9300 NMS Installation Guide

codex

CODEX
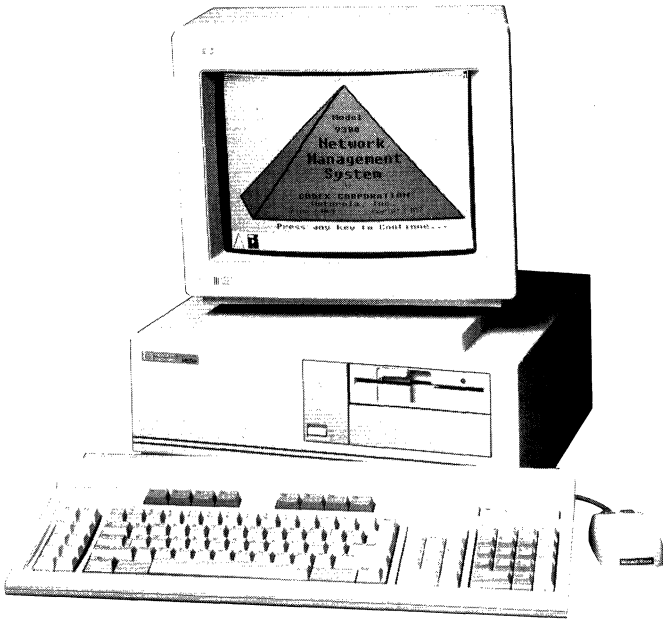
9300 NMS Installation Guide

Notice

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Ⓜ **MOTOROLA**

User Questionnaire
A prepaid user questionnaire is provided in the back of this manual for your comments. Codex welcomes your comments; your input is important in helping us improve the effectiveness of this manual. Thank you.

WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

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Production Editor: Jean E. Keyes

Codex Customer Service

This Installation Guide has been written to help you understand, install, and use your Codex product. For further technical assistance, please contact the Codex Customer Service office in your area during normal business hours. Use the map below to determine the telephone number to call.

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1-800-323-4999

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Preface

The *9300 NMS Installation Guide* is intended for network operators who are either initially installing their 9300 Network Management System (NMS) or upgrading their system with a new release of 9300 application software.

The guide provides a general description of system components and recommended procedures for installing the hardware and software. The *9300 NMS Installation Guide* has five chapters:

Chapter 1, The 9300 Network Management System, describes hardware and software components of the 9300.

Chapter 2, Installing the 9300 Hardware, outlines procedures for installing the personal computer and the network management hardware. It includes a list of recommended hardware diagnostic tests that should be run before loading any software.

Chapter 3, Loading Software (New Systems), is intended for operators who are loading software onto new 9300 systems. It explains the recommended procedure for preparing the hard disk for operation and for loading the various system software packages.

Chapter 4, Loading Software (Existing Systems), is for operators who are loading revised 9300 application software onto systems that were previously in operation. It contains information that should be read before restarting the 9300.

Chapter 5, Ordering Information and Return Procedures, lists product codes for ordering the 9300 system hardware and software and describes guidelines for returning equipment.

Preface (continued)

The following is a list of trademarks used in this guide:

- QuietJet is a trademark, and Hewlett-Packard, HP, and Vectra are registered trademarks of Hewlett-Packard Company.

- IBM is a registered trademark of International Business Machines Corporation.

- Microsoft and MS-DOS are registered trademarks of Microsoft Corporation.

- Reflex is a trademark and SuperKey is a registered trademark of Borland International, Inc.

Definitions of terms used in this guide can be found in the Glossary section of the *9300 NMS Operator's Guide*.

Chapter 1
The 9300 Network
Management System

Contents

The 9300 Network Management System

GENERAL

This chapter introduces you to the Codex 9300 Network Management System (NMS). The 9300 NMS combines advances in network management techniques with the high-resolution color graphics of a windowing environment. This hardware and software combination gives network operators a very effective tool for monitoring, testing, and managing a variety of Codex modems and multiplexers from a central site. The 9300 is designed for use with the Hewlett-Packard Vectra ES/12, an IBM PC-AT compatible personal computer.

The 9300 operates with the following software packages:

- DOS operating system software
- Windows software
- Mouse software
- Management reporting software
- 9300 application software

Check the most recent 9300 NMS Software Release Notice for a list of minimum required revision levels of software.

