority on the machine being configure. The root user of the DCE client machine runs the local portion to create the necessary files and to start the client daemons for all client components.

**Split Configuration:** Use the following distinct set of procedures to perform a split configuration. The split configuration is separated into the cell administrator task and root user task.

- Cell Administrator Task

This task must be performed by the DCE cell administrator, but it can be done from any machine in the cell.

1. At a shell prompt, enter:

```
smitty mkdceclient
```

The Type of configuration screen is displayed.

2. On this screen, select **3 admin only configuration for another machine**. The Administrator DCE Client Configuration screen is displayed.

3. On this screen:

- a. In the **CLIENTS to configure** field, select `sec_c1 cds_c1 dts_c1` from the list.
- b. In the **Cell ADMINISTRATOR'S account** field, type the account for the cell administrator if different from `cell_admin`.
- c. In the **Client Machine DCE HOSTNAME** field, type the local hostname as the DCE hostname for the client machine. If no name is specified, the fully-qualified TCP/IP hostname (including domain name) is used.
- d. In the **Client Machine IDENTIFIER** field, type the TCP/IP hostname or IP address for the client being configured.
- e. In the **LAN PROFILE** field, type the LAN profile that the client machine should use. Use this field only if the cell contains multiple LANs and requires the use of global DTS servers.
- f. Press the **Enter** key.

- After the cell administrator task completes, perform the root user task.

**Root User Task:** This task must be performed on the DCE client as root.

1. At a shell prompt, enter:

```
smitty mkdceclient
```

The Type of configuration screen is displayed.

2. On this screen, select **2 local only configuration for this machine**. The Local DCE/DFS Client Configuration screen is displayed.
3. On this screen:
  - a. In the **CELL name** field, type the cell name of the Master Security Server for the cell.
  - b. In the **CLIENTS to configure** field, select `rpc sec_c1 cds_c1 dts_c1` from the list.
  - c. In the **SECURITY Server** field, type the TCP/IP hostname or IP address of the Master Security Server for the cell.
  - d. In the **Client Machine DCE HOSTNAME** field, type the DCE hostname for the client machine. If no name is specified, the fully-qualified TCP/IP hostname (including domain name) is used.
  - e. Press the **Enter** key.

**Full Configuration:** If you are both the cell administrator and the root user, you can perform the admin only and local only configuration at the same time. To perform a full configuration:

1. At a shell prompt, enter:
 

```
smitty mkdceclient
```

The Type of configuration screen is displayed.
2. On this screen, select **1 full configuration for this machine**. Full DCE/DFS Client Configuration screen is displayed.
3. On this screen:
  - a. In the **CELL name** field, type the cell name of the Master Security Server for the cell.
  - b. In the **CLIENTS to configure** field, select `rpc sec_c1 cds_c1 dts_c1` from the list.
  - c. In the **Client Machine DCE HOSTNAME** field, type the DCE hostname for the client machine. If no name is specified, the fully-qualified TCP/IP hostname (including domain name) is used.
  - d. In the **SECURITY Server** field, type the TCP/IP hostname or IP address of the Master Security Server for the cell.
  - e. In the **Cell ADMINISTRATOR'S account** field, type the account for the cell administrator if different from `cell_admin`.
  - f. In the **LAN PROFILE** field, type the LAN profile that the client machine should use. Use this field only if the cell contains multiple LANs and requires the use of global DTS servers.
  - g. Press the **Enter** key.
4. At a shell prompt, enter:
 

```
smitty dce
```

The DCE (Distributed Computing Environment) window is displayed.
5. Select **Configure DCE/DFS** and press the **Enter** key. The Configure DCE/DFS window is displayed.
6. Select **DCE/DFS Start Options** and press the **Enter** key. The DCE/DFS Start options window is displayed.
7. In the DCE/DFS Start options window:
  - a. Set **Start DCE now** to yes.
  - b. Set **Start DCE at system restart** to yes.
  - c. Press the **Enter** key.

**Additional Information:** When performing a `cell_admin` login on a new AIX DCE 2.2 installation, on either the server or the client side, after entering your password, you may see the following message:

```
Password must be changed!  
DCE LOGIN SUCCESSFUL  
Warning: This account has been marked by an administrator, recommending that the  
password be changed.  
Do you wish to change now [y/n]? (y)
```

If you specify `y` (Yes, to change your password now), the system assists you to change your login password. If you specify `n` (No, to change your password later), each time you log on until your password is changed, the Password must be changed message displays.

To prevent the message from appearing without changing your password, perform the following steps:

1. At a command prompt, open the `dcecp` control program shell by entering:

```
dcecp
```

2. At the `dcecp` command prompt, enter:

```
account modify cell_admin -pwdvalid yes
```

3. End the DCE command session. Enter:

```
exit
```

4. Login to DCE again to verify that the message does not appear.

---

## Installing C Set++

C Set++ is required only for development on a Component Broker server or a C++ client. C Set++ can be found on the Software Development Solutions for AIX Version 4 compact disc that was shipped as part of AIX Version 4.2.1.

Use SMIT to install C Set++. The package to install is `x1C.C++`.

After installing C Set++, install the C Set++ PTF. This PTF is provided on the CBConnector Supplemental Programs compact disc. For installation details, see “Installing the Fixes for the Prerequisite Products.”

---

## Installing the Fixes for the Prerequisite Products

This section includes procedures for creating a CD-ROM file system and mounting this file system to install the PTFs. This step is required to install necessary fixes that are supplied on the CBConnector Supplemental Programs compact disc. If you have already created a CD-ROM file system, skip the Creating a CD-ROM File System section.

The AIX PTFs are provided on the CBConnector Supplemental Programs compact disc. The instructions contained in the Installing the PTFs section will update the prerequisite software installed on your system. If the initial software is not already installed on your system, the PTF for that software will not be installed. The PTFs provided on the CBConnector Supplemental Programs compact disc are the following:

- Multi-Processor
- DCE Server and Client
- C Set++
- DB2

## Creating a CD-ROM File System

If a CD-ROM file system does not exist, use the following procedure to create one.

