AVAYA
communication

DEFINITY®
Network Administration
Release 3
Planning, Installation, and Configuration

555-233-602CI
Issue 2
December 2000

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Welcome

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Purpose

This book explains how to plan your DNA installation, how to connect your DNA computers to switches, voice mail systems, and other systems; how to install and configure DNA, how to test the installation; and how to troubleshoot it.

Prerequisites

Planning a DNA installation requires familiarity with data networking concepts, knowledge of your data network topology, and proficiency with Windows NT administration. This knowledge is not taught in this book but is essential for a successful installation. For this reason, we highly recommend that data network administrators take the primary role in planning. PC administrators and telephone technicians will most likely take the primary role in actually installing DNA.

Intended Audience

We wrote different chapters of this book for different audiences. The planning chapters are written for LAN/WAN administrators, because they are usually most experienced with the data networking concepts required to successfully plan the installation of a distributed, client-server based software package.

The chapter on preparing your switches is written for telephone technicians, who typically have the switch administration knowledge and DEFINITY system permissions to perform this task.

The physical connectivity, installation, configuration, testing, and troubleshooting chapters are written for PC administrators, because they are generally most familiar with computer equipment configurations and software installation activities.

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1 Welcome
Conventions Used in This Book   2

Switch and voice mail administrators are not an intended audience for this book (unless they are installing the system). Similarly, this book is not written for telephony managers, telephone equipment installers, or anyone else, unless they are familiar with PC administration, Windows NT administration, and data networking concepts required for a successful installation.

Conventions Used in This Book

In this book, we use the following typographical conventions:

- We use bold type for emphasis and for any information that you should type; for example: **save translation**.

- We use Courier font for any information that the computer screen displays; for example: `login`.

- We use arrows to indicate options that you should select on cascading menus; for example: "Select File>Open" means choose the "Open" option from the "File" menu.

- We use small type for any keyboard control keys that you should press; for example: Enter.

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Additional Resources

You may find the following additional resources helpful.

For help using DNA, look in the online help. It explains how to make changes to DNA's configuration and how to perform basic switch administration tasks.

For help with complex switch administration tasks, use the *DEFINITY ECS Administrator's Guide* (Document Number 555-233-502), which explains system features and interactions in detail. A copy of this document is available on the DNA documentation CD-ROM.

For a complete list of DEFINITY books, refer to the Avaya Publications Catalog, available at: http://www.lucent.com/enterprise/documentation.

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Tell Us What You Think!

Let us know how this book measured up to your expectations. Your opinions are crucial to helping us meet your needs! Please complete and return the comment card at the front of this book. Optionally, send us your comments by mail, fax, or e-mail, as follows:

Mail: Avaya, Inc.
Avaya University
DNA Documentation Team
Room 22-2H24
11900 North Pecos Street
Denver, CO 80234-2703
USA

Fax: DNA Documentation Team
+ 1 303 538 1741

E-mail:document@avaya.com

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To view or download the latest version of this book, perform the steps listed next.

1. Install your internet browser.

   Most computers are sold with browsers already installed.

2. Get access to the Internet.

   If you do not already have access to the Internet, contact your local Internet Service Provider (ISP).

3. Set up your browser preferences.

   Refer to the documentation that came with your browser.

4. Install Adobe Acrobat Reader with Search, version 3.0 or later.

   This is available on your DNA CD-ROM or from: http://www.adobe.com.

5. Access http://support.lucent.com

6. Wait a moment while the web page prepares the popup menus.

7. Position your cursor over `Online Services` (at the top left of the screen).

8. From the popup menu, click `Documentation`.

9. Click `Recent Documents`.

10. Locate DEFINITY Network Administration and click it.

If you do not have a service contract, you can still order the book over the web. To do so, visit http://www.lucent.com/enterprise/documentation and search for document number 555-233-602.

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Overview

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DEFINITY Network Administration (DNA) is a distributed, client-server based switch administration application that offers these powerful features:

- DNA enables multiple switch administrators to administer the same switch (or separate switches) at the same time, remotely.

- DNA offers improved, graphical station administration and graphical system administration screens.

- DNA has easy-to-use wizards for basic administration tasks.

- DNA lets you cut through (using terminal emulation) to administer other telephony devices (like DEFINITY AUDIX, Intuity AUDIX, and Intuity HICAP).

This installation is different

Installing DEFINITY Network Administration (DNA) is more complex than installing many off-the-shelf software packages because:

- DNA is client-server based.

- DNA server components can be distributed.

- DNA interfaces with your telephone system.

How you install the software affects its performance and therefore how efficiently and reliably your switch administrators can administer your telephone network. We encourage you to take the time to plan; this book will aid you in that task.

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Installation Checklist

The installation will follow a process like the one listed below.

1. Design DNA Network

We recommend that a LAN/WAN administrator perform the following tasks, with help from the voice organization. These steps are explained in detail in Chapter 3 through Chapter 12 (page 13 through page 109).

   a. Read about DNA system requirements and software components. (Chapter 2; page 5)

   b. Gather information about your current PCs and telephone systems. (Chapter 4; page 19)

   c. Create a map of your current data and telephony network. (Chapter 5; page 33)

   d. Read about how to place DNA components; connection options; and sample installation scenarios. (Chapter 6 through Chapter 8; page 37 through page 58.)

   e. Design the installation by completing all of the planning questions on the forms in Chapter 4 (page 19), and completing the Design Summary forms in Chapter 9 (page 59).

   f. Determine user groups, who should be in which groups, and what permissions each user group should have, in conjunction with the telecom manager (Chapter 10; page 65 through page 108).

   g. If you have an Avaya support contract or you want support during DNA's warranty period, determine where to install modems and pcAnywhere (to allow Avaya to access and troubleshoot your system). Then complete the TSC Cutover Assistance Request Form (form PA002) on page 109.

   h. If your company is installing DNA, give a copy of all completed forms to the person(s) who will perform the installation. If Avaya is installing DNA, simply send the PA002 form to the fax or e-mail address on the form.

2. Install And Upgrade DNA Computers

We recommend that PC administrators perform the following tasks. These steps are beyond the scope of this book, and are not explained for this reason.

   a. Purchase computers (if necessary), as specified by the installation planner on the Upgrades and Purchases form (page 61).

   b. Install new computers (if necessary), and configure Windows.

   c. Upgrade existing computers (if necessary) as specified by the installation planner on page 61.

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d. Install any necessary Windows Year 2000 patches.

e. Ensure TCP/IP connectivity between all DNA computers (that is, make sure they can PING each other). Troubleshoot problems with the LAN/WAN administrator.

3. Prepare Switches for DNA

We recommend that a switch technician perform the following tasks.

a. Upgrade DEFINITY ECS systems to R6.3 or later through an upgrade PEC (for switches earlier than R5) or QPPCN (for R5 and later). ECSs may be optioned as R5 or later.

b. Have Avaya enable the feature, "DEFINITY Network Admin" on the customer options form for each DEFINITY ECS system that DNA supports (page 114).

c. Have Avaya enable Access Security Gateway (ASG) on each DEFINITY ECS system that DNA supports, if you want ASG and it isn't already enabled (page 115).

d. Create DNA "upload" login and "administrative" login for each DEFINITY ECS system that DNA supports (page 115).

e. If you purchased DNA's Enhanced Number Portability (ENP) feature, enable each DEFINITY ECS system in your ENP network to work with DNA (page 120).

4. Connect DNA Computers to Devices

We recommend that PC administrators or telephone technicians perform the following steps.

a. Connect DNA computers to the switches, voice mail systems, and other systems specified by the installation planner on the Telephone Network Information Form (page 21), following the instructions in Chapter 14, "Connecting the Hardware" (page 121).

b. Test and troubleshoot physical connections (page 221).

5. Give Avaya Access to Your System

This step applies if you have a maintenance support agreement with us, or if you want us to be able to support you during the warranty period. We recommend that PC administrators perform the following tasks.

a. Install modems and pcAnywhere on all computers that you want Avaya to be able to access to support DNA.

b. Grant Avaya's Technical Service Center (TSC) access to your IP network, if applicable.

c. Give Avaya the phone number or IP address to access any computers it will support, if applicable.

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6. Install or Upgrade DNA

We recommend that PC administrators perform the following tasks.

   a. If you want to use DNA's online help, install Internet Explorer 4.

   b. If you want e-mail notification of DNA errors and warnings, install a MAPI e-mail client (like Microsoft Exchange or Outlook) on the computer that will host the DNA Core Services, and (optionally) set up a mailbox on the e-mail server.

   c. Install Clients, Core Services, Connection Services, Button Label Printer Services, Device Services, electronic documentation, and (optionally) Enhanced Number Portability (ENP) on the computers specified during planning ().

7. Configure DNA Server Software

We recommend that PC administrators perform the following tasks.

   a. Reboot the computer after installing DNA (before configuring).

   b. Set up permissions on DNA's "data" directories.

   c. Start DNA and log on.

   d. Set the password for the root login.

   e. Register the following:

   - all host computers
   - all Connection Services
   - all Button Label Printer Services
   - all Device Services
   - all ENP Services, if applicable

   f. Configure the following:

   - all Connection Services
   - all Button Label Printer Services
   - all Device Services
   - all ENP Services, if applicable
   - the DNA Navigator

   g. Add DNA users.

   h. Set up e-mail notification.

   i. Create groups.

   j. Assign DNA users to groups.

   k. Assign permissions.

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l. Initialize DNA databases supporting DEFINITY ECS Systems.

m. Set up resynchronization intervals and scheduled maintenance
periods.

8. Test the Installation

We recommend that PC administrators perform the following tasks.

a. Test connections to devices .

b. Test that a client with full access permissions can connect to each
device.

c. Test that each type of user group has the permissions specified
during planning .

9. Troubleshoot, if appropriate

We recommend that PC administrators perform the following tasks.

a. Make sure that hardware connections were tested when they were
installed.

b. Troubleshoot any connection problems with installed software
.

c. Troubleshoot any problems with permissions.

Getting Help with the Installation

If you are located within the United States and you want help installing DNA or
planning the installation, call your Avaya representative.

If you are located outside the United States and you want help installing DNA or
planning your installation, contact your Avaya representative or distributor. Call at
least 4 weeks before the date on which you want to install DNA.

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Understanding DNA Components

DNA is made up of the following software components:

- DNA Client Software

- DNA Server Software—composed of the following parts:

    - DNA Core Services—performs the following tasks:

        - Enables DNA's different parts to recognize each other.

        - Maintains a schedule of changes to be made to the switch or voice mail system, and executes them.

    - DNA Device Service

        The Device Service keeps information about the different telephony devices (switches, voice mail systems, and so on) that you are administering using DNA. It validates any switch data that you enter before sending it to the switch, it supports the user interface (providing drop-down lists of available ports, for example), and it lets you access supported devices via terminal emulation ("cut-through").

    - DNA Connection Service

        The Connection Service stores information about any connection devices (modems, data modules, terminal servers, and so on) that DNA uses to communicate with the telephony devices it supports. It also sends the commands to invoke those connections.

    - Button Label Printer Service

        The Button Label Printer Service generates the forms you use to label telephone buttons.

    - Enhanced Number Portability Service (optional)

        This component supports DNA's ENP wizard, an optional feature that enables you to move stations from one switch to another switch in an ENP network, and automatically update UDP tables, or move subscribers among voice mail systems in an ENP network. You will need to install only one ENP component per ENP network that DNA will support (most customers will install only one).

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You can install all of the DNA components on one computer (space, and processor speed permitting), or you can distribute them across your network. Figure 1 shows one way that DNA components could be distributed to support an installation with two devices.

iodr004 EWS 051200
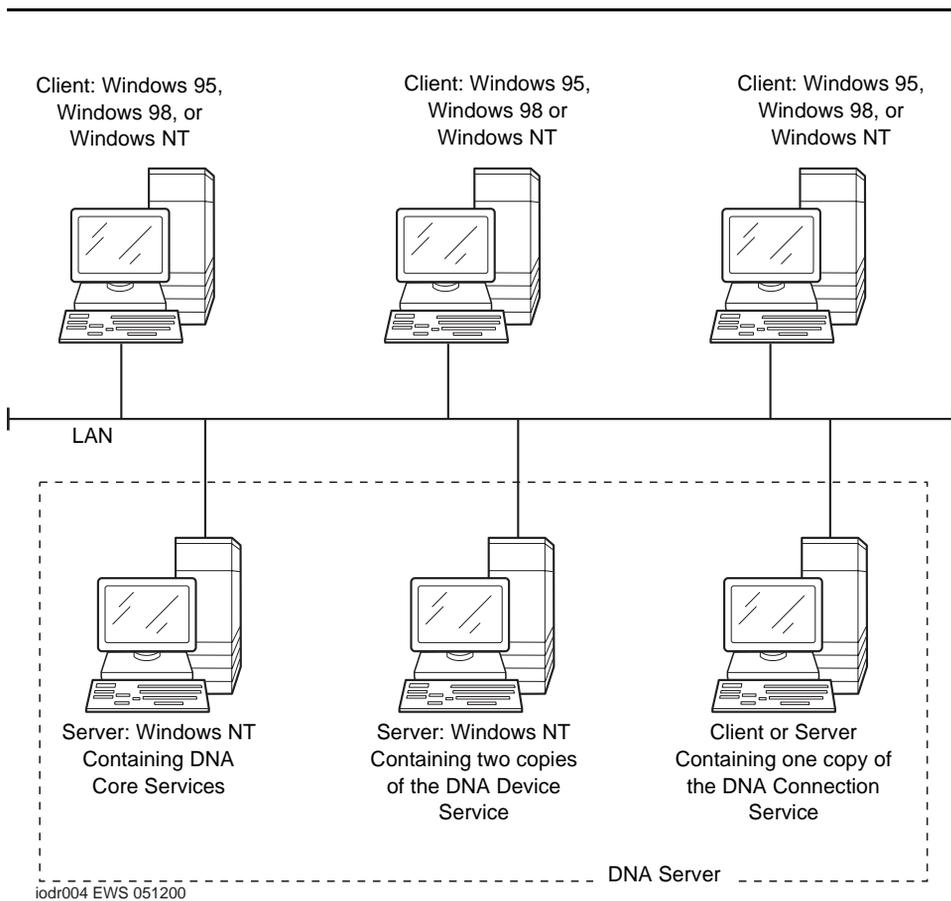
Figure 1.   DEFINITY Network Administration Software Components

We explain how to place DNA components in the section, .

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Understanding System Requirements

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Client Requirements

Client PCs should meet the following requirements:

Parameter	Minimum Requirement
Operating system	Windows 95
Other software	Internet Explorer 4
Processor	PII-233
RAM	64 MB
Available Disk Space	200 MB
CD-ROM	Yes
Available Serial Ports	0
TCP/IP Network Configuration	DNS

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Server Requirements

Any PC that you use to run DNA server components (see "Understanding DNA
Components" on page 10 for a list of the DNA server components) must meet the
following requirements:

Parameter	Recommended
Operating system	Windows NT Server 4.0, Service Pack 5 with Year 2000 updates
Other Software	Internet Explorer 4 (for all customers) pcAnywhere 8.0 or later (for customers with service contracts), plus a MAPI-compliant e-mail server (like Microsoft Exchange) on the network.
Processor	PII-300
RAM	128 MB for Core Services + 1 DEFINITY system 160 MB for Core Services + 2 DEFINITY systems 192 MB for Core Services + 3 DEFINITY systems
Virtual Memory	200 MB for Core Services, plus 150 MB per DEFINITY device, plus 20 MB per non-DEFINITY device
Available Disk Space	250 MB for Core Services 150 MB for each DEFINITY version 250 MB for each DEFINITY switch
CD-ROM	Yes
Available Serial Ports	2
TCP/IP Network	Yes.
IP Addresses	DNS
Display	1024 x 768, millions of colors

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Using Static or Dynamic IP Addresses

If a computer is running the DNA client but not the DNA server components, its IP
address can be dynamic. If a computer is running any DNA server components,
its IP address must be static. For this reason, on any computer running DNA
server components, DHCP can be used only if it is configured to give the
computer the same IP address after each reboot.

Enabling Avaya Remote Services

If you have a maintenance agreement with Avaya for support of DNA, you are
required to install a modem and a copy of Symantec's pcAnywhere on the
computers that you want Avaya to be able to access. pcAnywhere enables Avaya
personnel to troubleshoot and fix problems on your system.

Before installing pcAnywhere, please read the pcAnywhere security guidelines on
page 174, or visit the following web site for the latest pcAnywhere security
information: http://www.symantec.com/pcanywhere/index.html

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Supported Devices   16

Supported Devices

DNA supports the following switches, voice mail systems, and other devices:

Device	Supported Releases
DEFINITY ECS	R5r, R5si, R5vs R6r, R6si, R6vs, R6csi R7r, R7si, R7csi R8r, R8si, R8csi R9r, R9si, R9csi
	The above releases must be running one of the following loads:
	G3V6i.03.0.223.5 G3V6r.03.0.223.5 G3V6i.03.1.230.6 G3V6r.03.1.230.6 G3V6i.03.2.239.3 G3V6r.03.2.239.3 G3V6i.03.3.246.1 G3V6r.03.3.246.1 G3V6i.03.4.253.1 G3V6i.03.4.253.1 G3V7i.01.0.343.7 G3V7r.01.0.343.7 G3V8i.01.0.025.3 G3V8r.01.0.025.3 G3V8i.02.0.034.2 G3V8r.02.0.034.2 G3V8i.03.0.042.1 G3V8r.03.0.042.1 G3V8i.04.0.046.5 G3V8r.04.0.046.5 G3V9i.01.0.031.3 G3V9r.01.0.031.3
	The Version field in the Customer Options form should have the value V5 or greater.
DEFINITY AUDIX	3.2, 4.0 SLIM
Intuity AUDIX	4.3, 4.4, 5.0
Intuity HICAP	5.0

Determining software versions

To determine what version of software you are using:

- DEFINITY ECS Systems

  Access the SAT and type **list config soft mem**.

- DEFINITY AUDIX Systems

  Type **list configuration** at the command line and check the Software Vintage field.

- Intuity AUDIX Systems

  From the Intuity main menu, select Customer/Services Administration> System Verification>View Installed Software. When the system displays the window, look for the version number in the VERSION field.

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Supported DEFINITY releases (by DNA release)

DEFINITY Release	DNA 1, 1.0.1	DNA 1.1	DNA 1.2	DNA 2.0	DNA 2.0.1	DNA 2.0.2	DNA 2.0.3	DNA 3.0
G3V6(i/r).03.0.223.5	X	X	X	X	X	X	X	X
G3V6(i/r).03.1.230.6	X	X	X	X	X	X	X	X
G3V6(i/r).03.2.239.3		X	X	X	X	X	X	X
G3V6(i/r).03.3.246.1				X	X	X	X	X
G3V6(i/r).03.4.253.1							X	X
G3V7(i/r).01.0.343.7			X	X	X	X	X	X
G3V8(i/r).01.0.025.3				X	X	X	X	X
G3V8(i/r).02.0.034.2						X	X	X
G3V8(i/r).03.0.042.1						X	X	X
G3V8(i/r).04.0.046.5							X	X
G3V9i(i/r).01.0.031.3								X

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Gathering Information About Your Networks

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The first step in planning a DNA installation is to inventory your needs and resources. To do so, complete the following steps:

1. Complete a Telephone Network Information form (page 21) for each switch, voice mail system, or other device that DNA will support.

2. Complete a Data Network Information form (page 25) for each PC that will host DNA software.

NOTE:
Photocopy the forms as many times as necessary. Complete only "Basic" questions. Do *not* complete the "Planning" questions yet.

NOTE:
The completed worksheets contain highly sensitive information about your telephone system. ***Keep them in a secure location*** at all times, and do not give them to persons without adequate security clearance and a direct need to know the information.

After you complete the "Basic" questions, read these chapters to understand planning:

- Chapter 5, "Mapping Your Networks"

- Chapter 6, "Placing NT Servers and DNA Components"

- Chapter 7, "Understanding Connection Options"

- Chapter 8, "Sample Installation Scenarios"

After you read the planning chapters, complete the questions and forms listed in Chapter 9, "Designing the Installation". Finally, read Chapter 10 through 12 to plan DNA permissions. When you are done, you will be ready to install DNA.

Telephone Network Information Form

Photocopy this form for each switch you want to administer with DNA.
See reverse side for instructions.

Questions 1-6 = Basic   Questions 7-22 = Planning

Customer Name: _____**Date:** _____ **DNA Version:** _____

I. **DEFINITY ECS:** Complete the following. Work with your Telecom Manager for answers to questions 1-18.

	Switch 1	Switch 2	Switch 3	Switch 4
1. Switch Name:				
2. Physical Location:				
3. Switch Model & Release:				
4. Software Load Number:				
5. Use Level:				
6. Switch Node Number (ENP):				
7. DNA Init Login ID:				
8. DNA Init Password:				
9. DNA Init Secret Key:				
10. DNA Admin Login:				
11. DNA Admin Password:				
12. DNA Admin Secret Key:				
13. Connecting Method or Dev:				
14. Connecting Device Model:				
15. Connecting Dev Phone #:				
16. Hunt Group Number:				
17. Hunt Group Lead Extension:				
18. System Port:				
19. Connection Service PC Name:				
20. CS PC COM Port:				
21. CS PC COM Port IRQ:				
22. Term Svr IP address (if app)				

CONTINUED ON NEXT PAGE

Telephone Network Information Form

Questions 1-6 = Basic   Questions 7-22 = Planning

1. **Switch Name:** The name of the switch as the switch administrators know it.

2. **Physical Location:** The physical location of the system, in terms that are meaningful to you and the installers.

3. **Switch model/release:** For example, G3rV4. Supported releases are listed on .

4. **Software load number:** Indicate the version number of the DEFINITY software that is running on your switch. To determine this, 1) Log into the switch. 2) type **list config soft mem**.

5. **Use Level:** Indicate whether this switch is administered lightly or heavily. If this switch is administered heavily, put its Device Service on dedicated servers or servers that support switches that are *not* heavily administered.

6. **Switch Node Number:** (If you purchased ENP.) To determine the node number, access the switch and type **display dialplan** on the command line. Then note the number listed in the field named "Local Node Number."

7. **DNA Init Login ID:** DNA uses this login when accessing the switch to download translations to the mirror image database. Specify the login ID that you want DNA to use. **DO NOT REUSE EXISTING or COMMONLY USED LOGINS or DNA's resync function will not work properly!** (See). During installation, your switch technician must create this login on the switch, using the instructions on . In addition, the person who configures DNA must specify this login when configuring DNA, as specified on .

8. **DNA Init password:** Specify the password that you want DNA to enter when using the above login ID. Your switch technician must specify this password when creating the Init login on the switch.

9. **DNA Init Secret Key:** This is the 20-digit key that DNA must enter along with the above login ID and password, *only* if ASG is enabled on this switch. ASG is an optional security feature on DEFINITY ECS switches. To determine if this switch is using ASG, see . If this switch is using ASG, then your switch either already has an ASG Secret Key (ask the Telecom Manager for it) or your switch technician must it set up (see). If the switch technician must set it up, you can either specify it yourself (here) or let the DEFINITY system create one for you. If you create it, it must conform to the rules on .

10-12. **DNA Admin Login ID, Password, and Secret Key:** These are as described in 7, 8, and 9, except they are for the switch login that DNA will use to make day-to-day administrative changes to the switch.

13. **Connecting Method or Device:** Indicate how you plan to connect the PC that contains Connection Service for this switch, to this switch. For example: direct connect, ADU, data module, modem, terminal server.

14. **Connecting Device Model:** For example, 8400B+ data module.

15. Connecting Device Phone Number: If DNA is connecting to this switch using a dial-up connection (data module or modem), then specify the phone number DNA should dial to access the switch. **Be sure the number is not for the INADS port! See note on .**

16. Hunt Group Number: Enter the extension number of the hunt group associated with the data module or modem being used to access the switch.

17. **Hunt Group Lead Extension:** Enter the lead extension associated with the above hunt group. To find this, enter **display hunt-group *<number>*** where *<number>* is the hunt group number above.

18. **System Port: Enter the extension number associated with the System Port that is connected to the data module or modem in Item 16.**

19. **Connection Service PC Name:** Indicate the name of the computer that hosts the Connection Service that supports this switch.

20. **CS PC COM Port:** Indicate which COM port the PC is using to connect to this switch. For example: COM 1.

21. **CS PC COM Port IRQ:** 1) Start>Settings>Control Panel. 2) Double-click Ports. 3) Highlight the COM port that is connected to the data module or modem you are using to access the switch, and click Advanced.

22. **Terminal Server IP address:** If DNA is connecting to the switch through a terminal server, enter the IP address. Not applicable if you are not connecting through a terminal server.

Telephone Network Information Form

See reverse side for instructions.

Questions 23-26 & 35-38 = Basic   Questions 27-34 & 39-45 = Planning

Customer Name: _____Today's Date: _____

II.   **Voice Mail Information:** If the device is a voice mail system, provide the following information.

	Voice Mail 1	Voice Mail 2	Voice Mail 3	Voice Mail 4
23. Voice Mail System Name:				
24. Physical Location:				
25. Make/Model/Release:				
26. Software Load Number:				
27. Login:				
28. Password:				
29. ASG Secret Key:				
30. CS PC Name:				
31. CS PC COM Port:				
32. Connecting method/device:				
33. Connecting Dev Model:				
34. Access Number/IP Address:				

II.   **Other Device Information:** If the device is neither a switch nor a voice mail system, provide the following:

	System 1	System 2	System 3	System 4
35. System Name:				
36. Physical Location:				
37. Make/Model/Release:				
38. Software Load Number:				
39. Login:				
40. Password:				
41. CS PC Name:				
42. CS PC COM Port:				
43. Connecting method/device:				
44. Connecting Dev Model:				
45. Access Number/IP Address:				

Telephone Network Information Form

Questions 23-26 & 35-38 = Basic   Questions 27-34 & 39-45 = Planning

23. **Voice Mail System Name:** The name of the system as the voice mail administrators know it.

24. **Physical Location:** The physical location of the system, in terms that are meaningful to you and the installers.

25. **Make/Model/Release:** Indicate the make, model, and release of the system. For example, Intuity AUDIX R4.

26. **Software Load Number:** Indicate the version number of the AUDIX software that is running on your system (if applicable). To determine this, ask the telephony manager, or complete the following steps.

    ■   For Intuity AUDIX systems: From the Intuity main menu, select Customer/Services Administration> System Verification>View Installed Software. Look for the version number in the VERSION field.

    ■   For DEFINITY AUDIX systems: At the command line, type **`list configuration`** . Then check the `Software Vintage` field.

27. **Login ID:** Indicate the login ID that DNA should use to gain access to this voice mail system.

28. **Password:** Specify the password that DNA should use with the above login ID.

29. **ASG Secret Key:** ASG is an optional security feature on AUDIX voice mail systems. In this row, specify the the 20-digit key that DNA must enter in conjunction with the login ID and password, if ASG is enabled on this voice mail system. To determine if ASG is enabled, complete the following steps: 1) Log in to the Intuity AUDIX system. 2) At the INTUITY Main Menu, select ASG Security Administration. 3) Select ASG Security Port Administration. If the `Secure` field has a value of YES for any of the ports, then your Intuity AUDIX system has the ASG feature enabled for that port.

30. **Connection Service PC Name:** Indicate the name of the computer that hosts the Connection Service that supports this voice mail system.

31. **CS PC COM Port:** Indicate which COM port the PC is using to connect to this voice mail system.

32. **Connecting Method or Device:** Indicate how you plan to connect the PC that contains Connection Service for this voice mail system, from this PC to this voice mail system. For example: data module or network.

33. **Connecting Device Model:** For example, 8400B+ data module.

34. **Access Number / IP address:** Specify the phone number DNA should dial, or the IP address DNA should use, to gain access to this system.

35. **System Name:** The name of the system as the administrators know it.

36. **Physical Location:** The physical location of the system, in terms that are meaningful to you and the installers.

37. **Make/Model/Release:** Indicate the make, model, and release of the system, as appropriate.

38. **Software Load Number:** Indicate the version of the software that is running on your system (if applicable).

39. **Login ID:** Indicate the login ID that DNA should use to gain access to this system (if applicable).

40. **Password:** Specify the password that DNA should use with the above login ID (if applicable).

41. **Connection Service PC Name:** Indicate the name of the computer that hosts the Connection Service that supports this system.

42. **CS PC COM Port:** Indicate which COM port the PC is using to connect to this system. For example: COM 1.

43. **Connecting Method or Device:** Indicate how you plan to connect the PC that contains Connection Service for this system, from this PC to this system. For example: data module or network.

44. **Connecting Device Model:** For example, 8400B+ data module.

45. **Access Number / IP address:** Specify the phone number DNA should dial, or the IP address DNA should use, to gain access to this system.

Data Network Information Form

Photocopy this form (4 pages) once for each DNA client or server PC.
See reverse side of each page for instructions.

Questions 1-14 = Basic   No planning questions on this page.

Customer Name: _____ **Date:** _____ **PC Name:**_____

1.	Physical Location			
2.	Circle one: Is this a...	Client PC	Server PC	Both
3.	Make/Model			
4.	Processor Type and Speed Compare to requirements. (page 13)			
5.	OS Type, Version, Service Pack Compare to requirements. (page 13)			
6.	Available Memory (RAM) Compare to requirements. (page 13)	MB		
7.	Virtual Memory (for servers only) Compare to requirements. (page 13)	KB MB		
8.	Available Disk Space & Capacity Compare to requirements. (page 13)	__: Drive MB GB (free) MB GB (total) C: Drive MB GB (free) MB GB (total)		
9.	Available Serial Ports Compare to requirements. (page 13)			
10.	Network Interface Card (For troubleshooting purposes only.)			
11.	Network Type* Compare to requirements. (page 13)			
12.	Domain Name (for servers only)* (Used in Step 9 on page 176 and in Step 8 on page 181.)			
13.	FQDN (for servers only)* (Used in Step 10 on page 176 and in Step 9 on page 182.)			
14.	IP Address (for servers only)* (Used in Step 10 on page 176 and in Step 9 on page 182.)			

CONTINUED ON NEXT PAGE

* If, for some reason, you are installing all DNA software on the same computer, you do not have other clients, and do not need to communicate with other devices on your data network, then you don't need to answer Questions 10, 11, 12, or 14, and you can use the computer name instead of FQDN in question 13.

Data Network Information Form

Questions 1-14 = Basic   No planning questions on this page.

PC name: Enter the name that is most meaningful to you and the people who will maintain DNA (either the common name, or the name as it is known on your network). To determine the computer name as it is known to the network, complete the following steps: 1) Choose Start>Settings>Control Panel. 2) Double-click Network. 3) Click the Identification tab. The PC name is listed in the Computer Name field.

3. **Make & Model:** Obtain this from the documentation that came with your PC, or contact the manufacturer.

4. **Processor type & speed:** Obtain this from the documentation that came with your PC, or contact the manufacturer.

5. **OS Type, version, service pack:** 1) Choose Start>Settings>Control Panel. 2) Double-click System. 3) Click the General tab (if it isn't selected). Under the "System" heading, the operating system and version number are listed. If not, obtain them from the documentation that came with your PC, or contact the manufacturer. You can get the service pack by rebooting and watching for the (blue) Hardware Initialization Screen.

6. **Available memory (RAM):** 1) Choose Start>Settings>Control Panel. 2) Double-click System. 3) Click the General tab (if it isn't selected). Under the "Computer" heading, RAM will be listed in KB. If it is not listed there, obtain this from the documentation that came with your PC, or contact the manufacturer.

7. **Virtual memory:** 1) Choose Start>Settings>Control Panel. 2) Double-click System. 3) Click the Performance tab. In the area called "Virtual Memory," virtual memory will be listed after "Total paging file size for all disk volumes:"

8. **Available disk space & Capacity:** 1) Open Windows File Explorer or Windows File Manager. 2) Highlight the drive that contains DNA. 3) Right-click the drive and choose Properties. Click the General tab (if it isn't selected). Available disk space will be listed under "Free Space." Hard Disk Capacity: On the same tab, listed under "Capacity."

9. **Available serial ports:** The best way to determine available serial ports is to look at the back of the computer. Serial ports have either a 9-pin or 25-pin female adapter. Most computers are manufactured with a default of 2 serial ports. You may already be using both, one, or none.

10. **Network Interface Card:** 1) Choose Start>Settings>Control Panel. 2) Double-click Network. 3) Click the Adapters tab. Under the "Network Adapters," the network card type will be listed. If it is not listed there, obtain this from the documentation that came with your PC, or contact the manufacturer.

11. **Network Type:** Indicate Ethernet, Token-Ring, etc.

12. **Domain name:** To determine the domain name, complete the following steps: 1) Choose Start>Settings>Control Panel. 2) Double-click Network. 3) Click the Identification tab. The domain name is listed in the Domain field.

13. **FQDN:** Fully-qualified domain name. The FQDN is the PC name followed by the Domain Name. For example, `dnapc1.department.company.com.` You can find the PC name and Domain as follows: 1) Choose Start> Settings>Control Panel. 2) Double-click Network. 3) Click the Identification tab.

14. **IP Address:** 1) Choose Start>Settings>Control Panel. 2) Double-click Network. 3) Click the Protocols tab. 4) Highlight TCP/IP Protocol. 5) Click Properties. 6) Click the IP Address tab (if it isn't selected). The IP address is listed in the area marked "Specify an IP address," in the IP Address field. ***Be sure you are not using DHCP for the Core Services PC, because if DHCP reassigns the IP address of the Core Services PC, DNA will not function and may require a reinstallation.***

Data Network Information Form

See reverse side for instructions.

Questions 15-19 & 24 = Basic   Questions 20-23 = Planning
CONTINUED FROM PREVIOUS PAGE.

Customer Name: _____   Date: _____   PC Name:_____

15. **Subnet Mask:*** (for server PCs only)
    (For troubleshooting purposes only.)

16. **Gateway:*** (for server PCs only)
    (For troubleshooting purposes only.)

17. **DNS Server:*** (for server PCs only)
    (For troubleshooting purposes only.)

18. **Primary WINS Server:*** (servers only)
    (For troubleshooting purposes only.)

19. **Secondary WINS Server:*** (servers only)
    (For troubleshooting purposes only.)

20. pcAnywhere version: (servers only)   (required for Avaya support)

21. pcAnywhere access number: (required for Avaya support)

22. pcAnywhere Login: (required for Avaya support)

23. pcAnywhere password: (required for Avaya support)

24. Currently loaded applications: pcAnywhere (required for Avaya support)

* If, for some reason, you are installing all DNA software on the same computer, you do not have other clients, and do not need to communicate with other devices on your data network, then you don't need to answer Questions 15 through 19.

Data Network Information Form

Questions 15-19 & 24 = Basic   Questions 20-23 = Planning

15. **Subnet Mask (for server PCs only):** 1) Choose Start>Settings>Control Panel. 2) Double-click Network. 3) Click the Protocols tab. 4) Highlight TCP/IP Protocol. 5) Click Properties. 6) Click the IP Address tab (if it isn't selected). Subnet mask is listed on this page.

16. **Gateway (for server PCs only):** 1) Choose Start>Settings>Control Panel. 2) Double-click Network. 3) Click the Protocols tab. 4) Highlight TCP/IP Protocol. 5) Click Properties. 6) Click the IP Address tab (if it isn't selected). Gateway is listed on this page.

17. **DNS Server (for server PCs only):** 1) Choose Start>Settings>Control Panel. 2) Double-click Network. 3) Click the Protocols tab. 4) Highlight TCP/IP Protocol. 5) Click Properties. 6) Click the DNS tab. DNS server is listed on this page.

18. **Primary WINS server (servers only):** 1) Choose Start>Settings>Control Panel. 2) Double-click Network. 3) Click the Protocols tab. 4) Highlight TCP/IP Protocol. 5) Click Properties. 6) Click the WINS Address tab. Primary WINS server is listed on this page.

19. **Secondary WINS server (server only):** Same steps as in Item 18.

20. **pcAnywhere version:** If your company has a contract with Lucent for DNA support , you are required to install pcAnywhere on all computers where DNA server components (Core Services, Connection Services, Device Services, Button Label Printer Service, or ENP services) are installed. You must install pcAnywhere version 8 or later. Indicate on this row the version of pcAnywhere installed on this computer.

21. **pcAnywhere access number:** Indicate the phone number that Lucent remote support should dial to gain access to this computer via pcAnywhere.

22. **pcAnywhere login:** Indicate the login ID that Lucent remote support should enter to gain access to this PC via pcAnywhere.

23. **pcAnywhere password:** Indicate the password that Lucent remote support should enter to gain access to this PC via pcAnywhere.

24. **Currently loaded applications:** List all applications that are installed on this PC.

Data Network Information Form

See reverse side for instructions.
Question 25 = Planning
CONTINUED FROM PREVIOUS PAGE.

Customer Name: _____ **Date:** _____ **PC Name:**_____

25. Check the DNA components you want on this PC and provide requested information for checked boxes.

⎕ Core Services

⎕ Connection Service:

Serial Port Connection Information: If you need space for more serial ports, create a table like this and attach it to this form.

	COM Port # ____	**COM Port # ____**
a. Name of device:		
b. Make and model of device:		
c. Connecting method or device:		
d. Connecting device model:		
e. Serial Device Script to use:		
f. End Point Script to use:		
g. Name of Device Service this COM port serves:		
h. DNA name for this Serial Port Connection.		
i. Access number:		

Network Connection Information: If you need space for more network connections, create a table like this and attach it to this form.

	Network Cnxn# ___	**Network Cnxn# ___**
j. Name of device:		
k. Make and model of device:		
l. End Point Script to use:		
m. Name of Device Service this network connection serves:		
n. DNA name for this Network Connection.		
o. IP Address:		
p. TCP/IP Service/Socket		

Data Network Information Form

25. Core Services: Check this box only if you want the DNA Core Services software installed on this PC.

Connection Service: Check this box only if you want the Connection Services software installed on this PC.

Serial Port Connection Information: Complete this table only if this PC connects to devices via serial ports. The information will be used when configuring the Connection Service.

a. **Name of device:** For reference purposes only. If you have completed the Telephone Network Info Form, you can get this information from Q.1, p. 21; Q.23, p. 23; or Q.35, p. 23.

b. **Make and model of device:** For troubleshooting purposes only. You can get this information from Q.3, p. 21; Q.25, p. 23; or Q.37, p. 23.

c. **Connecting method or device:** For troubleshooting purposes only. You can get this information from Q.13, p. 21; Q.32, p. 23; or Q.43, p. 23.

d. **Connecting device model:** For troubleshooting purposes only. You can get this information from Q.14, p. 21; Q.33, p. 23; or Q.44, p. 23.

e. **Serial Device Script to use:** This is used on page 195 and in Step 5 on page 197. Choose none for (direct connect), 7400, 8400, ADU, Generic Modem, PDU, or specify the name for another.)

f. **End Point Script to use:** This is used on page 196 and in Step 5 on page 198. Choose DEFINITYAudix, DEFINITYECS, DEFINITYECSdirect, or specify the name for another.

g. **Name of Device Service this COM port serves:** Complete this question after you determine the name of the Device Service for the device that this connection will serve. You may not know this until you complete the Device Service section (page 31) for each DNA computer. This information is used in Step 2 on page 198.

h. **DNA name for this Serial Port Connection.** For example, COM1 to WestCampusSwitch. This is used in Step 7 on page 199.

i. **Access number:** This is used in Step 7 on page 199. You can get this information from Q.15, p. 21; Q.34, p. 23; or Q.45, p. 23.

Network Connection Information: Complete this table only if this PC connects to devices via the network. The information will be used when configuring the Connection Service.

j. **Name of device:** For reference purposes only. If you have completed the Telephone Network Info Form, you can get this information from Q.1, p. 21; Q.23, p. 23; or Q.35, p. 23.

k. **Make and model of device:** For troubleshooting purposes only. You can get this information from Q.3, p. 21; Q.25, p. 23; or Q.37, p. 23.

l. **End Point Script to use:** This is used on page 196 and in Step 5 on page 198. Choose DEFINITYAudix, DEFINITYECS, DEFINITYECSdirect, or specify the name for another.

m. **Name of Device Service this network connection serves:** Complete this question after you determine the name of the Device Service for the device that this connection will serve. You may not know this until you complete the Device Service section (page 31) for each DNA computer. This information is used in Step 2 on page 198.

n. **DNA name for this Network Connection:** For example, TCP/IP to EastCampusSwitch. This is used in Step 6 on page 198.

o. **IP Address:**
This is used in Step 6 on page 198. If you have completed the Telephone Network Info Form, you can get this information from Q.22, p. 21; Q.34, p. 23; or Q.45, p. 23.

p. **TCP/IP Service/Socket:** This is used in Step 6 on page 198.