THE 9300 SYSTEM

The 9300 is a completely equipped network management system. It includes one Hewlett-Packard Vectra ES/12 personal computer, which has 640 kbytes of RAM and is configured with the following components:

- One 1.2-Mbyte floppy disk drive
- One 40-Mbyte internal hard disk
- One Four Function Controller card
- One Enhanced Graphics Display and an adapter card
- One Hewlett-Packard printer
- One Hewlett-Packard Mouse
- One Codex 8-channel I/O card
- One group cable
- One junction box
- Eight device cables
- One I/O daisy chain cable

The 9300 Network Management System

In addition, the system may include up to three additional 8-Channel I/O Expansion Kits. Each kit consists of:

- One Codex 8-channel I/O card
- One group cable
- One junction box
- Eight device cables
- One daisy chain cable

The 9300 includes the following software packages:
- MS-DOS software
- Microsoft Windows for the HP (See Windows)
- HP Mouse Software
- Borland International, Inc.'s Reflex software
- Borland International, Inc.'s SuperKey software
- Codex 9300 application software

The 9300 system arrives partially installed. The floppy disk drive and the hard disk drive are installed, as are all circuit cards except the Codex 8-channel I/O cards. You need to install:

- The Codex 8-channel I/O cards

- The group and device cables (from the 9300 to the network devices)

- The software packages

ABOUT YOUR SYSTEM HARDWARE

The following sections describe in general terms the personal computer hardware. For more specific information, refer to the manufacturer's documentation.

The Hewlett-Packard Personal Computer

The two main components of the Hewlett-Packard ES/12 are the computer cabinet and a high-resolution color monitor. The cabinet contains the central processing unit, a floppy disk drive, a hard disk drive, a power supply, and the following circuit cards:

- Enhanced Graphics Adapter card for the color monitor
- Four Function Controller card

The cabinet also has slots for up to four Codex 8-channel I/O cards.

In addition to the computer cabinet and the high-resolution color monitor, your system includes a keyboard and a mouse. You will use the keyboard most often during your initial sessions with the 9300 when you enter textual information about your network configuration. Thereafter, your primary tool for system interaction is the mouse, a hand-held device for making selections in Windows environment. Refer to Chapter 2 of the *9300 NMS Operator's Guide* for information on using the mouse and keyboard with Windows.

Floppy Disk Drive. The opening for the 1.2-Mbyte floppy disk drive is located at the front of the computer cabinet. The drive, identified on the system as Drive A, has an amber indicator that lights whenever the read/write heads are active. While the 1.2-Mbyte drive can read from either 1.2-Mbyte or 360-kbyte floppy disks, you must use 1.2-Mbyte floppy disks for storing data files.

The 9300 application software is delivered on 1.2-Mbyte floppy disks. Make sure you check your manufacturer's documentation for instructions on the care and handling of floppy disks and the disk drive before operating the system.

Hard Disk. The internal 40-Mbyte hard disk is identified on the system as Drive C. The disk activity light is on whenever the read/write heads are active. Make sure you consult your manufacturer's documentation for instructions on the care and handling of the hard disk and the disk drive.

Circuit Cards. The computer cabinet has internal slots with the following circuit cards already installed:

- The adapter card for the high-resolution color monitor. This card oversees the I/O to the monitor.

- The Four Function Controller Card. This card serves as the controller for the floppy disk and hard disk. It also serves as the controller for the system printer (25-pin parallel port) and the auxiliary serial port. While the serial port can support a serial mouse, Codex provides the HP Mouse, which connects to the rear of the keyboard.

- Codex 8-channel I/O cards (up to 4). These cards support the flow of control data to and from the network devices.

System Printer

The 9300 printer has a parallel interface and is compatible with Windows software. The printer can log events as they arrive from the network devices. The printer can also provide a record of configuration data.

NETWORK MANAGEMENT HARDWARE

This section describes the network management hardware that connects to the rear panel of the personal computer. The overall purpose of this hardware is to direct the flow of control data between the 9300 and the network devices.

The NMS hardware for the 9300 consists of the following items.

- One to four Codex 8-channel I/O cards
- One group cable per card
- One junction box per card
- Eight device cables per card

You can install up to four 8-channel I/O cards into any of the four remaining full-length expansion slots in the computer cabinet. Each card has a 50-pin connector at the rear panel, and each card can support up to eight control channels in the network. Since each I/O card controls eight channels, a fully utilized 9300 allows a maximum of 32 control channels (4 × 8 = 32).