1. Log in as root (if not already logged in).

2. From a shell prompt, enter:

```
smitty crcdrfs
```

This displays the Add a CDROM File System screen.

3. On this screen:

a. In the **DEVICE name** field, press the **F4** key to lists the available devices. Select the appropriate device; for example:

```
cd0
```

b. In the **MOUNT POINT** field, type the mount point; for example:

```
/cdrom
```

c. In the **Mount AUTOMATICALLY at system restart?** field, press the **Tab** key to toggle from yes to no.

d. Press the **Enter** key.

## Installing the PTFs

**Note:** The perfagent bff only needs to be applied if the Performance Analysis and Control Commands were previously installed.

To install the PTFs, perform the following procedure:

1. Log in as root (if not already logged in).

2. Insert the CBConnector Supplemental Programs compact disc into the CD-ROM drive.

3. Mount the file system. To mount, enter:

```
mount /cdrom
```

4. From a shell prompt, enter:

```
smitty update_all
```

The Update Installed Software to Latest Level (Update All) screen is displayed.

5. On this screen:

a. In the **INPUT device / directory for software** field, type `/cdrom/aix/fixes`.

b. Press the **Enter** key to continue.

6. Press the **Enter** key, which displays the ARE YOU SURE? screen is displayed.

7. Press the **Enter** key to commit the install.

8. Press the **F10** key to exit SMIT.

9. Unmount the CD-ROM to eject the compact disc from the drive. To unmount, enter:

```
umount /cdrom
```

where `/cdrom` is the file system.

10. If you previously had DB2 databases on your computer, you must follow the steps in `/cdrom/aix/fixes/fixpack.readme` on the CBConnector Supplemental Programs compact disc to migrate your databases to this new version of DB2. This is not required if this is a new installation of DB2.

11. Once the PTFs are installed, shut down the system and reboot. To reboot, enter:  
`shutdown -Fr`



---

## Chapter 5. Installing Component Broker for Windows NT

### Note

Before installing Component Broker, create an Emergency Repair Disk (ERD) using the RDISK.EXE utility provided with the operating system.

This chapter details the procedure to install a typical Component Broker installation on a single computer. Using this procedure, you can perform the Standalone Workstation installation option to install:

- Component Broker Server
- C++ Client
- System Manager
- System Manager User Interface
- DB2 Application Adaptor
- Documentation

See the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide* for detailed information about planning and installing Component Broker. In addition, see the “Installation and Configuration” section of the *Late Breaking News* provided with Component Broker for important setup information.

**Note:** Before installing Component Broker, uninstall any pre-existing versions.

---

### Pre-Installation

Before performing any Component Broker installation:

1. Read Chapter 2, “Planning for the Installation” on page 5.
2. Read Chapter 3, “Installing the Prerequisite Software on Windows NT” on page 11 and install all the Component Broker prerequisite products.
3. Verify that you have administrator authority under Windows NT. Your installation creates a new NT Service (CBConnector) that requires Administrator authority.
4. Disable any antiviral programs, unless you are using IBM AntiVirus 3.0. Failure to do so could result in an incomplete installation. After a Component Broker installation, you can reactivate your antiviral programs.

Any installation scenario that installs the Component Broker server detects to see if JDK 1.1.6 or above was previously installed on the system. If not, the installation will terminate, and you must install JDK 1.1.6 before continuing the Component Broker installation. If JDK 1.1.6 or above was previously installed, you need to ensure that the classpath and path include the directories where the JDK is installed. Perform the following steps:

1. From the **Start** menu, select **Settings** → **Control Panel**
2. Open the System object.
3. In the System Properties window, select the **Environment** tab.
4. Verify that the User Variables includes the following in the path statement:

```
x:\JDK1.1.6\bin;
```

and includes the following in the classpath statement:

```
x:\JDK1.1.6\lib\classes.zip;
```

Where *x* represents the disk on which the JDK is installed and JDK1.1.6 is the JDK base directory. If the variables do not include the paths, update the variables.

The Component Broker Configuration tool fails if these environment variables are not set.

---

## Installing the Standalone Workstation

Perform the following steps to install the Standalone Workstation option:

1. Change to the desired locale before continuing. Once the server is installed, you should not switch to a different locale unless you plan to uninstall the server.
2. Uninstall any previous version of Component Broker.
3. Insert the CBConnector compact disc into your CD-ROM drive.
4. Display the contents of the compact disc.
5. Start the installation by clicking the Setup icon. Three Setup icons are displayed in the contents list. To install Component Broker, you must click the Setup icon that looks like a computer. The Component Broker for Windows NT splash screen is displayed followed by the Welcome window.
6. On the Welcome window, click the **Next** button. A message is displayed indicating that Setup is searching for Component Broker packages on your system, then the Choose Destination Location window is displayed.
7. In the Choose Destination Location window:
  - a. The default installation directory is CBroker. To change the drive or directory, click the **Browse** button to open the Choose Directory window in which you can specify a different location.
  - b. In the Choose Directory window:
    - 1) Type a directory name.
    - 2) Click the **OK** button to continue.
    - 3) If the specified directory does not exist, Setup displays a window asking if you want the directory to be created. Click the **Yes** button.
  - c. The Choose Destination Location window is displayed again and lists the directory you specified. Click the **Next** button to continue.
8. In the Select Installation Type window:
  - a. Select the Standalone Workstation installation option.
  - b. Click the **Next** button to continue.

### Notes:

- a. The installation program verifies that your selections are compatible. If they are not compatible, the program displays a message that identifies the conflict.
- b. If DCE 2.0 is not installed, the install program asks if you want to install it. DCE is a prerequisite for Component Broker.
  - Click the **Yes** button to stop the Component Broker install. After the installation stops, you can install DCE. After installing DCE, restart the Component Broker for Windows NT installation.
  - Click the **No** button to choose another installation selection.



9. In the Enter SSL Runtime Install Path window:

- a. The default installation directory for the SSL run time is GSK. To change the drive or directory, specify a different directory in the **Install Path** field.

**Note:** Avoid installing the SSL run time under the Component Broker directory. If the SSL run time is also registered to be used by other products, the cleanup of the Component Broker directory will fail.