Data Network Information Form

See reverse side for instructions.
Question 25 = Planning

❐ DNA Client

❐ Button Label Printer Service:

Printer Name	BLPS Name	UNC Pathname

❐ Device Service:

Model/Version/Load	Device Name	Device Service Name

❐ Enhanced Number Portability Service:

ENP Network Name	Device Name	Switch only: Node Number	Switch only: Update UDP table?

Data Network Information Form

Button Label Printer Service: List the UNC name of each network laser printers for which a Button Label Printer Service will be installed on this computer. See the example below.

> ⇒ **NOTE:**
> Button Label Printer Service names are case sensitive and cannot contain special characters, such as / \ * ? & % @ ! ^.

Printer Name	BLPS Name	UNC Pathname
Example: Oilcan	Oilcan	\\myserver\oilcan

Device Services: Check this box and complete the table only if you are installing DNA Device Services on this PC. DEFINITY systems Model/Version/Load information must match the list of supported devices (page 16) if you want to use DNA's GEDI feature.

> ⇒ **NOTE:**
> Device Service names are case sensitive and cannot contain special characters, such as / \ * ? & % @ ! ^. We suggest naming the Device Service the same as the Device Name, so you know which Device Service serves which device.

Model/Version/Load	Device Name	Device Service Name
Example: G3r R7.1 Load 343.7	West Campus	West Campus

Enhanced Number Portability Service: List the devices that you want to be part of the ENP network, plus (for switches) Node Numbers and whether or not to update the routing tables. See the example below.

ENP Network Name	Device Name	Switch only: Node Number	Switch only: Update UDP table?
Example: West Campus	West Campus switch	523	Yes
	West Campus voice mail	n/a	n/a
East Campus	East Campus switch	55	Yes
	East Campus voice mail	n/a	n/a

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5 Mapping Your Networks

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Mapping Your Networks

5

After you inventory your networks, you must create a composite map of all equipment that will be a part of your DNA installation. Ideally, you will also associate each piece of equipment on the map with the "inventory" information you gathered in the last chapter. Figure 2 on page 34 shows an example of what your map might look like **before** you start making design decisions.

Your map should show:

- Each piece of equipment (data or telephony) that will be involved with DNA.

  Ideally, the map would show all of the equipment on your entire data and telephony network, so that a single map could serve as your reference in devising multiple or alternate installation strategies. Less ideally, the map would show just the equipment you know will be involved with DNA.

- The connections between these pieces of equipment.

- The geographical location of sites, if there is more than one.

- The "inventory" information you gathered.

  You can either put the inventory information in the map or reference a paper record or database entry that contains the information.
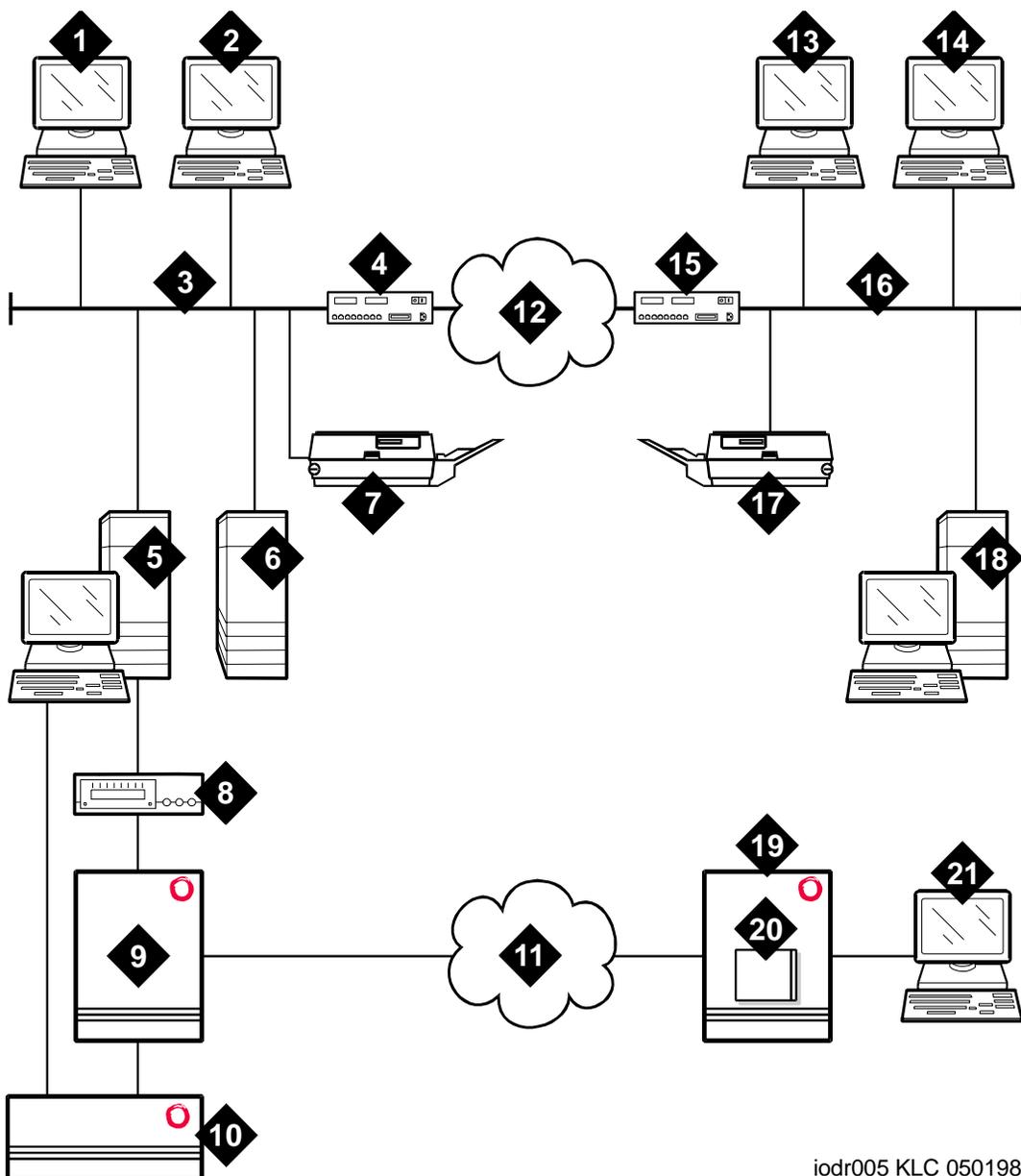
iodr005 KLC 050198

Figure 2.   Example Composite Map of Data and Telephony Networks Before Installing DNA

1. **Client**
   Computer Name: "Mariner"
   Location: Chicago
   IP Address: 126.10.10.10
   Processor: Pentium 90
   RAM: 32 Mb
   Virtual Mem: 32 Mb
   Avail Space: 150 Mb of 500
   CD-ROM: 4x
   Avail Ser. Ports: 1
   Network Card: Ethernet; TCP/IP
   Display: 256 color, 800x600
   OS: WinNT 4

2. **Client**
   Computer Name: "Ahab"
   Location: Chicago
   IP Address: 126.10.10.11
   Processor: Pentium 90
   RAM: 32 Mb
   Virtual Mem: 75 Mb
   Avail Space: 250 Mb of 1 GB
   CD-ROM: 8x
   Avail Ser. Ports: 1
   Network Card: Ethernet; TCP/IP
   Display: 256 color, 800x600
   OS: WinNT 4

3. **Network**
   Protocol: TCP/IP
   Topology: Ethernet 10-base T

4. **Router**

5. **Server**
   Computer Name: "Willie"
   Location: Chicago
   IP Address: 126.10.10.12
   Processor: Pentium 120
   RAM: 64 Mb
   Virtual Mem: 125 Mb
   Avail Space: 2 GB of 8Gb
   CD-ROM: 8x
   Avail Ser. Ports: 1
   COM1: data module to "Chicago"
   Network Card: Ethernet; TCP/IP
   Display: 256 color, 800x600
   OS: WinNT 4

6. **File Server**
   Computer Name: "Moby"
   Location: Chicago
   IP Address: 126.10.10.13
   Processor: Pentium 90
   RAM: 32 Mb
   Virtual Mem: 150 Mb
   Avail Space: 6 GB of 36Gb
   CD-ROM: 8x
   Avail Ser. Ports: 1
   Network Card: Ethernet; TCP/IP
   Display: 256 color, 800x600
   OS: WinNT 4

7. **Printer**
   Model: HP LaserJet 4

8. **Data Module**
   Model: AT&T 7400B

9. **Switch**
   Name: "Chicago"
   IL Number: 0123456789
   Location: Chicago
   Model: DEFINITY G3r
   Version: G3V6r.03.0.223.5
   Connection Type: Dial-up serial
   (digital port through data module to
   COM1 on "Willie")
   IP address: Not applicable
   Dial-up number: 555-6622
   Trunked?Yes
   Trunked to which?19 ("Atlanta")
   Using UDP?No
   Digital trunk?Yes

10. **Voice Mail**
    IL Number: 0123456789
    Location: Chicago
    Model: INTUITY AUDIX
    Version: Release 4
    Connection Type: Network connection
    IP address: 126.10.10.14
    Dial-up number: Not applicable
    Supported switch: 9 ("Chicago")

11. **PSTN**

12. **LAN or WAN**

13. **Client**
    Computer Name: "Pandora"
    Location: Atlanta
    IP Address: 125.10.10.10
    Processor: Pentium 90
    RAM: 32 MB
    Virtual Mem: 32 MB
    Avail Space: 1 GB
    CD-ROM: 4X
    Avail Ser. Ports: 1
    Network Card: Ethernet: TCP/IP
    Display: 256 color, 800x600
    OS: Windows 95

14. **Client**
    Computer Name: "Circe"
    Location: Atlanta
    IP Address: 125.10.10.11
    Processor: Pentium 90
    RAM: 32 MB
    Virtual Mem: 64 MB
    Avail Space: 1 GB
    CD-ROM: 4X
    Avail Ser. Ports: 2
    Network Card: Ethernet; TCP/IP
    Display: 256 color, 800x600
    OS: Windows 95

15. **Router**

16. **Network**
    Protocol: TCP/IP
    Topology: Ethernet 10-base T

17. **Printer**
    Model: HP LaserJet 4

18. **Server**
    Computer Name: Sisyphus
    Location: Atlanta
    IP Address: 125.10.10.12
    Processor: Pentium 133
    RAM: 128 MB
    Virtual Mem: 270 MB
    Avail Space: 3 GB
    CD-ROM: 8X
    Avail Ser. Ports: 2
    Network Card: Ethernet: TCP/IP
    Display: 256 color, 800x600
    OS: Window 4.0, Serv Pck 3

19. **Switch**
    Name: "Atlanta"
    IL Number: 1234567890
    Location: Atlanta
    Model: DEFINITY G3i
    Version: G3V6i.03.0.223.5
    Connection Type: Direct serial (to SAT)
    IP address: Not applicable
    Dial-up number: Not applicable
    Trunked?Yes
    Trunked to which?10 ("Chicago")
    Using UDP?No
    Digital trunk?Yes

20. **Voice Mail**
    IL Number: 4567891011
    Location: Atlanta
    Model: DEFINITY AUDIX
    Version: 3.2
    Connection Type: Dial-up serial
    IP address: Not applicable
    Dial-up number: 555-6789
    Supported switch: 19 ("Atlanta")

21. **System Administration Terminal**
    Model: 715

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6 Placing NT Servers and DNA Components
Placing NT Servers   37

Placing NT Servers and DNA Components

6

Placing NT Servers

In general, place NT servers close to people who can maintain and troubleshoot them, in a way that reduces network traffic and saves connection costs. Where you put NT servers may depend on where you place DNA components; for this reason, review the following sections before making your final decisions.

Placing DNA Components

DNA's components must be installed on computers that use the operating systems listed in the following table. For operating system requirements, see "Understanding System Requirements" on page 13.

DNA Component	Win95	Win98	WinNT4
Client software	X	X	X
Connection Service	X	X	X
Core Services			X
Device Services			X
Button Label Printer Service			X
Enhanced Number Portability			X

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6 Placing NT Servers and DNA Components
Placing Core Services 38

As long as a DNA component is installed on the correct operating system, you can place it anywhere on your network. Many customers place all DNA components on a single server, but your ability to do this depends on the number of switches and voice mail systems you are supporting. If you choose to distribute DNA components over multiple servers, we suggest the following placement guidelines, which are explained in detail in the sections that follow.

When placing the...	Be sure to...
Core Services	Put it near the clients.
Device Service	Put it near the device.
Connection Service	Put it near the device.
Button Label Printer Service	Put it near the button label printer.
Enhanced Number Portability	Put it near the Core Services.

Placing Core Services

DNA's Core Services component supplies DNA's scheduling functionality and task repository, among other functionality.

How many to install

Install only one copy of the Core Services component for a given DNA installation.

Where to install

Install the Core Services component on a server that is close to the most-frequently-accessed clients. The farther away the Core Services software is from the client, the slower the client will respond.

How this affects placing the NT server

Put an NT server close to the most frequently-used clients, so you can install the Core Services component close to them.

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6 Placing NT Servers and DNA Components
Placing Device Services 39

Placing Device Services

DNA's Device Service component stores information about each device that DNA supports. For DEFINITY ECS switches, the Device Service stores a local copy of the translations; switch administrators interact with the local copy rather than with the switch itself. This enables DNA to validate data before sending it to the switch. It also enables multiple switch administrators to administer a single switch simultaneously, because the Device Service handles all of the administration requests and sends a single set of instructions to the DEFINITY ECS.

How many to install

Install one copy of the Device Service for each device you want to support. For example, if you are using one NT server to support three devices, install three Device Services on that server.

Where to install

When placing the Device Service, follow these guidelines:

- Don't install Device Services for more than two or three simultaneously-accessed switches on the same NT server.

- If possible, do not allow network bottlenecks or large distances to separate the Device Service from a switch.

How this affects placing the NT server

Put an NT server close to the devices it supports, and allocate one server for every two to three DEFINITY ECS switches you want to access.

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6   Placing NT Servers and DNA Components
Placing Connection Services   40

Placing Connection Services

DNA's Connection Service component stores information about how to connect to the devices that DNA supports. It also sends the necessary commands to invoke those connections.

How many to install

How many copies you install depends on how you are connecting to your devices:

■ If you are connecting via dial-up serial connection (modems or data modules) or direct serial connection (null modems or ADUs), install one copy of the Connection Service on each computer that is connected to the devices.
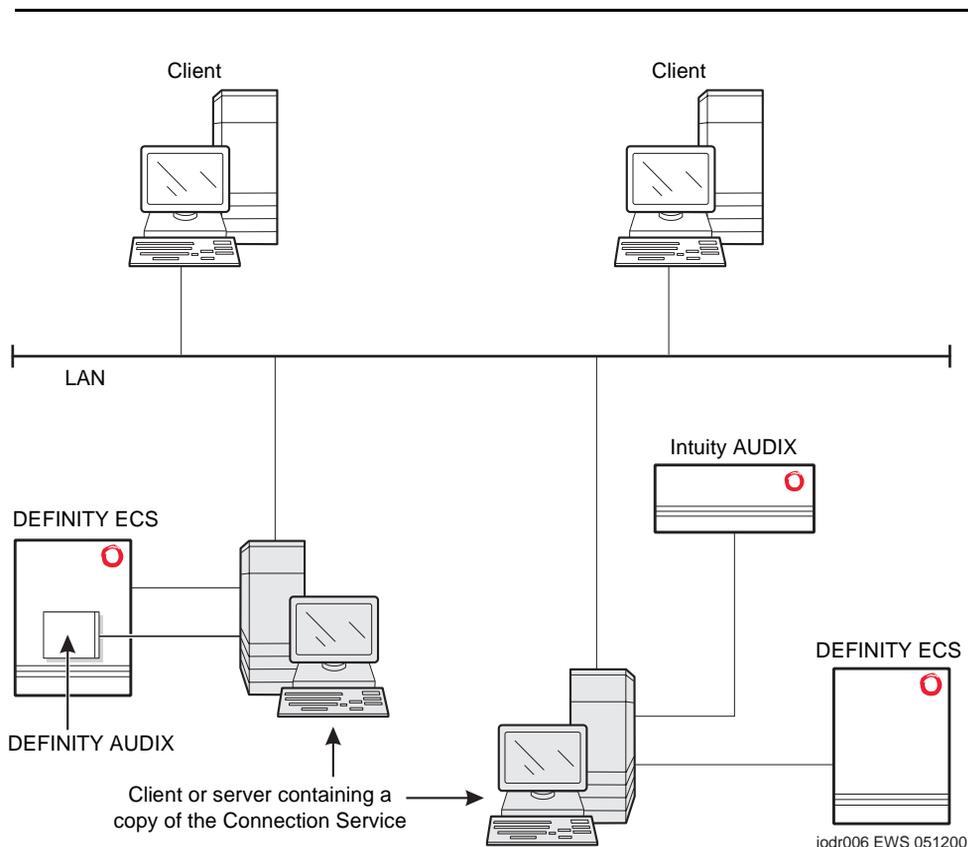
Figure 3.   Placing the Connection Service on computers with direct or dial-up connections to devices

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■ If you are connecting via network connection (terminal server or network port), install one copy of the Connection Service for all of the devices that are being accessed via network connections.
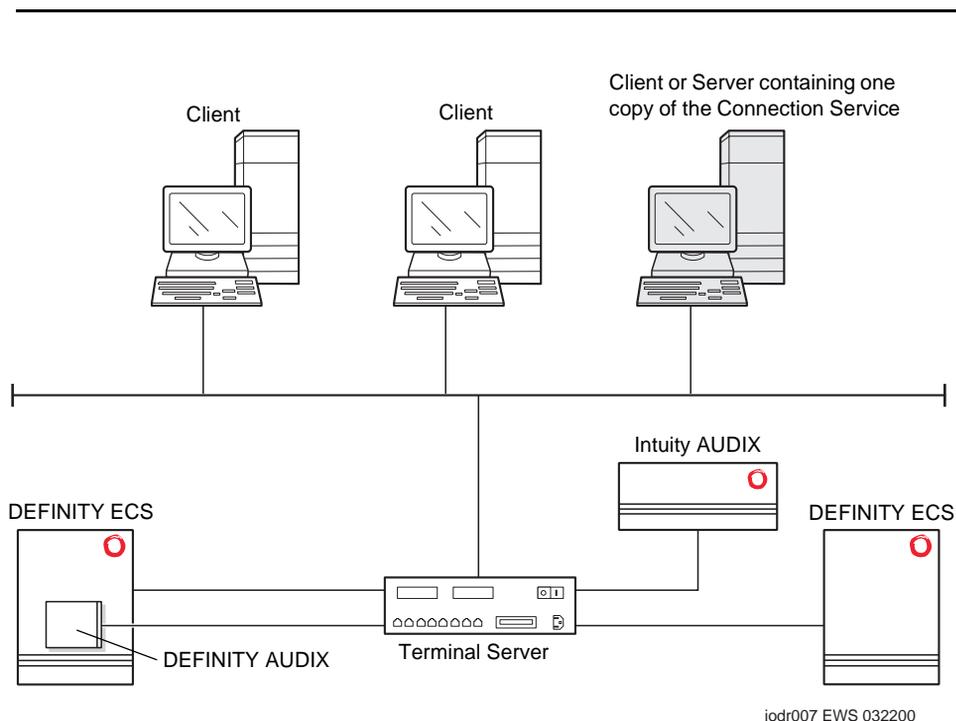
Figure 4.   Placing the Connection Service on computers with network connections to devices

Where to install

Where you install the Connection Service depends on whether you will be using a private network (WAN or private telephone network) or the Public Switched Telephone Network (PSTN) to communicate with your devices. To decide where to install the Connection Service, answer the following questions:

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Using the Connection Service with the PSTN

1. Do you *only* have access to the PSTN?

   - If yes, you can *only* use dial-up connections to access your remote devices. Ignore the remaining questions. Install the Connection Service on the computer that has the dial-up connection to the device.
     (See Figure 5.)

   - If no, read the next two questions.

Client

Client

LAN

Client or server containing one
copy of the Connection Service

PSTN

iodr008 EWS 051200

DEFINITY ECS
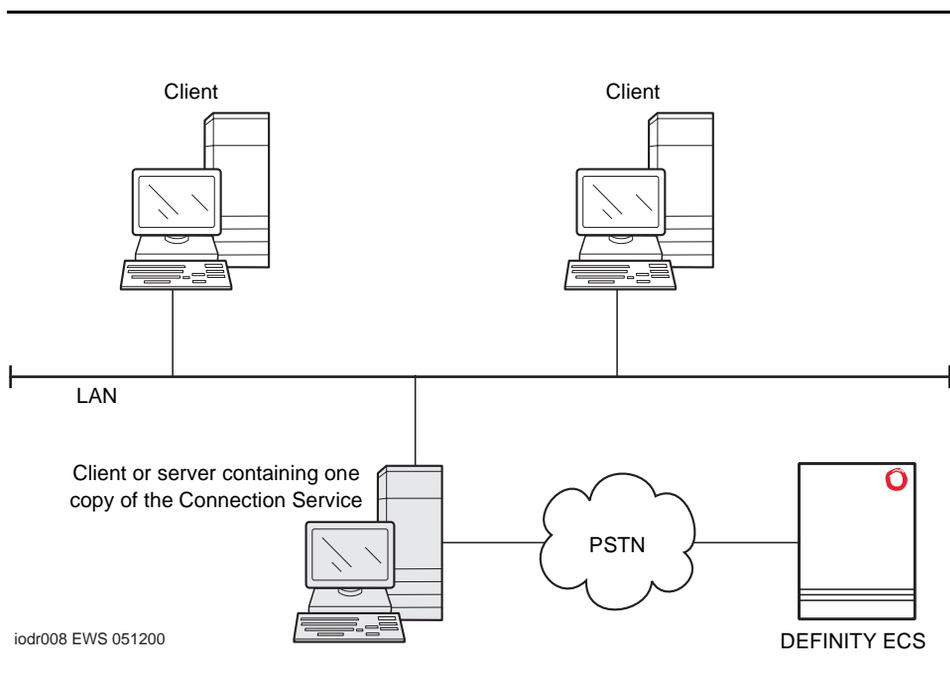
**Figure 5.   Placing the Connection Service on computers with *only* PSTN
dial-up access to devices**

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Using the Connection Service with a
Private Telephone Network

1. Do you have a private telephone network to your devices?

   - If yes, you can probably afford to install the Connection Service far from the remote device (and use dial-up connections), because you do not have to pay regular long-distance charges. However, before choosing this option, you may want to evaluate the effects of adding traffic to your private telephone network. (See Figure 6.)

   - If no, you can still save on long-distance costs if you have a WAN out to the remote devices. Read the next question.

iodr008 EWS 051200
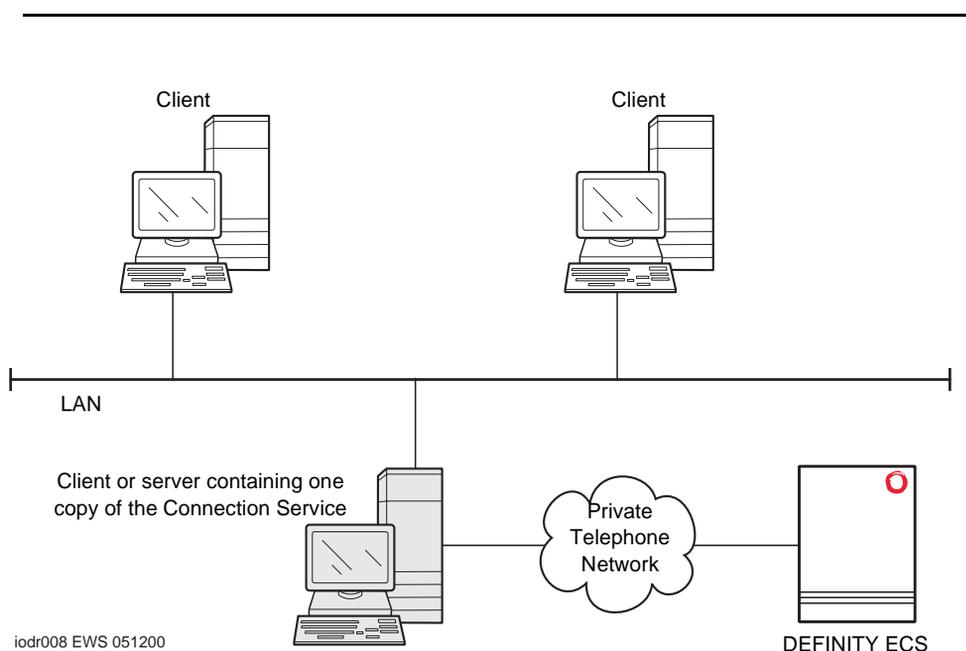
Figure 6.   Placing the Connection Service on computers with PTN dial-up access to devices

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Placing Connection Services   *44*

Using the Connection Service with a WAN

1. Do you have a WAN out to your devices?

   If yes, you can either:

   ■ Install the Connection Service on a computer close to the devices
     (for dial-up or direct connections from that computer to the device).
     (See Figure 7.)
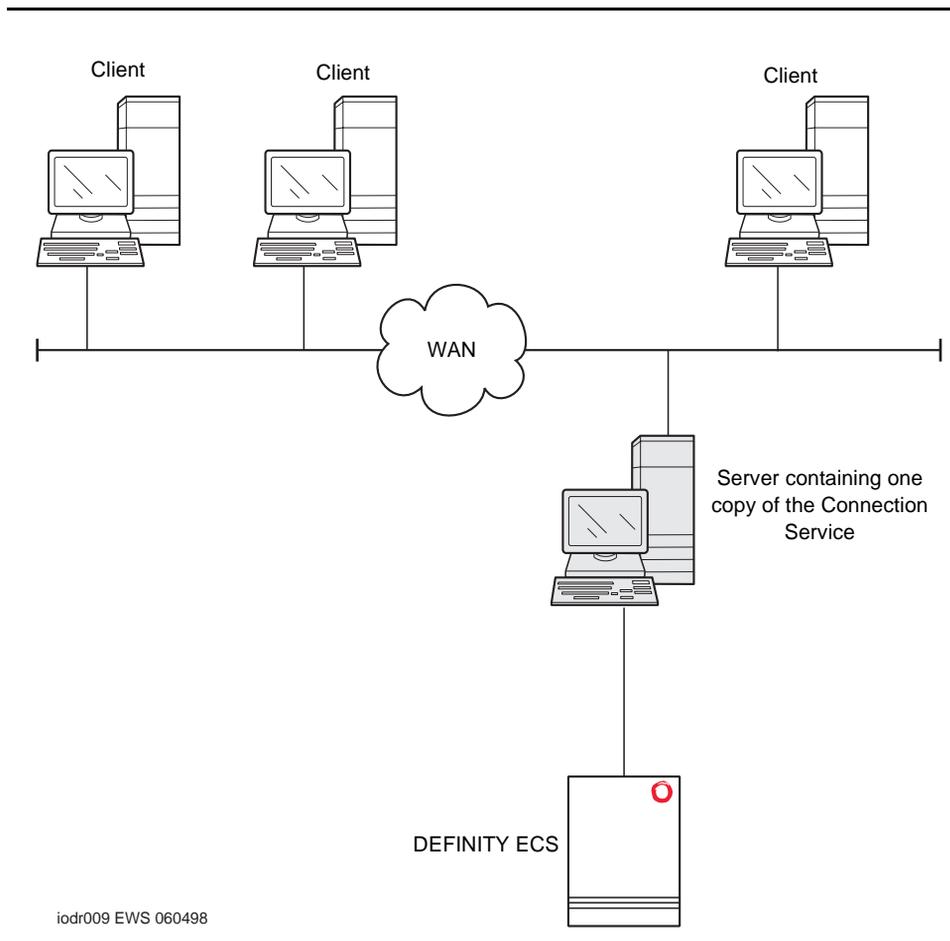
iodr009 EWS 060498

**Figure 7.   Placing the Connection Service on computers with WAN access to
devices (Option 1)**

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Placing Connection Services 45

- Or, you can install the Connection Service far from the devices, using the WAN to communicate (via terminal server for DEFINITY ECS — see Figure 8, or via a network connection for Intuity AUDIX).
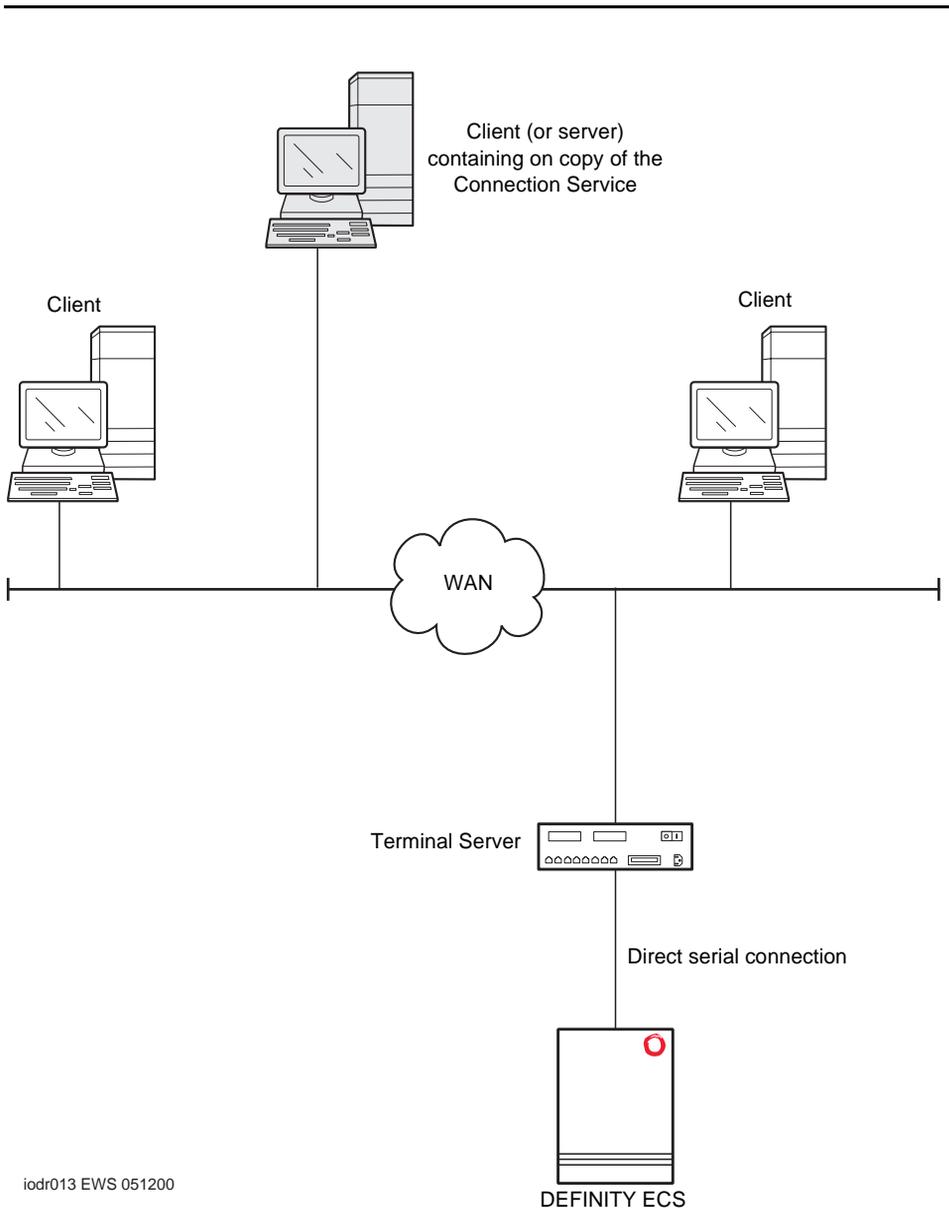
iodr013 EWS 051200

Figure 8.   Placing the Connection Service on computers with WAN access to devices (Option 2)

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6 Placing NT Servers and DNA Components
Placing Button Label Printer Services   46

Summary for placing the Connection Service

Whether you should use the PSTN, a private telephone network, or a WAN ultimately depends on availability (most companies use whatever network they have), your performance expectations, and cost to your company for each option.

We recommend the following strategies:

- If you have a computer close to the devices, and it has enough available COM ports to connect to the devices or COM ports can easily be installed, then install the Connection Service on it.

- If you do not have a computer close to the devices, install the Connection Service wherever it minimizes long-distance costs.

- If you have a WAN and you can connect to all of your devices via network connections (see the table in "Understanding Connection Options" on page 49), then install the Connection Services anywhere.

Placing Button Label Printer Services

The Button Label Printer Service generates the forms you use to label telephone buttons. It works in conjunction with your laser printer to print telephone labels.

Printer requirements

To print button labels, DNA must have access to a laser printer. You can use any network laser printer that has a UNC name (for example, \\myserver\deptprinter), for which you have installed a printer driver.

How many to install

Install one Button Label Printer Service for each network laser printer you want to use with DNA. You can install multiple Button Label Printer Services on the same computer.

Where to install

In general, place the Button Label Printer Service on any computer that is close to the printer it supports. Doing so makes it easier to manage or troubleshoot any printing problems, and can reduce network traffic.

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6 Placing NT Servers and DNA Components
Placing Enhanced Number Portability (ENP) Services 47

Placing Enhanced Number Portability (ENP) Services

Enhanced Number Portability is an optional DNA feature designed to support customers who manage networks of DEFINITY ECS switches and AUDIX voice mail systems. DNA's ENP wizard automates the process of moving stations from one switch to another and subscribers from one voice mail system to another.

When you configure DNA's ENP feature, you tell DNA which switches are in the network, what their node numbers are, and whether you want DNA to update their routing tables when you move a station from one switch to another. For voice mail systems, you simply tell DNA which systems are in the network.

The ENP Service keeps track of this information. If a particular switch or voice mail system has not been specified (in the ENP Service) as part of a network, then DNA's ENP wizard will not be able to move stations (and subscribers) to or from that system.

How many to install

Although DNA does not pose any restrictions on the number of ENP Service components you can install, most customers will need to install only one.

Where to install

We recommend installing the ENP Service on the Core Services computer. Doing so makes it more convenient to upgrade DNA and its services, or perform any other configuration changes, because more services are located centrally on one computer.

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6 Placing NT Servers and DNA Components
Placing Enhanced Number Portability (ENP) Services 48

Understanding Connection Options

7

The easiest way to connect a DNA computer to any device is via a direct serial connection. Direct serial connections require less hardware, and less hardware reduces the chances of hardware failure.

However, you can connect your computers to your telephony devices in several other ways, which are summarized below.

Device	Direct Serial	Dial-Up Serial	TCP/IP
DEFINITY ECS	RS-232 cable	ADU*	terminal server*
		data module*	terminal server & ADU*
		modem pooling*	terminal server & data module*
Intuity AUDIX or Intuity HICAP	RS-232 cable with null modem*	data module*	network port*
	ADU*	analog modem	
DEFINITY AUDIX	RS-232 cable with null modem*	data module*	terminal server & RS-232 cable*
	ADU with null modem*	analog modem*	

*   These connection methods are explained and illustrated in .

➡ **NOTE:**
    Do not connect to a DEFINITY switch via the INADS port. Doing so prevents the switch from reporting alarms to Lucent and prevents Lucent personnel from remotely servicing the switch. Also, in some countries, connecting to the INADS port can be a violation of local laws.

You can connect DNA computers to telephony devices via direct serial, dial-up serial, and network connections. illustrates one possible arrangement of these connections. Specific options are discussed in detail on .
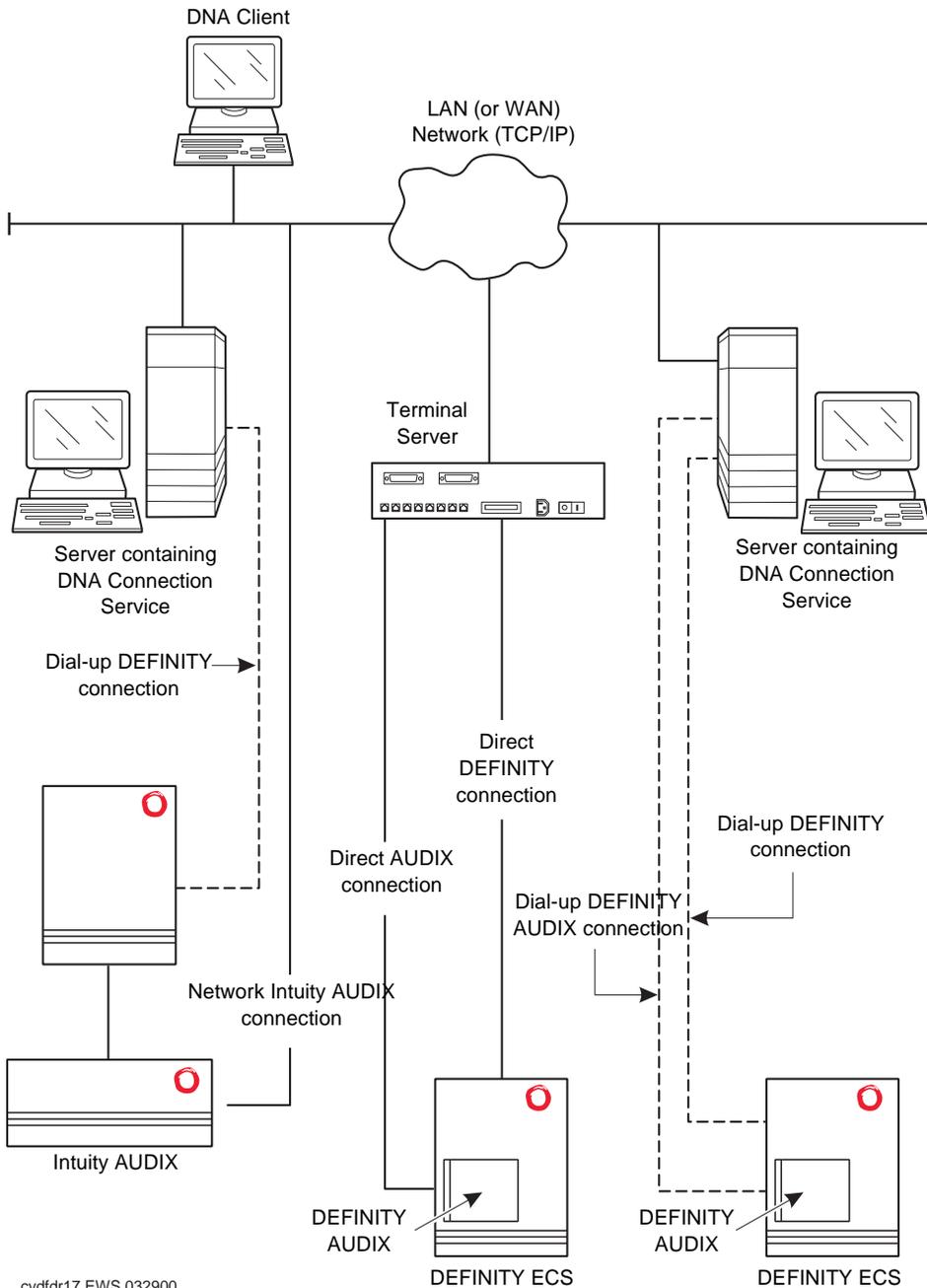
cydfdr17 EWS 032900

Figure 9.   Example Direct, Dial-Up, and TCP/IP Connections

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8   Sample Installation Scenarios

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Sample Installation Scenarios

8

In this chapter, we illustrate how you might place NT servers and DNA components in several different situations. This chapter does not focus on how to connect your computers to your telephony devices because you can connect them in several different ways.

Work with your phone technician to determine the best connection methods for your site; refer to "Understanding Connection Options" on page 49 or "Connecting the Hardware" on page 121 for more information.