The group cable connects the Codex 8-channel I/O card to a junction box. The primary role of the junction box is to divide the signals on the group cable among the eight individual control channels.

Each control channel has its own connector on the junction box. A device cable, which connects to the control channel port on the junction box, carries the control signals for that control channel to the network control port of a network device. The relationship of the network management hardware is shown in Figure 1-1.

The 9300 Network Management System
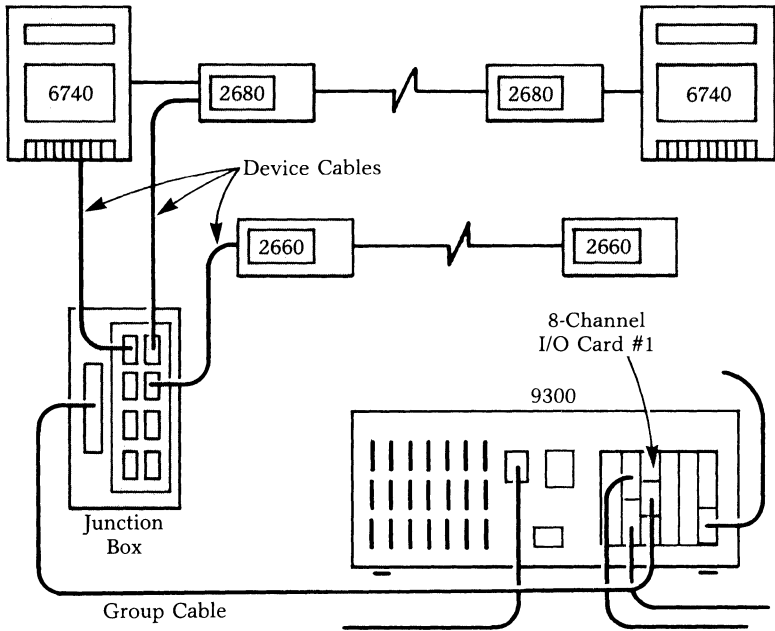
Figure 1-1. 8-Channel I/O Cards and Junction Box

SYSTEM SOFTWARE

A complete 9300 includes five software packages: the DOS operating system, Windows software, the Codex 9300 application software, Reflex software, and SuperKey software. The following sections explain the role of each.

DOS Operating System

The operating system software performs management operations for the computer, files and disks, and peripheral devices like disk drives and printers. A basic knowledge of DOS commands may prove helpful in maintaining your 9300 system. Chapter 2 of the *9300 NMS Operator's Guide* reviews some of the basic DOS commands. If you want more information, refer to the DOS documentation provided with your system.

Windows Operating Environment

Windows is a software application that runs in conjunction with DOS to provide a graphics-oriented work environment for the 9300 software. Windows allows you to run several applications on-screen at the same time.

This type of operating environment is particularly useful to a network operator because, depending upon the operating status of the lines and devices in your network, you may want to track several different system operations at once. While Chapter 2 of the *9300 NMS Operator's Guide* provides a summary of Windows operations, you may want to also consult the software manufacturer's documentation for details.

Codex 9300 Application Software

The Codex 9300 application software runs within Windows and consists of a number of individual application programs. The applications provide various network management capabilities, including:

- System logon and logoff procedures

- Configuring the 9300 system

- Configuring the network devices

- A utility to print or extract configuration data

- Monitoring the status of network activity

- Running tests and loopbacks on network devices

- Reviewing test results

- Altering network devices to meet changing network conditions

- Providing management reports based upon collected network information

Each application includes an online Help utility, which can provide an immediate explanation of topics within a display. While Windows lets you run more than one application at a time, it is best to keep the number to a minimum.

Report Management Software

Report management for the 9300 consists of Borland International, Inc.'s Reflex and SuperKey software.

Reflex Software. The Reflex report generator software allows you to create reports on network operation and trends. The 9300 software lets you extract selected information from the 9300 database in several areas, including:

- Network events
- Network configuration

Once extracted from the database, the information is then available for use with the Reflex software, which allows you to generate reports. In addition to reports on configuration data and events, you can create and track trouble tickets. A trouble ticket is a means of logging network problems and tracking how the problem is resolved.