- b. Click the **Next** button to continue.

**Note:** This window does not display if the SSL run time has been installed previously on the system.

10. In the Enter NetQuestion Install Path window:

- a. The default installation directory for NetQuestion is IMNNQ. To change the drive or directory, specify a different directory in the **Install Path** field.

- b. Click the **Next** button to continue.

**Note:** This window does not display if NetQuestion has previously been installed on the system. For example, if you have the DB2 V.5 documentation installed, NetQuestion is found in the `x:\imnnq_nt` directory (where `x:` is your DB2 installation drive). The Component Broker installation copies additional files to this location.

11. In the Select Application Adaptor window:

- a. Verify that the DB2 check box is set.
- b. Click the **Next** button to continue.

12. In the Verify Configuration Setting window, verify that the items to be installed are correct.

- Click the **Back** button to review or change any information you previously entered.
- Click the **Next** button to start the configuration.

13. A status bar is displayed indicating the progress of each component file transfer. The installation may take several minutes.

14. A window is displayed stating that setup is installing the SSL run time. When the SSL run time installation has completed, the window closes automatically.

15. A window is displayed stating that the setup program is installing the NetQuestion search engine. When the NetQuestion installation has completed, the window closes automatically.

16. A window displays stating that the Component Broker installation has completed. When you exit this window, your computer automatically restarts. Optionally in this window you can set check boxes to:

- Automatically launch the configuration tool when the computer restarts
- Automatically display the readme file when the computer restarts

Click the **Finish** button to restart your computer.

## Configuring the Standalone Workstation

Before beginning the configuration, verify the following:

- The JDK 1.1.6 classes.zip is included in the CLASSPATH environment variable before any previous versions of the JDK.
- The JDK 1.1.6 bin directory is in the PATH environment variable.

Perform the following steps to configure your Standalone Workstation installation:

1. If your computer starts the configuration tool automatically when you restart your computer after performing the installation, skip to the next step. To start the configuration tool from the Windows NT

**Start** menu, select **Programs** → **IBM Component Broker** → **Component Broker Configuration tool**. The Configure New Install window opens.

2. In the Configure New Install window:
  - a. Select the **New Install Configuration** radio button to configure your entire Component Broker installation.
  - b. Select the **Next** button to continue.

**3. If the DB2 client is installed**

In the Enter Remote DB2 Server Information window:

- a. Type the DB2 user ID used to access the remote DB2 server in the **User ID** field.
  - b. Type the password for the DB2 user ID in the **Password** field.
  - c. Specify the fully-qualified host name of the server in the **Server Host** field. For example:  
`db2srvr1.austin.ibm.com`
  - d. Type the node for this computer in the **Local Node** field.
  - e. Click the **Next** button to continue.
4. In the Enter Client's Bootstrap Host Name and Port Number window:
    - a. Type the fully-qualified client bootstrap **Host Name** (for example, myhost.austin.ibm.com). The default host name is the local host.  
**Note:** The bootstrap host computer contains information about the name servers. Any Component Broker server can act as a bootstrap host.
    - b. The default **Port ID** is 900. Accept the default or type a different port ID.
    - c. Click the **Next** button to continue.

5. In the Enter Component Broker Secure Socket Layer (SSL) Port ID window:
  - a. The default port ID is 3004. This is the port ID that Component Broker will use to perform SSL security. Accept the default or supply a different port ID.
  - b. Click the **Next** button to continue.

6. In the Input User ID And Password For Component Broker Service window:
  - a. Select a user ID from the list or type a user ID for starting the Component Broker service in the **User ID** field.
  - b. Type the password associated with the user ID in the **Password** field.
  - c. Click the **Next** button to continue.

**Notes:**

- a. If the selected user ID was created by the Administrator, the password entered must be identical to the existing password. If the password entered does not match the existing user ID, System Management configuration will fail. If the existing user does not have the advanced user right of "logon as a service," the installation program grants this authority automatically.
  - b. When you uninstall, this user ID and password are not deleted. If you reinstall, you must specify this user ID and password or a new user ID and password combination. If the password entered does not match an existing user ID, System Management configuration will fail.
7. In the Enter DCE Cell Administrator User ID and Password window:
    - a. Type the DCE cell administrator ID in the **User ID** field. The default ID is cell\_admin.
    - b. Type the DCE administrator password in the **Password** field.

- c. Click the **Next** button to continue.
8. In the Enter System Management Host Name and Port Number window:
- a. Type the fully-qualified host name of the computer on which system manager is installed. The default is your local host.
  - b. Type a number representing the port the System Manager User Interface will use to communicate with other System Managers and System Management Agents on all the connected computers. The default port ID is 20002. You can accept the default or supply a different port ID.
  - c. Click the **Next** button to continue.
9. In the Verify Configuration Setting window, verify that the items to be installed are correct.
- Click the **Back** button to review or change any information you previously entered.
  - Click the **Next** button to start the configuration.
10. The Configuration Status window displays information about the items being configured. The configuration process creates the cbconfig.log file in the *CBroker*\service directory (where *CBroker* represents the directory in which Component Broker is installed) and places all status information into this log file.

**Notes:**

- a. If the configuration fails, refer to the “Reconfiguring Your Component Broker Installation” topic in the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide* for information about reconfiguring your Component Broker installation.
  - b. If System Management configuration fails with the following error:
 

```
SM - Failed to start CBConnector service. Return Code = 1069
```

Refer to the “Return Code 1069 From System Management Configuration” topic in the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide* for information about fixing the problem. After the problem is fixed, you can reconfigure your Component Broker installation.
11. An informational window is displayed stating that the system management configuration completed successfully. Click the **OK** button to continue.
12. **If the DB2 server is installed on this computer**

As part of the configuration process, several windows are opened that show the configuration of DB2 for the Component Broker server:

- After the system management configuration has completed, a status window is displayed stating that Setup has finished launching the DB2 configuration process. Click the **OK** button to continue.
- After the configuration, two DB2 windows remain open (the other windows close themselves).

If these windows show successful messages at the end, close these windows.