Scenario One: Simple	One switch administrator needs to be able to administer one medium-sized DEFINITY and one AUDIX.
Scenario Two: Typical	Ten people need to be able to administer four DEFINITYs and four AUDIXs in two sites. "Site A" has three of the DEFINITYs and AUDIXs; "Site B" has one of each. All administration occurs from Site A, which has a LAN. Site A and Site B are linked only by a private telephone network.
Scenario Three: Low Use	Three switch administrators need to be able to administer two DEFINITY switches in two remote sites, using dial-up PSTN connections. The switch administrators rarely need to make any changes to these switches.
Scenario Four: Using terminal servers	Three switch administrators in two locations need to be able to administer three DEFINITYs, one Intuity AUDIX, and one DEFINITY AUDIX. "Site A" has two administrators, "Site B" has one administrator and a terminal server.

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8 Sample Installation Scenarios
Scenario One: Simplest Installation   52

Scenario One: Simplest Installation

One switch administrator needs to be able to administer one medium-sized DEFINITY ECS and one AUDIX.

Figure 10 illustrates one possible arrangement of hardware and software to meet these needs. For precise hardware configuration options, refer to "Connecting the Hardware" on page 121.
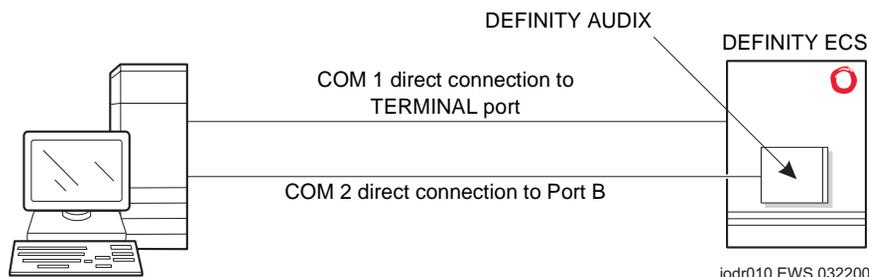
Figure 10.   Configuration for simple installation

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8 Sample Installation Scenarios
Scenario Two: Typical Installation   53

Scenario Two: Typical Installation

Ten people need to be able to administer four DEFINITY systems and four AUDIX systems in two sites. "Site A" has three of the DEFINITY systems and AUDIX systems; "Site B" has one of each. All administration occurs from Site A, which has a LAN. Site A and Site B are linked only by a private telephone network.

Figure 11 illustrates one possible arrangement of hardware and software to meet these needs. For precise hardware configuration options, "Connecting the Hardware" on page 121.

iodr011 LJK 091198

Figure Notes
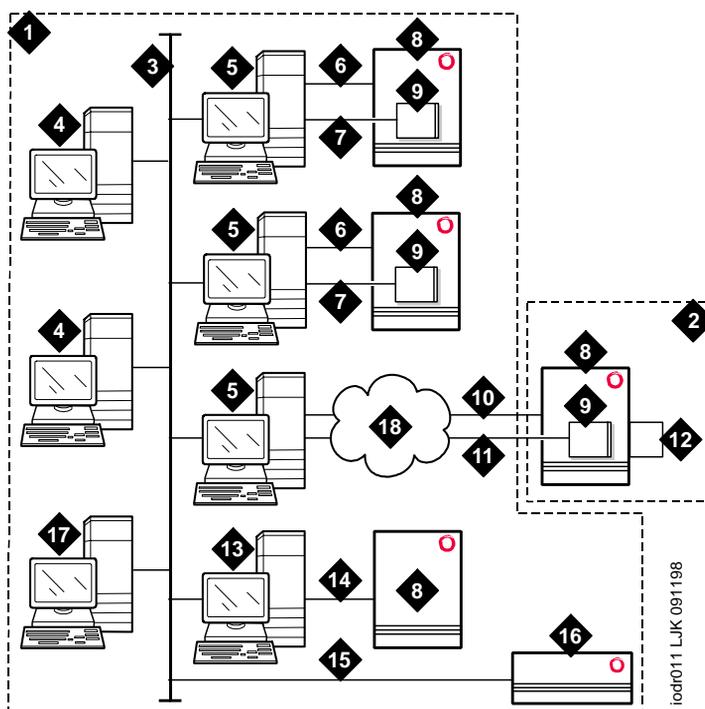
1. Site A
2. Site B
3. LAN
4. Client (x 10)
5. Server w/Conn Svc, Device Svc for DEF ECS and DEF AUDIX.
6. COM 1 direct to TERM port
7. COM 2 direct to Port B
8. DEFINITY ECS
9. DEFINITY AUDIX
10. Dial-up to DEFINITY ECS
11. Dial-up to DEFINITY AUDIX
12. Data module connecting Port A to digital line circuit pack
13. Server with Connection Service, Device Service for DEFINITY ECS and Intuity AUDIX
14. Direct or dial-up serial connection
15. Network connection
16. Intuity AUDIX
17. Server containing Core Services
18. Private Telephone Network

Figure 11.   Configuration for a typical installation

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8 Sample Installation Scenarios
Scenario Three: Infrequent Access 54

Scenario Three: Infrequent Access

Three switch administrators must administer two DEFINITY switches in two remote sites, using dial-up PSTN connections. They rarely need to make changes to these switches.

Figure 12 on page 55 illustrates one possible arrangement. For precise options, refer to "Connecting the Hardware" on page 121.

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8 Sample Installation Scenarios
Scenario Three: Infrequent Access 55

Site A

Client

Client

Client

LAN

Server w/Core Services,
Device Service for 2
DEFINITY ECS systems, and
Connection Svc

Analog modem dial-up
from COM 1

Site B

Analog modem
to TERM port

DEFINITY ECS

PSTN

Site C

Analog modem
to TERM port

DEFINITY ECS

iodr012 EWS 032200

Figure 12.   Configuration for a Low-Use Installation

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8 Sample Installation Scenarios
Scenario Four: Using Terminal Servers   56

Scenario Four: Using Terminal Servers

Three switch administrators in two locations need to be able to administer three
DEFINITY systems and one Intuity AUDIX. "Site A" has two administrators, "Site
B" has one and a terminal server.

Figure 13 on page 57 illustrates one possible arrangement. For precise options,
refer to "Connecting the Hardware" on page 121.

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8 Sample Installation Scenarios
Scenario Four: Using Terminal Servers   57

iodr014 EWS 051200
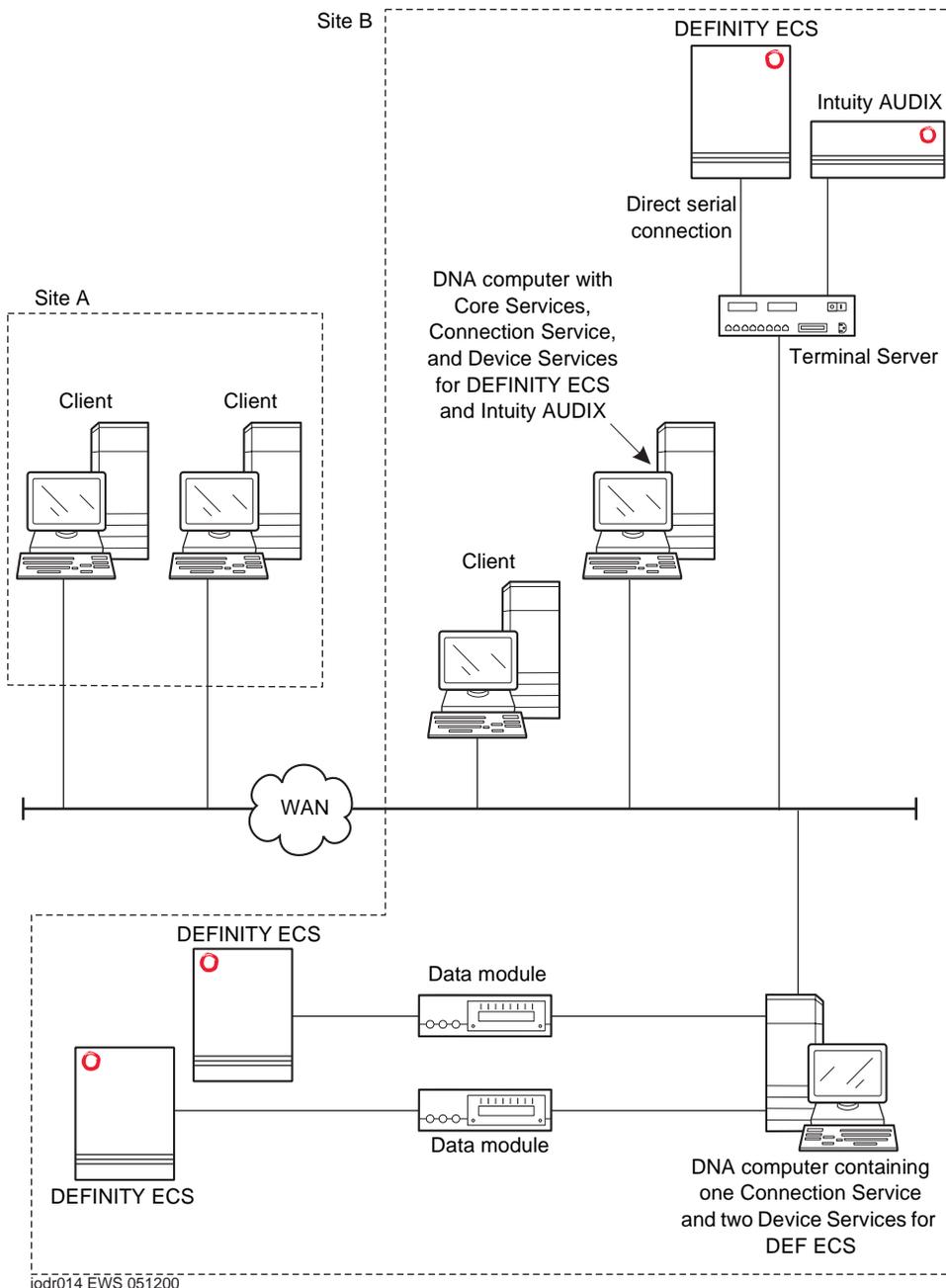
Figure 13.   **Configuration using terminal servers**

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8 Sample Installation Scenarios
Scenario Four: Using Terminal Servers   *58*

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9 Designing the Installation
Making Design Decisions   59

Designing the Installation

9

By now, you should have completed the "basic" questions on the Telephone and Data Network Information forms, and created a map of your network. You should also have read "Mapping Your Networks", "Placing NT Servers and DNA Components", "Understanding Connection Options", and "Sample Installation Scenarios".

Making Design Decisions

In the simplest scenario, the decision-making process is as follows: count the number of switches you want to support, divide by three, find that many NT servers, and place them on the network wherever they reduce network traffic and connection costs.

The formula above may be modified by your answers to the following questions:

1. Can you group your DEFINITY systems by version?

   If yes, you may be able to save hard disk space by putting the them on the same server.

2. Do you administer some DEFINITY systems heavily?

   If yes, you may want to put those DEFINITY systems on dedicated servers, or on servers with DEFINITY systems that are not administered much.

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9 Designing the Installation
Recording Design Decisions   60

Recording Design Decisions

To record your design decisions, complete the following tasks:

1. Complete the design questions on the Telephone Network Information Form (Questions 7-21, 26-33, and 38-44)

2. Complete the design questions on the Data Network Information Form (Questions 20-23 and 25).

3. Complete the "Upgrades and Purchases" on page 61.

4. Complete the "DNA Systems" on page 63.

5. Revise your network map diagram to include any new PCs you plan to add.

6. If you have a Lucent support agreement for DNA, or if you want Lucent support during the DNA warranty period, you must **also** complete the TSC Cutover Assistance Request form, Form PA002 (page 109).

➡ NOTE:

The completed worksheets contain highly sensitive information about your telephone system. **Keep them in a secure location** at all times, and do not give them to persons without adequate security clearance and a direct need to know the information.

7. Give a copy of the network map and all forms to DNA installers.

Installers need this design information to set up DNA, and you may want this information if you need to troubleshoot or modify your design.

Planning Permissions

After you make the above decisions, you must plan DNA permissions, as explained on page 65.

Upgrades and Purchases

Complete this form once for each DNA installation.
Give a copy of the complete form to the person(s) performing the installation.

1. Which of your switches, voice mail systems, and other telephony devices (if any) need to be upgraded?

Device Name	Old Make/Model/Version	Upgrade to

2. How many server PCs and client PCs do you currently have available for DNA? How many (if any) do you need to purchase?

	Server PCs	Client PCs
Currently available		
Need to purchase		

3. Which of your PCs (if any) need to be upgraded?

PC Name	Old Spec (what to upgrade)	Upgrade to

DNA Systems

What systems go on which PCs and how will they be connected? (Use whichever of the following lists you prefer).

By System Name

System Name	PC Name	Connection Method

By PC Name

PC Name	System Name	Connection Method

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10 Permissions Overview
Understanding Permissions Categories   65

Permissions Overview

10

DNA enables you to set permissions that control the access of DNA users to specific DEFINITY commands, to specific folders in the DNA Navigator window, and to other DNA capabilities. This section explains DNA's permissions and helps you specify them for each user.

Understanding Permissions Categories

DNA permissions fall into the following main categories:

Category	Privileges
Device permissions	These allow DNA users to run specified DEFINITY commands on a specific switch.
Folder permissions	These allow DNA users to access specific folders in the DNA Navigator.
Services permissions	Services permissions are of three types:
	Scheduling permissions allow DNA users to view or change other users' scheduled tasks.
	Call accounting permissions allow DNA users to generate and send data to Call Accounting packages.
	History Log permissions allow DNA users to view the history of tasks that other DNA users have executed using DNA.

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10 Permissions Overview
Understanding User Groups   66

Understanding User Groups

Setting up user groups can save you time when you assign permissions because you can define permissions once for the group rather than for each user individually. You may want to set up user groups by their permission levels, by company organization, by the devices they can administer, or by some other method. A single user can belong to many groups.

DNA comes with four predefined user groups, described below. Using these groups saves you the effort of creating a user group yourself. It may not save you time in assigning permissions, however, because the permissions for these groups are (for the most part) undefined. To assign permissions, see "Assigning Permissions" on page 214.

The table below describes the default permissions assigned to each predefined user group.

Predefined Group	Default Permissions
DNA Administrators	These are DNA "superusers." By default, DNA gives this group all permissions, including folder, device, and services permissions. Assign to this group only the DNA users that you want to have full access to all DNA windows and devices.
Device Administrators	These are day-to-day administrators of switches and voice mail systems. By default, DNA gives this group all device permissions (that is, members can execute all commands on a DEFINITY switch). You can modify the default device permissions (see "Assigning Device Permissions" on page 214). By default, DNA does not assign any folder permissions or services permissions to this group. If you want members to have specific folder or services permissions, you must assign them.
Device Browsers	These are typically managers or others who do not need to make changes to a switch, but need to be able to see switch administration screens and run reports. By default, DNA does not assign any permissions to this group. You must assign them yourself.
All Administrators	This group includes all DNA users. Do not add members to this group; DNA does it automatically for you. DNA does not assign any permissions to this group. You must assign them yourself. However, any permission you assign to this group is granted to every DNA user, so exercise caution when granting this group a permission.

In addition, you can create your own.

The next chapters explain how to plan device permissions, folder permissions, and services permissions.

Planning Device Permissions

11

DNA lets you specify which user groups can perform which commands on a given switch. You can do this in three ways:

- assign users to DNA's predefined user groups and accept the default permissions,

- assign users to DNA's predefined user groups and modify the default permissions to meet your needs, or

- create your own user groups and set the permissions from scratch.

The person who sets up device permissions on DNA will use a special window in the DNA Navigator (see). The window displays folders that correspond to the commands you can issue on a DEFINITY ECS system. You can view sub-commands (if there are any) by opening the given command folder.

A fully expanded tree displays approximately 700 DEFINITY commands, which are listed in the Device Permissions Worksheet.
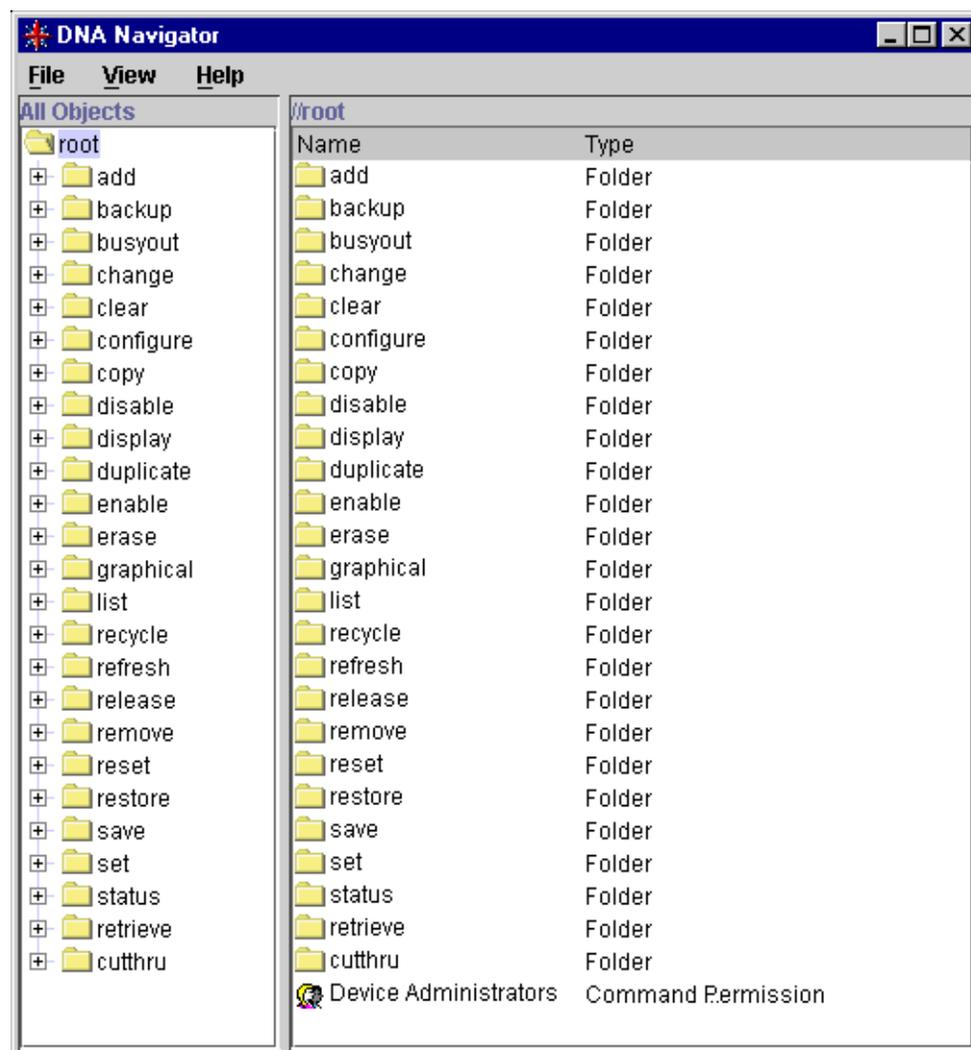
Figure 14.   Device Permissions window in DNA Navigator

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11 Planning Device Permissions
Understanding the permissions hierarchy   69

Understanding the permissions hierarchy

When you assign command permissions, the following principles apply:

1. You assign groups to commands, not the other way around.

   The commands in the tree are fixed. The groups or individuals assigned to each entry may vary.

2. If you give a group (or individual) permission to command, you grant access to that command and all its sub-commands, with the exception explained in Principle 3.

3. If you give a group permissions to a sub-command, you override the permissions *for that sub-command* that were granted via Principle 2.

   For example, if you give Person 1 permission to the "change" command, you thereby grant Person 1 permission to change every object. If you then give Person 2 permission to "change station," you undo Person 1's permission to "change station" until you expressly grant Person 1 that permission again by adding Person 1 into the "change station" folder.

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11 Planning Device Permissions
Understanding the permissions hierarchy 70

Example

Figure 15.   DEFINITY Command Tree, Root Level

In Figure 15, the "Device Administrators" group, the "Device Browsers" group, and
the individuals "mstukas" and "lula" have access to all DEFINITY commands
because their names are at the root level of the tree.

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11 Planning Device Permissions
Understanding the permissions hierarchy
71

If you wanted someone else (named Person1), who is not already assigned to the root level of the tree, to have permission to issue *only* the "Set" command, you might think that you could simply add Person1 to the "set" folder on the command tree. (See Figure 16.)
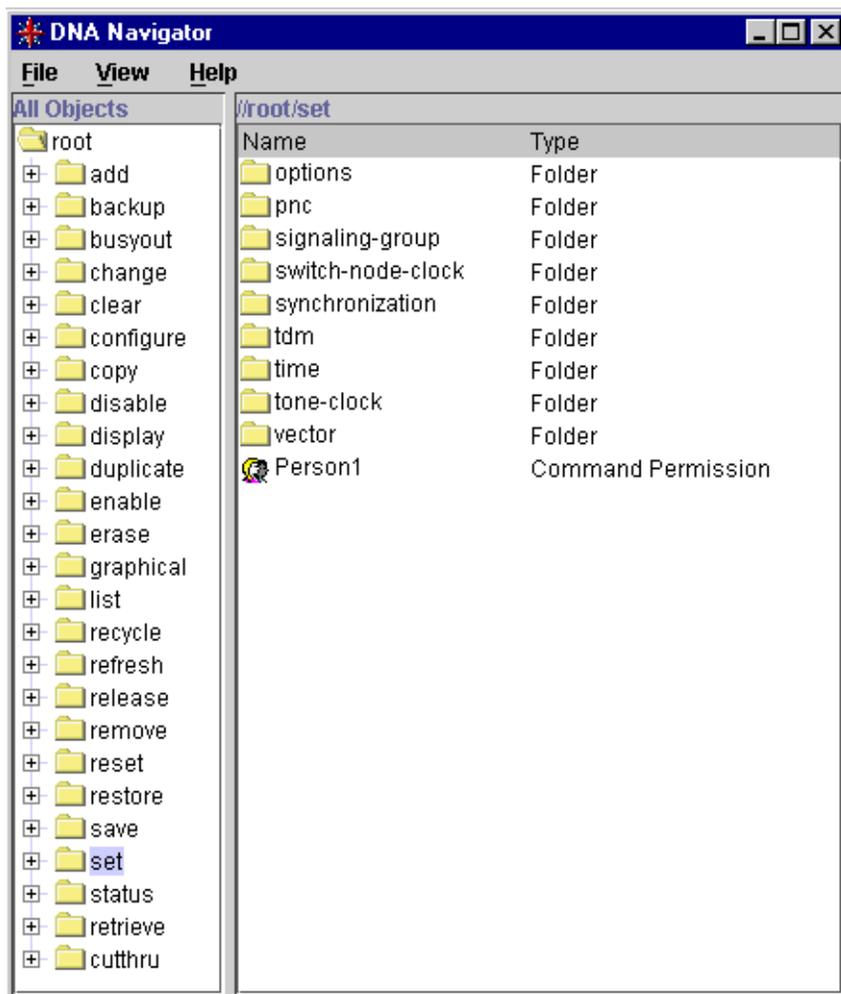
Figure 16.   DEFINITY Command Tree, "Set" Command

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11 Planning Device Permissions
Using DNA's Default User Group Permissions 72

However, as explained in Principle 3, doing so would undo the permission that anyone on the root level of the tree has to the "Set" command. In this example, this would mean:

- Person1 could issue "Set" commands on the switch.

- Person1 could not issue any other commands on the switch.

- Device Administrators, Device Browsers, mstukas, and lula could not issue any "Set" commands.

To enable them to issue "Set" commands, you must expressly put them in the "Set" command folder (along with Person1).

For this reason, when you fill out the Device Permissions Worksheet, if you indicate that you want someone to have permission to a sub-command, be sure to indicate, in the row dedicated to that sub-command on the form, who else you want to have access to that sub-command, too.

Using DNA's Default User Group Permissions

DNA comes with default user groups (see page 66) already set up. If you want to use the default user groups and accept the permissions that are already set up (also defined on page 66), complete the following steps:

1. Photocopy the first page of the Device Permissions Worksheet once for each switch that DNA will support.

2. Write the name and location of the switch.

3. List who you want to go in each predefined user group.

4. Give the completed form to the person who will be setting up permissions on DNA.

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11 Planning Device Permissions
Modifying Default User Group Permissions 73

Modifying Default User Group Permissions

If you want to use DNA's default user groups, but you want to change the permissions associated with a default user group, complete the following steps:

⇒ NOTE:

You cannot change the permissions for the DNA Administrator group. You can change the permissions for DNA's other default groups, but it may be preferable to create a new group entirely (see the next section) and assign the customized permissions to that (new) group.

1. Photocopy the Device Permissions Worksheet once for each switch that you will administer using DNA.

2. Write the name and location of the switch.

3. List who you want to go in each user group.

4. In the DEFINITY command table, under columns for Device Administrator or Device Browsers simply mark off any changes you want to make.

5. Give the completed form to the person who will set up permissions on DNA.

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11 Planning Device Permissions
Creating Custom User Groups and Permissions 74

Creating Custom User Groups and Permissions

You also can build your own user groups and set permissions to meet your needs. To do so, complete the following steps:

1. Photocopy the Device Permissions Worksheet once for each switch that you will administer using DNA.

2. Write the name and location of the switch.

3. On the user group form, pick an empty user group, write the name of the group at the top of the box, and then list the individuals you want in that group.

   If you want to set up permissions for a single person, you can still use this form. Just set up a user group for that person.

4. On the DEFINITY commands table, in the column corresponding to the user group that you want to create, check off the DEFINITY commands you want that user group to be able to perform.

5. Repeat this process for each user group on each switch that DNA supports.

6. Give the completed forms to the person who will set up permissions on DNA.

➡ NOTE:

If you give someone permission to execute a command that is at a lower level than a parent command (for example, "station" is at a lower level than "add") that has already been assigned to other users, you will also have to explicitly assign everyone else (that you want to have permission to that command) permission to the command. You *must* understand this concept before planning or setting up permissions. For a more detailed explanation, see "Understanding the permissions hierarchy" on page 69.

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DEFINITY Network Administration Planning, Installation, and Configuration,
555-233-602.

User Group #1: All Administrators

User Group #2: Device Administrators

User Group #3: Device Browsers

User Group #4:

User Group #5:

User Group #6:

User Group #7:

User Group #8:

User Group #9:

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
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User Group #10:

User Group #11:

User Group #12:

User Group #13:

User Group #14:

User Group #15:

User Group #16:

User Group #17:

User Group #18:

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
root	X	X																
add																		
abbreviated-dialing																		
7103A-buttons																		
enhanced																		
group																		
system																		
access-endpoint																		
administered-connection																		
agent-loginID																		
atm pnc																		
atm trunk-board																		
attendant																		
bcms-vustats loginIDs																		
best-service-routing																		
bri-trunk-board																		
cabinet																		
conference																		
conference override																		
coverage																		
answer-group																		
path																		
time-of-day																		
data module																		
ds1																		
eda-external-device-alrm																		
fiber-link																		
group-page																		
hunt-group																		
intercom-group																		
intra-switch-cdr																		
ip-route																		
login																		
masi																		
terminal																		
trunk-group																		
mcu-extension																		
modem-pool																		
personal-CO-line																		
pgate																		
pickup-group																		
pri-endpoint																		
radio-controller																		
second-digit																		
signaling-group																		
station																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
add (continued)																		
term-ext-group																		
test-schedule																		
trunk-group																		
vdn																		
vrt																		
backup disk																		
busyout																		
access-endpoint																		
board																		
cau																		
cdr-link																		
primary																		
secondary																		
data-module																		
disk																		
ds1-facility																		
fiber-link																		
host-adapter																		
journal-printer																		
pms-log																		
wakeup-log																		
link																		
mis																		
modem-pool																		
pms-link																		
pnc-standby																		
port																		
pri-endpoint																		
sp-link																		
station																		
tape																		
tdm																		
tone-clock																		
trunk																		
wfb																		
cancel hardware-group																		
change																		
aar																		
analysis																		
digit-conversion																		
abbreviated-dialing																		
7103A-buttons																		
enhanced																		
group																		
personal																		

Device Permissions Worksheet

For completion instructions, see of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
change (continued)																		
abbreviated-dialing																		
system																		
access-endpoint																		
adjunct-names																		
administered-connection																		
agent-loginID																		
alias station																		
alphanumeric-dial-table																		
alternate-frl																		
announcements																		
ars																		
analysis																		
digit-conversion																		
toll																		
atm																		
pnc																		
pnc-pairs																		
trunk-board																		
attendant																		
authorization-code																		
bcms-vustats loginIDs																		
best-service-routing																		
bri-trunk-board																		
bulletin-board																		
cabinet																		
call-screening																		
cama-numbering																		
carrier-frequencies																		
circuit-packs																		
communication-interface																		
hop-channels																		
links																		
processor-channels																		
conference																		
console-parameters																		
cor																		
cos																		
coverage																		
answer-group																		
path																		
remote																		
time-of-day																		
data-module																		
daylight-savings-rules																		
dialplan																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
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DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
change (continued)																		
digit-absorption																		
display-messages																		
ad-programming																		
auto-wakeup-dn-dst																		
call-identifiers																		
date-time																		
leave-word-calling																		
malicious-call-trace																		
miscellaneous-features																		
property-management																		
self-administration																		
softkey-labels																		
time-of-day-routing																		
transfer																		
view-buttons																		
vustats																		
ds1																		
eda-external-device-alrm																		
enp-number-plan																		
extended-pickup-group																		
feature-access-codes																		
fiber-link																		
group-page																		
hunt-group																		
integ-annc-brd-loc																		
intercom-group																		
intra-switch-cdr																		
ip-interfaces																		
ip-parameters																		
ip-route																		
isdn																		
mwi-prefixes																		
network-facilities																		
private-numbering																		
public-unknown-numbering																		
tsc-gateway																		
ixc-codes																		
listed-directory-numbers																		
locations																		
login																		
masi																		
path-parameters																		
terminal																		
trunk-group																		
mct-group-extensions																		

Device Permissions Worksheet

For completion instructions, see of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
change (continued)																		
mcu-extension																		
meas-selection																		
coverage																		
principal																		
route-pattern																		
trunk-group																		
wideband-trunk-group																		
modem-pool																		
mst																		
music-sources																		
node-names																		
node-routing																		
paging																		
code-calling-ids																		
loudspeaker																		
partition-route-table																		
password																		
permissions																		
personal-CO-line																		
pgate																		
pickup-group																		
pri-endpoint																		
radio-controller																		
reason-code-names																		
remote-access																		
report-scheduler																		
rhnpa																		
route-pattern																		
second-digit																		
signaling-group																		
sit-treatment																		
site-data																		
station																		
synchronization																		
system-parameters																		
atm																		
cdr																		
country-options																		
coverage-forwarding																		
crisis-alert																		
customer-options																		
duplication																		
features																		
hospitality																		
maintenance																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
change (continued)																		
system-parameters (continued)																		
mode-code																		
multifrequency-signaling																		
ocm-call-classification																		
security																		
special-applications																		
wireless																		
telecommuting access																		
tenant																		
term-ext-group																		
terminal parameters																		
603/302B1																		
6400																		
8400																		
test-schedule																		
time-of-day																		
toll																		
trunk-group																		
udp																		
vdn																		
vector																		
video-processors																		
vrt																		
vustats-display-format																		
clear																		
amw																		
all																		
asai																		
audix																		
msa																		
pms																		
audits																		
peak-hour																		
cumulative																		
errors																		
firmware-counters																		
hardware-group																		
isdn-testcall																		
link																		
measurements																		
ds1																		
ds1-facility																		
occupancy																		
security-violations																		
mst																		

Device Permissions Worksheet

For completion instructions, see of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
clear (continued)																		
pgate-port																		
pkt																		
port																		
configure tape																		
control conference																		
copy																		
announcements																		
bootimage																		
coredump																		
update-file																		
disable																		
administered-connection																		
all																		
login																		
MO																		
MO-all																		
mst																		
remote-access																		
syspend-alm-orig																		
synchronization-switch																		
test-number																		
wt-upgrade																		
display																		
aar																		
analysis																		
digit-conversion																		
abbreviated-dialing																		
7103A-buttons																		
enhanced																		
group																		
personal																		
system																		
access-endpoint																		
adjunct-names																		
administered-connection																		
agent-loginID																		
alarms																		
alias station																		
alphanumeric-dial-table																		
alternate-frl																		
announcements																		
ars																		
analysis																		
digit-conversion																		
toll																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
display (continued)																		
atm																		
pnc																		
pnc-pairs																		
ports																		
trunk-board																		
attendant																		
authorization-code																		
available-ports																		
2B																		
128K																		
192K																		
256K																		
320K																		
384K																		
512K																		
768K																		
1472K																		
1536K																		
1920K																		
b112/128K																		
b168/192K																		
b224/256K																		
b280/320K																		
b336/384K																		
b448/512K																		
b672/768K																		
t.120																		
ucc																		
bcms-vustats loginIDs																		
best-service-routing																		
bri-trunk-board																		
bulletin-board																		
button-location-aca																		
cabinet																		
call-screening																		
capacity																		
carrier-frequencies																		
circuit-packs																		
communication-interface																		
hop-channels																		
links																		
processor-channels																		
conference																		
console-parameters																		
cor																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
display (continued)																		
cos																		
coverage																		
answer-group																		
path																		
remote																		
sender-group																		
time-of-day																		
data-module																		
daylight-savings-rules																		
dialplan																		
digit-absorption																		
disabled-tests																		
ad-programming																		
auto-wakeup-dn-dst																		
call-identifiers																		
date-time																		
leave-word-calling																		
malicious-call-trace																		
miscellaneous-features																		
property-management																		
self-administration																		
softkey-labels																		
time-of-day-routing																		
transfer																		
view-buttons																		
vustats																		
ds1																		
eda-external-device-alrm																		
enp-number-plan																		
errors																		
events																		
extended-pickup-group																		
feature-access-codes																		
fiber-link																		
group-page																		
hunt-group																		
initcauses																		
integrated-annc-boards																		
intercom-group																		
internal-data																		
atd-pott																		
bconf-tab																		
bhist-tab																		
bept_rec																		
bri-port																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
display (continued)																		
internal-data (continued)																		
callr																		
conf-tab																		
ext-map																		
mhh-bd																		
hmm-pt																		
isg-callr																		
isg-cnfr																		
masi																		
mmi-tab																		
s-tab																		
sta-port																		
susr_rec																		
trk-port																		
uid-map																		
vc-tab																		
intra-switch-cdr																		
ip-interfaces																		
ip-parameters																		
ip-routine																		
isdn																		
mwi-prefixes																		
network-facilities																		
private-numbering																		
public-unknown-numbering																		
tsc-gateway																		
ixc-codes																		
listed-directory-numbers																		
locations																		
login																		
masi																		
path-parameters																		
terminal																		
trunk-group																		
mct-group-extensions																		
mcu-extension																		
meas-selection																		
coverage																		
principal																		
route-pattern																		
trunk-group																		
wideband-trunk-group																		
memory-configuration																		
modem-pool																		
mst																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
display (continued)																		
music-sources																		
node-names																		
node-routing																		
paging																		
code-calling-ids																		
loudspeaker																		
partition-route-table																		
permissions																		
personal-CO-line																		
pgate																		
pickup-group																		
port																		
pri-endpoint																		
radio-controller																		
reason-code-names																		
remote-access																		
rhnpa																		
route-pattern																		
second-digit																		
signaling-group																		
sit-treatment																		
site-data																		
software																		
station																		
svn-button-location																		
synchronization																		
system-parameters																		
atm																		
cdr																		
country-options																		
coverage-forwarding																		
crisis-alert																		
customer-options																		
duplication																		
features																		
hospitality																		
maintenance																		
mode-code																		
multifrequency-signaling																		
ocm-call-classification																		
offer-options																		
security																		
special-applications																		
wireless																		
telecommuting-access																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
display (continued)																		
tenant																		
term-ext-group																		
terminal-parameters																		
603/302B1																		
6400																		
8400																		
test-schedule																		
time																		
time-of-day																		
toll																		
trunk-group																		
udp																		
vdn																		
vector																		
video-processors																		
vrt																		
vustats-display-format																		
download																		
firmware																		
translation																		
update-file																		
duplicate																		
access-endpoint																		
administered-connection																		
data-module																		
masi terminal																		
station																		
enable																		
administered-connection																		
all																		
login																		
MO																		
MO-all																		
mst																		
remote-access																		
save-translation																		
suspend-alm-orig																		
synchronization-switch																		
test-number																		
wt-update																		
erase announcements																		
format disk																		
get vector																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
list																		
aar																		
analysis																		
digit-conversion																		
route-chosen																		
abbreviated-dialing																		
group																		
personal																		
aca-parameters																		
access-endpoint																		
administered-connection																		
agent-loginID																		
announcements																		
ars																		
analysis																		
digit-conversion																		
route-chosen																		
asg-history																		
atm pnc																		
authorization-code																		
bcms																		
agent																		
skill																		
split																		
summary																		
trunk																		
vdn																		
vustats loginIDs																		
best-service-routing																		
bridged-extensions																		
cabinet																		
call-forwarding																		
conference																		
configuration																		
all																		
atm																		
board																		
carrier																		
control																		
ds1																		
firmware-versions																		
port-network																		
radio-controller																		
software-versions																		
stations																		
trunks																		

Device Permissions Worksheet

For completion instructions, see of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
list (continued)																		
configuration (continued)																		
wt-stations																		
cor																		
coverage																		
answer-group																		
path																		
time-of-day																		
data-module																		
disabled-MOs																		
do-not-disturb																		
group																		
station																		
eda-external-device-alrm																		
emergency																		
extended-pickup-group																		
extension-type																		
fiber-link																		
group-page																		
groups-of-extension																		
history																		
hunt-group																		
integrated-annc-boards																		
intercom-group																		
internal-data login																		
intra-switch-cdr																		
ip-route																		
isdn-testcall																		
logins																		
marked-ports																		
masi																		
terminal																		
trunk-group																		
tsc																		
mct-history																		
measurements																		
aca																		
atm board																		
atm latency-histogram																		
atm pnc-latency																		
atm setup-events																		
attendant																		
blockage																		
call-rate																		
call-summary																		
cbc-trunk-group																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
list (continued)																		
measurements (continued)																		
cell-traffic																		
clan																		
communications-links																		
coverage-path																		
ds1																		
ds1-facility																		
expansion-services																		
hunt-group																		
ip-signaling groups																		
lar-route-pattern																		
lightly-used-trunk																		
load-balance																		
modem-pool																		
multimedia-interface																		
occupancy																		
outage-trunk																		
principal																		
route-pattern																		
security-violations																		
summary																		
tone-receiver																		
trunk-group																		
voice conditions																		
wideband-trunk-group																		
mcu-extension																		
members hunt-group																		
members trunk-group																		
mmi																		
modem-pool																		
monitored-station																		
mst																		
multimedia																		
endpoints																		
h.320-stations																		
ip-softphones																		
node-routing																		
partition-router-table																		
partitioned-group																		
performance																		
attendant																		
hunt-group																		
summary																		
trunk-group																		
personal-CO-line																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
list (continued)																		
pgate																		
pickup-group																		
pms-down																		
pri-endpoint																		
report-scheduler																		
route-pattern																		
set-data																		
signaling-group																		
station																		
suspend-alm-orig																		
sys-link																		
term-ext-group																		
test-schedule																		
testcalls																		
detail																		
summary																		
toll																		
all																		
restricted-call																		
toll-list																		
unrestricted-call																		
trace																		
advocate																		
ewt																		
previous																		
vdn																		
vector																		
trunk-group																		
udp																		
unstaffed-agents																		
usage																		
button-type																		
extension																		
hunt-group																		
vector																		
vdn																		
vector																		
video-processors																		
vrt																		
vustats-display-format																		
wakeup																		
incomplete																		
requests																		
station																		
load translation																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
mark port																		
monitor																		
bcms																		
skill																		
split																		
system																		
vdn																		
conference																		
health																		
security-violation																		
authorization-code																		
login																		
remote-access																		
station-security-codes																		
system																		
conn																		
scr																		
view1																		
view2																		
traffic																		
hunt-groups																		
trunk-groups																		
trunk																		
recycle carrier																		
refresh spe-standby																		
release																		
access-endpoint																		
board																		
cau																		
cdr-link																		
primary																		
secondary																		
data-module																		
disk																		
ds1-facility																		
fiber-link																		
host-adapter																		
journal-printer																		
pms-log																		
wakeup-log																		
link																		
mis																		
modem-pool																		
pms-link																		
pnc-standby																		
port																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
release (continued)																		
pri-endpoint																		
sp-link																		
station																		
tape																		
tdm																		
tone-clock																		
trunk																		
wfb																		
remove																		
abbreviated-dialing																		
7103A-buttons																		
enhanced																		
group																		
system																		
access-endpoint																		
administered-connection																		
agent-loginID																		
atm pnc																		
atm trunk-board																		
attendant																		
best-service-routing																		
bri-trunk-board																		
cabinet																		
conference																		
coverage																		
answer-group																		
path																		
time-of-day																		
data-module																		
ds1																		
eda-external-device-alrm																		
fiber-link																		
group-page																		
hunt-group																		
intercom-group																		
ip-route																		
login																		
masi																		
terminal																		
trunk-group																		
mcu-extension																		
modem-pool																		
personal-CO-line																		
pgate																		
pickup-group																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
remove																		
pri-endpoint																		
radio-controller																		
report-scheduler																		
second-digit																		
signaling-group																		
station																		
term-ext-group																		
test-schedule																		
trunk-group																		
update-file																		
vdn																		
vrt																		
reset																		
board																		
disk																		
esm																		
fiber-link																		
host-adapter																		
maintenance																		
packet-interface																		
pnc																		
port																		
port-network																		
system																		
tape																		
restore																		
announcements																		
disk																		
resume hardware-group																		
save																		
announcements																		
translation																		
set																		
options																		
pnc																		
secret-key																		
signaling-group																		
switch-node-clock																		
synchronization																		
tdm																		
time																		
tone-clock																		
vector																		
status																		
access-endpoint																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
status (continued)																		
administered-connection																		
all-conference																		
attendant																		
audits																		
cumulative																		
peak-hour																		
bri-port																		
cabinet																		
cdr-link																		
cleared-alarm-notif																		
conference																		
data-module																		
hardware-group																		
health																		
isdn-testcall																		
journal-link																		
pms-log																		
wakeup-link																		
link																		
logins																		
masi																		
terminal																		
trunk-group																		
mst																		
packet-interface																		
periodic-scheduled																		
pgate-port																		
pms-link																		
pri-endpoint																		
pnc																		
port-network																		
processor-channels																		
radio-controller																		
remote-access																		
signaling-group																		
spe																		
sp-link																		
station																		
switch-node																		
synchronization																		
sys-link																		
system																		
1st-cabinet																		
2nd-cabinet																		
3rd-cabinet																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
status (continued)																		
system (continued)																		
all-cabinets																		
to-conference																		
trunk																		
tsc-administered																		
tti																		
wt-upgrade																		
ww-conference																		
test																		
access-endpoint																		
alarms																		
analog-testcall																		
trunk																		
port																		
board																		
board																		
cau																		
cdr-link																		
primary																		
secondary																		
customer-alarm																		
data-module																		
disk																		
ds1-facility																		
ds1-loop																		
eda-external-device-alrm																		
environment																		
fiber-link																		
hardware-group																		
board																		
cabinet																		
carrier																		
pnc																		
port-network																		
spe																		
system																		
host-adapter																		
inads-link																		
isdn-testcall																		
journal-printer																		
pms-log																		
wakeup-log																		
led																		
link																		
maintenance																		

Device Permissions Worksheet

For completion instructions, see "Planning Device Permissions" on page 67 of
DNA Planning, Installation, and Configuration, 555-233-602.