The reports use Codex-supplied preformatted report designs. The *9300 NMS Operator's Guide* explains how to use the report generator software.

SuperKey Software. The SuperKey software combines standard command sequences into "macros," which are available to you with a single keystroke. Used with the Reflex software, the SuperKey macros simplify report generating and make the reports faster to obtain.

SUMMARY

This chapter introduced you to the 9300 system hardware and software. Chapter 2, Installing the Hardware, explains how to install your 9300 hardware, including cabling to the network-managed devices.

Before you attempt any installation procedures, either hardware or software, Codex strongly recommends that you take the time to read the manufacturer's documentation on installation procedures. In some instances, you will be asked to refer to the manufacturer's documentation for specific instructions.

Chapter 2
Installing the 9300 Hardware

Contents

GENERAL

This chapter is divided into two parts: installing the computer and its peripheral equipment and installing the 9300 network management hardware.

HOW TO PROCEED

The sequence for installing the computer and its peripheral equipment is as follows. Make sure these steps are completed before installing the 9300 network management hardware.

1) Check that the following accessory cards are installed in the assigned slot of the computer cabinet.

   • Slot 1: High resolution color monitor card

   • Slot 7: Four Function Controller Card ■ **Note:** *Do not* close the cabinet cover until you have installed the 8-channel I/O cards. (Slots 2, 3, 4, and 5 are reserved for the 8-channel I/O cards)

2) Check that the switch settings for the accessory cards match the recommended settings as explained in the vendor documentation.

3) Install the 8-channel I/O card(s).

4) Connect the peripheral components, that is, the monitor, keyboard, mouse, and printer.

THE CODEX 8-CHANNEL I/O CARDS

The following sections explain how to install the 8-channel I/O cards. Since a discharge of static electricity can damage card components, observe the following antistatic precautions when handling these or any other circuit cards.

To help minimize the risk of static damage, each cards is shipped in a protective antistatic plastic bag. Keep the card in this bag until you are ready to install it. Handle the card as little as possible and only by its edges or rear panel. Do not touch it with clothing, tools, or metal surfaces. Do not touch the card components, printed circuits, or connector edges.

Installing the 9300 Hardware

	SWITCH POSITION			
	4	3	2	1
CARD 1	OFF	OFF	ON	ON
CARD 2	OFF	OFF	OFF	ON
CARD 3	OFF	OFF	ON	OFF
CARD 4	OFF	OFF	OFF	OFF
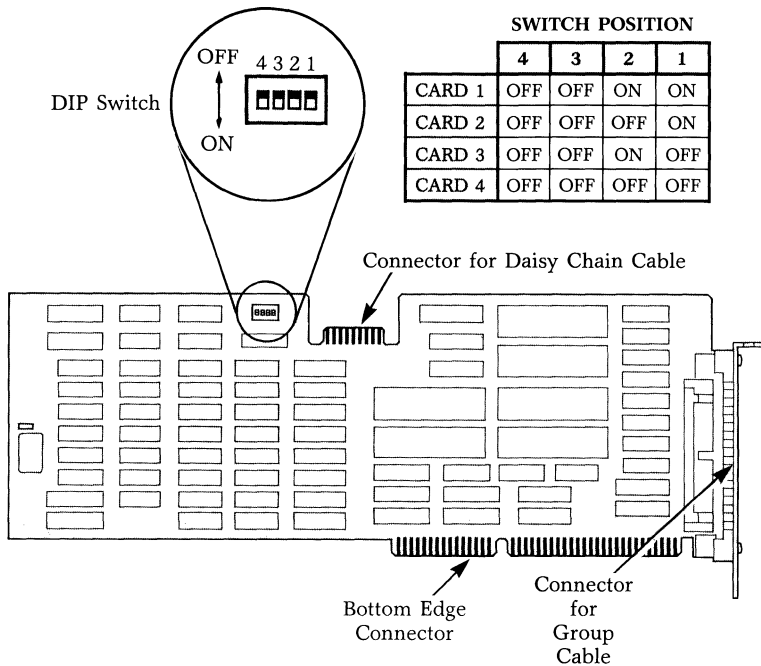
Figure 2-1.   8-Channel I/O Card

Setting the Card Identification Number

Each I/O card has a 4-position DIP switch, as shown in Figure 2-1. Use this switch to set the identification number of the I/O card to the system.