If either window contains an error message, double check the following areas:

- Ensure that the correct transaction monitor is configured by opening a DB2 command line processor window. Enter:

```
get dbm cfg
```

and verifying that the transaction processor monitor name is somtrx1i. If not, enter:

```
update database manager configuration using TP_MON_NAME somtrx1i
```

- To verify that the CBSRFCDB has been created, enter:

```
list db directory
```

If the CBSRFCDB has not been created, enter:

```
quit
db2 -f x:\CBroker\etc\inscrtdb.db2
```

where x:\CBroker is the base directory where Component Broker is installed.

The DB2 configuration accomplishes:

- The set up of the Database Manager configuration TP\_MON\_NAME to somtrx1i, the Component Broker transaction monitor.
- The creation of a database CBSRFCDB for Component Broker Reference Collections database.

13. An informational window is displayed stating that the configuration has completed. Click the **OK** button to close the window.

**Note:** If the configuration fails, refer to the “Reconfiguring Your Component Broker Installation” topic in the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide* for information about reconfiguring your Component Broker installation.

14. Exit the Component Broker Configuration tool. In the Configuration Status window, click either the **Close** button or the **Cancel** button.

15. If you are using a non-English locale, you must configure the Interface Repository for the current user. The pre-populated Interface Repository (IR) database that is installed on a server is compatible only with the English (United States) setting in the Regional Setting selection of the NT Control Panel. If any other regional setting is selected, you must rebuild the IR using that particular regional setting. To rebuild the IR, perform the following steps:

a. If not in the desired locale, change to that locale now.

b. Copy the files. From a command prompt, enter:

```
copy \CBroker\etc\irempty \CBroker\etc\irwork
```

c. Rebuild the IR using the new files. From a command prompt, enter:

```
irpop1
```

On completion, enter:

```
irpop2
```

This procedure could take from ten to fifteen minutes to complete. If multiple servers are needed and the populate time is a consideration, the database files from irwork may be copied between servers. This should be done before applications are installed on either the source or target server, because installing an application could modify the IR.

Accessing the IR under any setting other than English (United States) without this correction may generate a SOMDERROR\_IRIncoherent error.

---

## Installing the Development Environment

This installation option adds the Component Broker application development environment to an existing Component Broker system. This procedure installs the following:

- CBToolkit
- Server SDK
- C++ Client SDK
- Samples

You can have difficulties installing JIT 1.1.6 if you installed another version of the JDK. The JIT install program detects whether an incorrect JDK/JRE is found for the upgrade. To resolve this difficulty, use the Registry Editor to change the following:

1. Find the key:

\\HKEY\_LOCAL\_MACHINE\SOFTWARE\JavaSoft\Java Development Kit\1.1

2. Edit the value JavaHome and change to the path to where you installed the JDK 1.1.6 (for example, x:\jdk1.1.6).
3. Edit the value MicroVersion and change to 6.

To add the installable units to an existing system:

1. Insert the CBToolkit compact disc into your CD-ROM drive.
2. Display the contents of the compact disc.
3. Start the installation by clicking the Setup icon. The Component Broker for Windows NT splash screen is displayed followed by the Welcome window.
4. Click the **Next** button. A message is displayed indicating that Setup is searching for Component Broker packages on your system.
5. An information window is displayed listing the software already installed.
  - a. Verify the software.
  - b. Click the **OK** button.
6. In the Select the package(s) for installation window:
  - a. Click the **List of packages not yet installed on this system** radio button.
  - b. Click the **Next** button.
  - c. Set the check box next to the following software:
    - CB Toolkit
    - Server SDK
    - C++ Client SDK
    - Samples
  - d. Click the **Next** button to continue.

**Note:** The installation program verifies that your selections are compatible. If they are not compatible, the installation program displays a message identifying the conflict and allows you to select software that does not conflict. Additionally, the installation program displays a message if there are other requirements or prerequisites required.

7. If VisualAge C++ is not already installed on your system, a warning is displayed indicating that VisualAge C++ is required to do development. VisualAge C++ is a prerequisite for Component Broker development. Click the **OK** button to continue.
8. If one or more of the following components were installed:
  - CBToolkit
  - Server SDK
  - C++ Client SDK
  - Java Client SDK
  - Samples

the Enter Port ID for Remote Debugger window is displayed.

- a. Accept the default ID of 8001 or type the appropriate port ID.

- b. Click the **Next** button to continue.
9. In the Check Setup Information window, verify that the items to be installed are correct.
  - Click the **Back** button to review or change any information you previously entered.
  - Click the **Next** button to continue.
10. A status bar is displayed indicating the progress of each component file transfer. The installation may take several minutes.
11. In the Setup Complete window, click the **Finish** button.

**Notes:**

1. If you installed the Java client SDK, remember that to run a Java application from the directory in which it was developed, this directory needs to be added to the classpath. In the classpath statement, the current directory is represented by a period (“.”). For information about the classpath and the items that must be listed, see *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide*.
2. If the ActiveX client SDK is installed before Microsoft Visual C++, the MS\_INC\_DIR environment variable needs to be defined. Define the environment variable to the path name where the MSVC++ include directory is located.

The path name cannot contain the space character and the MS\_INC\_DIR variable should be defined in 8.3 format. If Microsoft Visual C++ was installed using a longer format, modify the MS\_INC\_DIR variable to the short format.

---

## Accessing the Online Documentation

To view the online documentation, from the **Start** menu, select **Programs** → **IBM Component Broker** → **Component Broker Information Library**. Your default browser should open to the documentation homepage, located at the following URL:

`http://localhost:49213/cgi-bin/cbwebx.exe/en_US/cbdoc/Extract/0/index.htm`

If you have difficulty accessing the online documentation, consult the documentation readme (docread.txt), located in your *CBroker\doc* directory.

To access HTML documentation for the ORB and object service bindings, execute the self-extracting ZIP file `apidocs.exe`, located in the `...doc\client\javacl` directory. Browse the `packages.html` file to view a listing of available Java packages for the Java client API.

---

## Chapter 6. Installing Component Broker for AIX

This chapter contains the following procedures for Component Broker for AIX.