DEFINITY Command Folder	User Group Number (see page 71 of this form)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
test (continued)																		
mass-storage																		
memory																		
MO																		

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12 Planning Folder Permissions
Understanding folder permissions   99

Planning Folder Permissions

12

To access the switches and voice mail systems using DNA, you must use the DNA Navigator window. The DNA Navigator window displays the switches and voice mail systems that you can administer using a tree-like directory structure. You can open the folders in the tree and click on objects in the folder to access different devices.

You can control who can access which folders in the tree by setting folder permissions. To set folder permissions, you use a special window in the DNA Navigator. (See .)

Understanding folder permissions

Folders have two permissions settings: *read*, or *read/write*. Users that have *read* permission can view the contents of the folder and may be able to access the devices (depending on the device permissions they have), but they cannot add or delete objects in the folder. Users that have *read/write* permission can access, add, and delete objects in the folder.

By default, DNA gives all users *read/write* permission to all folders placed in this window. Unless you change the permissions yourself, all DNA users have full access to all folders, including the ability to delete folders. You can modify the default permissions and set your own up in any way necessary to meet your company's needs.

In addition, by default, DNA always allows the DNA Administrators user group full permissions to everything in DNA. Even though the DNA Administrators group is not visible in the folder permissions window, this group always has full access to all folders.

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12 Planning Folder Permissions
Understanding folder permissions *100*
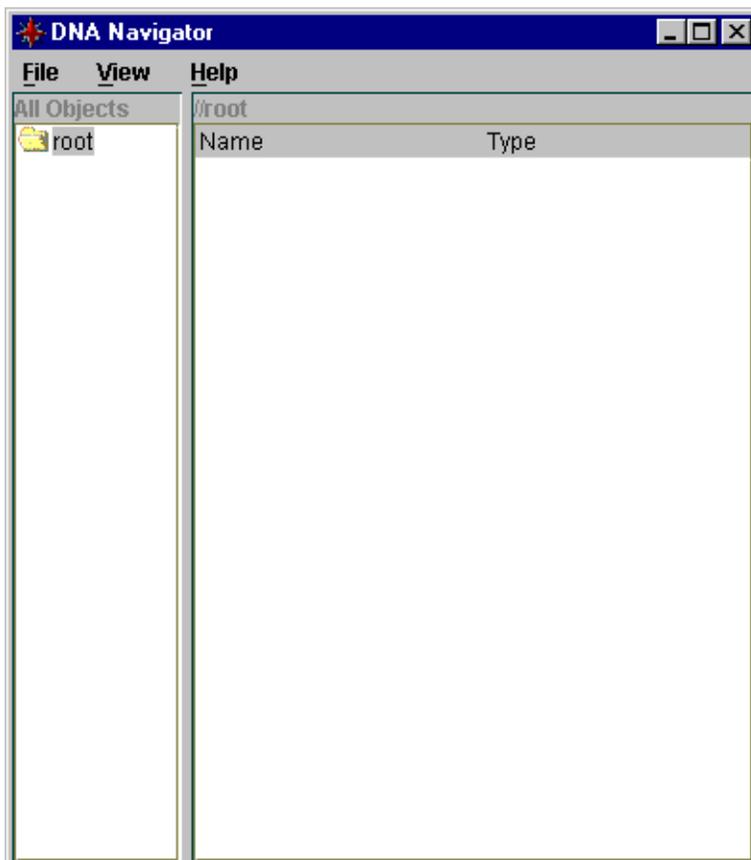
Figure 17.   Folder Permissions Window in DNA Navigator

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12 Planning Folder Permissions
Understanding folder permissions   101

Understanding folder permissions hierarchy

When assigning folder permissions, the following principles apply:

1. You assign user groups (or individuals) to folders, not the other way around.

   The folders you add to the window serve as the basis upon which you build folder permissions. Once you assign folders to the window, you will assign user groups or individuals to the folders.

2. If you give a group or individual permission to a folder, you grant access to that folder and all folders beneath it, with the exception explained in Principle 3.

3. If you give a group or individual permission to a sub-folder, you override the permissions *for that sub-folder* that were granted via Principle 2.

   For example, let's say you have a folder named "Tokyo," which contains three folders for the following switches: V6i, V6r, and V6csi. If you give Person 1 *read/write* permission to the "Tokyo" folder, you thereby grant Person 1 permission to access and change all folders within it. If you then give Person 2 *read/write* permission to "V6i," you undo Person 1's permission to "V6i" until you expressly grant Person 1 that permission again.

For this reason, when you complete the Folder Permissions Worksheet, if you indicate that you want someone to have access to a sub-folder, be sure to indicate, in the row dedicated to that sub-folder on the form, who else you want to have access to that sub-folder, too.

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12 Planning Folder Permissions
   Understanding folder permissions   *102*

Example

In the following example, we created folders that correspond to the geographical locations in a hypothetical DNA installation. (See Figure 18.) Within each location folder, we created folders for the different types of devices that DNA will support at the location. We can then place the icons for individual switches and voice mail systems within these folders.

We also created folders for the people who will use DNA in our hypothetical installation. We created a folder for Management; managers might want a folder that no one else can modify. We created a folder for each administrator; individual administrators also want folders that no one else can modify. Finally, we created a "shared" folder that all administrators could access, add objects to, and delete objects from.
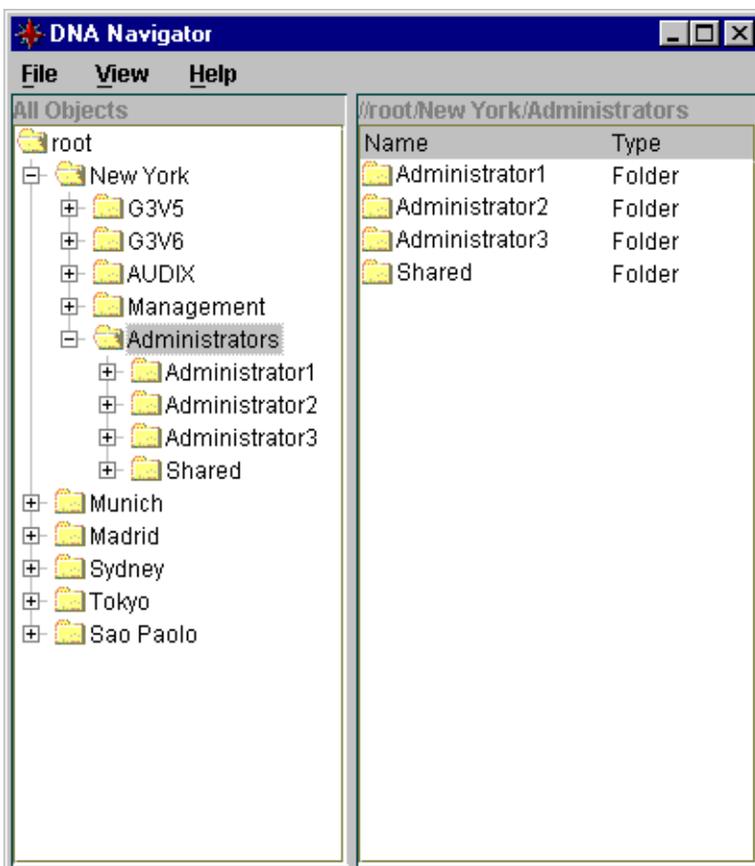
Figure 18.   Folders for a Hypothetical Installation

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12 Planning Folder Permissions
Restricting default permission to read-only   103

Restricting default permission to *read-only*

If you do not want all DNA users to automatically have full *read/write* permissions to all folders, you can add the "All Administrators" user group to the root level of the tree and give this group *read-only* permission. Because the group is at the root level of the tree and no permissions have been specified for folders that are more indented on the tree, the *read-only* permission applies to all folders, which prevents DNA users from modifying any folders *by default*. However, you can still give specific groups or individuals *read/write* permissions, which we will do next.

Assigning write permissions

You can assign *read/write* permissions to specific folders simply by placing the user groups (and individuals) that you want to have this permission in the given folder, and specifying that their permission should be *read/write*. As you place permissions, remember:

- Granting someone permission to a folder gives them permission to its sub-folders, unless you give someone else permission to the sub-folder.

  For example, if you grant UserGroup1 *read/write* permission to the New York folder and you do not specify any other permissions for the sub-folders, then anyone in UserGroup1 can access, add, and delete objects in all of the New York sub-folders, including the Management folder, which you may want to keep secure. For this reason, in this hypothetical scenario, you would want to be careful when assigning *read/write* permissions to high levels on the tree.

- If you give someone permission to a sub-folder, you may be taking permissions away from a group or individual that has permissions at a higher level in the tree.

  For example, if you give UserGroup1 *read/write* permission to the New York folder, and then you give PersonX *read/write* permission to the G3V5 folder within it, UserGroup1 will no longer have *read/write* permission to the G3V5 folder until you expressly place them in that folder.

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12 Planning Folder Permissions
Mixing permissions   *104*

Mixing permissions

You can give one person *read/write* permission to a folder and give another person *read-only* permission to the same folder. In this way, you can give managers (for example) permission to modify the Management folder, while allowing everyone else permission only to view the folder.

Creating shared folders

To create a "shared" folder, in which multiple people or groups can not only view the objects in the folder, but add or delete objects, simply add the user groups (or individuals) to the folder and give all of them *read/write* permissions to that folder.

Folder Permissions Worksheet

Photocopy as many times as necessary to list all your DNA folders.
See reverse for instructions.

Folder, Sub-Folder or Object ↓	User Groups (fill in the blanks)					

Folder Permissions Worksheet

1. If you have more folders, more users, or more user groups than you can list on this form, photocopy this form as many times as you need before proceeding.

2. Down the left column, list the folders you want to create, list any folders that go inside folders, and list which devices or button label printer services should go in each folder.

   Some companies create folders for different geographical locations and then put devices (switches, voice mail systems, and so on) within them. Other companies create folders for different kinds of devices (G3r; AUDIX, and so on). In the same way, for button label printer services, you may want to put each one in the appropriate location folder, or create a special folder for all of your button label printer services.

3. Across the top, list the accounts (individuals or user groups) that will use DNA.

4. On folder rows only, in each cell, indicate whether you want the given individual or group to have *read-only* or *read/write* permissions to the folder.

   You cannot assign permissions for an object from the DNA Navigator. Therefore, for the rows that correlate to a device or a button label printer service, do not indicate *read* or *read/write* permissions.

5. Give the completed worksheet to the person who will set up permissions on DNA.

   > **NOTE:**
   > If you give someone permission to a sub-folder when the parent folder already has permissions assigned to other users, you will also have to explicitly assign those "other users" (or whomever you want to have permission to that sub-folder) permission to the sub-folder. This is a tricky concept that you *must* understand before planning or setting up permissions. For a more detailed explanation, see "Planning Folder Permissions" on page 99.

Services Permissions Worksheet

Service →	Administration			Scheduling		History Log
User/User Group ↓	Access Admin Windows	Access Call Acctg Windows	Shut Down DNA	View Scheduled Events	Change Scheduled Events	View Others' Logs

Services permissions include:

- ■ access to DNA Administration windows

  This enables the user to add devices or button label printer services to the DNA Navigator, create user groups, create DNA user logins, change permissions, and so on.

- ■ access to Call Accounting windows

  This enables the user to extract data from the switch and send it to a shared file that a third-party call accounting software package can use.

- ■ ability to shut down DNA

  This enables the user to terminate the operation of DNA server software everywhere it is installed. Shutting down DNA prevents anyone from logging into a DNA client, halts all administration through DNA, and halts all pending administration tasks that have been scheduled using DNA.

- ■ ability to view all scheduled tasks

  Without this permission, DNA users can view only the tasks that they scheduled. Granting this permission enables the user to view tasks that other users have scheduled.

- ■ ability to change all scheduled tasks

  Without this permission, DNA users can change only the tasks that they scheduled. Granting this permission enables the user to change tasks that other users have scheduled.

- ■ ability to view other administrators' history logs.

  The history log contains a detailed list of the user's actions and whether these actions succeeded or failed. Without this permission, an administrator cannot view other administrators' history logs.

Do this

1. Down the left column, list your user accounts.

2. In each cell, indicate whether you want the given individual or group to have the permission shown on the right.

3. Give the completed worksheet to the person who will be setting up permissions on DNA.

TSC Cutover Assistance Request Form

Form PA002
Fax to **1 (303) 488-3365** or
e-mail to **fsireno@lucent.com**

If you have a Lucent support agreement, or if you want Lucent support during the DNA warranty period, install pcAnywhere on all computers that host a DNA server component. Then, complete this form and send it to to *System Management Provisioning*. For technical assistance, call **1 (800) 242-2121**.

1. **DNA Release:** _____   2. **Version:** _____

3. **DNA Components to be installed:**

   ❑ Core Services   ❑ Client

   ❑ Button Label Printer Service   ❑ Device Service

   ❑ Enhanced Number Portability (ENP) option   ❑ Connection Service

4. **Customer Contact Information:**

   Company Name: _____   IL: _____

   Address: _____

5. **Project Contact Information:**

Title	Name	Phone	E-mail
Customer:			
Customer:			
Account Exec:			
Project Manager:			
Design Specialist:			
Software Administrator			
Software Specialist			

6. **Enable DNA on your switch:** Call the phone number listed for your area and request that Lucent turn on the DNA customer option (PEC number 13362).

CT, DC, DE, MA, ME, NH, NJ, NY, PA, RI, VA, VT, WV	1-800-632-0900
AL, AR, FL, GA, KS, KY, MO, MS, NC, SC, TN	1-800-922-1523
IA, IL, IN, MI, MN, ND, NE, OH, SD, WI	1-800-572-0036
LA, OK, TX	1-800-527-6889
AZ, Southern CA, NM, HI	1-800-829-8888
AK, Northern CA, CO, ID, MT, NV, OR, UT, WA, WY	1-800-642-4690

TSC Cutover Assistance Request Form
Form PA002

7.   **Network Map:**

Attach a drawing of the configuration of the DNA portion of the network, referencing the specific customer and locations. Preferred file formats include Microsoft Word or Microsoft PowerPoint. The TSC does not currently support Visio, so any Visio drawings must be embedded in one of the previous types of files.

8.   **pcAnywhere Information:**

Access Number:

Login:

Password:

9.   **Server Information:**

Make/Model:

Operating System:

Processor:

RAM:

Virtual Memory:

HD Capacity:

LAN OS:

Server Name:

IP Domain Name:

FQDN:

IP Address:

Subnet Mask:

Gateway:

DNS Server:

WINS Primary:

TSC Cutover Assistance Request Form
Form PA002

10. **Client Information:**

Make/Model:

Operating System:

Processor:

RAM:

HD Capacity:

LAN OS:

11. **Switch Information:**

	Switch 1	Switch 2	Switch 3	Switch 4
Switch Name:				
Version Number:				
DNA Upload Login ID:				
DNA Upload Password:				
DNA Upload Secret Key:				
DNA Admin Login ID:				
DNA Admin Password:				
DNA Admin Secret Key:				
User Login:				
User Password:				
8400B Data Module:				
HG Number:				
HG Lead Ext:				
System Port:				
Server COM Port:				
COM Port IRQ:				

TSC Cutover Assistance Request Form

Form PA002

12. **Voice Mail Information:**

	AUDIX 1	AUDIX 2	AUDIX 3	AUDIX 4
AUDIX Name:				
Version Number:				
Passwords:				
User Login:				
User Password:				
IP Address:				

13. **Other Device:**

	Device 1	Device 2	Device 3	Device 4
Device Name:				
Version Number:				
Passwords:				
User Login:				
User Password:				
IP Address:				

14. **Button Label Printer Information:**

	Printer 1	Printer 2	Printer 3	Printer 4
Device Name:				
Device Type:				
UNC:				

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13 Preparing Switches for DNA
Using a Supported Switch and Software Load 113

Preparing Switches for DNA

13

Before you can use DEFINITY Network Administration (DNA) to administer a DEFINITY ECS, the following activities must happen. A number of these activities require you to call Lucent. To avoid calling Lucent repeatedly, read all of the sections first, and then determine what activities you need Lucent to perform, before you call.

These activities are explained in the sections that follow.

1. You must be using a supported switch and software load.

2. Lucent must enable each of your switches to work with DNA.

3. If you want to use Access Security Gateway (ASG), your switch must have ASG enabled.

4. On each switch that you plan to use with DNA, you must add a login that DNA can use to upload translations, and then have Lucent enable it.

5. On each switch that you plan to use with DNA, you must add a login that DNA can use for all other administration.

   A DEFINITY ECS can support only 11 logins, and you need two for DNA. However, to keep DNA synchronized with your switch, no one should administer your switch using a tool other than DNA. For this reason, you should not use more than two logins per switch: the ones you set up for DNA.

Using a Supported Switch and Software Load

DNA works with the switch releases and software loads that are listed in . If your switch is not listed, or is not running one of the listed loads, contact your Lucent representative to arrange an upgrade.

If you must upgrade a switch and you already have DNA installed, be sure to execute all scheduled DNA tasks and custom scripts for that switch, and then save translations, before upgrading.

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13 Preparing Switches for DNA
Enabling Your Switch to Work with DNA 114

Enabling Your Switch to Work with DNA

Your switch will not work with DNA until Lucent turns on the DNA customer option on that switch. To determine whether your switch has the DNA customer option turned on, complete the following steps:

1. Log in to your switch

2. Type **display system-parameters customer-options** and press Enter.

   If the DEFINITY Network Admin field has a value of **y**, then your switch will work with DNA. If it does not, ask Lucent to turn on the DNA customer option.

To turn on the DNA customer option, complete the following steps:

1. Call Lucent (see numbers below).

2. Give Lucent your Installation Location (IL) number.

3. Request that Lucent turn on the DEFINITY Network Administration customer option (request PEC number 13362).

If you are calling from the United States...	Dial...
CT, DC, DE, MA, ME, NH, NJ, NY, PA, RI, VA, VT, WV	1-800-632-0900
AL, AR, FL, GA, KS, KY, MO, MS, NC, SC, TN	1-800-922-1523
IA, IL, IN, MI, MN, ND, NE, OH, SD, WI	1-800-572-0036
LA, OK, TX	1-800-527-6889
AZ, S. CA, NM, HI	1-800-829-8888
AK, N. CA, CO, ID, MT, NV, OR, UT, WA, WY	1-800-642-4690

If you are calling from outside the United States, contact your Lucent representative.

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13 Preparing Switches for DNA
　　Enabling ASG on Your Switch　　　　　　　　　　　　　　　　　　　　115

Enabling ASG on Your Switch

ASG is an optional security feature that prevents unauthorized persons from accessing your switch. To determine if the ASG feature is enabled on your switch, complete the following steps:

1. Log in to your switch.

2. Type **display system-parameters customer-options** and press Enter.

   If the `Access Security Gateway` field has a value of **y**, then your switch has the ASG feature.

If your switch does not have the ASG feature enabled, and you want it, you can order it by completing the following steps:

1. Call Lucent .

2. Give Lucent your Installation Location (IL) number.

3. Request that Lucent turn on the ASG customer option.

Creating the Upload Login

On each DEFINITY ECS that you will be administering using DNA, you must create a new login that DNA can use to upload switch translations to the server. For security purposes, "upload" and "logoff" are the only DEFINITY commands that this login can issue. To create the login, complete the following steps:

> **NOTE:**
> To perform this task, you must have permissions on the switch to add and change logins.

1. Log into the DEFINITY ECS.

2. At the command line, enter **add login** <**name**>

   Where <name> is the word you want to use as the login.

> **NOTE:**
> *Do not reuse existing logins* or login names that have been commonly used in the past. DNA must have a *unique* login so that when it resynchronizes its databases with the supported switch, it can distinguish between its own changes and those that were made using a tool other than DNA.

3. Enter your password.

4. Verify that the `Login Type:` field is set to **customer**.

5. Verify that the `Service Level:` field is set to **non-super-user**.

6. In the `Login's password:` field, enter the password that you want to associate with the login.

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13 Preparing Switches for DNA
Creating the Upload Login 116

7. In the `Reenter Login's password:` field, enter the password again.

8. If you want this login to use ASG, then in the `Access Security Gateway?` field, enter a **y** and complete the fields on page 2 of the form.

   If you do not see this field, your switch does not have the ASG feature enabled. To enable it, see "Enabling ASG on Your Switch" on page 115.

Field	Description
Blocked	Enter **y** to temporarily disable the login ID from accessing the switch through ASG.
System Generated Secret Key?	To use ASG, either you or the switch must generate a Secret Key, which you must enter on the switch and in DNA when you are configuring it. Enter a **y** to have the switch generate the Secret Key.
Secret Key	If you want to create your own Secret Key, enter it in this field. Be sure to note the Secret Key; you will need it to configure DNA and/or any response generation devices. The Secret Key must conform to the following requirements: ■ It must be 20 digits long. ■ Each digit must be between 0 (zero) and 7, inclusive. ■ The last number must be 0 (zero). ■ The next-to-last number must be 0 (zero), 2, 4, or 6.
Expiration Date	To disable this login after a certain date, enter the date in this field. If you enter a value in the Number of Sessions field, then the login will be disabled based on whichever criteria is satisfied first.
Number of Sessions	Enter the number of times this login ID can be used to access the switch (between 1 and 999). If you enter a value in the Expiration Date field, then the login will be disabled based on whichever criteria is satisfied first.
Restrict Days of Week	Enter **y** to restrict this login from accessing the switch on the specified day of the week.
Restrict From Time and Restrict To Time	Enter the time interval during which this login ID is blocked from accessing the switch.

9. Press Enter to submit the form.

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13 Preparing Switches for DNA
Creating the Administrative Login   117

10. Call Lucent .

11. Give Lucent your Installation Location (IL) number.

12. Give Lucent the login name you just added, and request that they enable the `System Management Data Transfer Only?` field on the first page of the Change Permissions form for your switch.

➡ NOTE:
> Only Lucent can set the `System Management Data Transfer Only?` field to **y**. DNA will not work with your switch until this is enabled.

Creating the Administrative Login

The DNA administrative login is what DNA uses to make changes to your switch. DNA cannot make changes to your switch if you do not create this login.

To perform this task, you must have permissions on the switch to add and change logins.

1. Access the DEFINITY System administration screens.

2. At the command line, enter **add login** <**name**>

    Where <name> is the word you want to use as the login.

➡ NOTE:
> *Do not reuse existing logins* or login names that have been commonly used in the past. DNA must have a *unique* login so that when it resynchronizes its databases with the supported switch, it can distinguish between its own changes and those that were made outside of DNA.

3. Enter your password.

4. Verify that the `Login Type:` field is set to **customer**.

5. Verify that the `Service Level:` field is set to **super-user**.

6. In the `Login's password:` field, enter the password that you want to associate with the administrative login.

7. In the `Reenter Login's password:` field, enter the password again.

8. If you want this login to use ASG, then in the `Access Security Gateway?` field, enter a **y** and complete the fields on page 2 of the form.

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If you do not see this field, your switch does not have the ASG feature enabled. To enable it, see "Enabling ASG on Your Switch" on page 115.

Field	Description
Blocked	Enter **y** to temporarily disable the login ID from accessing the switch through ASG.
System Generated Secret Key?	To use ASG, either you or the switch must generate a Secret Key, which you must enter on the switch and in DNA when you are configuring it. Enter a **y** to have the switch generate the Secret Key.
Secret Key	If you want to create your own Secret Key, enter it in this field. Be sure to note the Secret Key; you will need it to configure DNA and/or any response generation devices.
	The Secret Key must conform to the following requirements:
	■ It must be 20 digits long.
	■ Each digit must be between 0 (zero) and 7, inclusive.
	■ The last number must be 0 (zero).
	■ The next-to-last number must be 0 (zero), 2, 4, or 6.
Expiration Date	To disable this login after a certain date, enter the date in this field. If you enter a value in the Number of Sessions field, then the login will be disabled based on whichever criteria is satisfied first.
Number of Sessions	Enter the number of times this login ID can be used to access the switch (between 1 and 999). If you enter a value in the Expiration Date field, then the login will be disabled based on whichever criteria is satisfied first.
Restrict Days of Week	Enter **y** to restrict this login from accessing the switch on the specified day of the week.
Restrict From Time and Restrict To Time	Enter the time interval during which this login ID is blocked from accessing the switch.

9. Press Enter to submit the form.

10. At the command line, enter **change permissions** <**name**>.

   Where <name> is the word you used as the login in Step 2. The system displays the Command Permission Categories form.

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11. Set the fields to **y** to enable DNA to perform the listed activity.

    Use the table below to decide which of the fields to set to **y**. If you think that even one of your DNA users will need to perform one of these tasks, set the field to **y**. If you set the field to **n**, no DNA users will be able to perform the listed task.

    If you set a field to **y**, it does not mean that *all* of your DNA users will be able to perform the listed task. You can tell DNA exactly which users should be able to perform which tasks when you configure DNA. For now, however, enter a **y** in any field that *any* of your DNA users will need.

    The fields listed in the following table are for a basic switch configuration. Your switch may display more than the following fields. For help setting those fields, refer to the *DEFINITY Enterprise Communications Server Administrator's Guide*, 555-233-502.

If this field is set to Y...	Then...
Display Admin and Maint Data?	DNA can issue display, list, monitor, status, and schedule (reports) commands.
System Measurements?	DNA can issue the list measurements command (vs/si systems only).
System Mgmt Data Transfer Only?	DNA can upload translations from the switch to a local hard drive on a DNA server. **Only Lucent can set this field, and will set it to Y only for one login (your upload login).**
Administer Stations?	DNA can issue add, change, duplicate, or remove commands for stations, data modules, and associated features, such as abbreviated dialing, vectors, and routing tables.
Administer Trunks?	DNA can issue commands to administer AAR/ARS, trunk groups, remote access, and route patterns.
Administer Features?	DNA can issue commands to administer feature-related system parameters, such as coverage paths, class of service, class of restriction, system parameters, authorization codes, and security.
Administer Permissions?	DNA can issue commands to administer logins and command permissions.
Restricted Objects?	You can list any objects that DNA cannot access, like stations, trunks, or hunt groups. Since you probably want DNA to be able to access any object on the switch, be sure this field is set to n.

12. Press Enter.

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Enabling Your Switch to Work with ENP   120

Enabling Your Switch to Work with ENP

DNA's Enhanced Number Portability feature requires that your switch network use node number routing and 4 or 5-digit dialing.

Your network must also be configured in such a way that moving a station from one switch to another makes the exact same change in all of the affected routing tables. DNA's ENP feature does not support network configurations in which different changes must be made to different routing tables.

This book does not endeavor to explain how to set up a network of switches. If you have questions or need help designing your switch network, refer to your DEFINITY ECS system documentation or contact your Lucent representative.

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Reusing Existing Connections   121

Connecting the Hardware

14

This chapter explains how to connect DEFINITY Network Administration (DNA) computers to DEFINITY, DEFINITY AUDIX, and Intuity AUDIX Systems, and how to test the connections.

For a quick summary of connection options and an illustration of one theoretical network setup, see .

Reusing Existing Connections

If you are currently using another system administration program, the connections you need for DNA are most likely already installed and functioning. In that case, you may be able to skip this chapter. You may want to test the connections to each device to be sure they work, however. In that case, refer to the specific section in this chapter dealing with that type of connection.

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Protecting Telephone Network Circuits   *122*

Protecting Telephone Network Circuits

Any equipment you use to make connections over the Public Switched Telephone Network (PSTN) must have circuit protection to protect central office equipment and your own.

Your telephony service provider will perform the installation, and will know which type of circuit protection is preferred for your region and your particular interface to the central office. However, the following books explain, in general, what type of circuit protection you need under what circumstances.

DEFINITY ECS Version	Refer to these DEFINITY books:
R5r, R6r, R7r, or R8r Multi-Carrier Cabinet and R5si, R6si, R7si, or R8si Multi-Carrier Cabinet	DEFINITY Enterprise Communications Server Installation and Test for Multi-Carrier Cabinets (Release 5, 6, 7, or 8 as appropriate) "Install Sneak Fuse Panels" in Chapter 2 Document Number: 555-230-112.
R5si, R6si, R7si, or R8si Single-Carrier Cabinet	DEFINITY Enterprise Communications Server Installation and Test for Single-Carrier Cabinets (Release 5, 6, 7, or 8 as appropriate) "Install Sneak Fuse Panels" in Chapter 2 Document Number: 555-230-894.
R5vs or R6vs	DEFINITY Enterprise Communications Server Installation and Upgrades (for Release 5 or 6, as appropriate) "Install Sneak Fuse Panels" in Chapter 2 Document Number: 555-230-124.
R6csi, R7csi, or R8csi	DEFINITY Enterprise Communications Server Installation, Upgrades, and Additions for Compact Modular Cabinets "Install Sneak Fuse Panels" in the section called "Install Equipment Room Hardware" in Chapter 1 Document Number: 555-230-128.

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Connecting to DEFINITY Systems

When connecting DNA computers to DEFINITY Systems, follow the guidelines below:

- Use a direct connection whenever possible.

  For direct connections, use the TERMINAL port (SAT port). Using any other port interferes with the proper operation of DNA.

- Do not dial into a DEFINITY switch via the INADS port.

  Dialing into the INADS port prevents the switch from reporting alarms to Lucent, and prevents Lucent personnel from remotely servicing the switch. Also, in some countries, connecting to the INADS port can be a violation of local laws.

- Connect to the PPN, not an EPN.

  Connect DNA computers to the Processor Port Network (PPN), not the Expansion Port Network (EPN). Connecting via the EPN can compromise the security of your switch.

- Connect to a circuit pack type that matches the line type.

  When you wire a connection into the DEFINITY switch, the circuit pack type must match the type of phone line you are using. See "Determining DEFINITY Line Types" on page 124.

- Wire to the Main Distribution Frame (MDF) according to Figure 36 on page 226.

If you cannot connect DNA computers to DEFINITY Systems via a direct connection, use one of the following methods:

- terminal server (page 125)
- terminal server and ADU (page 126)
- terminal server and data module (page 129)
- ADUs (page 133)
- data modules (page 136)
- modem pooling (page 140)

➡ NOTE:

In all of the diagrams on the following pages, EIA-232 cables can be used in place of RS-232 cables.

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Determining DEFINITY Line Types

If you are using dial-up connections to communicate with a DEFINITY ECS, the circuit pack that you connect to on the DEFINITY ECS must match the type of phone line you are using to reach it. For example, if you are using an 8400B+ data module, the line type is digital, so you must connect to a port on a 2-wire digital line circuit pack. The following table lists which circuit pack type to connect to for common connection devices.

For this Connection Device...	Use this Circuit Pack...
ADU	Data line circuit pack
8400B+ data module	2-wire digital line circuit pack
7400A or 7400B+ data module	4-wire digital line circuit pack
analog modem	analog line circuit pack

➤ NOTE:
For non-United States installations, use the international line-type equivalents with A-law companding.

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Connecting to DEFINITY Systems 125

Connecting to DEFINITY via Terminal Server
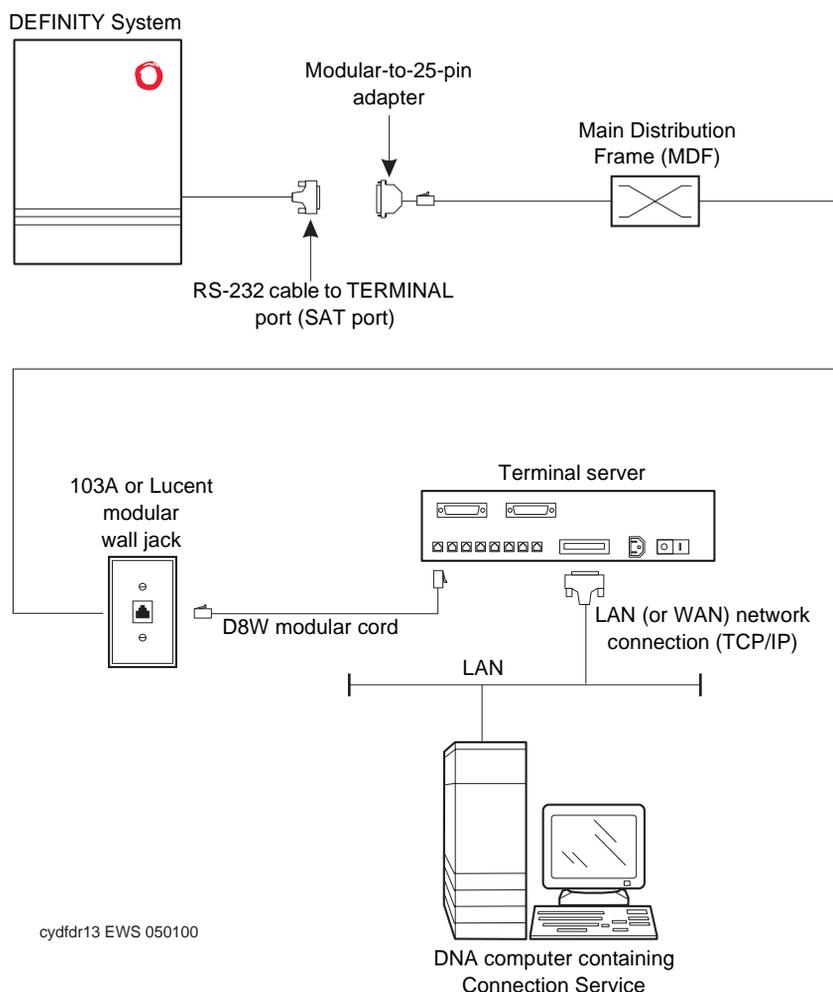
Figure 19.   Connecting to DEFINITY via Terminal Server

1. Connect the equipment as shown in Figure 19.

$\Rightarrow$ NOTE:

When using a terminal server, be sure to use *asynchronous* serial ports only and ensure that all in-band flow control (for example, Xon/Xoff) is disabled and that you have a clear 8-bit connection (that is, no 7-bit telnet protocol).

Testing Hardware Connections

1. Using a terminal emulator, telnet to the DEFINITY System.

A login prompt should appear. If no login prompt appears, check the wiring at the wall jack, the MDF, and the terminal server.

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Connecting to DEFINITY
via Terminal Server and ADU
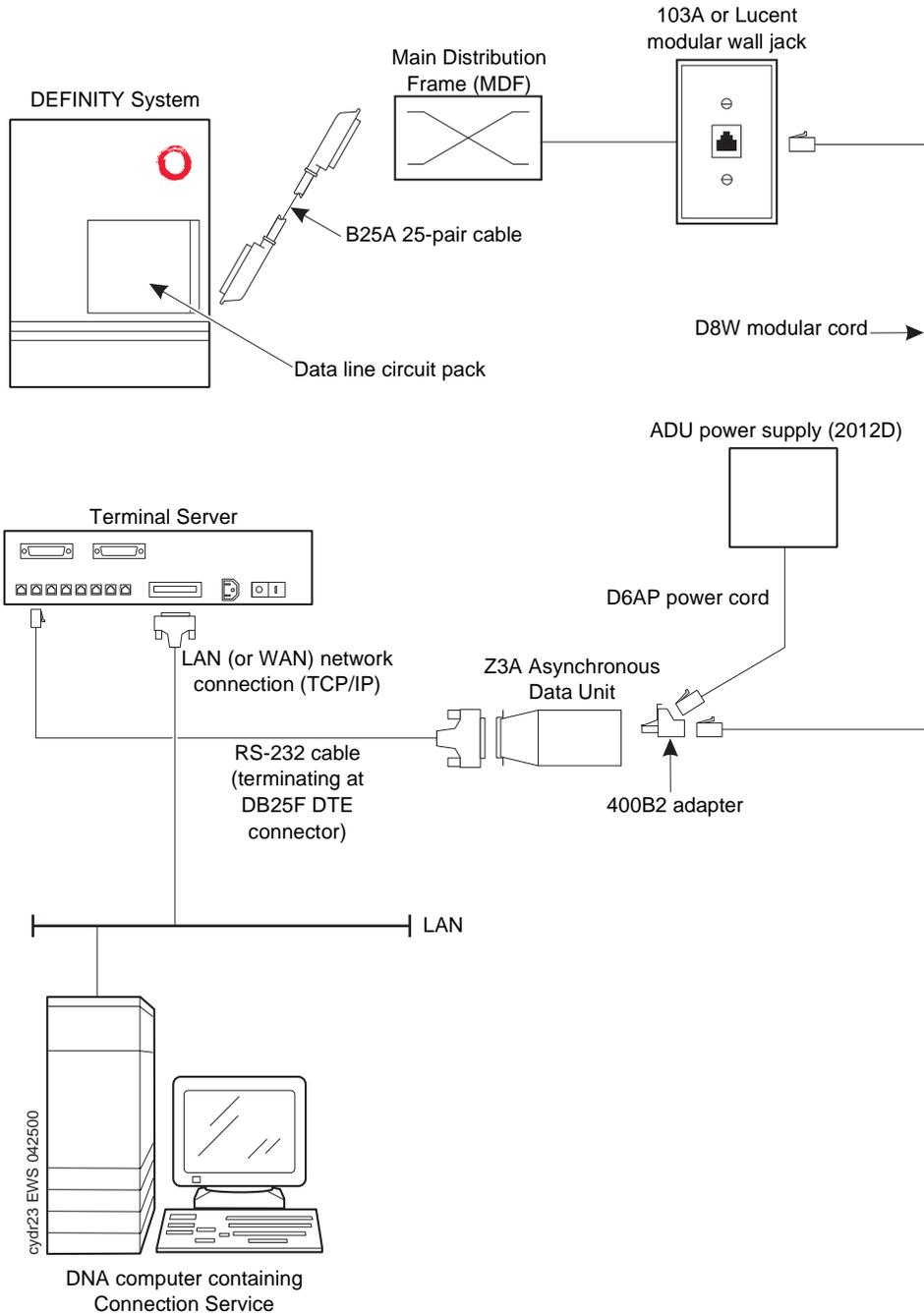
Figure 20.   Connecting to DEFINITY via Terminal Server and Data Module

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1. Connect the equipment as shown in .

2. Configure the Terminal Server to issue a *break* signal followed by a carriage return on the serial interface, when a network session is established.

⇒ NOTE:

When using a terminal server, be sure to use *asynchronous* serial ports only and ensure that all in-band flow control (for example, Xon/Xoff) is disabled and that you have a clear 8-bit connection (that is, no telnet protocol).

Adding an ADU to the Switch

1. If system access ports and hunt groups have not been set up, set them up as explained on .

2. Using a SAT, access the DEFINITY system administration screens and enter **add data-module** <**number**> or **add data-module next**.

3. In the Type: field, enter **data-line.**

4. In the Port: field, enter the location of the data line circuit pack connected to the ADU (for example 01B0801).

5. In the Special Dialing Option: field, enter **hot-line**.

6. In the Abbreviated Dialing Dial Code: field, enter the extension of the system access port hunt group from Step 1.

7. On page 2 of the Add Data-Module form, set the fields as shown in Table 1.

Table 1.   Add Data-Module Settings (ADU)

Field Name	Setting
Kybd Dialing?	y
Busyout?	n
Configuration?	n
Speeds?	9600 (y) (all others n)
Permit Mismatch?	n
Dial Echoing?	y
Disconnect Sequence:	two-breaks
Answer Text?	y
Parity:	even
Connected Indication?	y

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Testing Hardware Connections

1. Using a terminal emulator, telnet to the terminal emulator and connect to the DEFINITY System.

   A login prompt should appear. If no login prompt appears, check the wiring at the wall jack, the MDF, and the terminal server.

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Connecting to DEFINITY via Terminal Server and Data Module
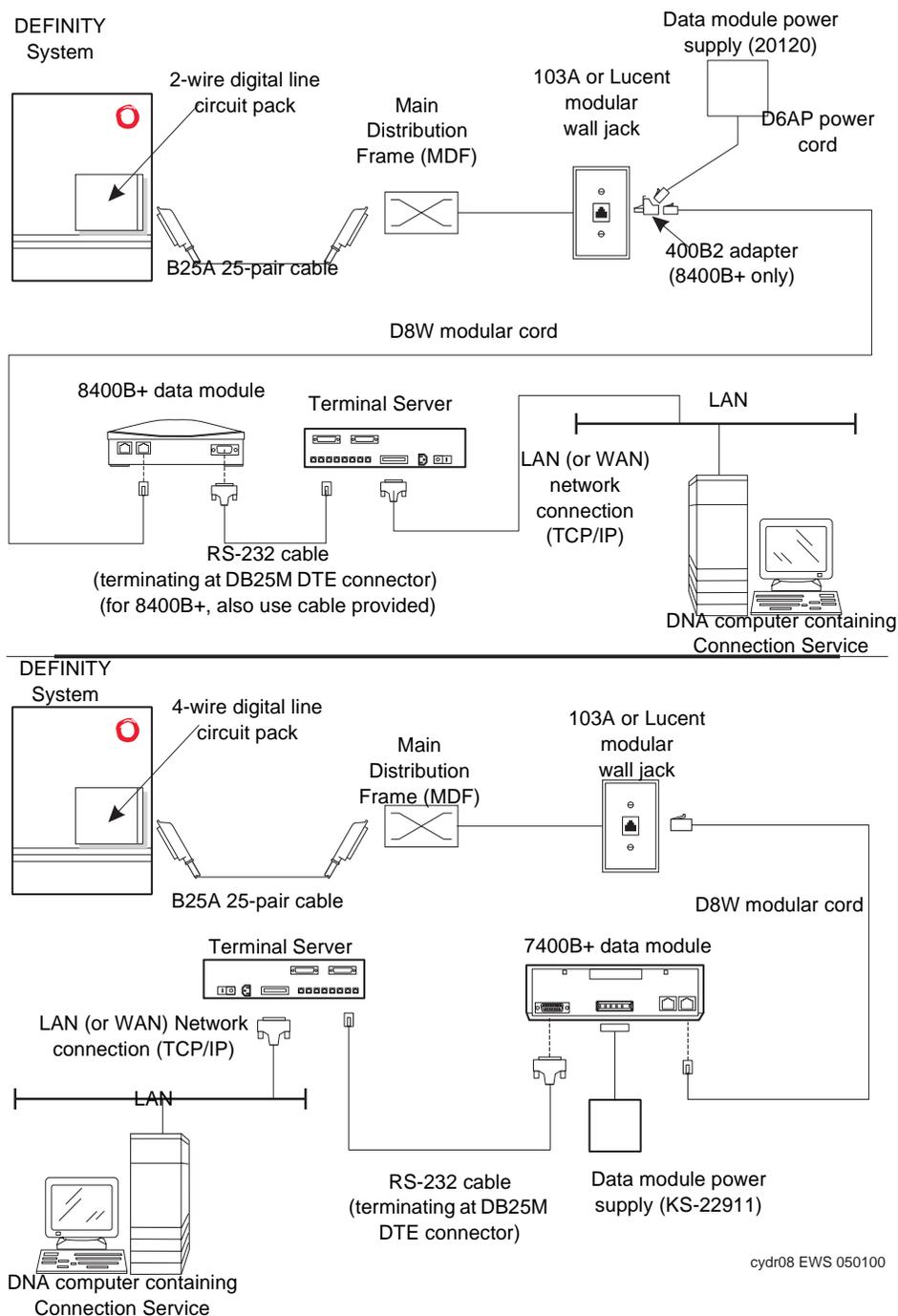
Figure 21.   Connecting to DEFINITY via Terminal Server and Data Module

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1. Connect the equipment as shown in Figure 21 on page 129.

    In place of a 7400B+ data module, you can use a 7400A data module. If
    you do, set the 7400A to AT Commands Mode. See below.

2. Wire the digital line circuit pack to the wall jack as follows:

    -   For a 7400B+, wire to the second and third pair of the wall jack.

    -   For an 8400B+, wire to the first pair of the wall jack.

3. Configure the Terminal Server to issue an 'ATDT' command followed by a
    carriage return to the serial interface, when a network session is
    established.

➡ NOTE:

When using a terminal server, be sure to use *asynchronous* serial ports only
and ensure that all in-band flow control (for example, Xon/Xoff) is disabled
and that you have a clear 8-bit connection (that is, no telnet protocol).

Setting a 7400A Data Module to AT Commands Mode

You can use a 7400A in place of a 7400B+ if you set the 7400A to AT Commands
mode. To do so, complete the following steps:

1. Press NEXT/NO until SET INTERFACE? displays.

2. Press ENTER/YES.

3. Press NEXT/NO until AT COMM? displays.

4. Press ENTER/YES.

    The unit automatically resets itself.

Adding a Data Module to the Switch

1. If system access ports and hunt groups have not been set up, set them up
    as explained on page 145.

2. Using a SAT, add the data module to the switch by entering **add
    data-module** <**number**> or **add data-module next**.

3. In the Type: field, enter **pdm**.

4. In the Port: field, enter the location of the digital line circuit pack connected
    to the data module (for example 01A1503).

5. In the Special Dialing Option: field, enter **hot-line**.

6. In the Abbreviated Dialing Dial Code: field, enter the extension of the
    system access port hunt group from Step 1.

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Testing Hardware Connections

In the table below, find your data module and follow the instructions for testing and troubleshooting it.

Type of Data Module	How to Test and Troubleshoot
8400B+	The red LED should be steady on. If the red and green LEDs are blinking, the unit is not communicating with the DEFINITY System. Check the wiring at the MDF, wall jack, and the 8400B+.
7400B+	The Power and TR LEDs should be steady on. If the Power and Data LEDs are blinking, the unit is not communicating with the DEFINITY System. Check the wiring at the MDF, wall jack, and the 7400B+.
7400A	Set the 7400A to *AT Commands* mode. See "Setting the Data Module to DCE Mode" on page 137. The Power LED must be steady on. The DTR, DSR, DCD, RTS, and CTS settings must be highlighted in the display. If the Power LED is blinking, the data module is not communicating with the DEFINITY System. Check the wiring at the MDF, wall jack, and 7400A.

Setting the Data Module Operating Mode

1. Connect an RS-232 cable from the DNA computer to the data module.

   If you are using an 8400B+, connect the DNA computer to the data module using the supplied adapter cable.

2. Using a terminal emulator, set the emulation to *vt100* mode.

3. Type **AT** at the prompt and press Enter.

   The data module should return an OK. If it does not, be sure that a standard RS-232 or EIA-232 cable is connected (not a null modem cable).

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4. Set the operating mode as described in the following table.

Type of Data Module	How to set the operating mode
8400B+	Type **ATS24=1** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.
7400B+	Type **AT&F** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.
7400A	Type **AT&F** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.

5. Disconnect the terminal from the data module and reconnect the data module to the system cabling.

Setting the 7400B+ Options

1. Set the DIP switches for the 7400B+ using Table 4.

    The DIP switches are located inside the unit. Refer to the 7400B+ instruction book.

2. If any switches were set in Step 1, cycle the power to the data module so that the firmware can read the new switch settings.

Table 2. DIP Switch Settings (7400B+)

Option	DIP Switch	Setting
No Telephone Connected	1	On
Data Metering	5	Off
Suppress Touch-tone/Dial Tone	6	Off
Speakerphone Disable/Enable	7	Off
Busyout on Local Loop	8	Off
Unused DIP Switches	2, 3, and 4	Off

Testing Hardware Connections

1. Using a terminal emulator, telnet to the terminal serer and connect to the DEFINITY System.

    A login prompt should appear. If no login prompt appears, check the wiring at the wall jack, the MDF, and the terminal server.

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Connecting to DEFINITY
via Asynchronous Data Unit
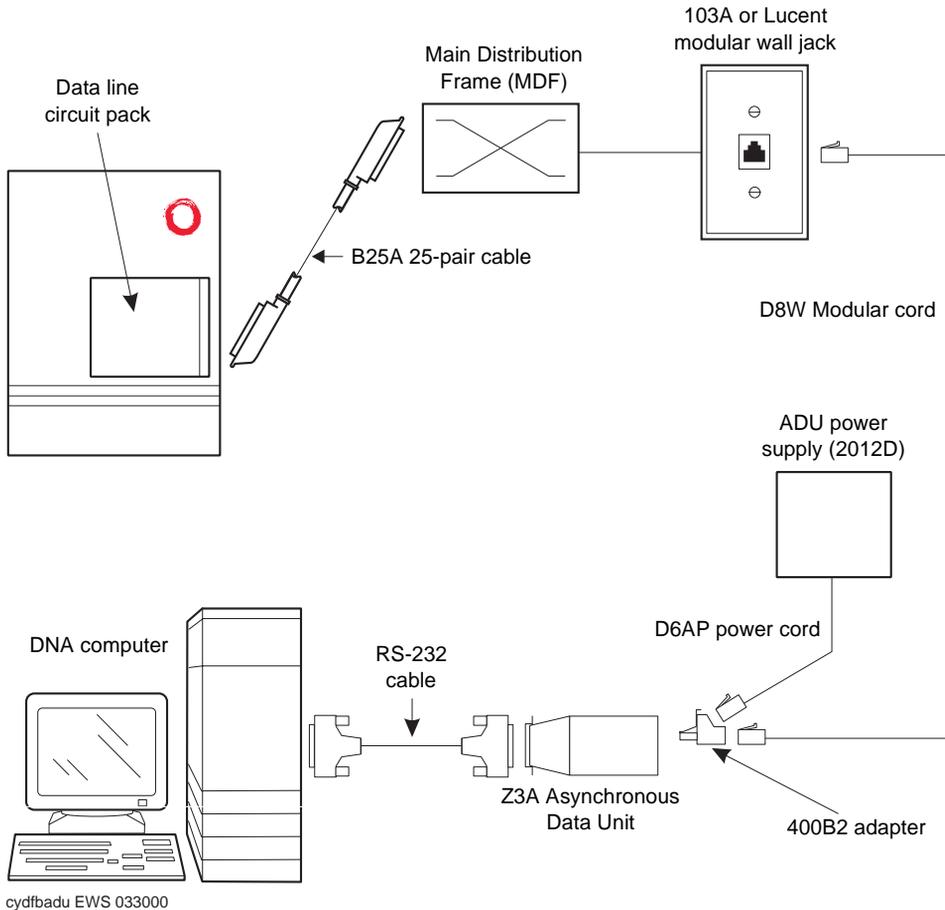
Figure 22.   Connecting to DEFINITY via ADU

   1. Connect the equipment as shown in Figure 22.

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Adding an ADU to the Switch

1. Using a SAT, access the DEFINITY system administration screens and enter **add data-module <number>** or **add data-module next**.

2. In the `Type:` field, enter **data-line.**

3. In the `Port:` field, enter the location of the data line circuit pack connected to the ADU (for example 01B0801).

4. On page 2 of the Add Data-Module form, set the fields as shown in .

Table 3.   Add Data-Module Settings (ADU)

Field Name	Setting
Kybd Dialing?	y
Busyout?	n
Configuration?	n
Speeds?	9600 (y) (all others n)
Permit Mismatch?	n
Dial Echoing?	y
Disconnect Sequence:	two-breaks
Answer Text?	y
Parity:	even
Connected Indication?	y

5. If system access ports and hunt groups have not been set up, set them up as explained on .

Testing Hardware Connections

1. Using a terminal emulator, connect to the serial port that the ADU is connected to, and set the emulation to *vt100* mode.

2. Press the Break key on the keyboard.

   A login prompt should appear. If it does not, the MDF wiring, the wall jack wiring, or an ADU is bad. Perform the loop-around test.

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Performing a loop-around test

In the following tests, a Windows PC with terminal emulation may be substituted for the dumb terminal.

1. Cut the modular plug off one end of a *spare* D8W modular cord.

2. Connect the blue lead to the black lead.

3. Connect the orange lead to the yellow lead.

4. Disconnect the D8W modular cord (Figure Note 7) from the 400B2 adapter (Figure Note 8) at the DNA computer location.

5. Plug the loop-around test cord (that you made in Steps 1-3) into the 400B2.

6. Disconnect the RS-232 cable from the DNA computer and connect it to an RS-232 connector on a dumb terminal.

7. Set the dumb terminal to full duplex mode and echo off.

8. Type a few characters on the keyboard.

   The characters should display exactly as you type them. If they do, the wiring is correct between Figure Notes 8 and 13 in Figure 22 on page 133. The problem lies between Figure Notes 10 and 1. Check port connections and cabling. If that does not resolve the problem, check the wiring at the MDF and wall jacks.

   If the characters do *not* display exactly as you type them, the ADU is defective or the wiring is incorrect between Figure Notes 8 and 13 (including 9 and 10). Check port connections and cabling.

9. When finished troubleshooting, remove the loop-around test cord and reconnect the system cabling. See Figure 22 on page 133.

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Connecting to DEFINITY via Data Module
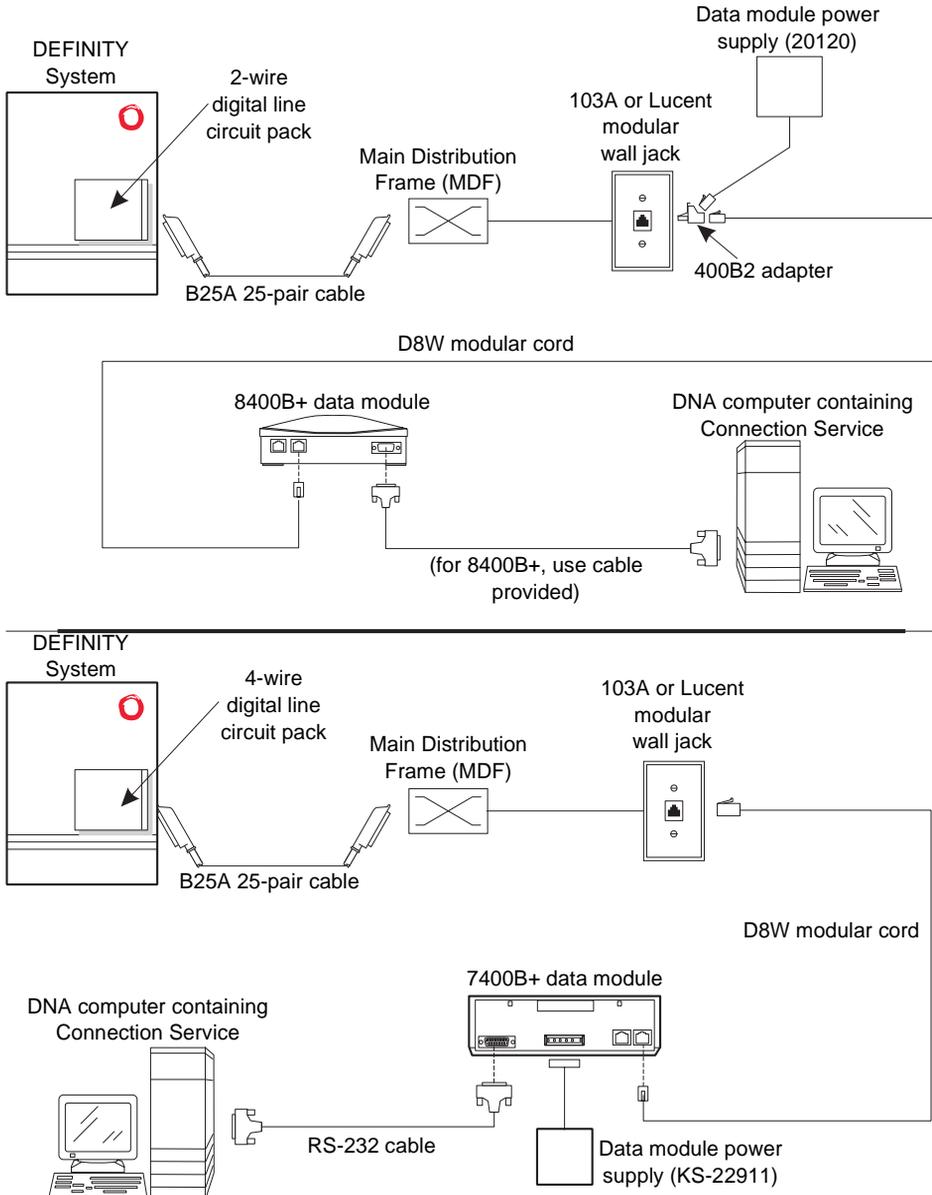
cydfdr08 EWS 032900

Figure 23. Connecting to DEFINITY via Data Module

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> **NOTE:**
> With a 7400A or 7400B+ data module, use a 4-wire digital line circuit pack.
> With the 8400B+ data module, use a 2-wire digital line circuit pack.

1. Connect the equipment as shown in .

   In place of a 7400B+ data module, you can use a 7400A data module. If you do, set the 7400A to DCE Mode. See below.

2. Wire the digital line circuit pack to the wall jack as follows:

   - For a 7400B+, wire to the second and third pair of the wall jack.

   - For an 8400B+, wire to the first pair of the wall jack.

Setting the Data Module to DCE Mode

1. Cycle the power to the data module.

   The unit performs a self test and displays its operating mode.

2. Observe the display.

   a. If the display reads DCE mode, proceed to the next section.

   b. If the display reads DTE mode, complete the following steps:

      1. Remove the power cord from the unit.

      2. Remove the cover from the top rear of the unit.

      3. Remove the mode select circuit board and turn it around.

      4. Replace the cover.

      5. Connect the power cord.

         The unit performs a self test.

> **NOTE:**
> The power LED must be steady on. If the power LED is blinking, the data module is not communicating with the DEFINITY ECS. Check the wiring at the MDF, wall jacks, and data module.

Adding a Data Module to the Switch

1. Using a SAT, add the data module to the switch by entering **add data-module** <**number**> or **add data-module next**.

2. In the Type: field, enter **pdm**.

3. In the Port: field, enter the location of the digital line circuit pack connected to the data module (for example 01A1503).

4. If system access ports and hunt groups have not been set up, set them up as explained on .

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Testing Hardware Connections

In the table below, find your data module and follow the instructions for testing and troubleshooting it.

Type of Data Module	How to Test and Troubleshoot
8400B+	The red LED should be steady on. If the red and green LEDs are blinking, the unit is not communicating with the DEFINITY System. Check the wiring at the MDF, wall jack, and the 8400B+.
7400B+	The Power and TR LEDs should be steady on. If the Power and Data LEDs are blinking, the unit is not communicating with the DEFINITY System. Check the wiring at the MDF, wall jack, and the 7400B+.
7400A	Set the 7400A to DCE mode. See . The Power LED must be steady on. The DTR, DSR, DCD, RTS, and CTS settings must be highlighted in the display. If the Power LED is blinking, the data module is not communicating with the DEFINITY System. Check the wiring at the MDF, wall jack, and 7400A.

Setting the Data Module Operating Mode

1. Connect an RS-232 cable from the DNA computer to the data module.

   If you are using an 8400B+, connect the DNA computer to the data module using the supplied adapter cable.

2. Using a terminal emulator, connect to the serial port that the data module is connected to, and set the emulation to *vt100* mode.

3. Type **AT** at the prompt and press Enter.

   The data module should return an OK. If it does not, be sure that a standard RS-232 or EIA-232 cable is connected (not a null modem cable).

4. Set the operating mode as described in the following table.

Type of Data Module	How to set the operating mode
8400B+	Type **AT&F** and press Enter. Type **ATS24=1** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.
7400A 7400B+	Type **AT&F** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.

5. Disconnect the terminal from the data module and reconnect the data module to the system cabling.

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Setting the 7400B+ Options

1. Set the DIP switches for the 7400B+ using Table 4.

   The DIP switches are located inside the unit. Refer to the 7400B+ instruction book.

2. If any switches were set in Step 1, cycle the power to the data module so that the firmware can read the new switch settings.

Table 4. DIP Switch Settings (7400B+)

Option	DIP Switch	Setting
No Telephone Connected	1	On
Data Metering	5	Off
Suppress Touch-tone/Dial Tone	6	Off
Speakerphone Disable/Enable	7	Off
Busyout on Local Loop	8	Off
Unused DIP Switches	2, 3, and 4	Off

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Connecting to DEFINITY via Modem Pooling
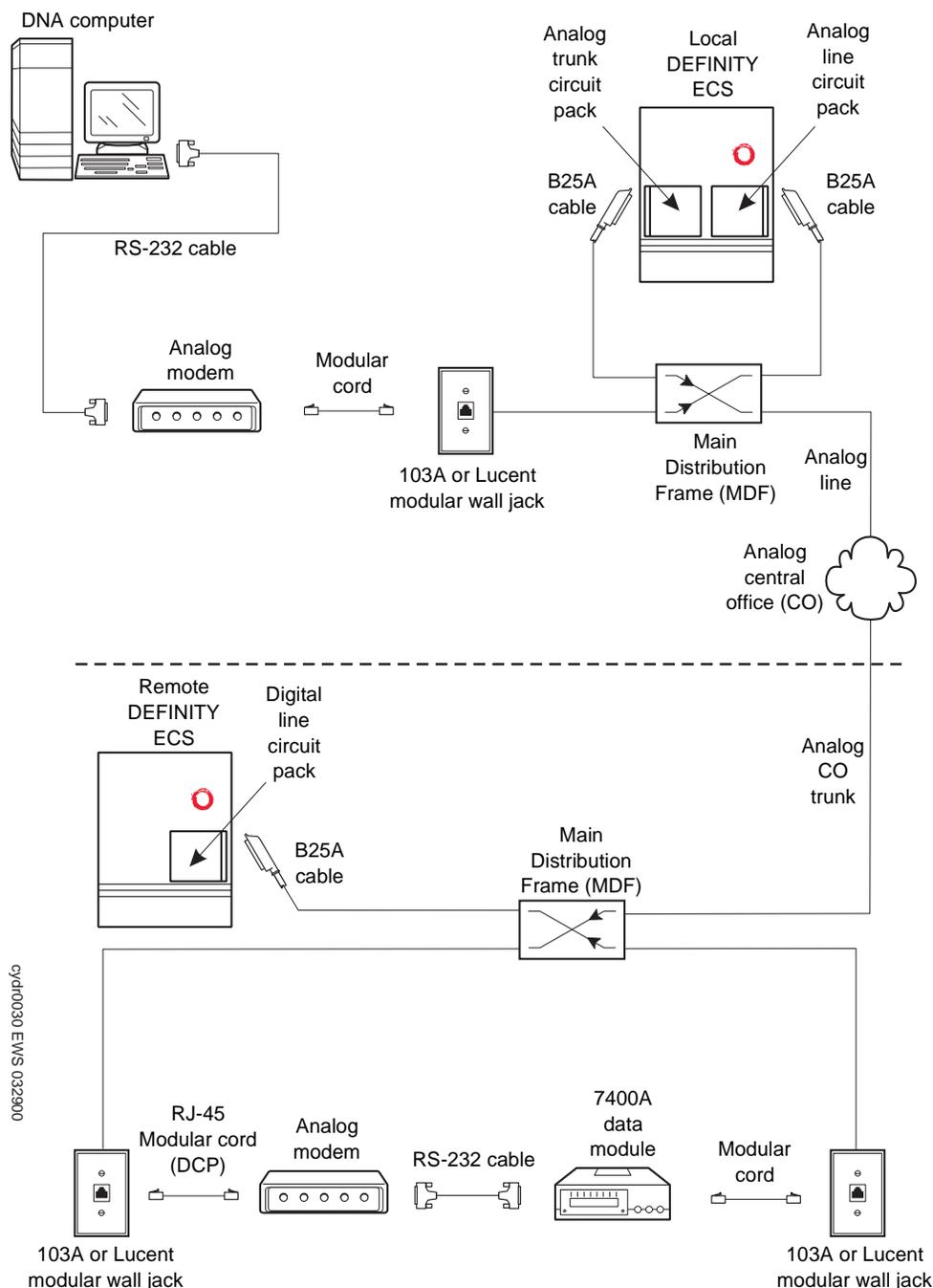
Figure 24. Connecting to DEFINITY via Modem Pooling

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1. Connect the equipment as shown in .

2. Wire the data module to the second and third pair of the 103A or Lucent modular wall jack.

3. Wire tip and ring from both modems to the first pair of each 103A or Lucent modular wall jack.

Setting Up the Data Module at the Remote Site

Setting the Data Module to DCE Mode

1. Cycle the power to the data module.

   The unit performs a self test and displays its operating mode.

2. Observe the display.

   a. If the display reads DCE mode, proceed to the next section.

   b. If the display reads DTE mode, complete the following steps:

      1. Remove the power cord from the unit.

      2. Remove the cover from the top rear of the unit.

      3. Remove the mode select circuit board and turn it around.

      4. Replace the cover.

      5. Connect the power cord.

         The unit performs a self test.

➡ NOTE:

The power LED must be steady on. If the power LED is blinking, the data module is not communicating with the DEFINITY ECS. Check the wiring at the MDF, wall jacks, and data module.

Setting the Data Module Operating Mode

1. Connect an RS-232 cable from the DNA computer to the data module.

2. Using a terminal emulator, connect to the serial port that the data module is connected to, and set the emulation to *vt100* mode.

3. Type **AT** at the prompt and press Enter.

   The data module should return an OK. If it does not, the data module is not communicating with the terminal emulator. Be sure that a standard RS-232 or EIA-232 cable is connected (not a null modem cable).

4. Set the operating mode as follows:

   ■ Type **AT&F** and press Enter.

   ■ Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.

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5. Disconnect the terminal from the data module and reconnect the data module to the system cabling.

Setting the Data Module to DTE Mode

1. Cycle the power to the data module.

   The unit performs a self test and displays its operating mode.

2. Observe the display.

   a. If the display reads DCE mode, complete the following steps:

      1. Remove the power cord from the unit.

      2. Remove the cover from the top rear of the unit.

      3. Remove the mode select circuit board and turn it around.

      4. Replace the cover.

      5. Connect the power cord.

         The unit performs a self test.

   b. If the display reads DTE mode, proceed to the next section.

➤ **NOTE:**
   The power LED must be steady on. If the power LED is blinking, the data module is not communicating with the DEFINITY ECS. Check the wiring at the MDF, wall jacks, and data module.

Setting Up the Analog Modems

Setting the Local Modem Operating Mode

1. Using a terminal emulator, connect to the serial port that the modem is connected to, and set the emulation to *vt100* mode.

2. At the computer, set the local modem to the factory default mode by typing **AT&F** and pressing Enter.

3. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.

4. If using a U.S. Robotics® Model 839 modem, also use to set the options.

➤ **NOTE:**
   When calling from a remote modem, you may need to disable error correction to allow the modems to connect. For example, the AT&T Paradyne KeepInTouch® modem may require the **AT\N0** command. The U.S. Robotics Model 839 does not recognize this command.

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Table 5.   U.S. Robotics Model 839 External Modem Switch Settings

Switch	Setting	Function
1	OFF (Up)	DTR (Data Terminal Ready) override
2	OFF (Up)	Provides verbal result codes (text-formatted feedback characters such as *connected* or *no carrier*)
3	ON (Down)	Enables result codes
4	OFF (Up)	Displays keyboard commands (local echo)
5	ON (Down)	Auto answer (modem answers on preset number of rings). Set `Auto Answer Ring Number` on System Parameters Maintenance form.
6	OFF (Up)	CD (Carrier Detect) override (modem sends CD signal on connect, drops CD on disconnect)
7	OFF (Up)	Power-on and ATZ reset software defaults (loads Y or Y1 configuration from NVRAM)
8	ON (Down)	AT (Attention) command set recognition (enables recognition, smart mode)

5. Reconnect the modem to the system cabling.

Setting the Remote Modem Operating Mode

1. Connect a computer to the modem using an RS-232 cable.

2. Using a terminal emulator, connect to the serial port that the modem is connected to, and set the emulation to *vt100* mode.

3. At the computer, set the remote modem to the factory default mode by typing **AT&F** and pressing Enter.

4. Type **ATSØ=3&WØ** and press Enter to set the modem to answer only mode and save the operating mode into non-volatile RAM.

5. If using a U.S. Robotics® Model 839 modem, also use Table 5 to set the options.

6. Reconnect the modem to the system cabling.

Administering the Remote DEFINITY ECS

Adding Modem Pooling

1. At the SAT, type **add modem-pooling <number>** or **add modem-pooling next** and press Enter.

2. In the `Group Type:` field, type **combined**.

3. In the `Speed:` field, type **9600**.

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4. In the `Analog:` field, type the carrier, port, and slot number of the analog line circuit pack that is connected to the *remote* analog modem (for example, 1A1001).

5. In the `Digital:` field, type the carrier, port, and slot number of the circuit pack that is connected to the data module (for example, 2B1001).

6. Press Enter when finished.

7. If system access ports and hunt groups have not been set up, set them up as explained on .

Administering the Local DEFINITY ECS

Adding the Local Analog Modem to the Switch

1. At the SAT, type **add station <number>** or **add station next** and press Enter.

2. In the `Type:` field, type **2500**.

3. In the `Port:` field, type the carrier, port, and slot number of the analog line circuit pack that is connected to the *local* analog modem (for example, 1A1306).

4. Press Enter when finished.

Testing Hardware Connections

1. To verify the connection, place a remote administration call to the remote DEFINITY System using the hunt group extension.

   If a login prompt appears, the wiring and administration are correct. If a login prompt does not appear, go to Step 2.

2. Check the wiring at the data module and analog modems.

   Be sure the 7400A is set to *DTE* mode. If the Power LED is blinking, that data module is not communicating with the DEFINITY System. Check the wiring at the MDF and the wall jacks.

3. Verify that all administration at the local and remote sites is correct.

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Setting Up System Access Ports

DNA computers cannot dial into a DEFINITY ECS switch until the system access ports on the DEFINITY are set up.

$\Longrightarrow$ NOTE:

Most switches' system access ports are set up when the switch is installed; if this is true for your switch, or if you plan to connect via direct connection, you do not have to perform this task.

1. Associate an extension with a netcon channel or system port by entering **add data-module** <**number**> or **add data-module next**.

2. Administer the following fields:

DEFINITY Release	Fields to administer
R5vs/si R6vs/si/csi R7si/csi and R8si/csi	In the `Type`: field, enter **netcon**. In the `Physical Channel`: field, enter the physical channel number (01 to 04) for the netcon channel. In the `Maintenance Extension`: field, enter an unused station number.
R5r and later	In the `Type`: field, enter **system-port**. In the `Port`: field, enter the location of the data line circuit pack (for example 01B0903) In the `PDATA Port`: field, enter the location of the packet data line circuit pack (for example 01B0510).

3. Add the *netcon* extension number or the *system port* extension number to a hunt group by entering **add hunt-group** <**number**> or **add hunt-group next**.

   - In the `Group Extension`: field, enter the extension number to dial for access to the hunt group. Give this number to the person who will configure DNA.

   - On page 3 of the Hunt Group form, add the *netcon* extension number or the *system port* extension number as a member.

4. For Release 5r and later, jumper the data line circuit pack to the packet data line circuit pack, via the MDF.

   See .

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Connecting to Intuity AUDIX

This section explains how to connect DNA computers to Intuity AUDIX Systems via the following methods:

⮕ **NOTE:**

In all of the diagrams on the following pages, EIA-232 cables can be used in place of RS-232 cables.

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Connecting to Intuity AUDIX via Null Modem Cable
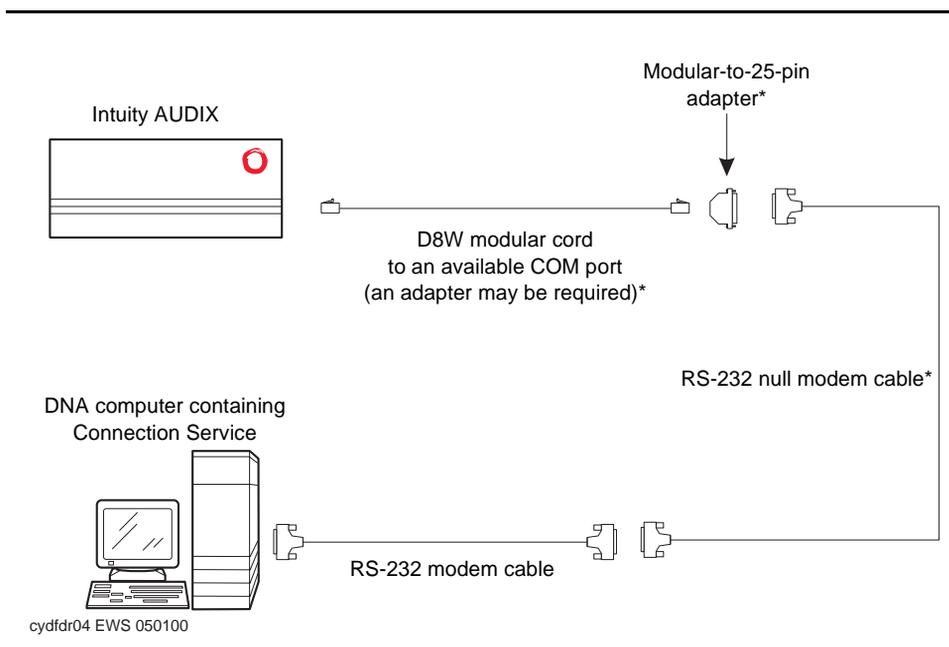
Figure 25.   Connecting to Intuity AUDIX via Null Modem Cable

* If you are connecting the D8W modular cord to...	Then the RS-232 null modem cable is...
COM1 or COM2 of Intuity AUDIX	not required
Remote Maintenance Board (RMB) using a DCE plug as the modular-to-25-pin adapter	required
RMB using a DTE plug as the modular-to-25-pin adapter	not required

1. Connect the equipment as shown in Figure 25.

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Connecting to Intuity AUDIX via Network Port

RJ-45 cable from Intuity
LAN card to network connector

DNA computer containing
Connection Service

Intuity AUDIX

cydfdr18 EWS 050100

LAN (or WAN) Network Connection (TCP/IP)

Figure 26.   Connecting to Intuity AUDIX via Network Port

1. Connect the equipment as shown in Figure 26.

Testing Hardware Connections

1. Using a terminal emulator, telnet to the Intuity System.

   A login prompt should appear. If no login prompt appears, check the wiring at the wall jack and test network connectivity.

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Connecting to Intuity AUDIX
via Asynchronous Data Units
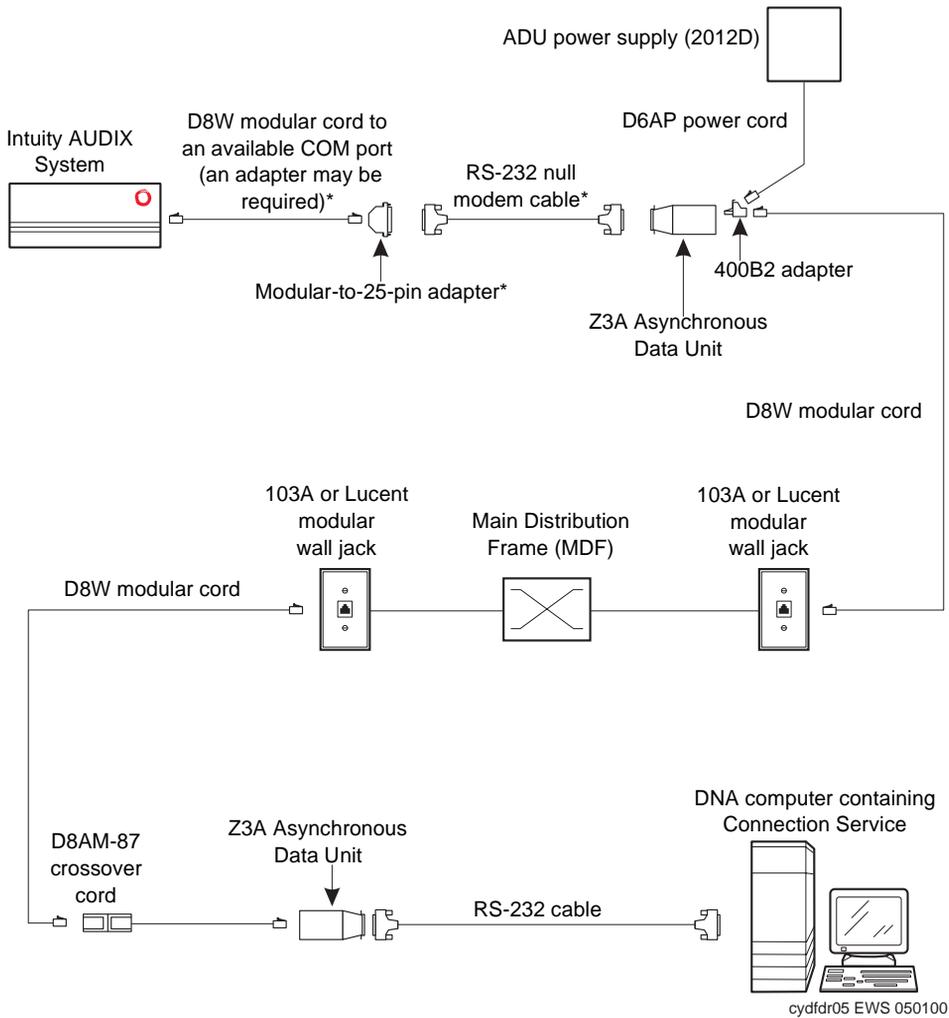
Figure 27. **Connecting to Intuity AUDIX via ADUs**

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* **If you are connecting the D8W modular cord to...**	**Then the RS-232 null modem cable is...**
COM1 or COM2 of Intuity AUDIX	not required
Remote Maintenance Board (RMB) using a DCE plug as the modular-to-25-pin adapter	required
RMB using a DTE plug as the modular-to-25-pin adapter	not required

1. Connect the equipment as shown in .

Testing Hardware Connections

1. Using a terminal emulator, set the emulation to *vt100* mode.

2. Press the Esc key on the keyboard.

   A login prompt should appear. If it does not, the MDF wiring, the wall jack wiring, or an ADU is bad.