- “Installing the Server Run Time”
- “Configuring the Run Time” on page 59
- “Installing the Development Environment” on page 60
- “Accessing the Online Documentation” on page 61

**Note:** Before installing this version of Component Broker for AIX completely remove any previous versions. To determine the installed software on a computer, enter:

```
ls1pp -l | grep CB
```

If any Component Broker products are listed, uninstall Component Broker for AIX. For information about uninstalling, see the “Uninstalling Component Broker” topic in the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide*.

These procedures assume the korn shell (ksh) as the default shell. Component Broker for AIX supports only the korn shell.

To complete the instructions in this chapter, you must be logged in as root (unless otherwise specified). Additionally, they assume installation, configuration, and uninstallation using the ASCII version of SMIT (using the `smitty` command from the shell prompt). To use the GUI version of SMIT, use the `smit` command from the shell prompt and modify the instructions as appropriate.

See the “Installation and Configuration” section of the *Late Breaking News* provided with Component Broker for additional important setup information.

---

### Installing the Server Run Time

This set of installation instructions covers the installation (and included components) for:

- Standalone Workstation
  - Component Broker server
  - C++ client
  - System Manager
  - System Manager User Interface
  - DB2 Application Adaptor
  - Documentation

**Note:** Avoid performing a Custom Install on an individual Component Broker fileset because there is no configuration entry added to ODM to do the configuration. For a server run time installation you should always install from the CBConnector.TYPICAL LPP level.

To begin the installation process:

1. If not already logged in as root, do so now.
2. Insert the CBConnector compact disc into the CD-ROM drive.

**Note:** If a CD-ROM file system does not already exist, you must create one. For information about creating a CD-ROM file system, see “Creating a CD-ROM File System” on page 46.

3. Mount the file system. To mount, enter:

```
mount /cdrom
```

4. At a shell prompt, enter:

```
smitty install_latest
```

The Install and Update from LATEST Available Software screen is displayed.

5. On this screen:

a. In the **INPUT device / directory for software** field, press the **F4** key to display a list of available devices from which you can select the appropriate input device (/dev/cd0) and press the **Enter** key. This screen is redisplayed with additional fields.

b. In the **SOFTWARE to install** field, press the **F4** key to display a list of the software packages contained on the compact disc.

c. In the SOFTWARE to install list, scroll down and select the following entry:

```
2.0.0.0 for CBConnector.TYPICAL (Standalone_Workstation)
```

d. Press the **F7** key to select the packages you want to install.

e. Press the **Enter** key. The Install and Update from LATEST Available Software screen is redisplayed, but the software packages selected are in the **SOFTWARE to install** field.

f. Ensure that the **AUTOMATICALLY install requisite software?** and **EXTEND file systems if space needed?** fields are yes.

g. Press the **Enter** key. The ARE YOU SURE? screen is displayed.

6. On the ARE YOU SURE? screen, press the **Enter** key to continue.

The installation process begins. After the files are copied, the command status, as indicated in the upper left corner of the screen should state OK. When you receive this OK status, all files were copied and the system is ready to be configured. Press the **F10** key to exit smitty.

The files installed during the run-time installation are in the /usr/lpp/CBConnector directory.

#### Notes:

1. If any errors occurred, view the \$HOME/smit.log file. If the cause of the error is not clear, save a copy of the smit.log file and report the problem to IBM.
2. Component Broker, while placing most of its files on the /usr filesystem, also uses space from the /var filesystem. You must ensure that you have adequate space available on the /var filesystem when doing an Application Install of Component Broker built applications. Space can be determined for your Component Broker Applications by entering the following command in the location in which you built your application:

```
du -sk *.ddl *.so
```

The total of these files will be the amount of space required for the application. An additional 50MB of space should be allocated beyond that for utilization by Component Broker Systems Management purposes.

You should consider creating a separate filesystem for DCE other than /var. If Component Broker and DCE share the same filesystem and if space in /var is exhausted, you may not be able to perform a dce\_login. In addition, System Manager could terminate.

If Component Broker Load Application fails due to filling up the /var filesystem because of files being copied during load application, then Component Broker Systems Management frees disk space by removing the files that were installed by this failed load application attempt. There are two ways you can recover from this:

- If you have a JFS filesystem and adequate space in the LVM, then you can increase the filesystem space on /var dynamically.



- If you cannot expand your JFS filesystem on /var, but you have space allocated on other filesystems then you could use symbolic links to your aixApps directory to another filesystem. Please refer to the AIX documentation for information regarding symbolic links.

There are additional steps that are required if your Component Broker server is installed on a DB2 client computer. For more information, see the “Installing a Component Broker Server on a DB2 Client” topic in the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide*.

---

## Configuring Your Component Broker User ID

Before configuring and using Component Broker, you must ensure that the environment is properly configured. Do this by updating the .profile and .kshrc of the Component Broker *cbuser* user ID

### Notes:

1. The following steps are valid for an AIX Korn Shell.
2. Some of these lines might have been added to the .profile during previous steps. They are included here for completeness.

Perform the following steps:

1. Logon as *cbuser*.
2. Ensure the following lines are at the top of the .profile:

```
#!/bin/ksh
START=$HOME/.kshrc
ENV='${START[( _$--=1)+( _=0)-( _$-!= _${-%%*i*})]}'
export START ENV
```

3. Add the following lines to the end of the .profile:

```
PATH=/usr/jdk_base/bin:$PATH
CLASSPATH=/usr/jdk_base/lib/classes.zip:.$CLASSPATH
. /usr/lpp/CBConnector/bin/CBConnector.profile
. $HOME/sql1lib/db2profile
```

4. Edit .dtprofile to uncomment the last line. It should look similar to:

```
DTSOURCEPROFILE=true
```

5. Edit the .kshrc file to add the following as the last line:

```
. /usr/lpp/CBConnector/bin/CBConnector.profile
```

**Note:** If you don't have a .kshrc file in the \$HOME directory, you can create the file by entering the above line in the file.

---

## Configuring the Run Time

### Notes:

1. To configure Component Broker, the system must have a minimum of 400 MB of paging space.
2. The Component Broker install code does not error check return codes from DB2 commands. Anytime you configure or reconfigure Component Broker, you must review the return codes in the smit.log for any DB2 command errors that may have occurred.