3. Swap the positions of the ADUs and press the Esc key again.

   If the login prompt now appears, the ADU that is connected directly to the power supply is good and the other ADU is bad. If the login prompt does not appear, proceed as follows.

Performing a Loop-Around Test

⇒ NOTE:
   In the following tests, a Windows 95 or Windows NT PC with terminal emulation may be substituted for the dumb terminal.

1. Cut the modular plug off one end of a spare D8W modular cord.

2. Connect the blue lead to the black lead.

3. Connect the orange lead to the yellow lead.

4. Disconnect the D8W modular cord (Figure Note 2) from the modular wall jack at the DNA computer location.

5. Plug the loop-around test cord (that you made in Steps 1-3) into the wall jack at the DNA computer location.

6. Remove the modular-to-25-pin adapter cable (Figure Note 3) from the circuit and connect a dumb terminal to the RS-232 connector (Figure Note 4).

7. Set the dumb terminal to full duplex mode and echo off.

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8. Type a few characters on the keyboard.

   The characters should display exactly as you type them. If they do, the
   wiring is correct. If they do *not*, check the data module, cabling, and port
   connections. If that does not fix the problem, check the wiring at the
   modular wall jacks and MDFs.

9. When finished troubleshooting, remove the loop-around test cord and
   reconnect the system cabling. See Figure 27 on page 149.

Connecting to Intuity AUDIX via Data Modules

Figure 28 on page 152 shows a dial-up connection using 2 data modules: a
7400A data module on the Intuity AUDIX side and a 7400B+ or 8400B+ on the
DNA side.

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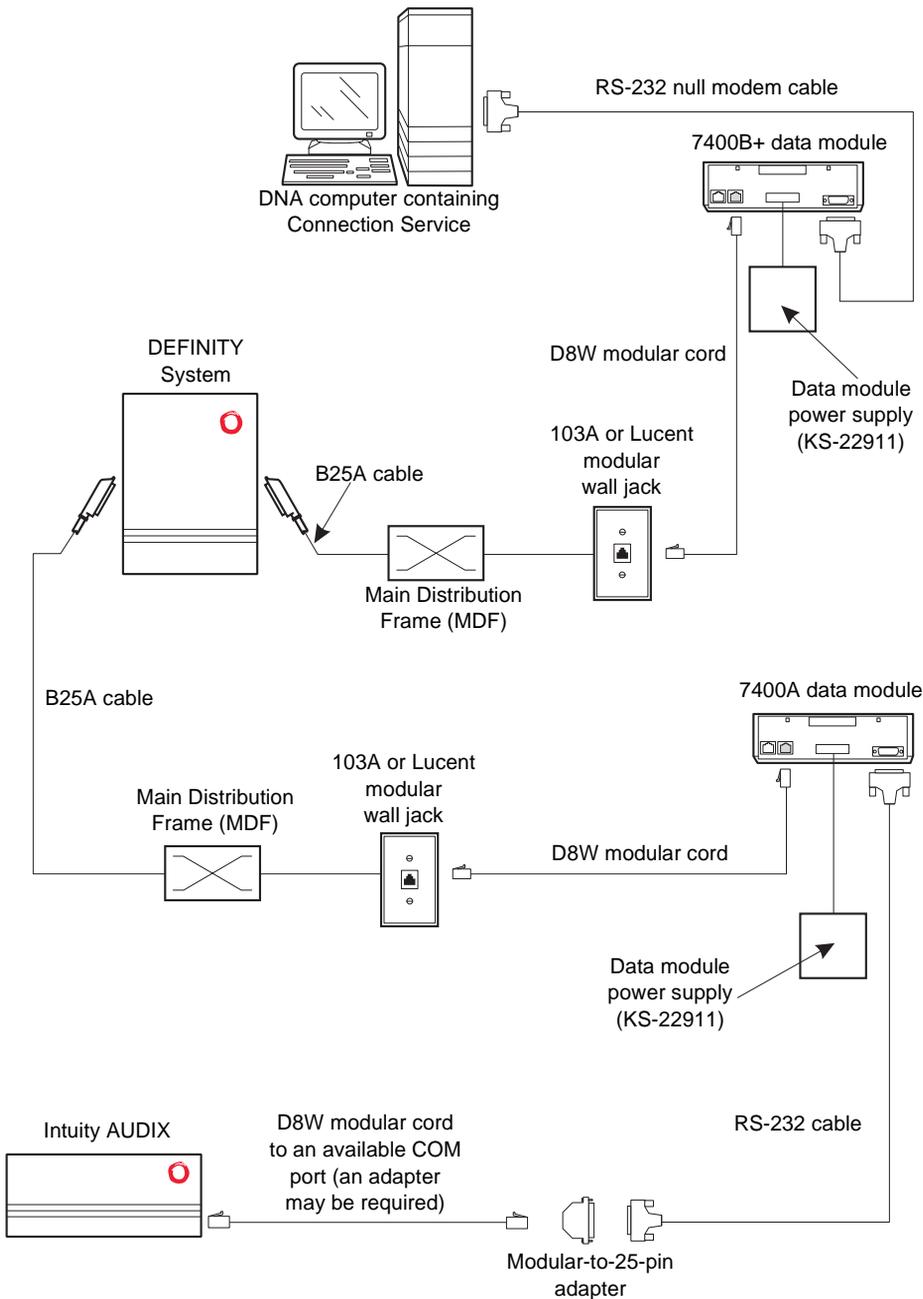
cydfdr06 EWS 050100

Figure 28.   Connecting to Intuity AUDIX via Data Modules

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> **NOTE:**
> With a 7400A or 7400B+ data module, use a 4-wire digital line circuit pack. With the 8400B+ data module, use a 2-wire digital line circuit pack.

1. Connect the equipment as shown in .

2. Wire the digital line circuit pack to the wall jack as follows:

   ■ For a 7400A or 7400B+, wire to the second and third pair of the wall jack.

   ■ For an 8400B+, wire to the first pair of the wall jack.

Adding a Data Module to the Switch

1. Using a SAT, add the data module to the switch by entering **add data-module** <**number**> or **add data-module next**.

2. In the Type: field, enter **pdm**.

3. In the Port: field, enter the location of the digital line circuit pack connected to the data module (for example 01A1503).

Testing Hardware Connections

In the table below, find your data module and follow the instructions for testing and troubleshooting it.

Type of Data Module	How to Test and Troubleshoot
8400B+	The red LED should be steady on. If the red and green LEDs are blinking, the unit is not communicating with the DEFINITY System. Check the wiring at the MDF, wall jack, and the 8400B+.
7400B+	The Power and TR LEDs should be steady on. If the Power and Data LEDs are blinking, the unit is not communicating with the DEFINITY System. Check the wiring at the MDF, wall jack, and the 7400B+.
7400A	Set the 7400A to *Answer Only* mode. See . The Power LED must be steady on. If the Power LED is blinking, the data module is not communicating with the DEFINITY System. Check the wiring at the MDF, wall jacks, and 7400A.

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Setting the Data Module Operating Mode

1. Connect an RS-232 cable from the DNA computer to the data module.

2. Using a terminal emulator, connect to the serial port that the data module is connected to, and set the emulation to *vt100* mode.

3. Type **AT** at the prompt and press Enter.

   The data module must return an OK. If it does not, the data module is not communicating with the DEFINITY System. Be sure that a standard RS-232 cable is connected (not a null modem cable).

4. Set the operating mode as described in the following table.

Type of Data Module	How to set the operating mode
8400B+	Type **AT&F** and press Enter. Type **ATS24=1** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.
7400A 7400B+	Type **AT&F** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.

5. Reconnect the data modules to the system cabling.

Setting the 7400B+ Options

If you are using a 7400B+ data module, set the options by completing the following steps:

1. Set the option switches as described in Table 6.

   The DIP switches are located inside the unit. Refer to the 7400B+ instruction book.

2. If any switches were set in Step 1, cycle the power to the data module so that the firmware can read the new switch settings.

Table 6.   DIP Switch Setting (7400B+)

Option	DIP Switch	Setting
No Telephone Connected	1	On
Data Metering	5	Off
Suppress Touch-tone/Dial Tone	6	Off
Speakerphone Disable/Enable	7	Off
Busyout on Local Loop	8	Off
Unused DIP Switches	2, 3, and 4	Off

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Setting the 7400A Options

If you are using a 7400A data module, set the options by completing the following steps:

1. Check that the 7400A data module is set to DCE mode by completing the following steps:

    a. Unplug power from the 7400A.

    b. Restore the power to the 7400A and observe the display.

       After the *Self Test Passed* message, the *7400A DCE Mode* message should display. If the message *7400A DTE Mode* displays, turn the EIA card around to the DCE mode. Refer to the 7400A instruction book.

2. The 7400A is factory-set to the *AT Commands* mode. Change the 7400A to *Answer Only* mode by completing the following steps:

    a. Press NEXT/NO until SET INTERFACE? displays.

    b. Press ENTER/YES.

    c. Press NEXT/NO until INT = ANS ONLY? displays.

    d. Press ENTER/YES. The unit automatically resets itself.

    e. Press NEXT/NO until SET OPTIONS? displays.

    f. Press ENTER/YES.

3. Set the data module options using Table 7 on page 156.

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Table 7. 7400A Data Module Options (Answer Only Mode)

Set Option Display	Abbreviation	Setting	Default
Set 300 SPEED?	300	ON	ON
Set 1200 SPEED?	1200	ON	ON
Set 2400 SPEED?	2400	ON	ON
Set 4800 SPEED?	4800	ON	ON
Set 9600 SPEED?	9600	ON	ON
Set 19200 SPEED?	19200	ON	ON
Set ANSWER?	ANS	AUTO	AUTO
Set BREAK DISC	BRKDISC	LONG	LONG
Set CI LEAD?	CI	OFF	OFF
Set CH LEAD?	CH	OFF	OFF
Set CTS LEAD?	CTS	ON	ON
Set DCD LEAD?	DCD	ON	ON
Set DSR LEAD?	DSR	ON	ON
Set DTR DETECT?	DTR	50 MSEC	50
Set DTR LEAD?	DTR	**FOLLOW**[1]	IGNORE
Set LL LEAD?	LL	OFF	OFF
Set PARITY?[2]	PARITY	**SPACE**[1]	NONE
Set REMOTE LOOP?	REMLOOP	GRANT	GRANT
Set RI LEAD?	RI	ON	ON
Set RL LEAD?	RL	OFF	OFF
Set SIGLS DISC?	SIGLS DISC	ON	ON
Set TM LEAD?	TM	OFF	OFF

1. Indicates settings that are not defaults.
2. This option not available on all units.

4. When finished, press ENTER/YES when DONE? displays.

5. Press ENTER/YES when SAVE CHANGES? displays.

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Connecting to DEFINITY AUDIX

This section explains how to connect DNA computers to DEFINITY AUDIX
Systems via the following methods:

- RS-232 cable

- terminal server and RS-232 cable

- ADUs

- data modules

- analog modems

⇒ NOTE:
In all of the diagrams on the following pages, EIA-232 cables can be used in
place of RS-232 cables.

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Connecting to DEFINITY AUDIX
via RS-232 Cable

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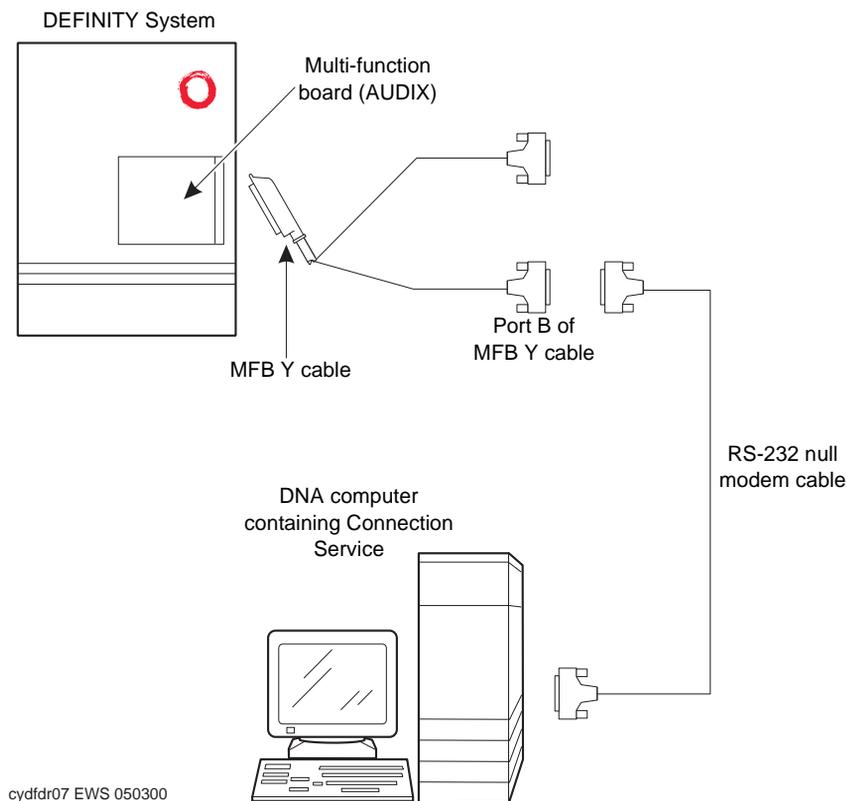
Figure 29.   Connecting to DEFINITY AUDIX via RS-232 Cable

1. Connect the equipment as shown in Figure 29.

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Connecting to DEFINITY AUDIX
via Terminal Server and RS-232 Cable
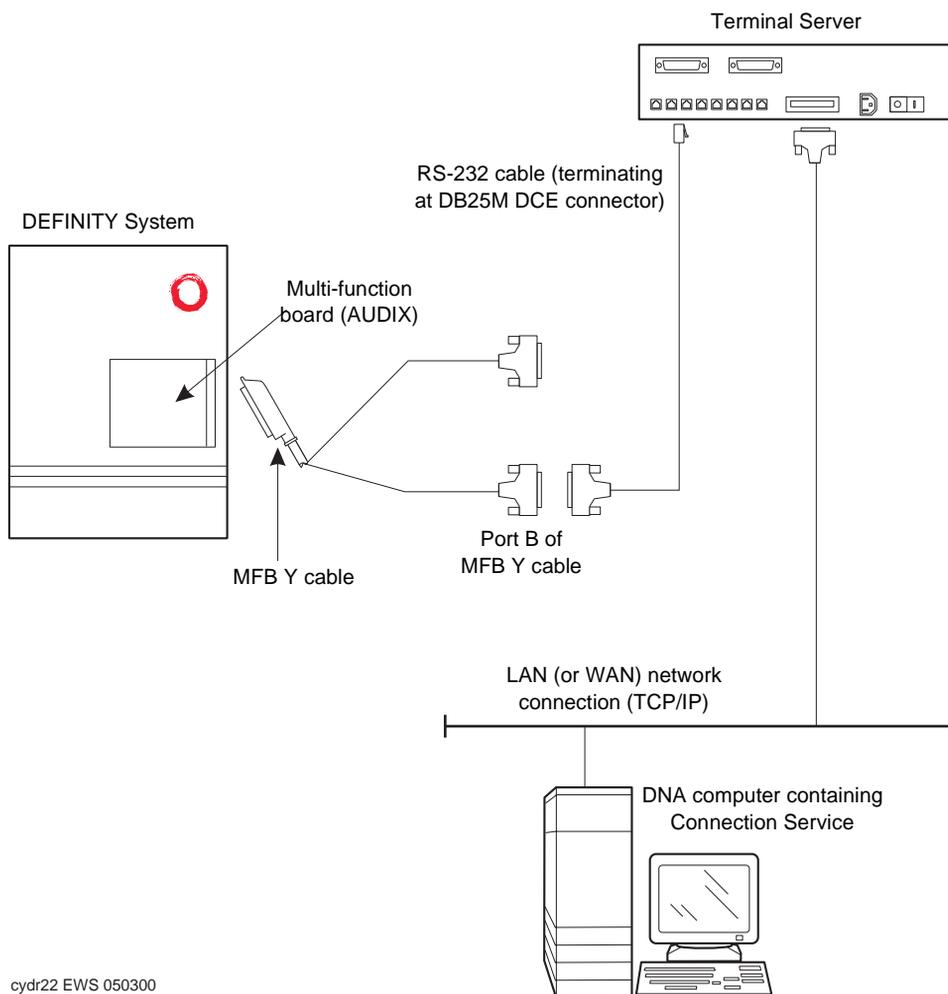
cydr22 EWS 050300

Figure 30.   Connecting to DEFINITY AUDIX via Terminal Server and RS-232 Cable

1. Connect the equipment as shown in Figure 30.

Testing Hardware Connections

1. Using a terminal emulator, telnet to the terminal server and connect to the AUDIX System.

   A login prompt should appear. If no login prompt appears, check the wiring at the terminal server.

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Connecting to DEFINITY AUDIX
via Asynchronous Data Units
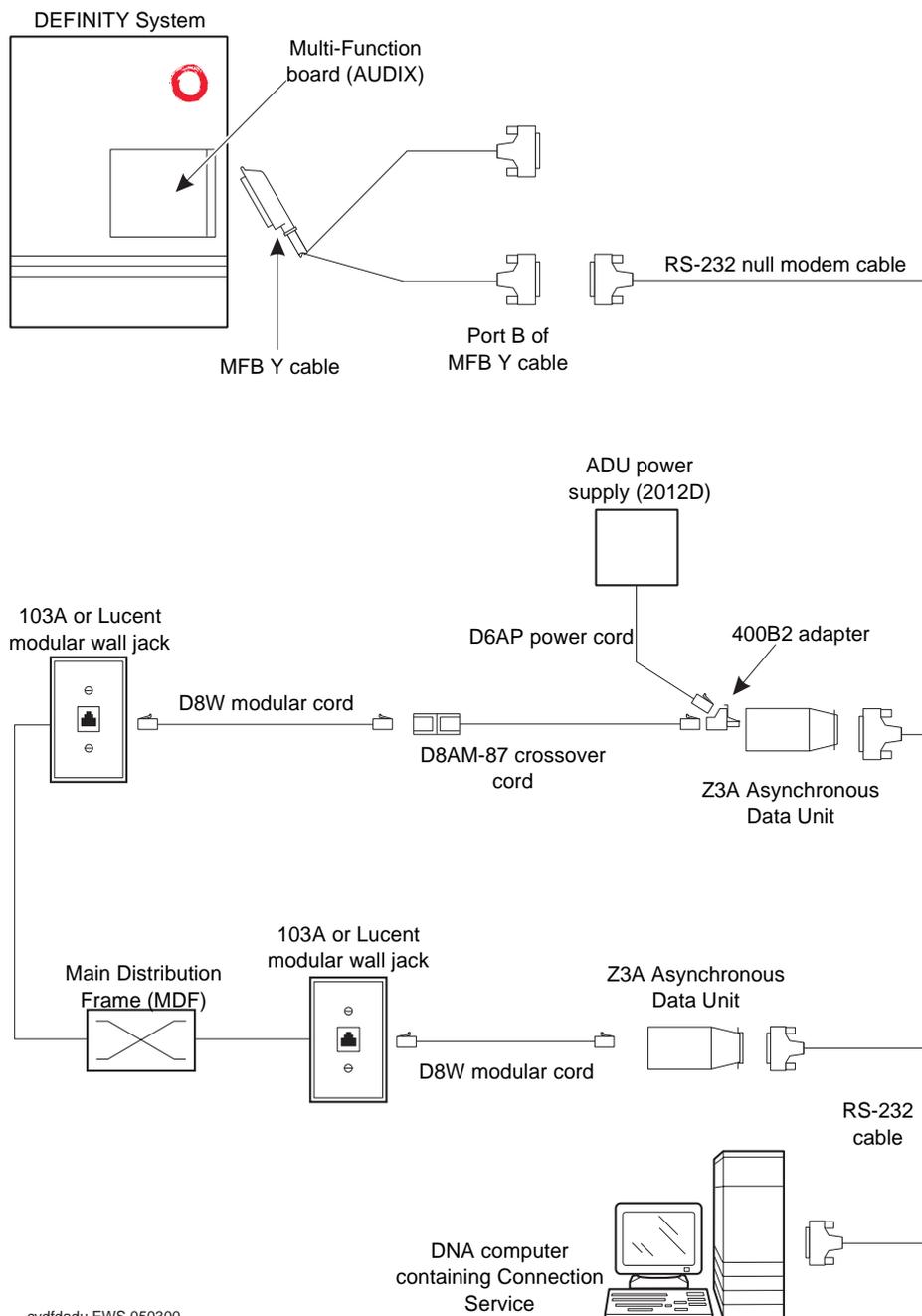
cydfdadu EWS 050300

Figure 31.   Connecting to DEFINITY AUDIX via ADUs

1. Connect the equipment as shown in Figure 31.

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   Connecting to DEFINITY AUDIX   *161*

Testing Hardware Connections

1. Using a terminal emulator, connect to the serial port that the ADU is connected to, and set the emulation to *vt100* mode.

2. Press the Esc key on the keyboard.

   A login prompt should appear. If it does not, the MDF wiring, the wall jack wiring, or an ADU is bad.

Performing a Loop-Around Test

⮕ **NOTE:**
   In the following tests, a Windows 95 or Windows NT PC with terminal emulation may be substituted for the dumb terminal.

1. Cut the modular plug off one end of a *spare* D8W modular cord.

2. Connect the blue lead to the black lead.

3. Connect the orange lead to the yellow lead.

4. Disconnect the D8W modular cord from the modular wall jack at the DNA computer location.

5. Plug the loop-around test cord (that you made in Steps 1-3) into the wall jack at the computer location.

6. Disconnect the RS-232 cable from Port B on the MFB Y cable and connect it to an RS-232 connector on a dumb terminal.

7. Set the dumb terminal to full duplex mode and echo off.

8. Type a few characters on the keyboard.

   The characters must display exactly as you type them. If so, the system is wired properly. Reconnect the cabling as shown in . If the characters do *not* display as typed, the modular wall jacks or the MDF are not wired properly. The ADU may also be defective.

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  Connecting to DEFINITY AUDIX   162

To Further Isolate the Problem:

1. Disconnect the D8W modular cord from the D8AM-87 crossover cord (Figure Note 10).

2. Disconnect the loop-around test cord from the wall jack at the computer location and connect it to the D8AM-87 crossover cord.

3. Type a few characters on the keyboard.

   The characters must display exactly as you type them. If not, the ADU or the crossover cord is bad. If the characters *do* display as typed, but did not in Step 8, above, then:

   ■   The D8W modular cord may be defective.

   ■   The modular wall jacks may be wired incorrectly.
       Ask your telephone cable installer to check them.

   ■   The MDF may be wired incorrectly.
       Ask your telephone cable installer to check it.

4. When the troubleshooting is finished, remove the loop-around test cord and reconnect the system cabling. See .

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Connecting to DEFINITY AUDIX
via Data Modules

1. Connect the equipment as shown in Figure 32 or Figure 33 on page 164.
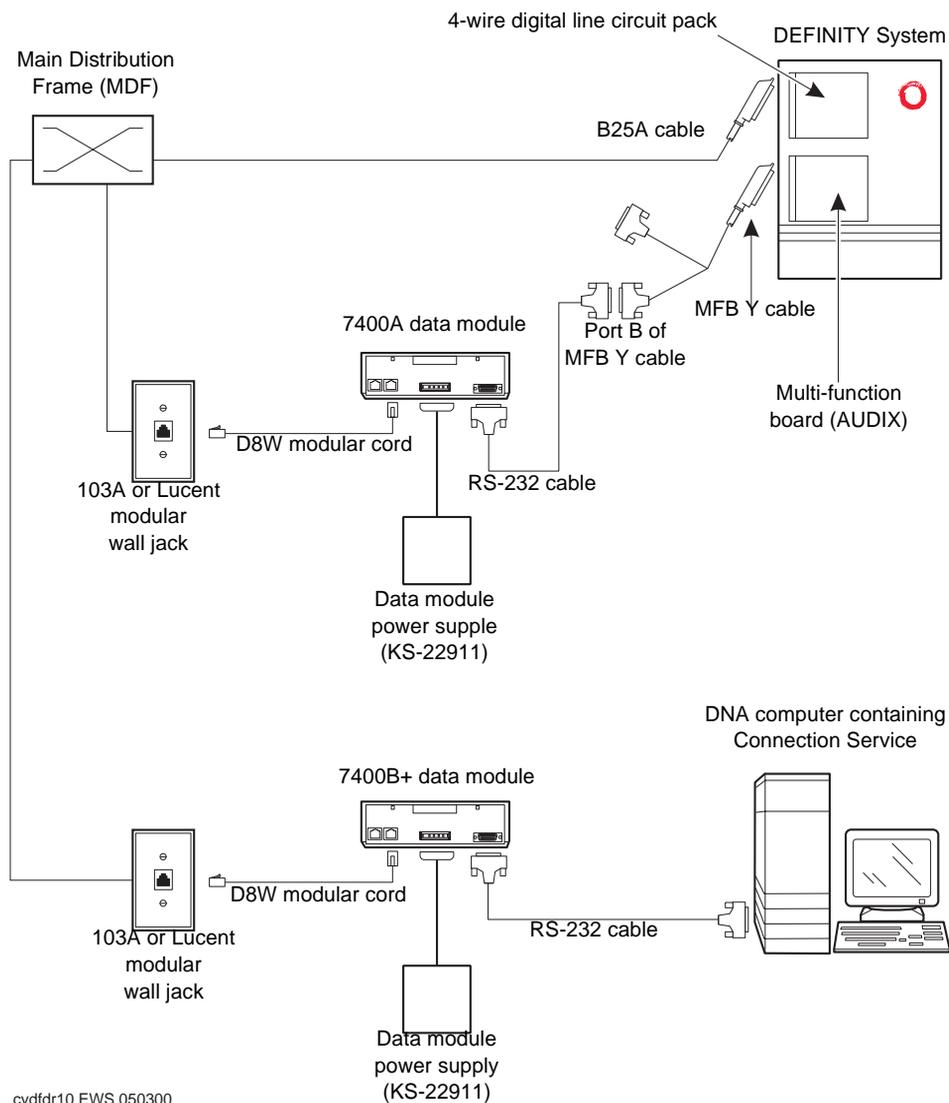
cydfdr10 EWS 050300

Figure 32.   Connecting to DEFINITY AUDIX via 7400A and 7400B+

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Connecting to DEFINITY AUDIX 164
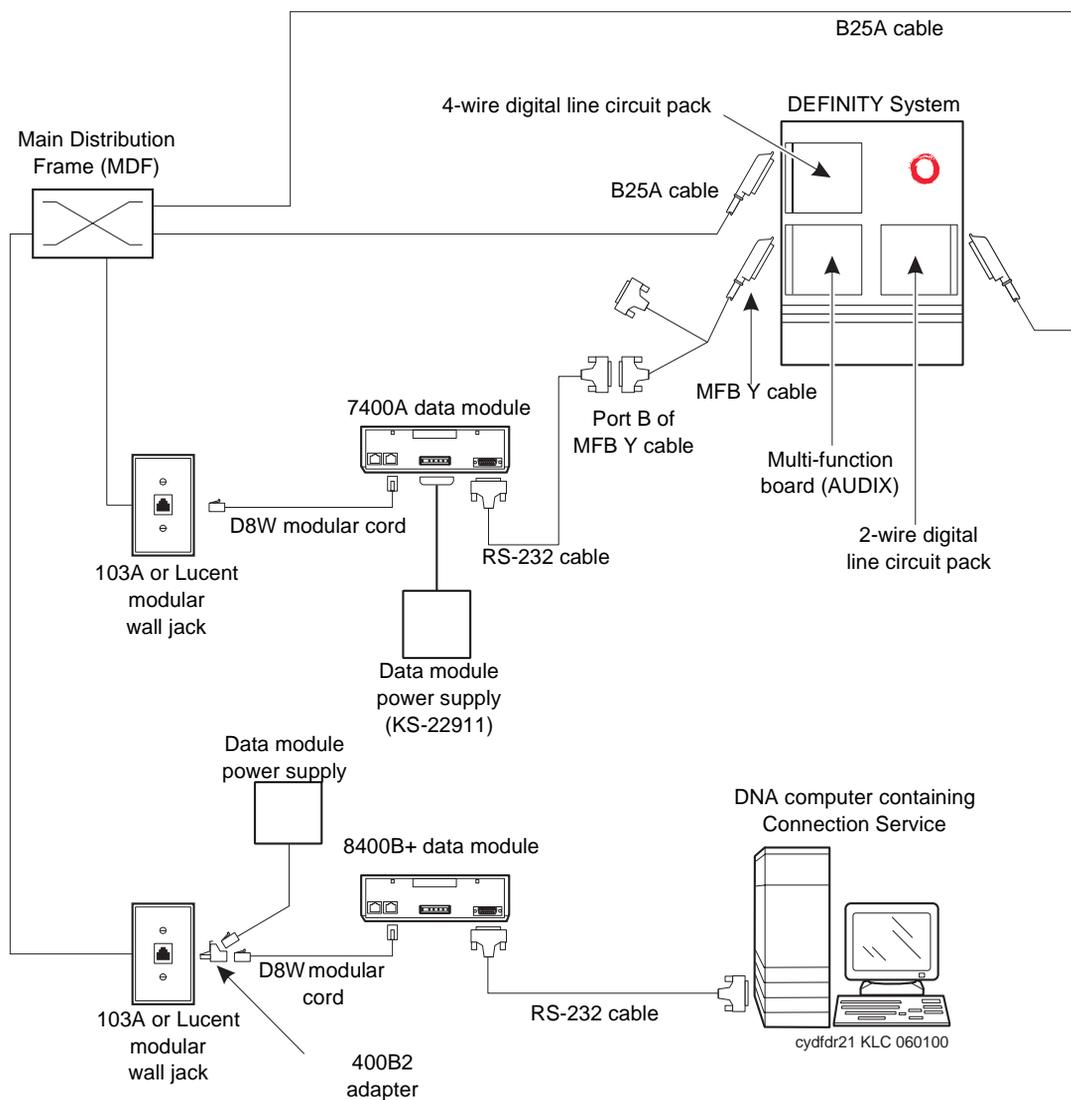
Figure 33. Connecting to DEFINITY AUDIX via 7400A and 8400B+

2. Wire the digital line circuit pack to the wall jack as follows:

■ For a 7400A or 7400B+, wire to the second and third pair of the wall jack.

■ For a 8400B+, wire to the first pair of the wall jack.

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Adding a Data Module to the Switch

1. Using a SAT, add the data module to the switch by entering **add data-module** <**number**> or **add data-module next**.

2. In the Type: field, enter **pdm**.

3. In the Port: field, enter the location of the digital line circuit pack connected to the data module (for example 01A1503).

Setting the Data Module Operating Mode

1. Connect an RS-232 cable from the DNA computer to the data module.

2. Using a terminal emulator, connect to the serial port that the data module is connected to, and set the emulation to *vt100* mode.

3. Type **AT** at the prompt and press Enter.

   The data module should return an OK. If it does not, the data module is not communicating. Be sure that a standard RS-232 or EIA-232 cable is connected, and an RS-232 null modem cable.

4. Set the operating mode as described in the following table.

Type of Data Module	How to set the operating mode
8400B+	Type **ATS24=1** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.
7400B+	Type **AT&F** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.
7400A	Set the 7400A to *Answer Only* mode. See ''Setting the 7400A Options'' on page 166. Type **AT&F** and press Enter. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.

5. Disconnect the terminal from the data module and reconnect the data module to the system cabling.

Setting the 7400B+ Options

If you are using a 7400B+ data module, set the options by completing the following steps:

1. Set the option switches for the 7400B+ using Table 8 on page 166.

   The DIP switches are located inside the unit. Refer to the 7400B+ instruction book.

2. If any switches were set in Step 1, cycle the power to the data module so that the firmware can read the new switch settings.

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Table 8.   DIP Switch Setting (7400B+)

Option	DIP Switch	Setting
No Telephone Connected	1	On
Data Metering	5	Off
Suppress Touch-tone/Dial Tone	6	Off
Speakerphone Disable/Enable	7	Off
Busyout on Local Loop	8	Off
Unused DIP Switches	2, 3, and 4	Off

Setting the 7400A Options

If you are using a 7400A data module, set the options by completing the following steps:

1. Check that the 7400A data module is set to DCE mode by completing the following steps:

   a. Unplug power from the 7400A.

   b. Plug in the power back and observe the display.

      After the *Self Test Passed* message, the *7400A DCE Mode* message should display. If the message *7400A DTE Mode* displays, turn the EIA card around to the DCE mode. Refer to the 7400A instruction book.

2. The 7400A is factory-set to the *AT Commands* mode. Change the 7400A to *Answer Only* mode:

   a. Press NEXT/NO until SET INTERFACE? displays.

   b. Press ENTER/YES.

   c. Press NEXT/NO until INT = ANS ONLY? displays.

   d. Press ENTER/YES.

      The unit automatically resets itself.

   e. Press NEXT/NO until SET OPTIONS? displays.

   f. Press ENTER/YES.

3. Set the data module options using .

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Table 9.   7400A Data Module Options (Answer Only Mode)

Set Option Display	Abbreviation	Setting	Default
Set 300 SPEED?	300	ON	ON
Set 1200 SPEED?	1200	ON	ON
Set 2400 SPEED?	2400	ON	ON
Set 4800 SPEED?	4800	ON	ON
Set 9600 SPEED?	9600	ON	ON
Set 19200 SPEED?	19200	ON	ON
Set ANSWER?	ANS	AUTO	AUTO
Set BREAK DISC	BRKDISC	LONG	LONG
Set CI LEAD?	CI	OFF	OFF
Set CH LEAD?	CH	OFF	OFF
Set CTS LEAD?	CTS	ON	ON
Set DCD LEAD?	DCD	ON	ON
Set DSR LEAD?	DSR	ON	ON
Set DTR DETECT?	DTR	50 MSEC	50
Set DTR LEAD?	DTR	**FOLLOW**[1]	IGNORE
Set LL LEAD?	LL	OFF	OFF
Set PARITY?[2]	PARITY	**SPACE**[1]	NONE
Set REMOTE LOOP?	REMLOOP	GRANT	GRANT
Set RI LEAD?	RI	ON	ON
Set RL LEAD?	RL	OFF	OFF
Set SIGLS DISC?	SIGLS DISC	ON	ON
Set TM LEAD?	TM	OFF	OFF

1.   Indicates settings that are not defaults.
2.   This option not available on all units.

4. When finished, press ENTER/YES when DONE? displays.

5. Press ENTER/YES when SAVE CHANGES? displays.

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Testing Hardware Connections

To test the connections, complete the following steps:

1. Connect an RS-232 cable between the computer and the data module.

2. Using a terminal emulator, connect to the serial port that the data module is connected to, and set the emulation to *vt100* mode.

3. Type **AT** at the prompt and press Enter.

   The data module should return an OK. If it does not, the data module is not communicating. Be sure that a standard RS-232 or EIA-232 cable is connected, and an RS-232 null modem cable.

4. Reconnect the data module to the system cabling.

   The power LED should be steady on. The DTR, DSR, DCD, RTS, and CTS settings should be highlighted in the display. If the power LED blinks, the data module is not communicating.

5. Dial a telephone number for the data module attached to the AUDIX.

   A login prompt should appear.

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Connecting to DEFINITY AUDIX via Modems
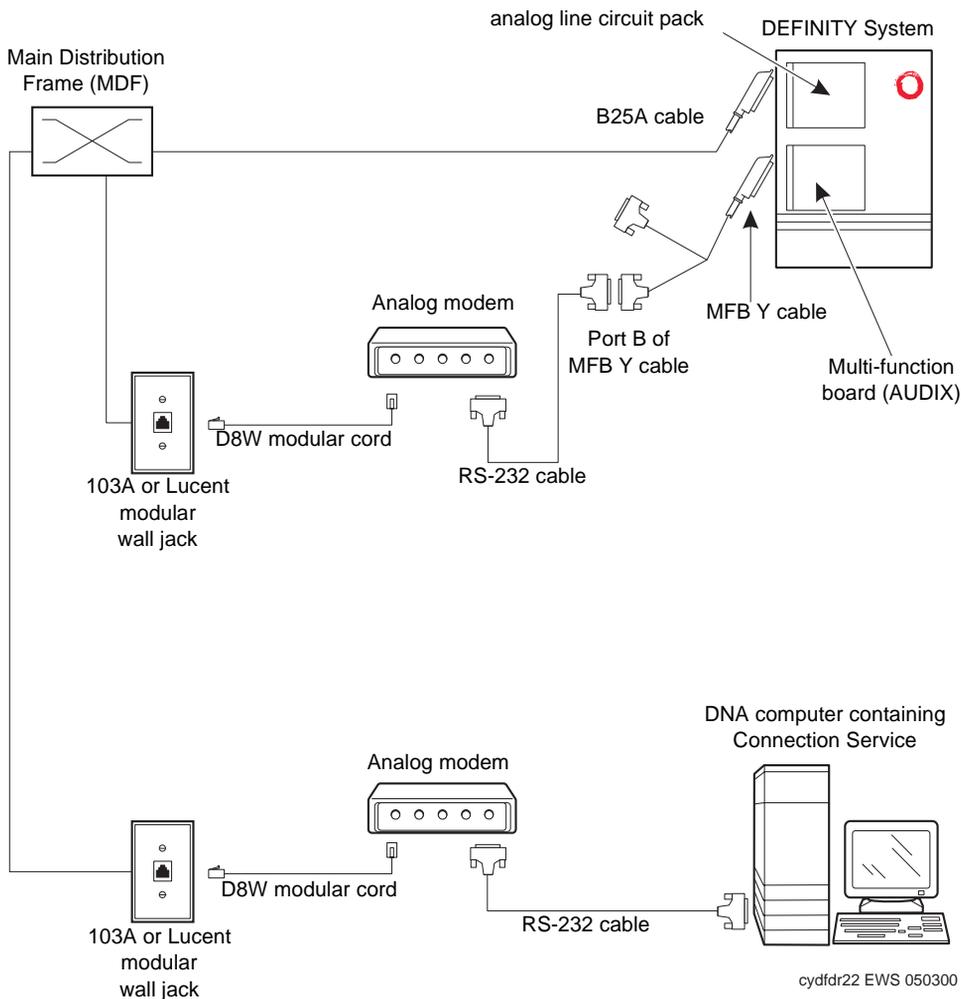
Figure 34.   Connecting to DEFINITY AUDIX via analog modems

1. Connect the equipment as shown in Figure 34.

2. Wire the analog line circuit pack to the wall jack using the first pair.

Adding an Analog Modem to the Switch

1. At the SAT, type **add station** **<number>** or **add station next** and press
    Enter.

2. In the Type: field, type **2500**.

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3. In the `Port:` field, type the carrier, port, and slot number of the analog line circuit pack that is connected to the analog modem (for example, 1A1306).

4. Press Enter when finished.

Setting Up the Analog Modems

Setting the Local Modem Operating Mode

1. Using a terminal emulator, connect to the serial port that the modem is connected to, and set the emulation to *vt100* mode.

2. At the computer, set the local modem to the factory default mode by typing **AT&F** and pressing Enter.

3. Type **AT&WØ** and press Enter to save the operating mode into non-volatile RAM.

4. If using a U.S. Robotics® Model 839 modem, also use Table 10 to set the options.

➨ **NOTE:**
   When calling from a remote modem, you may need to disable error correction to allow the modems to connect. For example, the AT&T Paradyne KeepInTouch® modem may require the **AT\N0** command. The U.S. Robotics Model 839 does not recognize this command.

Table 10.   U.S. Robotics Model 839 External Modem Switch Settings

Switch	Setting	Function
1	OFF (Up)	DTR (Data Terminal Ready) override
2	OFF (Up)	Provides verbal result codes (text-formatted feedback characters such as *connected* or *no carrier*)
3	ON (Down)	Enables result codes
4	OFF (Up)	Displays keyboard commands (local echo)
5	ON (Down)	Auto answer (modem answers on preset number of rings). Set Auto Answer Ring Number on System Parameters Maintenance form.
6	OFF (Up)	CD (Carrier Detect) override (modem sends CD signal on connect, drops CD on disconnect)
7	OFF (Up)	Power-on and ATZ reset software defaults (loads Y or Y1 configuration from NVRAM)
8	ON (Down)	AT (Attention) command set recognition (enables recognition, smart mode)

5. Reconnect the modem to the system cabling.

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Setting the Remote Modem Operating Mode

1. Connect a computer to the modem using an RS-232 cable.

2. Using a terminal emulator, connect to the serial port that the modem is connected to, and set the emulation to *vt100* mode.