To configure this installation from the System Management (SMIT) main screen:

1. If not already logged in as root, do so now.
2. At a shell prompt, enter:  

```
smitty apps
```
3. Select the following configuration:  
Configure CBCConnector (Standalone\_Workstation)
4. On the Component Broker Configuration screen.
  - a. In the **Client Bootstrap Host Name** field, type the fully-qualified client bootstrap host name (for example, myhost.austin.ibm.com). On a Standalone\_Workstation server, this is usually your fully-qualified server name. The bootstrap host contains information about the name servers so that all other computers can get their naming services populated. There is no default for the bootstrap host name. Any Component Broker server can be the bootstrap host. Normally, this is the first Component Broker server; therefore, this computer is your bootstrap host.
  - b. In the **Client Bootstrap Port ID** field, accept the default (900) or type a different port ID.
  - c. If the configuration provides fields for the DCE administrator ID and password, type these values in the appropriate fields.
  - d. In the **System Management Port ID** field, accept the default (20002) or type a different port ID. This is the port ID the System Manager User Interface will use to communicate with other System Managers and System Management Agents on all the connected computers.
  - e. In the **System Management Host Name** field, type the fully-qualified host name (for example, myhost.austin.ibm.com). The Component Broker System Manager controls servers, clients, and applications on one or more hosts. Type the host name on which the System Manager is installed. If you enter the local host name, the System Manager is configured locally and the client becomes locally managed. If you specify a remote System Manager host, the System Management Agent is configured locally and is managed by the remote System Manager.  
**Note:** Ensure that the remote System Manager host is installed and the System Management service (bgmain) on that system is running before installing the remote System Management Agent.
  - f. In the **CBCConnector userid** field, type the user name. This name needs to be the user name specified during DB2 configuration.
  - g. Ensure that the **Create CDS now?** field is Y. If not, use the Tab key to toggle the value.
  - h. Press the **Enter** key to begin configuration. This can take several minutes.  
  
The configuration is completed when the command status, as indicated in the upper left corner of the screen should state OK.
5. Press the **F10** key to exit SMIT.

---

## Installing the Development Environment

Before installing the development environment, install the Component Broker run-time environment.

To install the Component Broker development environment and the application development tools:

1. If not already logged in as root, do so now.
2. Insert the CBToolkit compact disc into the CD-ROM drive.
3. Mount the file system. To mount, enter:

```
mount /cdrom
```

4. At a shell prompt, enter:

```
smitty install_latest
```

The Install and Update from LATEST Available Software screen is displayed.

5. On this screen:

a. In the **INPUT device / directory for software** field, press the **F4** key to display a list of available devices of which you can select the appropriate input device (/dev/cd0) and press the **Enter** key. This screen is redisplayed with additional fields.

b. In the **SOFTWARE to install** field, press the **F4** key to display a list of the software packages contained on the compact disc.

c. In the SOFTWARE to install list, scroll down and select one or more of the following:

**For a C++ client SDK installation 2.0.0.0 for CBToolkit.TOOLKIT (C++ClientSDK)**

**For a client samples SDK installation 2.0.0.0 for CBToolkit.TOOLKIT (clientSamplesSDK)**

**For a Java client SDK installation 2.0.0.0 for CBToolkit.TOOLKIT (JavaClientSDK)**

**For a server SDK installation 2.0.0.0 for CBToolkit.TOOLKIT (serverSDK)**

d. Press **F7** to select this package.

e. Press the **Enter** key. The Install and Update from LATEST Available Software screen is redisplayed, but the software packages selected are in the **SOFTWARE to install** field.

f. Ensure that the **AUTOMATICALLY install requisite software?** and **EXTEND file systems if space needed?** fields are yes.

g. Press the **Enter** key. The ARE YOU SURE? screen is displayed.

6. On the ARE YOU SURE? screen, press the **Enter** key to continue.

The installation process begins. After the files are copied, the command status, as indicated in the upper-left corner of the screen should state OK. When you receive this OK status, all file sets are copied and the system is ready to be configured. Press the **F10** key to exit smitty.

**Note:** If any errors occurred, view the \$HOME/smit.log file in the / file system. If the cause of the error is not clear, save a copy of the smit.log file and report the problem to IBM.

The file sets installed during the development environment installation are in the /usr/lpp/CBToolkit directory.

You can now unmount the CD-ROM drive to eject the compact disc. To unmount the drive, enter:

```
umount /cdrom
```

Where *cdrom* represents the file system.

---

## Accessing the Online Documentation

To access the Component Broker online documentation, open your browser and enter the following URL (you may want to bookmark this page for easy reference):

```
http://localhost:49213/cgi-bin/cbwebx.exe/en_US/cbdoc/Extract/0/index.htm
```

If you have difficulty accessing the online documentation, consult the documentation readme (docread.txt), located in your lpp/CBConnector/doc/en\_US directory.



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## Chapter 7. Testing the Component Broker Installation

After completing the Standalone Workstation installation, you can use the Component Broker System Manager to configure Component Broker Name Servers and Application Servers, and to manage Component Broker clients. This chapter provides procedures on how to configure and set up your initial Component Broker environment with the Programming Model Policy Sample Application and how to use the System Manager User Interface.

The System Manager is started when the host is started. All the administrator needs to do is start the System Manager User Interface. The System Manager User Interface can be stopped and restarted any number of times, independently of the System Management functions.

**WIN** To start the System Manager User Interface from the **Start** menu, select **Programs → IBM Component Broker → System Manager User Interface**.

**AIX** To start the System Manager User Interface from an AIX window using the cbtest user ID created during DB2 configuration, enter:

```
bhgeui '$eui' hostname
```

where *hostname* is the fully-qualified name of the host where the System Manager or the System Management Agent is installed.

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### The Initial Configuration

This section explains the steps to configure and start your first Component Broker server on a host. Specific system management actions (for example, activate) cause progress windows to be displayed. You can monitor the progress of these asynchronous actions using these windows.