3. At the computer, set the remote modem to the factory default mode by typing **AT&F** and pressing Enter.

4. Type **ATSØ=3&WØ** and press Enter to set the modem to answer only mode and save the operating mode into non-volatile RAM.

5. If using a U.S. Robotics® Model 839 modem, also use to set the options.

6. Reconnect the modem to the system cabling.

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Installation Prerequisites 173

Installing or Upgrading DNA

15

Your installation planner already should have specified where to put new NT servers and where to install each component of the DEFINITY Network Administration (DNA) software. If you do not have this information, do not proceed with the installation. Contact your installation planner or plan the installation yourself, referring to Chapters 1 through 10 of this book.

Installation Prerequisites

Before you install DNA, be sure that the computers you plan to install it on meet the hardware requirements listed in "Understanding System Requirements" on page 13 and that you have patched your operating systems so they are Year 2000 compliant. As of this writing, information about Windows patches is available from http://www.microsoft.com/technet

DNA requires a functioning LAN or loop-back host to operate. The instructions in this section assume that your LAN is fully operational and that all DNA computers can PING each other. In addition, to install DNA, you must have an NT login with NT Administrator privileges.

If you want to use DNA's online help, you must have Microsoft Internet Explorer 4 installed on the given computer, at least in a browser-only configuration. However, on the computer that will host the Core Services, be sure that IE4 desktop extensions are *not* installed. If they are, you may experience problems with OLE and DDE applications installed on this computer.

If you want to use DNA's Event Notification feature, which sends DNA users e-mail when DNA encounters errors or other situations, you must install and configure a MAPI e-mail client (like Microsoft Exchange or Outlook) on the computer you will be installing DNA's Core Services on.

If your company has a Lucent support agreement, you need to install a modem and a copy of Symantec's pcAnywhere on all computers that will host DNA server components. pcAnywhere enables Lucent personnel to troubleshoot and fix problems on your system. For the required version number of pcAnywhere, see "Understanding System Requirements" on page 13.

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Understanding pcAnywhere Security

Before you install a copy of Symantec's pcAnywhere on any of your computers, read this section.

You are responsible for the security of your data network and for preventing unauthorized individuals from accessing it. Therefore, exercise caution when using pcAnywhere. Having it installed does not pose a security risk; it must be up and running, and be configured to receive calls, before a remote user can enter the system. In addition, pcAnywhere offers a number of security features.

Follow these guidelines to protect PCs with pcAnywhere installed:

1. Unplug the modem from the phone jack when pcAnywhere is not in use.

2. Only run pcAnywhere when necessary.

3. Do NOT publish the phone number for the modem that people use to access the computer.

4. Change your password after Lucent personnel leave your site and after Lucent personnel terminate a remote service session.

5. Configure the following pcAnywhere security options:

   - Require login names for callers.

   - Make passwords case sensitive.

   - Log all failed connection attempts.

   - Set a maximum number of login attempts per call.

   - Allow time to enter the complete login.

   - Disconnect if inactive.

6. Configure pcAnywhere to log remote call and online sessions.

For more information on pcAnywhere, including acquisition and security, visit the following web site:

   http://www.symantec.com/pcanywhere/index.html

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15 Installing or Upgrading DNA
   Installing DNA Components on the Correct OS   175

Installing DNA Components on the Correct OS

Not all DNA components can be installed on all Windows operating systems. The following table indicates where you can install DNA components.

Component	Win95	Win98	WinNT4
Client	X	X	X
Connection Service	X	X	X
Core Services			X
Device Service			X
Button Label Printer Service			X
Enhanced Number Portability			X

Installing Standard DNA Components

Standard DNA components are: client, Core Services, Device Services, Button Label Printer Services, and Connection Services. This section describes how to install these components. To install the optional Enhanced Number Portability (ENP) feature, see .

Installation is simplest if you first install DNA on the computer that will host the Core Services, because when you install DNA on other computers, the installation program asks where the Core Services component has been (or will be) installed. For this reason, these instructions explain how to install DNA, starting first with the computer that will host the Core Services. This approach simplifies the installation instructions; you are not *required* to install in this order. You *can* install DNA on other computers first, but if you do, you will need to know where you *will be* installing the Core Services component.

To install DNA, you must use an NT login that has NT Administrator privileges. Then complete the following steps:

1. Determine which DNA component(s) to install on this computer.

   Your installation planner should have specified this for you.

2. If DNA is running on this computer, shut down DNA.

3. Insert the DNA CD into the CD drive.

   If you have purchased the optional Enhanced Number Portability (ENP) feature, you will have two CDs. Insert the DNA CD first. DNA displays a CD browser window.

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4. Click Install DNA.

   The installation program extracts the necessary files.

5. At the Welcome window, click Next.

6. To view the release notes, click Yes.

   After viewing the release notes, click X to close the window.

7. If this is the first time you have installed a DNA component on this computer, enter your name and company's name or accept the defaults and click Next.

8. If this is the first time you have installed a DNA component on this computer, specify the folder where you want to install the DNA components and click Next.

   We recommend that you accept the default destination folder, but you may want to alter the default drive. To do so, click Browse, reset the drive letter, and click OK. Click Yes to confirm that you want the new folder created if it does not already exist.

9. If this is the first time you have installed a DNA component on this computer, and if your company has DNS configured on your computer network, then enter the name of the DNS Domain that this computer belongs to.

   The installation planner should have recorded this on the Data Network Information Form for this computer, Step 12 on page 25. If you do not have DNS configured, leave this field blank. If you do not have DNS configured, leave this field blank.

10. If this is the first time you have installed a DNA component on this computer, enter a fully-qualified domain name (FQDN) or IP address for the computer that will host the Core Services component, as described below, and then click Next.

    The installation planner should have recorded this on the Data Network Information Form for *the computer that hosts the Core Services*, Step 13 on page 25. If not, you can determine it by following the instructions for that step on the reverse side of the form, on *the computer that hosts the Core Services.*

    (If you are *not* installing the Core Services first, then in this step you must specify the FQDN or IP Address of the computer where the Core Services *will* reside. See "Installing Core Services" on page 178 to learn why.)

$\Longrightarrow$ **NOTE:**
    Be sure you are not using DHCP for the Core Services PC, because if DHCP reassigns the IP address of the Core Services PC, DNA will not function and may require a reinstallation.

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What you enter (in) depends on whether you have DNS configured on your network:

Condition	What to enter, in order of preference
If you have DNS configured on your network...	■ Enter the FQDN of the Core Services computer. ■ Enter the IP address of the Core Services computer.
If you do not have DNS configured on your network...	■ Enter the short name of the Core Services computer (if you have WINS or "Hosts" files), or ■ Enter the IP address of the Core Services computer.

11. The installation program asks which of the following DNA components you want to install:

    ■ Core Services

    ■ Connection Service

    ■ DNA Client

    ■ Button Label Printer

    ■ One or more devices

12. Select the DNA components you want to install on this computer, and proceed as described in the following sections.

➡ NOTE:

Not all DNA components can be installed on all operating systems. See .

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Installing Core Services

The Core Services component is the main processing software within DNA. No matter how many computers are a part of your DNA installation, you will install the Core Services only once. This is not the case with other DNA components, which can have multiple copies installed on various computers throughout your network.

Because the Core Services component is the main processing software within DNA, all other DNA components refer to it and interact with it in order to function. For this reason, when you install DNA components on *other* computers, you will indicate the location of the Core Services as part of the installation process. This means you cannot move the Core Services component without re-installing all other components.

1. If you have not already done so, complete the steps in "Installing Standard DNA Components" on page 175.

2. Select the Core Services check box.

   When you do, the installation program automatically selects Connection Service and Client, because in most situations, you will want these components on the Core Services computer. However, you can deselect these components if you do not want them on this computer.

3. Select any other appropriate check boxes, and click Next.

4. If you selected "Button Label Printer Services," see page 178.

5. If you selected "One or more devices," see page 179.

6. To complete the installation, see "Final Installation Steps" on page 180.

Installing Button Label Printer Services

You must install one Button Label Printer Service for each network laser printer you want DNA to use. DNA does not restrict the number of Button Label Printer Services you can install on a single computer.

1. If you have not already done so, complete the steps in "Installing Standard DNA Components" on page 175.

2. Select the Button Label Printer Service check box (and any other appropriate check boxes), and click Next.

NOTE:
Button Label Printer Service names are case sensitive and cannot be changed later, so choose carefully. In addition, you cannot use spaces or special characters, such as / \ * ? & % @ ! ^. Record what you type here. You will need this information when you register the services.

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3. When prompted, enter the name you want to give each Button Label Printer Service, and click Add. When you are finished, click Next.

   Add a Button Label Printer Service for each printer that you want to be able to print button labels. To delete one, select it from the list and click Remove. Then click Next.

4. If you selected to install devices, see "Installing Device Services," below.

Installing Device Services

Install one Device Service component for each and every device that the given computer will support. To do so, complete the following steps:

1. If you have not already done so, complete the steps in "Installing Standard DNA Components" on page 175.

2. Select the check box called "One or more devices," (and any other appropriate check boxes), and click Next.

   If you selected "Button Label Printer Services," then the "Input Button Label Printer Names" screen appears. After you complete it and click Next, the device type screen appears.

3. When prompted, select the types of devices you want this computer to support, and then click Next.

   For each type of device you select, the installation program will install a Device Service component of that type on this computer.

➥ NOTE:
Device Service names are case sensitive and cannot be changed later, so choose carefully. In addition, you cannot use spaces or special characters, such as / \ * ? & % @ ! ^. Record what you type here. You will need it when you register these services.

4. For each type of device, enter the name(s) of each device that this computer will support, click Add to add it to the list, and then click Next.

   When you click Next, the installation program displays a screen for the next type of device that you selected in Step 2. Repeat Step 4 until you specify all devices this computer will support.

5. When you finish naming the devices that this computer supports, see "Final Installation Steps," below.

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Adding or Reinstalling Standard Components 180

Final Installation Steps

1. If you have not already done so, complete the steps in "Installing Standard DNA Components" on page 175.

2. If this is the first time you have installed a DNA component on this computer, enter the name that you want to appear on the Programs folder (and Windows Start menu) for this application, or accept the default value, and click Next.

   The installation program installs the selected DNA component(s). When it is finished, it displays the Setup Complete window.

3. Restart the computer or not, as follows:

   - If you want to immediately install other DNA components on this computer, click "No, I will restart my computer later" and click Finish.

   - If you do not want to install any other components on this computer, click "Yes, I want to restart my computer now" and click Finish.

You can now install DNA components on other computers in your network, using the same process.

Adding or Reinstalling Standard Components

You may need to add or reinstall DNA components if:

- You forgot to install a component.

- Your needs change (for example, you buy a new laser printer).

- You upgrade a switch (or voice mail system).

- You add a switch (or voice mail system).

- You want a different computer to support a particular switch (or voice mail system).

The process for reinstalling is the same as explained in "Installing Standard DNA Components" on page 175, but without questions about your name and company name, installation directories, domain names, FQDN or IP addresses, and program folder names.

If you have used DNA _on this computer_ since you installed DNA, be sure to back up DNA (see "Backing Up" on page 187) before you install additional components on this computer.

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Installing Enhanced Number Portability (ENP)   181

Installing Enhanced Number Portability (ENP)

DNA's Enhanced Number Portability (ENP) feature is optional. If you have purchased ENP, it will arrive on a separate CD.

This section assumes you do not have any other DNA components installed on this computer. If you do, the installation process is basically the same, except will not appear.

To install ENP, complete the following steps:

1. If DNA is running on this computer, shut down DNA.

2. Insert the ENP CD into the CD drive.

   DNA displays a CD browser window.

3. Click Install ENP.

   The installation program extracts the necessary files.

4. At the Welcome window, click Next.

5. To view the release notes, click Yes.

   After viewing the release notes, click X to close the window.

6. If this is the first time you are installing a DNA component on this machine, enter your name and company's name or accept the defaults and click Next.

7. If this is the first time you have installed a DNA component on this computer, specify the folder where you want to install the DNA components on this computer and click Next.

   We recommend that you accept the default destination folder, but you may want to alter the default drive. To do so, click Browse, reset the drive letter, and click OK. Click Yes to confirm that you want the new folder created if it does not already exist.

8. If this is the first time you have installed a DNA component on this computer, and if your company has DNS configured on your computer network, then enter the name of the DNS Domain that this computer belongs to.

   The installation planner should have recorded this on the Data Network Information Form for this computer, . If you do not have DNS configured, leave this field blank.

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9. If this is the first time you have installed a DNA component on this computer, enter a fully-qualified domain name (FQDN) or IP address for *the computer that hosts the Core Services*, as described below, and then click Next.

   The installation planner should have recorded this on the Data Network Information Form for *the computer that hosts the Core Services*, Step 13 on page 25. If not, you can determine it by following the instructions for that step on the reverse side of the form, but follow the steps on *the computer that hosts the Core Services* to get the information. Then enter that information here.

   What you enter (in Step 9) depends on whether you have DNS configured on your network:

Condition	What to enter, in order of preference
If you have DNS configured on your network...	■ Enter the FQDN of the Core Services computer. ■ Enter the IP address of the Core Services computer.
If you do not have DNS configured on your network...	■ Enter the short name of the Core Services computer (if you have WINS or "Hosts" files), or ■ Enter the IP address of the Core Services computer.

10. If this is the first time you have installed a DNA component on this computer, enter the name that you want to appear on the Programs folder (and Windows Start menu), or accept the default value, and click Next.

    The installation program installs ENP. When it is finished, it displays the Setup Complete window.

11. Restart the computer or not, as follows:

    - If you want to immediately install other DNA components on this computer, click "No, I will restart my computer later" and click Finish.

    - If you do not want to install any other components on this computer, click "Yes, I want to restart my computer now" and click Finish.

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Viewing Electronic Books Online   183

Viewing Electronic Books Online

The DNA documentation CD includes electronic copies of this book, plus several DEFINITY system administration books. It also contains Guide Builder™ software for DEFINITY telephones, which you can use to create laser-printed user guides and designation cards for specific telephones.

With this CD, you can:

■ read the documentation directly from CD

■ install the documentation on your computer

■ install it on a network server, so people can access it using your LAN or corporate intranet.

■ install Guide Builder™

For instructions on performing any of the above options, refer to the readme file on the documentation CD.

Uninstalling the Electronic Books

To remove the electronic books, complete the following steps:

1. From the Windows Start menu, select Programs>Lucent Documents>Uninstall DNA Documents.

   If you installed the electronic books to a different location, select Uninstall DNA documents from wherever you installed them.

2. Click Yes to the confirmation dialog box.

   The uninstall program removes the documentation and indicates when the uninstall is complete.

3. Click OK.

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Shutting Down DNA | 184

Shutting Down DNA

Before you upgrade or uninstall DNA, you must shut down DNA. To do so, you must have access to the Core Services computer. Then complete the following steps:

1. Start the DNA client and log in using a DNA administration login.

2. Click the Administration button on the DNA toolbar.

3. Select Action>Shutdown DNA.

   If other clients are logged in, DNA will ask you if you want to proceed. Click Yes.

4. Specify the number of minutes before shutdown and click OK.

   DNA begins shutting down. You can watch the progress of the shutdown by opening the DNA Service Manager, as explained in the next step. When you do, you should see each of the DNA services terminating, except for the Naming Service, which requires an additional step to terminate.

5. On the Core Services computer, double-click the DNA icon (a helix) on the right end of the Task Bar.

   DNA displays the DNA Service Manager.

6. Wait until all services have terminated except the Naming Service.

7. Select File>Exit and click Yes to the confirmation dialog box.

   You must perform Steps 1-4 before 5-7. You also must perform Step 6 before Step 7. Otherwise, DNA will not shut down cleanly.

Uninstalling DNA

To remove DNA from a computer, you must have Windows NT Administrator privileges.

1. If DNA is running on this computer, shut down DNA.

2. From the Windows Start menu, select Settings>Control Panel.

3. Double-click Add/Remove Programs.

4. On the Install/Uninstall tab, highlight DEFINITY Network Administration and click the Add/Remove button.

5. Confirm that you want to remove the selected application.

   If DNA uses software components that are also used by another application, the system displays the Remove Shared File? dialog box. If you know that the shared file is not being used by any other application, you can delete it by clicking Yes or Yes to All.

6. Click OK.

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Removing DNA Files from Your Computer 185

Removing DNA Files from Your Computer

If you uninstall DNA, some DNA files may remain on your computer. For example, DNA stores a database of translations for each supported switch, history logs of actions performed using DNA, and so on. If you want to remove these files, complete the following steps:

1. Using Windows File Manager, open the folder in which you installed DNA.

   If you accepted the default installation location when you installed DNA, look in C:\Program Files\Lucent\DNA.

2. Delete any directories and files that DNA has created, by selecting them, pressing the Delete key, and clicking OK.

   If you accidentally delete something, you can retrieve it from the Windows NT Recycle Bin, unless you turned off the Recycle Bin when you configured Windows NT.

3. Repeat the above steps on all DNA servers.

Upgrading Switches

Before upgrading a switch, be sure that the new version is supported by the version of DNA you are using (). Also be sure to execute all scheduled DNA tasks and custom scripts for that switch, and then save translations, before upgrading.

After you upgrade your switch, you must upgrade the DNA Device Service component that supports that switch, described next.

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Upgrading Standard DNA Components   186

Upgrading Standard DNA Components

When you upgrade DNA, you must upgrade *every* computer that has *any* DNA component installed (including the optional ENP feature or client software).

1. If DNA is running on this computer, shut down DNA.

2. Back up your DNA system .

3. Insert the DNA CD into the CD drive.

   DNA displays a CD browser window.

4. Click Install DNA.

   The installation program extracts the necessary files.

5. At the Welcome window, click Next.

6. To view the release notes, click Yes.

   After viewing the release notes, click X to close the window.

7. View the upgrade summary page and click Next.

   The summary page lists all DNA components that have been detected on the computer. All of these will be upgraded automatically after you complete the next screen.

8. Indicate whether or not you have backed up your system.

   Do not continue with the upgrade unless you have backed up. To proceed, click Yes. The upgrade program displays an MS-DOS window, which upgrades your databases to the new version. Then the installation program copies the new version of DNA to your computer.

9. Restart the computer or not, as follows:

   - If you want to immediately install other DNA components on this computer, click "No, I will restart my computer later" and click Finish.

   - If you do not want to install any other components on this computer, click "Yes, I want to restart my computer now" and click Finish.

10. Repeat these steps to upgrade any other DNA computers on your network.

To install additional clients, Connection Services, Button Label Printer Services, or Device Services on this computer, see "Adding or Reinstalling Standard Components" on page 180.

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Upgrading the Electronic Books   187

Upgrading the Electronic Books

If you have old DNA documentation on your computer, and you want the current DNA documentation, remove the old documentation before installing the new. To do so, complete the following steps:

1. Close the DNA documentation if it is open.

2. Remove the old documentation by choosing Start>Programs>Lucent Documents>Uninstall DNA Installation Docs.

3. Install the new DNA documentation, following the instructions on the readme file that comes on the documentation CD.

Backing Up

It is your responsibility to back up your system regularly. You must back up every computer where DNA is installed (including those hosting only the DNA client).

If you accepted the default pathnames when you installed DNA, we recommend that you back up the entire directory called:

- C:\Program Files\Lucent\DNA

If you can't back up the entire directory, then back up the following directories, at a minimum:

- C:\Program Files\Lucent\DNA\rt
- C:\Program Files\Lucent\DNA\devices
- C:\Program Files\Lucent\DNA\data

You should also back up the computer's registry. To do so, complete the following steps:

1. Choose Start>Run.

2. In the Run dialog box, type `rdisk` in the field, and click OK.

3. In the Repair Disk Utility dialog box, click Update Repair Info.

4. Click Yes in the confirmation dialog.

   The Repair Disk Utility backs up the registry. When it is done, it asks if you also want to save the information to floppy disk. To do so, click Yes and follow the prompts.

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  Backing Up   *188*

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16 Configuring DNA

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Configuring DNA

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When you configure DEFINITY Network Administration (DNA), you enable it to communicate with the devices it supports. To configure DNA, you will perform the following main steps. The rest of this chapter explain these steps in detail.

1. Reboot the computer after installing DNA (before configuring).

2. Set up permissions on DNA's "data" directories.

3. Start DNA and log on.

4. Set the password for the root login.

5. Register the following:

   - all host computers

   - all Connection Services

   - all Button Label Printer Services

   - all Device Services

   - all ENP Services, if applicable

6. Configure the following:

   - all Connection Services

   - all Button Label Printer Services

   - all Device Services

   - all ENP Services, if applicable

   - the DNA Navigator

7. Add DNA users.

8. Set up e-mail notification.

9. Create groups.

10. Assign DNA users to groups.

11. Assign permissions.

12. Initialize DNA databases supporting DEFINITY ECS Systems.

13. Set up resynchronization intervals and scheduled maintenance periods.

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16 Configuring DNA
Setting Up Permissions on Data Directories   190

Setting Up Permissions on Data Directories

When people use DNA, DNA creates files in the "data" directory on your DNA servers. Most of the time, DNA creates data files on the Core Services computer. However, sometimes DNA creates data files on other DNA servers (if they exist).

If you do not set up sharing on the "data" directories appropriately, DNA users will not be able to read or write to these directories. From the DNA user's perspective, it would appear that certain wizards (like Data Export or Data Import) are not functioning correctly.

For example, if you do not share the "data" directory properly, and someone uses the Data Export wizard, the wizard would write the file to the "data" directory, but the DNA user would not be able to view or access it. Similarly, the (optional) ENP feature would also be affected: users would not be able to "read in" an external file to specify a list of extensions to move.

For these reasons, after you install DNA but before anyone uses it, be sure to set up appropriate network accounts, and be sure that each person who will use DNA has appropriate access privileges to the "data" directories on all DNA servers.

Starting DNA

1. On every computer that hosts a DNA server component, start the DNA Service Manager.

   If you accepted the defaults when you installed DNA, you would choose Start>Programs>DEFINITY Network Administration>DNA Service Manager. A small, double-helix icon appears in the lower-right corner of the screen, in the Windows tray manager.

   You can double-click the icon to display the DNA Service Manager and observe the progress of the start. You should see the following services appear: Administration, Naming service, EventLog service, LogicalView service, Scheduler service, and ScriptFactory service. If you have installed and configured the Connection Service and Device Services, you should also see the ConnSvrAdmin service, and a Device Service for each device.

2. Start the DNA client.

   If you installed DNA in the default location, you would select Start>DEFINTY Network Administration>DNA Client.

Logging In

The first time you log in, use "root" as the username and "year2000" as the password.

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Setting the Root Password   *191*

Setting the Root Password

To prevent others from logging into DNA as the DNA Administrator, change the password associated with the "root" login.

1. Click the Administration button on the DNA toolbar.

2. Click the Administrators folder.

3. In the right pane, right-click on root and select Properties from the popup menu.

4. Enter the new password and re-enter it to confirm the spelling.

   A red box displays around the field until you *fully* enter a valid value.

5. Click OK.

If you don't want to use the root login when you configure the software, you can add yourself as a user and then assign yourself to the DNA Administrator group, which provides you with full administrative permissions.

Registering Host Computers

Registering host computers tells DNA what computers support it. You do not need to register the computer that hosts the Core Services (this was done automatically when you installed it). Also, you do not need to register a computer if *only* the DNA client is installed on it. However, you must register all computers that host DNA server components.

To register additional host computers, complete the following steps:

1. Click the Administration button on the DNA toolbar.

2. Right-click on Hosts and select New>Host Machine from the popup menu.

3. Type the FQDN or IP address of the host you want to add.

   We recommend using FQDNs or IP addresses consistently for all of the different DNA components. That is, if you use an FQDN here, use FQDNs when you register all of the other DNA components, too.

4. Click OK.

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Registering Connection Services   192

Registering Connection Services

When you register Connection Services, you tell DNA where the communications devices are that support it.

To register Connection Services, complete the following steps:

1. Click the Administration button on the DNA toolbar.

2. Open the Hosts folder.

   In the right pane, DNA displays all registered hosts.

3. Under Hosts, right-click on the host on which you installed the Connection Service you want to register.

4. Select New>Connection Service from the popup menu.

5. Confirm the addition by clicking OK.

6. Repeat these steps to for all other hosts that you installed the Connection Service software on.

Registering Button Label Printer Services

Registering Button Label Printer Services tells DNA what laser printers are available for printing the labels that go on your company's telephones.

To register Button Label Printer Services, complete the following steps:

1. Click the Administration button on the DNA toolbar.

2. Open the Hosts folder.

   In the right pane, DNA displays all registered hosts.

3. Under Hosts, right-click on the host on which you installed the Button Label Printer Service you want to register.

4. Select New>Button Label Printer from the popup menu.

5. Enter the name you gave the Button Label Printer Service when you installed it on the given host machine.

   You may have installed several Button Label Printer Services on a single computer; this step tells DNA which one you want to register. Type the name exactly as you typed it when you installed this Button Label Printer Service. The installation planner should have recorded this on the Data Network Information Form for *this* computer ().

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Registering Device Services   193

If you forgot the precise name of the service, you can determine it as follows:

    a. Open Windows File Explorer on the computer where you installed the Core Services.

    b. Open DNA's devices folder.

       If you installed DNA in the default directory, you will open C:\Program Files\Lucent\DNA\devices. This contains folders for each of the Device Services and Button Label Printer Services you installed. Use the same spelling (including case) as is on these folders when you register a service.

6. Confirm the addition by clicking OK.

7. Repeat these steps to register other Button Label Printer Services.

Registering Device Services

When you register Devices, you enable DNA to present you with a list of switches and voice mail systems that you can choose from during other configuration tasks. To register Devices, complete the following steps:

1. Click the Administration button on the DNA toolbar.

2. Open the Hosts folder.

   In the right pane, DNA displays all registered hosts.

3. Right-click on a host computer, and from the popup menu, select New and the type of device you want to add:

Select this option	For this type of device
Definity ECS	any supported DEFINITY ECS System (page 16) you want to administer using DNA.
AUDIX	any supported DEFINITY or Intuity AUDIX system you want to administer using DNA.
Device	for all other kinds of telephony devices, including DEFINITY and AUDIX Systems that are not supported by DNA.

4. Type the name of the device and click OK.

   Type the name exactly as you typed it when you installed this Device Service. The installation planner should have recorded this on the Data Network Information Form for *this* computer (page 31).

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Registering ENP Services   194

If you forgot the precise name of the Device Service, you can determine it as follows:

    a. Open Windows File Explorer on the computer where you installed the Core Services.

    b. Open DNA's devices folder.

       If you installed DNA in the default directory, you will open C:\Program Files\Lucent\DNA\devices. This contains folders for each of the Device Services and Button Label Printer Services you installed. Use the same spelling (including case) as is on these folders when you register a service.

5. Repeat these steps to register other Device Services.

Registering ENP Services

Registering ENP Services only if you installed the (optional) ENP feature. To register an ENP service, complete the following steps:

1. Click the Administration button on the DNA toolbar.

2. Open the Hosts folder.

    In the right pane, DNA displays all registered hosts.

3. Under Hosts, right-click on the host on which you installed the ENP service you want to register.

4. Select New>ENP Service from the popup menu.

5. Type the name you want to give this ENP network.

    The installation planner should have recorded this on the Data Network Information Form for *this* computer ().

6. Click OK.

    DNA adds the ENP service to the DNA Navigator window.

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Configuring Connection Services 195

Configuring Connection Services

The Connection Service stores information that DNA uses to connect to the devices it supports. You will need to configure each copy of the Connection Service separately, because each copy is installed on a different computer and serves different devices.

Overview

To configure the Connection Service, you will complete the following basic steps, which are explained in detail in the procedures that follow:

1. Open the Connection Service Administration window. (page 195)

2. Set up serial device scripts. (page 195)

3. Set up end point scripts. (page 196)

4. Set up serial ports. (page 197)

5. Set up end points. (page 198)

Opening the Connection Service Admin Window

The Connection Service Administration window is where you will perform all activities to configure the Connection Service software.

1. Click the Administration button on the DNA toolbar.

2. Open the Hosts folder.

3. Under Hosts, double-click on the host containing the Connection Service you want to configure.

4. Double-click on ServiceConnSvrAdmin.

Setting Up Serial Device Scripts

Most likely, you will not need to create your own device scripts. If you do, read this section. Serial device scripts control the configuration of peripherals, such as modems, data modules, or whatever device you are using to connect DNA computers to the switches and voice mail systems that DNA supports.

DNA comes with pre-configured serial device scripts for 7400 data modules, 8400 data modules, ADUs, PDMs, and generic modems. The generic modem script will work for the majority of Hayes-compatible modems. To set up a new serial device script, complete the following steps:

1. Right-click on Serial Device Scripts and select New>Serial device script from the popup menu.

2. Enter the name you want to give the serial device script.

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The installation planner should have recorded this on the Data Network Information Form for this computer (Step e on page 29). If the value recorded is 7400, 8400, ADU, Generic Modem, or PDM, these are the pre-configured scripts that DNA provides by default. Most likely, this means you should not be configuring your own script, but instead using a DNA default. In that case, skip this section. You will use the information that the installation planner recorded (above) in Step 5 on page 197.

3. Click OK.

   DNA adds the script to the Connection Service Administration window. If you want to take the default values that DNA assigns to serial device scripts, *STOP HERE.*

4. To set your own script for the serial device, right-click on the serial device script that you just added and select Properties from the popup menu.

5. Make any necessary changes to the scripts.

   The script format follows UUCP conventions. See "Appendix B — UUCP Send/Expect Strings" on page 227.

6. Click OK.

Setting Up End Point Scripts

Most likely, you will not need to create your own end point scripts. If you do, read this section. "End points" are the switches, voice mail systems, and other telephony devices that DNA can communicate with. End point scripts tell DNA how to log into and out of these devices.

DNA comes with pre-configured end point scripts for DEFINITY ECS, DEFINITY AUDIX, and Intuity AUDIX end points. If you want to use a pre-configured end point script, skip this section. If you want to add your own end point script, complete the following steps:

1. In the Connection Service Administration window, right-click on End Point Scripts and select New>End Point Script from the popup menu.

2. Enter a name for the end point script.

   The installation planner should have recorded this on the Data Network Information Form for this computer (Step f on page 29). If the value recorded is DEFINITYECS, DEFINITYAUDIX, or Intuity AUDIX, these are the pre-configured scripts that DNA provides by default. Most likely, this means you should not be configuring your own script, but instead using a DNA default. In that case, skip this section. You will use the information that the installation planner recorded (above) in Step 5 on page 198.

3. Click OK.

   DNA adds the end point script you specified to the Connection Service Administration window. If you want to take the default values that DNA assigns to end point scripts, *STOP HERE.*

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4. Right-click on the end point script you just created and select Properties from the popup menu.

5. Make any necessary changes to the scripts.

    The script format follows UUCP conventions. See "Appendix B — UUCP Send/Expect Strings" on page 227.

6. Click OK.

Setting Up Serial Ports

Setting up serial ports associates serial device scripts with a particular COM port on this computer. You will need to set up a serial port for each COM port that DNA uses to communicate with the devices it manages. So, for example, if you are using only one COM port on a given computer to communicate with devices, you would perform these steps only once on that computer.

1. In the Connection Service Administration window, right-click on Serial Ports and select New>Serial Port from the popup menu.

2. Select a COM port number from the drop down list.

3. Click OK.

4. Right-click on the serial port you just added and select Properties from the popup menu.

5. Associate a serial device script with this serial port, as follows:

NOTE:
If this is a direct serial connection, leave the Serial Device Script field blank.

   a. Click the browse button.

   b. In the dialog box that displays, double-click the Serial Device Script folder.

   c. Highlight the appropriate serial device script and click Select.

       The installation planner should have recorded this on the Data Network Information Form for this computer (Step e on page 29).

   d. For the other fields, make any changes and click OK.

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Setting Up End Points

Setting up end points associates device scripts and either network connections or serial port connections with that device.

1. In the Connection Service Administration window, right-click on End Points and select New>End Point from the popup menu.

2. Type a name for the end point or click the Browse button to locate one.

   This must match the name of the installed device that this end point is for.

3. Click OK.

   Within the End Points folder, DNA adds a folder for the end point you specified.

4. Double-click on the End Points folder.

   DNA displays all of the end points in the End Points folder.

5. Give the end point an end point script, as follows:

   a. Right-click on the end point you just created and select New>End Point Script from the popup menu.

      If you do not see this option, it is probably because you have already associated an end point script with this end point. Each end point can be associated with only one end point script.

   b. Enter the name of the end point script in the End Point Script field or:

      1. Click the browse button.

      2. Highlight the appropriate end point script and click Select.

         The installation planner should have recorded this on the Data Network Information Form for this computer (Step f on page 29).

   c. Click OK.

      DNA adds the selected end point script to the end point folder that you created in Step 3 of this procedure.

6. If DNA is using a network connection to communicate with the device in question, then give the end point a network connection, as follows:

   a. Right-click the end point you created and select New>Network Connection from the popup menu.

   b. Type a name for the network connection.

      The installation planner should have recorded this on the Data Network Information Form for this computer (Step n on page 29). For example, TCP/IP to WestCampusSwitch.

   c. Click OK.

      DNA adds the network connection to the end point folder you created in Step 3 of this procedure.

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      d. Right-click the network connection in the right panel and select Properties from the popup menu.

      e. In the TCP/IP Host Name field, type the FQDN or IP address of the end point.

         The installation planner should have recorded this on the Data Network Information Form for this computer (Step o on page 29).

      f. In the TCP/IP Service/Socket field, type the socket name or number of the end point.

         The installation planner should have recorded this on the Data Network Information Form for this computer (Step p on page 29). For example, "telnet" or "23".

      g. Click OK.

7. If DNA is using a serial port to communicate with the device in question, then give the end point a serial port connection as follows:

      a. Right-click the end point you created and select New>Serial Port Connection from the popup menu.

      b. Enter the name for this *connection* (not the serial port).

         The installation planner should have recorded this on the Data Network Information Form for this computer (Step h on page 29). For example, COM1 to EastCampusSwitch.

      c. Click OK.

         DNA adds the connection name to the end point folder that you created in Step 3 of this procedure.

      d. Right-click the serial port connection you just added and select Properties from the popup menu.

      e. In the Serial Port field, enter the name of the serial port you want to use with this end point or:

         1. Click the browse button.

         2. Highlight the appropriate serial port and click Select.

            The installation planner should have recorded this on the Data Network Information Form for this computer (COM Port # column header page 29).

      f. Type the phone number that DNA should use to connect from this Connection Service to this end point.

         The installation planner should have recorded this on the Data Network Information Form for this computer (Step i on page 29). If this is a direct connection, leave this field blank. Do not include parentheses ( ) in this field.

      g. Click OK.

8. Repeat Step 6 and Step 7 as many times as necessary to add all connectivity options for this device.

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Configuring Button Label Printer Services *200*

Configuring Button Label Printer Services

Configuring Button Label Printer services tells DNA which printer to print to and where on the page to print the button labels.

1. Click the Administration button on the DNA toolbar.

2. Open the Hosts folder.

3. Click on the host on which you registered the button label printer service that you want to configure.

4. Right-click on the button label printer service you want to configure and select Properties from the popup menu.

5. In the General tab, in the Printer Name field, enter the UNC pathname for the printer that this service will use.

   The installation planner should have recorded this on the Data Network Information Form for this computer ().

6. Adjust the positioning of the button labels on the printed page, complete the following steps:

   a. Click the Set Types tab.

   b. Select the set type you want to adjust.

   c. Set Horizontal Offset and Vertical Offset fields.

      These fields accept multiple-character entries (in 1/100 of an inch).

7. Click OK.

Configuring Device Services

When you configure a device, you are giving DNA the information it needs to connect, log in, and communicate with the device.

1. Click the Administration button on the DNA toolbar.

2. Open the Hosts folder.

3. Click on the host containing the device you want to configure.

4. In the right-hand pane, right-click on the device you want to configure and select Properties from the popup menu.

5. In the General tab, enter a description of the device.

   DNA does not require this information; enter it here only to help you remember important facts about the device.

6. Click the Communications tab.

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7. Click Browse to search for the FQDN or IP address of the computer on which you registered the Connection Service software that will serve the device in question.

   If you click Browse, highlight the host and then click Select.

8. If you are configuring a DEFINITY ECS, in the Maximum Simultaneous Physical Connections field, enter the number of active connections you want to allow at one time through this Connection Service.

   This is typically 1, although it may be greater if you have configured multiple connections (network or serial).

9. If you are configuring a DEFINITY ECS, in the Disconnection Inactivity Timeout field, enter the number of seconds that you will allow without activity before the Device Service terminates the connection to this device.

   Recommended value: 300 seconds (5 minutes).

10. On the DEFINITY ECS (or AUDIX) tab, select the First Name First check box if you want DNA to send users' names to the switch (or voice mail system) with first name first.

    On DEFINITY ECS and AUDIX systems, there is only one field for the user's name. However, on DNA, there are two: one for first name and one for last name. This check box tells DNA how to combine the two name fields before sending the information to the switch or voice mail system.

11. Click the Admin tab.

    For a DEFINITY ECS, complete the following fields:

Field	Entry
Administration Account	In this field, type name of the DNA Administrative Login you created in "Creating the Administrative Login" on page 117.
Password	In this field, type the password of the DNA Administrative Login you created in "Creating the Administrative Login" on page 117.
Password check	Type the password again.
ASG Secret Key	If your switch has ASG enabled, and you want to use ASG for this login, then enter the Secret Key that you or the switch generated in "Creating the Administrative Login" on page 117.
Use ASG login	If your switch has ASG enabled and you want to use ASG for this login, select this check box.

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Configuring Device Services   *202*

For an AUDIX, complete the following fields:

Field	Entry
Administration Account	In this field, type the login for your AUDIX system.
Administration Account Password	In this field, type the AUDIX password.
Password check	Type the password again.
ASG Secret Key	If you are using ASG with this login, enter the Secret Key that DNA will use to access AUDIX using this login.
Use ASG login	If your AUDIX has ASG enabled and you want to use ASG for this login, select this check box.

12. If you are configuring a DEFINITY ECS, click the Init tab and complete the following fields.

Field	Entry
Initialization Account	In this field, type the name of the DNA upload login you created in .
Password	In this field, type the password you assigned to the upload login.
Password check	Type the password again.
ASG Secret Key	If your switch has ASG enabled, and you want to use ASG for this login, then enter the Secret Key that you or the switch generated in .
Use ASG login	If your switch has ASG enabled and you want to use ASG for this login, select this check box.

If you are configuring a DEFINITY ECS and you have not yet initialized the DNA database, you will be prompted to do so now.

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Configuring ENP Services   203

13. We recommend that you test connections before you initialize, because if the connection were not to work, DNA could not initialize.

> **NOTE:**
> Initializing a DEFINITY database can take several hours, and during that time you cannot use DNA to perform any other activity on that switch. Initialization time varies depending on the number of stations, trunks, and enabled switch features, as well as the dial plan configuration and other variables. Perform this activity during low-use periods.

   a. To initialize now, click OK.

   b. To test first and initialize later, click Cancel. Then see Chapter 16, "Configuring DNA".

      When you are ready to initialize, see "Initializing DEFINITY Databases" on page 218.

14. Click OK.

Configuring ENP Services

DNA's Enhanced Number Portability wizard will not move a station (or a subscriber) from one switch (or voice mail system) to another until DNA knows which switches (or voice mail systems) are a part of the network. This section explains how to tell DNA which systems are a part of a network.

Prerequisites

Before you can configure DNA's ENP Services, you must have performed the following tasks:

1. Create the switch and voice mail network.

   Your switches and voice mail systems must be networked before you can use DNA's ENP feature. If you haven't already created the network, either contact your Lucent representative to set one up, or refer to the documentation that came with your switch or voice mail system.

2. Install, register, and configure DNA Device Services for each switch or voice mail system that you want to administer with DNA's ENP feature.

   This step puts the correct DNA software in place to support the switches and voice mail systems that you networked in Step 1. Until you have Device Service components set up for each of your devices, you cannot configure the ENP Service.