Configure and start a component server on a host by:

1. "The Policy Sample Application"
2. "Configuring the Policy Sample Application" on page 64
3. "Executing the Policy Sample Application" on page 66

### The Policy Sample Application

The Policy Application is provided to verify the correct operation of the Component Broker System Manager and to help guide you when creating your own applications. The Policy application consists of multiple parts:

- Client applications
- Business objects
- A home

The business objects and the home must be installed on a server and defined to System Management before the client applications can run. The Policy Application is built and ready for execution.

The PolicyApp client program demonstrates the creation of Transient Business Objects. To run the PolicyApp client program, the PolicyFamily Application Family must be properly configured to System Management.

**Note:** To compile the Policy Application, you must install the Server SDK, Application Development Tools, and the Toolkit samples from the Component Broker Toolkit CD-ROM. For instructions on how to compile the Policy Application, view the following HTML files using your web browser:

WIN

x:\CBroker\samples\IVP\ProgrammingModel\Docs\progmodel.html

where x:\CBroker represents the installation directory for Component Broker.

AIX

/usr/lpp/CBToolkit/samples/IVP/ProgrammingModel/Docs/progmodel.html

The pre-built Policy Application is not enabled for Object Level Trace. If you would like to use the Object Level Trace functionality, follow the instructions in the “OLT Scenarios” topic of the *Component Broker Application Development Tools Guide*.

## Configuring the Policy Sample Application

Perform the following steps:

1. “Define the PolicyFamily Application to System Management”
2. “Configure an Application Server” on page 65
3. “Load the Application on a Server” on page 65

**Note:** This document assumes that the sample application will be added to a server that is contained in a server group.

### Define the PolicyFamily Application to System Management

The Component Broker uses its own application installation process to add Component Broker functions to a server.

To load the application definition to your Host Images:

1. From the System Manager User Interface menu, select **View** → **User Level** → **Expert**.
2. From the System Manager User Interface Home view, expand the Host Images.
3. Select a host image. The host image corresponds to the name of the system on which the Server with System Manager configuration was installed.
4. Open the pop-up menu, and select **Load Application**.
5. Browse and select PolicyFamily.ddl

WIN

x:\CBroker\samples\IVP\ProgrammingModel\Policy  
\PolicyFamily\PolicyFamily.ddl

where x:\CBroker represents the installation directory for Component Broker.

AIX

/usr/lpp/CBConnector/samples/IVP/ProgrammingModel/Policy  
\PolicyFamily/PolicyFamily.ddl

The Action Console window is displayed that contains a message indicating successful completion.

6. Close the Action Console window.

## Configure an Application Server

To configure an application server you need to create a *server group*. A server group is an abstraction or a template to which you add servers. A *server* in a server group inherits its attributes and applications from its server group. To configure an application server:

1. Create a Server Group in the Sample Configuration.
  - a. From the System Manager User Interface Home view, expand Management Zones → Sample Cell and Work Group Zone → Configurations, and select Sample Configuration.
  - b. Open the pop-up menu of Sample Configuration, and select **New** → **Server Group**. A dialog is displayed.
  - c. Type a Server Group name. In this exercise, *myservergroup* is used as the Server Group name.
  - d. Click the **OK** button.
2. Create a Server in your Server Group.
  - a. From the System Manager User Interface Home view, expand Management Zones → Sample Cell and Work Group Zone → Configurations → Sample Configurations → Server Groups, and select *myservergroup*.
  - b. Open the pop-up menu of *myservergroup*, and select **New** → **Server (member of group)**.
  - c. Type a Server name. In this exercise, “*myserver*” is used as the Server name.
  - d. Click the **OK** button.
3. Drag *myserver* to the clipboard.
  - a. From the System Manager User Interface, expand Management Zones → Sample Cell and Work Group Zone → Configurations → Sample Configurations → Server Groups → *myservergroup* → Servers (member of group), and select *myserver*.
  - b. Open the pop-up menu of *myserver*, and select **Drag**.
  - c. Collapse Management Zones.
4. Expand Hosts.
5. Select the host with the same name as your Host Image (in this exercise *myhost.austin.ibm.com*).
6. Open the pop-up menu of *myhost.austin.ibm.com*, and select **Configure Server (member of group)**.

Optionally, you can navigate into the hosts by expanding Hosts. Expanding the host on which you just dropped the server and expanding Configured Servers (member of group), you will see the Server you created.

## Load the Application on a Server

You now have a server assigned to a host and you informed System Management about the new application. You now need to load the Policy application on a server. To load the Policy application on a Component Broker server:

1. From the System Manager User Interface Home view, expand Available Applications, and select Policy.
2. Open the pop-up menu of Policy, and select **Drag** to move the application to the System Manager clipboard.
3. Expand Management Zones → Sample Cell and Work Group Zone → Configurations, and select Sample Configuration.

4. Open the pop-up menu of Sample Configuration, and select **Add Application**. This places the application in the configuration.
5. Expand Sample Configuration → Applications. You should see that the Applications folder is populated with the Policy application
6. Up until now you have made the application part of a configuration, but have not specified which Component Broker servers in the configuration will execute the application. To do this for the Policy application in the Applications folder:
  - a. Select Policy.
  - b. Open the pop-up menu of Policy, and select **Drag**.
  - c. Expand Management Zones → Sample Cell and Work Group Zone → Configurations → Sample Configuration → Server Groups and select *myservergroup*.
  - d. Open the pop-up menu of *myservergroup*, and select **Configure Application**. A Configured Applications folder is displayed. If you expand it you will see the Policy application.
7. Enable security services (optional). For information about enabling the security services, see “Enabling the Security Service” in the *Component Broker for Windows NT and AIX Planning, Performance, and Installation Guide*.

## Executing the Policy Sample Application

Now that you have a configuration, a Server Group with an application, and an application server, you can activate your configuration and run the Sample Application.

### Activating Your Configuration

To activate your configuration:

1. From the System Manager User Interface Home view, expand Management Zones → Sample Cell and Workgroup Zone → Configuration, and select Sample Configuration.
2. Open the pop-up menu of Sample Configuration, and select **Activate**.
3. Monitor the Action Console window for a completion status.
4. Close the Action Console window.

Optionally, you can use DCE to examine the contents of the Component Broker servers. For details, see “Verifying Services With DCE” on page 67.

**Note:** If you rename a server in a configuration and activate that configuration, the Host Images folder contains the new and the old server images. Servers that are no longer part of the configuration are shut down. If you want to remove the old server name, explicitly do so in the server image.

### Running the Sample Application

Now you are ready to run the Policy Sample Application.

WIN Follow the steps below to start the application:

1. At a command prompt, change directory to:

```
x:\CBroker\samples\IVP\ProgrammingMode1\Policy
```

where *x:\CBroker* represents the installation directory for Component Broker.
2. Enter:



PolicyApp

**AIX** Follow the steps below to start the application:

1. At a command prompt, change directory to:

```
/usr/lpp/CBCConnector/samples/IVP/samples/ProgrammingModel/Policy
```

2. Enter:

```
PolicyApp
```

These applications use the name service and factory finder to locate the Homes for business objects and create new objects that the applications then locate and verify.

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## Verifying Services With DCE

To verify that the services are enabled, ensure that the services are added to DCE correctly by checking the DCE Director Cell Directory Service (CDS) domain.

**WIN** To check the DCE CDS domain:

1. From a command prompt, enter:

```
dcemapp
```

**Note:** For IBM DCE 2.0, the DCE Director was started using the `director` command.

2. Double click the CDS objects in the Cells window to look in the CDS.
3. Verify that the name server, once configured and registered, is properly stored in the DCE-CDS. From the CDS window, search through the path by double-clicking each item until you find: CBC-local-roots → (a long number) → host → resources → servers. The name server (*myhost.austin.ibm.com-Name-Server*) should be under servers in the tree view.

**AIX** To check the DCE CDS domain:

1. From a command prompt, enter:

```
cdsbrowser
```

2. Double-click:

```
/.:
```

3. Verify that the name server, once configured and registered, is properly stored in the DCE-CDS. From the CDS window, search through the path by double-clicking each item until you find: CBC-local-roots → (a long number) → host → resources → servers. The name server (*myhost.austin.ibm.com-Name-Server*) should be under servers in the tree view.

**Note:** If you do not find the name server listed within the DCE-CDS, ensure that the DCE application is correctly configured and is running.

System management uses *myhost.austin.ibm.com-Name-Server* as the default DCE principal for the name server. If *myhost.austin.ibm.com-Name-Server* already exists in the DCE Registry, system management assigns a new DCE principal for the name server. The new DCE principal for the name server is recorded in the Security Name attribute of the Security Service Image of the name server.

To find the **Security Name** attribute:

1. From the System Manager User Interface menu, become an Expert user. (**View** → **User Level** → **Expert**).

2. From the System Manager User Interface Home view, expand Host Images → *myhost.austin.ibm.com* → Server Images, and select *myhost.austin.ibm.com*-Name-Server.
3. Open the pop-up menu of *myhost.austin.ibm.com*-Name-Server, and select **Edit**. This opens the Object Editor.
4. Click the **Security Service** tab.

The DCE principal of the name server is in the **Security Name** attribute. The name server is registered with the DCE Registry with the DCE principal shown in the **Security Name** attribute.

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## Appendix A. Starting and Restarting Servers

Servers are normally started when the configuration that defines them is activated. This is controlled by the run control attribute of each Server Group Model and Server Model in the Configuration. After their Configuration is activated, individual servers can be stopped and restarted as needed. Normally, the servers would be restarted by reactivating the Configuration using the Activate command. The Activate command ensures that all the required servers are started properly. Manually restarting servers is only suggested as an occasional method for restarting individual servers.

To restart a server, activate its Configuration:

1. From the System Manager User Interface menu, select **View** → **User Level** → **Expert**.
2. From the System Manager User Interface Home view, expand Host Images → *myhost.austin.ibm.com* → Server Images, and select the host name you want to start.
3. Open the pop-up menu, and select one of the following:

**Run** Starts the server when it receives an ORB method request.

**Run Immediate**

Starts the server immediately. It is ready to process its first ORB method request without delay.

**Note:** If a server fails to start, a message is displayed in the Event Log indicating that the server is not able to run. To enable the server to run, follow this procedure again.



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## Appendix B. Stopping Servers

**Note:** Before stopping the name server, ensure that any application servers are stopped.

If you need to stop a server:

1. From the System Manager User Interface menu, select **View** → **User Level** → **Expert**.
2. From the System Manager User Interface Home view, expand Host Images → *myhost.austin.ibm.com* → Server Images, and select the server name you want to stop.
3. Open the pop-up menu, and select one of the following:

### **Stop**

Stops the server with full shut down processing. All user-tasks on the server are completed, and the required information is written to the system management logs.

### **Stop Quick**

Stops the server with partial shut down processing. Use this action only if the Stop action failed. This action does not wait for user-tasks to be completed.

### **Stop Immediate**

Stops the server without shut down processing. Use this action only as a last resort.

**Note:** Once a server is stopped, it cannot be restarted until it is placed in a run state. To place a server in a run state, see Appendix A, “Starting and Restarting Servers” on page 69.

If you need to shut down a Component Broker server in an untimely or forced manner, you may need to manually clean up DB2 connections and locks that were obtained. If these DB2 connections and locks are left on your DB2 database, they can interfere with future application usage.

To manually clean up after an untimely or forced shut down, the following tasks may need to be done to prevent future interaction problems between the server and DB2. Perform these tasks from a DB2 command prompt, if necessary.

From a DB2 command prompt:

1. Enter:

```
force applications all
```

All connections from the server to DB2 are broken, and all locks held by flight transactions are freed.

2. Enter:

```
list indoubt transactions with prompting
```

If any locks are held by in doubt transactions, they are listed numerically. For each lock held, commit or rollback the transaction. For example, to commit the first transaction in the list, enter:

```
c 1
```

To rollback the second transaction, enter:

```
r 2
```

For additional information on these commands, see the *DB2 Command Reference* installed with DB2. For in-depth information on manual recovery, see the *DB2 Administration Guide*.



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