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Opening the ENP Properties Dialog

Once you have set up your network and Device Services, then you can configure
DNA's ENP Service by completing the following steps:

1. Click the Administration button on the DNA toolbar.

2. Open the Hosts folder.

3. Click on the host on which you registered the ENP Service.

4. Right-click on the ENP Service and select Properties from the popup
   menu.

Specifying the Switches on Your Network

1. On the DEFINITYECSs tab, click Add to List.

2. In the Select Device dialog box, navigate to the switch you want to add to
   this ENP network.

   Putting a switch on this list does not make it a part of the physical switch
   network; it just tells DNA which switches are *already* a part of a network.
   For help using this screen, click the Help button.

3. Repeat Steps 1 and 2 until you have added all of the switches you want to
   the list.

4. Select the Extension Number Portability (ENP) routing radio button.

5. Enter the Node Number for each of the switches on the list.

   You installation planner should have gathered the Node Numbers of all
   switches on your network. To enter the Node Number, click in the Node
   Number box, type the number, and press Enter.

6. For each switch, select the Update check box if you want DNA to
   automatically update the switch's routing table when a station is moved
   from one switch to another.

   DNA will make the same change to all selected routing tables. DNA does
   not support making different changes to different routing tables. Therefore,
   do *not* select the Update check box for switches that need to be updated
   differently than the other switches on the list.

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Specifying the Voice Mail Systems on Your Network

This procedure is continued from .

1. Click the AUDIXs tab, and then click Add to List.

2. In the Select Device dialog box, navigate to the voice mail system you want to add to this ENP network.

   Putting a voice mail system on this list does not make it a part of the physical network; it just tells DNA which voice mail systems are *already* a part of a network. For help using this screen, click the Help button.

3. Repeat Steps 1 and 2 until you have added all of the voice mail systems you want to the list.

Configuring the DNA Navigator

DNA Navigator is the main window you use to view or access the devices DNA supports. In this task, you create the folders and place objects (devices or button label printer services) in the appropriate folder. Then, anyone who uses DNA can see what objects are available, and access them if they have appropriate permissions.

Creating Folders

Your installation planner should have specified what folders to create using the Folder Permissions Worksheet. When you know what folders to create, create them by completing the following steps:

1. Click the DNA Navigator button on the toolbar.

2. In the DNA Navigator window, right-click on the root folder and select New>Folder from the popup menu.

3. Type the name you want to give the folder.

4. Click OK.

   To rename a folder, delete the folder and create a new one.

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Adding Objects to Folders

After you create the folder hierarchy, you can add objects (devices or button label printer services) to the folders. Your installation planner should have specified which objects go in which folders. To add objects to folders, complete the following steps:

1. Right-click on the folder where you want to add the service and, from the popup menu, select New and the type of service you are adding.

   DNA displays a selection window.

2. Double-click on the host computer that contains the service you want to add.

3. Highlight the service you want to add and click OK.

   DNA places the service you selected inside the folder. This action merely inserts a shortcut; it does not copy or move the service from the location where you originally installed it.

Adding DNA Users

DNA users are the switch administrators, AUDIX administrators, and others who use DNA. Adding DNA users gives each person a login and password to access DNA, among other things.

To add a DNA user, complete the following steps:

1. Click the DNA Admin button on the toolbar.

2. Right-click on Administrators and select New>Administrator.

3. Complete the appropriate fields, as follows:

Field	Value
Login Name	Enter the login name for this DNA user. This is the name that the user must type at the DNA Login dialog box, to access DNA.
Name	Enter the real first and last name of the DNA user.
MAPI-Compliant E-mail Address	If you want DNA to send this person e-mail when certain conditions arise, enter the user's e-mail address, in a format appropriate to your e-mail application. For help, see ''Specifying the Recipient's E-mail Address'' on page 210.
Description	Completing this field is optional. You can use it to store administrator-specific information. DNA does not display this information in any other DNA screens, and the information you enter here has no effect on DNA, your switches, or other applications.

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Field	Value
Password/ Confirmation	In both of these fields, enter the password that this administrator would type to access DNA (regardless of whether you are using ASG for this login).
	You must enter a password here, even if you plan to use ASG.
	The Password and Confirm Password boxes are outlined in red until you enter a password in BOTH boxes that meets the following requirements: passwords must contain at least 7 characters, at least 1 character must be numeric, and at least 1 character must be alphabetic.
ASG	Complete this field only if you are enabling ASG for this login. Otherwise, leave this field blank.
	Either create a Secret Key of your own, or Click Create ASG Key to have DNA create one for you. If you create one on your own, it must conform to the following requirements:
	■ It must be 20 digits long.
	■ Each digit must be between 0 (zero) and 7, inclusive.
	■ The last digit must be 0 (zero).
	■ The next-to-last digit must be 0 (zero), 2, 4, or 6.
	Note the Secret Key and keep it in a secure location. Ideally, you should program your administrator's hand-held ASG PassKey immediately with the Secret Key. Less ideally, you can give the administrator the Secret Key using a secure method (for example, by telling them in person). Do not e-mail the Secret Key! (E-mail is not a secure transmission method!)
Use ASG login	Select this box if you want this user to have to enter an ASG response, instead of a password, to access DNA. This check box turns ASG on or off for this administrator, but does so only between the administrator and DNA. This field does not affect whether ASG is set up between DNA and a switch or voice mail system.

4. Click OK.

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Receiving E-mail Event Notification

DNA can send you (or any DNA user) e-mail when it encounters errors and other situations. To use this feature, you must first install a MAPI-compliant e-mail client (like Microsoft Outlook or Microsoft Exchange Client) on the Core Services computer, and install an e-mail server somewhere else on the network. The e-mail server must be running at all times. However, the e-mail client (on the Core Services computer) does not have to be running.

To configure e-mail notification, you must perform the following activities:

1. (Optional) Set up a separate mailbox for DNA on the e-mail server.

   When DNA sends out e-mail, it looks (to the recipient) like it is coming from this mailbox. Some companies set up a separate mailbox for DNA; others simply use an existing employee's mailbox. The advantage to using an existing employee's mailbox is that if someone inadvertently responds to a DNA e-mail, it is more useful if it goes to a mailbox that is checked regularly.

2. Create an e-mail profile called 'DNA' (as explained below) on the Core Services computer.

3. Specify the address of the person you want to receive e-mail.

4. Specify under what conditions you want DNA to send this person e-mail.

Creating an E-mail Profile for DNA

This book does not endeavor to explain how to set up all of the many different e-mail clients available. However, if your e-mail client is Microsoft Outlook or Microsoft Exchange Client, and you use Microsoft Exchange Server as your e-mail server, then the process for creating the 'DNA' e-mail profile is as follows:

1. From the Windows Start menu, choose Settings>Control Panel.

2. Double-click the 'Mail' or 'Mail and Fax' icon.

3. If other profiles already exist, click the Show Profiles button, or click the Add... button to create a new profile.

   Windows displays the Microsoft E-mail setup wizard.

4. Select the 'Manually configure information services' radio button, and click Next.

5. When prompted for the profile name, type **DNA** and click Next.

6. Click the Add... button, select Microsoft Exchange Server, and click OK.

   Windows displays a window you can use to configure the e-mail profile you are adding.

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7. Type the name of your Microsoft Exchange Server.

   If you do not know the name, ask your e-mail administrator or refer to the documentation that came with the application. Optionally, you can explore the client e-mail application.

   Below, we describe how you can determine the name of your e-mail server if you are using Microsoft Exchange Client, version 5. If you are using a different product (or version), these instructions may not work for you; in that case, read the documentation that came with the application.

   a. Open the e-mail application.

   b. Choose Tools>Options.

   c. Click the Services tab.

   d. Highlight Microsoft Exchange Server and click the Properties button.

      (If this option is not on the list, contact your e-mail administrator for help.) When the Properties screen appears, look for the name of your Microsoft Exchange server on the General tab. You can copy this name and paste it in the 'Mail' or 'Mail and Fax' dialog boxes.

8. Type the name of the Mailbox.

   If you do not know this, ask your e-mail administrator, who is responsible for creating mailboxes on the e-mail server. Note that this mailbox must be set up on the e-mail server *before* you can perform this step. Otherwise, this client will not be able to find the mailbox, and will not let you complete the profile.

9. In the "When Starting" area, select "Connect with the network".

   This question is targeted at people who use laptops or other non-networked computers to access e-mail. Since the Core Services computer is permanently connected to the network, the DNA e-mail profile should specify to connect with the network on startup.

10. Leave the check box called, "Choose the connection type when starting" unchecked.

    This question is also targeted at non-networked computers.

11. Click OK to exit the configuration window.

12. Click OK to exit the Properties window.

13. Indicate whether or not you want the e-mail client to run automatically when you start Windows on the Core Services computer, and click Next.

14. Click Finish.

15. Click Close on the 'Mail' or 'Mail and Fax' window.

16. Close the Control Panel.

> ➡ **NOTE:**
> You do not need to make this new DNA profile the default for the Mail and Fax clients.

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Specifying the Recipient's E-mail Address

You can specify the recipient's e-mail address when you first add a DNA user (see "Adding DNA Users" on page 206) or afterwards.

To do so afterwards, complete the following steps:

1. Click the Administration button on the DNA toolbar

2. Open the Administrators folder, right-click on the administrator you want to configure, and select Properties.

   DNA displays the User Properties dialog.

3. Enter a MAPI-compliant e-mail address in the e-mail address field.

   If you do not know the correct format, ask your e-mail administrator or check the documentation that came with your e-mail application.

   Optionally, you can often determine the correct format from the e-mail client itself (assuming you already have a working e-mail account set up). Below, we describe this process for Microsoft Exchange Client, version 5. If you are using a different product (or version), these instructions may not work for you; in that case, read the documentation that came with the application.

   a. Open your e-mail application.

   b. Open the address book.

      (In Exchange, choose Tools>Address Book.)

   c. Find the recipient's name in the list of addresses, and highlight it.

   d. When the name is highlighted, choose File>Properties.

   e. Click the E-mail Addresses tab.

      Any of the e-mail formats listed on this tab are acceptable for DNA's E-mail Address field.

Specifying the Events that Trigger E-mail

To specify which events will make DNA send someone e-mail, complete the following steps:

1. In the DNA Administration window, open the Administrators folder.

2. In the right pane, right-click on the administrator you want to configure, and select EMail Notification from the popup menu.

   DNA displays the Select Notifications dialog box.

3. Select the Set radio button.

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4. Click the Set... button to specify the conditions under which this DNA user will receive e-mail from DNA.

    DNA displays a History Filter dialog box. By default, this dialog box is configured so that DNA sends e-mail only when an error occurs upon execution of a DNA task.

5. To specify different conditions, select the appropriate boxes, as described below.

    The boxes on this page behave as AND statements. That is, the more check boxes you select, the fewer situations in which you will receive e-mail.

Table 11. E-mail Notification Set Filter dialog box

Field	Description
Severity: Information	DNA enters an "information" entry in the History Log when a task executes without error. Select this box to receive e-mail whenever this happens.
Severity: Warning	DNA enters a "warning" entry in the History Log when potential problems occur. Select this box to receive e-mail whenever this happens.
Severity: Error	DNA enters an "error" entry in the History Log when some kind of failure has occurred in the DNA system. Select this box to receive e-mail whenever this happens.
Event Classification	Select this box to receive e-mail when DNA encounters any of the situations listed when you click the Set... button. Click the Set... button to specify the conditions. Refer to Table 12 on page 212 for field descriptions.
User Name	Select this box to receive e-mail whenever events occur that originated from the actions of a particular DNA user. To specify the user, type the person's user name in the box, or click the ... button to choose from a list.
Service	It is not likely that you will need to use this field for e-mail notification purposes.
	Select this box to receive e-mail when DNA logs a History Log entry from a particular DNA service. To specify the service, type it in the box, or click the ... button to choose from a list.
	For example, to receive e-mail whenever someone accesses a particular switch, select this box and specify the name of the Device Service for that switch.

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Table 11. E-mail Notification Set Filter dialog box — *Continued*

Field	Description
Task ID	It is not likely that you will need to use this field for e-mail notification purposes.
	This field allows you to receive e-mail when DNA executes a task that has a particular identification number. DNA assigns ID numbers only when it executes (or attempts to execute) a task. For this reason, this field is useful only for notifying you about tasks that are being re-executed. For example, you could check this box if you want to be notified when DNA re-executes a regular task (like resynchronization) or a particular failed task.
Date	It is not likely that you will need to use this field for e-mail notification purposes.
	Select this box to receive e-mail when the DNA History Log is generated for a particular day.

6. If you selected the Event Classification check box in Step 5, then click the
   Set... button and select any of the following options.

   The boxes on this dialog box behave as OR statements. That is, the more
   boxes you check, the more situations in which you will receive e-mail.

Table 12. E-mail Notification Event Classification

Field	Description
Communications	Select this box to receive e-mail when any entries appear in DNA's History Log that deal with DNA's connections to supported switches and voice mail systems.
Service Manager	The Service Manager is the application that coordinates all of the services that make DNA run. Select this box to receive e-mail whenever the Service Manager logs an entry in the DNA History Log, such as a service starting or a service exiting.
Logins/Logouts	Select this box to receive e-mail when DNA users log into or log out of DNA.
DNA Administration	Select this box to receive e-mail when any DNA user makes an administrative change to DNA, such as adding a service, host machine, or administrator, or changing existing settings.

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Table 12. E-mail Notification Event Classification — *Continued*

Field	Description
Terminal Emulation	Select this box to receive e-mail when any DNA user opens a terminal emulation session to a device supported by DNA. If someone uses another terminal emulation package to cut through to a switch, you will not receive e-mail, because DNA only keeps track of its own terminal emulation sessions.
Button Label Printing	It is not likely that you will need to use this field for e-mail notification purposes. Select this box to receive e-mail when a DNA user prints button labels.
ICI Script Execution	Some customers write customized scripts for DNA to execute. If your organization uses DNA to execute ICI scripts, you can select this box to receive e-mail whenever DNA executes such a script.
ENP Wizard Execution	Some customers have their switches (or voice mail systems) networked, and have purchased DNA's optional Enhanced Number Portability (ENP) feature. If you are such an organization, and you want to know when the ENP feature logs any entries in the DNA History Log, select this box.
Task Execution	It is not likely that you will need to use this field for e-mail notification purposes. Select these boxes to receive e-mail when a task has been scheduled, started, or completed. Checking more than one box behaves as an OR statement. That is, if you check all three, you will receive e-mail in all three situations.
Sub Task Execution	It is not likely that you will need to use this field for e-mail notification purposes. DNA tasks can be made up of many subtasks. Select one of these options if you want to be e-mailed when subtasks start or complete.
Device Events	The Device Service for a particular switch or voice mail system is the DNA component that issues commands to that system. Select this option if you want to receive e-mail whenever DNA issues "read" commands (list, display, and so on) or "write" commands (change) for that system. Check "Device Events" to be notified when any other "device events" occur (such as accessing mirror database, relinquishing access to mirror database, GEDI session starting, and so on).

7. Click OK to exit the Event Classification dialog box (if you opened it).

8. Click OK to exit the User Properties dialog box.

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Creating User Groups

If you want to create a custom user group, complete the following steps:

1. Click the DNA Admin button on the toolbar.

2. Right-click Groups and select New>Group.

3. Type the name you want to give the group.

4. Click OK.

Adding Users to Groups

1. From the DNA Admin window, double-click Groups to see a list of user groups.

2. Right-click the group you want to add administrators to, then select New>Administrator.

   DNA displays a list of DNA users.

3. Select the user or users you want to add to this group.

   To select multiple entries, hold down the Ctrl key as you click the entries.

4. Click OK.

Assigning Permissions

You may want to read Chapter 10, "Permissions Overview" as well as Chapter 11, "Planning Device Permissions" before performing any of the activities in this section. Assigning Device Command Permissions

Assigning Device Permissions

Device Command permissions enable you to specify which DNA users can execute which commands on a given DEFINITY ECS.

Your installation planner should already have specified which users and groups should have permission to issue which DEFINITY commands, for each switch that will be supported by DNA, using the "Device Permissions Worksheet" on page 75.

To assign DEFINITY command permissions, complete the following steps:

1. Click the DNA Admin button on the toolbar.

2. Double-click on Hosts.

3. Click a host.

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4. Right-click on a device and select Permissions from the popup menu.

   DNA displays a tree view of all available commands for that device and any assigned permissions. By default, the Device Administrators group appears by default at the root level of the tree. Members of this group have access to all DEFINITY commands, but you can change that by removing this group from the root level of the tree and assigning it to the specific commands you want the group to be able to perform.

5. Right-click a command and select New>Command Permissions from the popup menu.

   DNA displays the Add Permissions window, which lists all DNA users and groups.

6. Select the DNA users and groups you want to have permission to execute the selected command.

   To select multiple entries, hold down the Ctrl key as you click the entries.

7. Click OK.

8. Repeat these steps for each command you want to set permissions for.

9. Repeat these steps for each DEFINITY that DNA supports.

Assigning Folder Permissions in DNA Navigator

Folder permissions enable you to specify which DNA users can access (*read* permission) or modify (*read/write* permission) the various folders in the DNA Navigator.

Your installation planner should already have specified which folders go in the DNA Navigator, using the "Folder Permissions Worksheet" on page 105.

To assign folder permissions, complete the following steps:

1. Click the DNA Admin button on the toolbar.

2. Double-click on Hosts.

3. In the left pane, click the host that contains the Core Services software.

4. Right-click on Service:LogicalView and select Permissions from the popup menu.

   DNA displays a tree view of all folders in the DNA Navigator.

5. Right-click the folder you want to set permissions for and select New>Folder Permissions from the popup menu.

   DNA displays the Add Permissions window, which lists all DNA users and groups.

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6. Select the DNA users and groups you want to have permission to access the selected folder.

   To select multiple entries, hold down the Ctrl key as you click the entries.

7. Click Read or Read/Write.

8. Click OK.

9. Repeat these steps for each folder.

Assigning Scheduler Permissions

Your installation planner should already have specified which DNA users should have scheduler permissions, using the Services Permission Worksheet on page 107. By default, all DNA users have permission to view and change their own scheduled tasks. This section explains how to set permissions to enable DNA users to view and change *other* users' scheduled tasks.

1. Click the DNA Admin button on the toolbar.

2. Double-click on Hosts.

3. Click the host that contains the Core Services software.

4. Right-click on Service:Scheduler and select Permissions from the popup window.

5. Right-click View All Tasks and select New>Command Permission from the popup menu.

   DNA displays the Add Permissions window, which lists all DNA users and groups.

6. Select the DNA users and groups you want to have permission to view all scheduled tasks.

   To select multiple entries, hold down the Ctrl key as you click the entries.

7. Click OK.

8. Right-click Change All Tasks and select New>Command Permission from the popup menu.

   DNA displays the Set Permissions window, which lists all registered DNA users and groups.

9. Select the DNA users and groups you want to have permission to change all scheduled tasks.

   To select multiple entries, hold down the Ctrl key as you click the entries.

10. Click OK.

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Assigning Call Accounting Permissions

Call Accounting packages keep track of call information that can be used for billing and cost allocation purposes. DNA can gather this information from the switches it supports and export it in a format that Call Accounting packages can use.

Your installation planner should already have specified which users and groups should have permission to export Call Accounting data from the switch, for each switch that will be supported by DNA, using the Services Permissions Worksheet on page 107.

To assign call accounting permissions, complete the following steps:

1. Click the DNA Admin button on the toolbar.

2. Double-click on Hosts.

3. Click the host that contains the Core Services software.

4. Right-click on DNA Administrator Service and select Permissions from the popup window.

5. Right-click Call Accounting and select New>Command Permission from the popup menu.

   DNA displays the Add Permissions window, which lists all DNA users and groups.

6. Select the DNA users and groups you want to have permission to gather and export Call Accounting data.

   To select multiple entries, hold down the Ctrl key as you click the entries.

7. Click OK.

Assigning History Log Permissions

DNA automatically allows all users to view their own history logs, but it does not automatically allow users to view *other* users' history logs. This section explains how to give DNA users permission to view *other* users' history logs.

1. Click the DNA Admin button on the toolbar.

2. Double-click on Hosts.

3. Click the host that contains the Core Services software.

4. Right-click the Event Log Service and select Permissions from the popup window.

5. Right-click View Other Administrator's Events and select New>Command Permission from the popup menu.

   DNA displays the Add Permissions window, which lists all DNA users and groups.

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6. Select the DNA users and groups you want to have permission to view all history logs.

   To select multiple entries, hold down the ctrl key as you click the entries.

7. Click OK.

Initializing DEFINITY Databases

After you register and configure the Device Services for DEFINITY ECS Systems, you can initialize DNA's databases. This process loads the DEFINITY translations and configuration information into the Device Service database for that switch.

➡ NOTE:

Initializing a DEFINITY database can take several hours, and during that time you cannot use DNA to perform any other activity on that switch. Initialization time varies depending on the number of stations, trunks, and enabled switch features, as well as the dial plan configuration and other variables. Perform this activity during low-use periods.

1. In the DNA Admin window, double-click the Host folder.

2. Click on the host containing the Device Service for the DEFINITY you want to initialize.

3. Right-click on the DEFINITY System you want to initialize and select Properties from the popup menu.

4. Click the DEFINITY ECS tab.

5. Click the Initialize Now button.

6. Confirm that you want to initialize the database by clicking OK.

   DNA begins copying translations from the DEFINITY System to the Device Service database that supports it.

Setting Resynchronization Intervals

DNA's Device Service contains a copy of a switch's translations in a "mirror image database." The database and the switch *must* stay in sync in order for DNA to work. They stay in sync if you use DNA's wizards or GEDI to make changes to the switch. They can fall out of sync if you use *anything else* to administer the switch, including: terminal emulation, SAT, G3-MA, TERRANOVA, DEFINITY Site Administration (DSA), Centre Vu Supervisor, Call Management System (CMS), or any third-party software application.

To adjust for *infrequent* or *minor* differences between a switch and its database, DNA offers a resynchronize feature. This feature issues a "list history" command on the switch and compares the switch changes to those made in the database. If DNA finds changes in the switch's history log that are *not* in its database, it will copy them into the database.

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However, the resynchronization feature is only a stop-gap measure:

- DNA cannot reproduce any `add <object> next` commands in its databases (except for `add station next` on switches of less than 5000 stations) because the precise extension has not been recorded in the "list history" log.

- Combinations of adds, removes, and changes may result in dependencies that cannot be reproduced in the DNA database.

For these reasons, to ensure that DNA databases stay in sync with the switches DNA supports, *only* use GEDI or DNA's wizards to administer DNA-supported switches.

⇒ NOTE:

If you make many changes or large changes to the switch using something other than DNA's wizards or GEDI, you may exceed DNA's ability to resynchronize its databases. If that happens, DNA will tell you in its History Log that you must *re-initialize* the DNA databases. Reinitializing can take several hours (see).

To set the resynchronization interval, complete the following steps:

1. On the toolbar menu, select Custom Task>Resynchronization...

   DNA displays the resynchronization wizard.

2. In the selection window, type the name of the switch you want to resynchronize DNA with. Optionally, click Browse to locate it, and then click Select.

3. Click Finish.

4. Accept the default values for Description, Path, Administrator, Script Engine, and Stop/Continue on Error fields.

5. Click Repeated.

6. Specify when you want the resynchronizations to occur:

   a. In the First field, specify the date on which you want the task to start.

   b. In the Last field, specify the date on which you want the task to end.

      Do not leave the date blank.

   c. In the Times area, select a time from the drop-down list and click Add to add it to the list of times when you want the task to run. To delete a time, highlight it and click Delete.

   d. In the Days area, click the days on which you want the task to run.

7. Click OK.

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Setting Scheduled Maintenance Intervals

If you know when your switch will be performing scheduled maintenance, you can tell DNA to stop administration activities during that period so that maintenance can occur without interruption. DNA users who check on the status of their submissions during that time will see that the submissions have failed.

> **NOTE:**
> This feature does not prevent others from accessing the switch via SAT terminals or other forms of terminal emulation; it merely blocks DNA tasks from executing on the switch.

To set a scheduled maintenance interval, complete the following steps:

1. Click the Task Editor button on the toolbar.

2. Select Edit>Insert>Custom Task>Sleep.

3. In the Device box, enter (or click Browse to search for) the name of the device.

4. In the Hours and Mins boxes, enter the number of hours and minutes you want DNA to block DNA-administration to the switch.

5. Click Finish.

   DNA inserts the sleep task in the Task Editor window.

6. Highlight the sleep task and select File>Schedule.

7. Accept the default values for Description, Path, Administrator, Script Engine, and Stop/Continue on Error fields.

8. Click Now, Once, or Repeated.

   If you click Now, go to step 10. If you click Once or Repeated, DNA displays the Schedule Task dialog box; go to step 9. (We recommend selecting Repeated.)

9. Specify when to block DNA tasks from being sent to the switch:

   a. In the First field, specify the date on which you want the task to start.

   b. In the Last field, specify the date on which you want the task to end.

      Do not leave the date blank.

   c. In the Times area, select a time from the drop-down list and click Add to add it to the list of times when you want the task to run. To delete a time, highlight it and click Delete.

   d. In the Days area, click the days on which you want the task to run.

10. Click OK.

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Testing Connections   221

Testing the Installation

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To test that you have correctly installed and configured all the components of DEFINITY Network Administration (DNA), complete the following sections.

Testing Connections

To test DNA's connections to supported devices, complete the following steps:

1. Start DNA (page 190) and log in (page 190).

2. Click the DNA Navigator button on the toolbar.

3. Double-click the folder that contains the device you want to test.

4. Right-click the device and choose how you want to connect.

   If you are testing the connections to a switch, select cut-through.

5. Enter a command and see if the device responds.

Testing Permissions

To test the permissions you set up, add some "test users" to DNA, put them in the user groups you have set up, and then log in as one of the test users and see if you can access the screens and execute the commands that you set up for that user group. Make sure that you cannot access areas of the system that were blocked to this user group, and that you cannot issue commands that were blocked to this user group.

If you notice problems, you either have the "test user" in the wrong user group or the permissions for that user group are set incorrectly.

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17 Testing the Installation
Troubleshooting Connections

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Troubleshooting Connections

In the table below, find the symptoms in the left column and follow the instructions in the right.

Symptom	Solution
Folder does not appear or folder does not open.	■ The folder has not been created (page 205), or
	■ The person performing the operation does not have permission to open the folder either because:
	■ the user was not assigned to the proper group(s) (page 214), or
	■ the group was not given proper permissions (page 214).
Device does not appear.	■ The device has not been registered (page 193), or
	■ The device has not been placed in the DNA Navigator (page 205), or
	■ The person performing the operation does not have permission to open the folder, either because
	■ the user was not assigned to the proper group(s) (page 214), or
	■ the group was not given proper permissions (page 214).
Folder and device appear, but right-clicking and selecting a connection method does not open the administration windows.	Check Connection Service settings (page 195). "Ping" the server. Be sure that hardware has been connected correctly (page 49).
Administration windows appear, but commands do not work.	Check permissions settings (page 215).

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A   Appendix A — Pinouts

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Appendix A — Pinouts

<div style="text-align: right; font-size: 96px; font-weight: bold;">A</div>

This appendix provides the pinouts for the cables, wall jacks, and circuit packs described in this book. Table 13 shows the pinouts for the analog line, digital line, data line, and packet data line circuit packs. Use this table when wiring modems, data modules, and ADUs.

Table 13.   Circuit Pack Pinouts

Wire Color	Connector Pin Number	2-Wire Digital and Analog Line 16 Ports	4-Wire Digital and Data Line 8 Ports	2-Wire Digital Line 24 Ports	Packet Data Line
W-BL	26	T1		T1	TXT1
BL-W	01	R1		R1	TXR1
W-O	27	T2	TXT1	T2	PXT1
O-W	02	R2	TXR1	R2	PXR1
W-G	28	T3	PXT1	T3	TXT2
G-W	03	R3	PXR1	R3	TXR2
W-BR	29	T4		T4	PXT2
BR-W	04	R4		R4	PXR2
W-S	30		TXT2	T5	TXT3
S-W	05		TXR2	R5	TXR3
R-BL	31		PXT2	T6	PXT3
BL-R	06		PXR2	R6	PXR3
R-O	32			T7	TXT4
O-R	07			R7	TXR4
R-G	33		TXT3	T8	PXT4
G-R	08		TXR3	R8	PXR4
R-BR	34	T5	PXT3	T9	TXT5
BR-R	09	R5	PXR3	R9	TXR5
R-S	35	T6		T10	PXT5
S-R	10	R6		R10	PXR5
BK-BL	36	T7	TXT4	T11	TXT6

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Table 13.   Circuit Pack Pinouts — *Continued*

Wire Color	Connector Pin Number	2-Wire Digital and Analog Line 16 Ports	4-Wire Digital and Data Line 8 Ports	2-Wire Digital Line 24 Ports	Packet Data Line
BL-BK	11	R7	TXR4	R11	TXR6
BK-O	37	T8	PXT4	T12	PXT6
O-BK	12	R8	PXR4	R12	PXR6
BK-G	38	T9		T13	TXT7
G-BK	13	R9		R13	TXR7
BK-BR	39	T10	TXT5	T14	PXT7
BR-BK	14	R10	TXR5	R14	PXR7
BK-S	40	T11	PXT5	T15	TXT8
S-BK	15	R11	PXR5	R15	TXR8
Y-BL	41	T12		T16	PXT8
BL-Y	16	R12		R16	PXR8
Y-O	42		TXT6	T17	TXT9
O-Y	17		TXR6	R17	TXR9
Y-G	43		PXT6	T18	PXT9
G-Y	18		PXR6	R18	PXR9
Y-BR	44			T19	TXT10
BR-Y	19			R19	TXR10
Y-S	45		TXT7	T20	PXT10
S-Y	20		TXR7	R20	PXR10
V-BL	46	T13	PXT7	T21	TXT11
BL-V	21	R13	PXR7	R21	TXR11
V-O	47	T14		T22	PXT11
O-V	22	R14		R22	PXR11
V-G	48	T15	TXT8	T23	TXT12
G-V	23	R15	TXR8	R23	TXR12
V-BR	49	T16	PXT8	T24	PXT12
BR-V	24	R16	PXR8	R24	PXR12
V-S	50				
S-V	25				

The following abbreviations apply for all circuit packs in this table. The wire colors apply only to B25A cables.

T   Tip
R   Ring
PX   PBX transmit
TX   Terminal transmit

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Figure 35 shows the cross-connects between a data line circuit pack and a packet data line circuit pack.
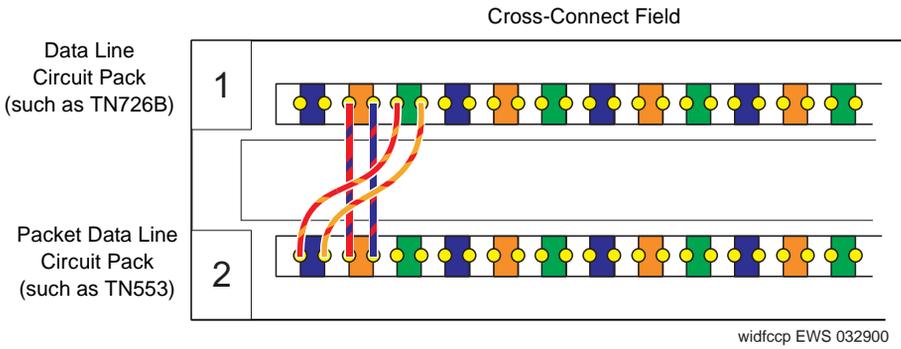
Figure 35. **Data Line-to-Packet Data Line Circuit Pack**

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Figure 36 shows the main distribution frame (MDF) punch-downs for common circuit packs.
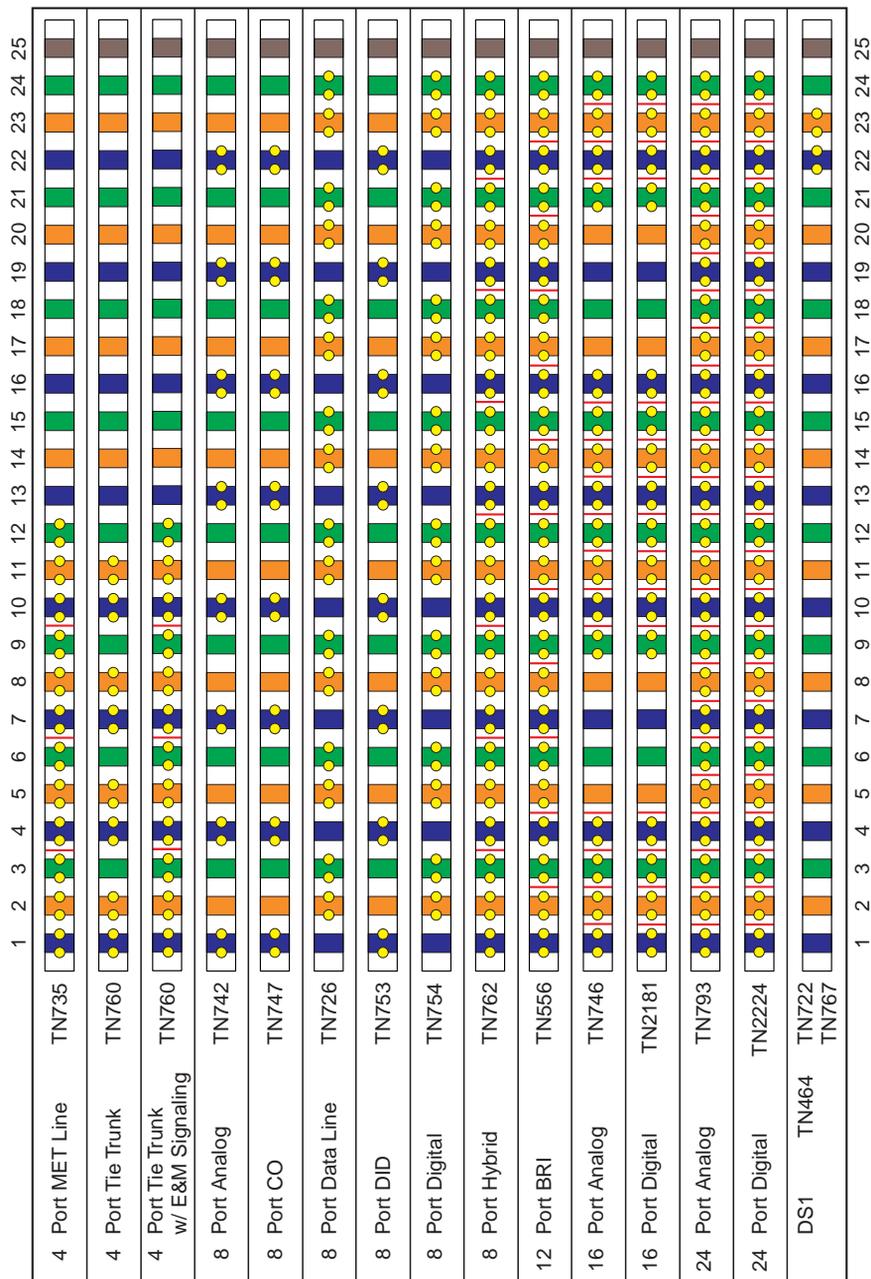
Figure 36.   Punch-downs for Common Circuit Packs

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B   Appendix B — UUCP Send/Expect Strings

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Appendix B — UUCP Send/Expect Strings

B

This appendix addresses some issues relating to the construction of UUCP send/expect strings that DNA uses for various scripts in the Connection Service.

The format of these strings is:

> send expect send expect...

where each send/expect component is separated from the next by spaces. When DNA executes a send/expect string, the 'send' component is sent and DNA waits for the 'expect' component to be received, or until some timeout expires, at which point the operation will fail.

To allow for some form of conditional processing, the 'expect' string can also be broken down into the following components:

> subexpect-subsend-subexpect-subsend-subexpect...

where each subexpect/subsend component is separated from the next by a **single** '-'(minus) sign. If DNA does not receive this 'subexpect' within some timeout, it will then send the following 'subsend' and wait for the next 'subexpect.' If the 'subexpect' is received, the rest of the subexpect/subsend string is ignored, and processing will continue with the next 'send' string. This process of waiting for a 'subexpect' and sending the next 'subsend' will continue until a 'subexpect' match is received (at which point the following 'send' will be sent), or until the subexpect/subsend sequence is exhausted (at which point the script will fail).

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Within each send/expect/subsend/subexpect string, a number of escape sequences can be used that control the device in special ways. Each escape sequence starts with a '\' character. The meaning of the various sequences are:

Sequence	Meaning
\b	Backspace character
\n	New line character
\p	Pause for 400 milliseconds
\r	Carriage return character
\s	Space character
\t	Tab character
\%	'%' character
\\	'\' character
\ooo	The null character represented by the octal (0-7) value 'ooo'
\N	NULL '\000' character
\B	BREAK sequence
\S	Skip this whole string and go to the next send/expect/subsend/subexpect string

When a send/subsend string is sent to a device, there are no new line or carriage returns automatically appended. If you need one to be sent, you must include it in the send/subsend string.

Also, within the login and dial scripts, a number of '%' delimited variables are recognized as follows:

Variable	Meaning
%phoneNumber%	The phone number to dial
%login%	The login name
%password%	The login password
%termtype%	The terminal type specified by the DNA application for this device
%%challenge%	The challenge the device issued for ASG authentication. (%% is intentional.)
%response%	The response that DNA generated for the given challenge.

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A sample that demonstrates most of these concepts is the following login script, which is used for logging into DEFINITY AUDIX devices.

\r ogin:-\r-ogin:-\r-ogin: %login%\r assword: %password%\r [513]

The processing of this string is as follows:

1. Send a carriage return.

2. Wait for the 'ogin:' portion of the 'login:' prompt. If that is received, then continue at Step 7.

3. If this is not seen within some timeout, then send another carriage return.

4. Wait for 'ogin:' once more. If that is received, then continue at Step 7.

5. If this is still not seen, send a final carriage return.

6. Wait a final time for the 'ogin:' prompt. If this is not seen, then abort the script.

7. Send the login name (expanded from %login%) that DNA provides followed by a carriage return.

8. Wait for the 'assword:' portion of the 'password:' prompt.

9. Send the login password (expanded from %password%) that DNA provides followed by a carriage return.

10. Wait for the terminal type prompt ('[513]') that the DEFINITY AUDIX next provides.

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Glossary and Abbreviations

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Glossary and Abbreviations

Numerics

103A
A modular wall jack.

A

ADU
Asynchronous data unit. Once of several connection devices you can use to connect DNA computers to the telephony devices DNA supports.

ASG
Access Security Gateway. A security feature available in DNA and optionally on your DEFINITY ECS system or AUDIX system.

C

component
A unit of the DNA software.

connection device
A modem, data module, asynchronous data unit (ADU), null modem cable, or terminal server you use to connect DNA computers to the telephony devices that DNA supports.

connection method
The general means by which you can connect your DNA computers to the telephony devices that DNA supports: direct serial connection, dial-up serial connection, and network (TCP/IP) connection.

Connection Service
A component of DNA that keeps information about any connection devices (modems, data modules, terminal servers, and so on) that DNA uses to communicate with the telephony devices it supports.

Core Services
A component of DNA that enables DNA's different parts to recognize each other, provides a navigational interface to the user, maintains a schedule of changes to be made to the telephony devices, and executes the changes.

D

device
See telephony device or connection device.

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Device Service

A component of DNA that keeps information about the different telephony devices (switches, voice mail systems, and so on) that DNA supports.

DIP

Dual Inline Package.

DNA

DEFINITY Network Administration. This product.

DNS

Domain Name Server.

E

ENP

Enhanced Number Portability. An optional DNA feature that enables you to move a station (and optionally a voice mail subscriber) from one DEFINITY ECS (and AUDIX) to another within a pre-defined network.

EPN

Expansion Port Network. In this book, an EPN can be considered a secondary switch cabinet or set of switch cabinets that serve the primary switch cabinet, which contains the Primary Port Network. See also PPN.

L

LAN

Local Area Network. A local data network. See also WAN.

P

PPN

Processor Port Network. In this book, PPN simply designates the main switch cabinet on any switch.

PSTN

Public Switched Telephone Network.

S

SAT

System Access Terminal. The dumb terminal that comes with a DEFINITY switch and is connected to it via a direct serial connection to the TERMINAL or TERM port on the back of the switch cabinet.

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T

telephony device
Any switch, voice mail system, or other adjunct you are using DNA to administer.

TERMINAL port
The port on the back of a DEFINITY switch that is used for direct serial connections to SATs or other computers used to administer the switch.

W

WAN
Wide Area Network. A data network that links two physically or geographically distant locations. See also LAN.

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