Assign the cards consecutive identification numbers, starting with number 1. For example, if you have two cards, number them 1 and 2, not 3 and 4 or 1 and 3. Figure 2-1 lists correct ID numbers for up to four I/O cards.

The slot number you select for a card is transparent to the software. You can, therefore, install any card into Slot 2, 3, 4, or 5. You may, however, want to keep the installation sequential: Card 1—Slot 2, Card 2—Slot 3, and so on.
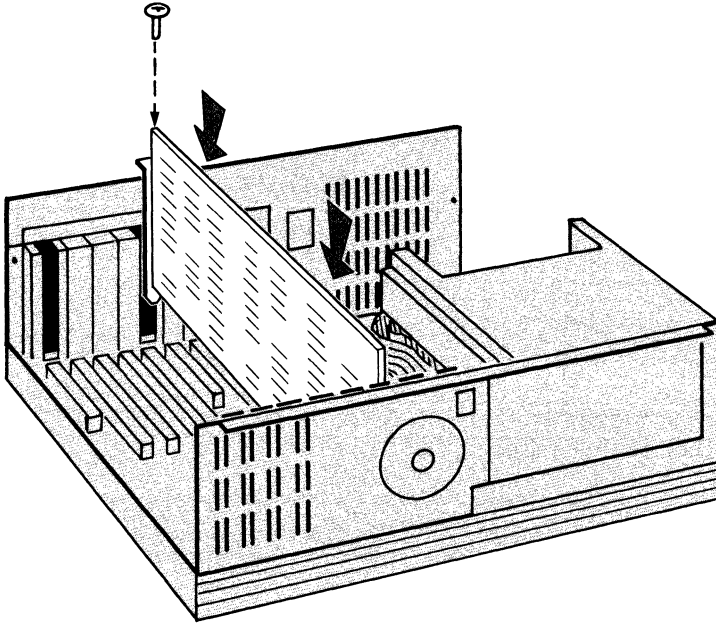
Figure 2-2.   Installing the 8-Channel I/O Card

Installing the 8-Channel I/O Card

Once you have set the identification number, you can install the
card into its full-length slot in the computer cabinet. To do so,
proceed as follows.

1) Remove the screw that holds the slot cover in place.
   Remove the cover. Loosening the screws on adjacent slot
   covers can make removal easier.

2) Hold the I/O card by its top edge and slide the card into
   the slot card guide at the rear of the base unit (see Figure
   2-2). Press down gently but firmly to seat the card
   connector into the connector socket on the bottom
   processor board. Make sure the card is installed securely.

3) Replace the screw you removed and tighten any screws
   you loosened when you removed the slot cover.

4) Repeat this procedure for each 8-channel I/O card you
   install.
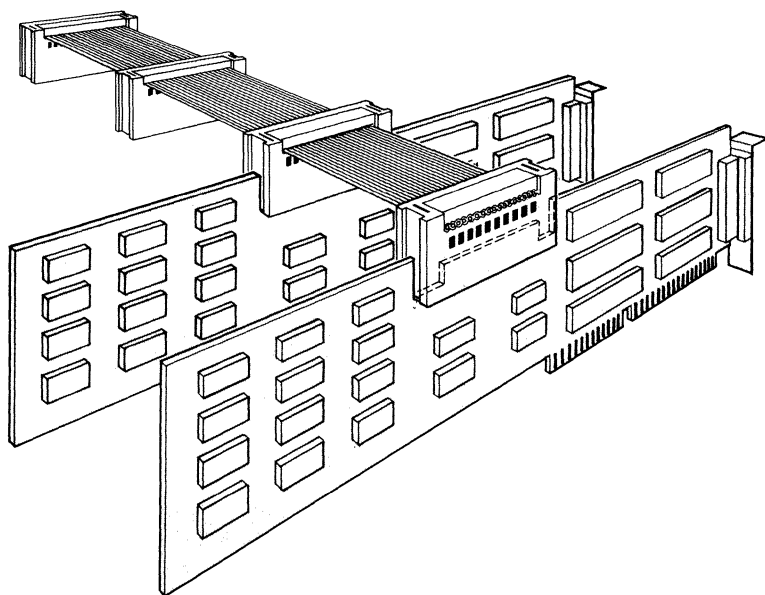
Figure 2-3. *Attaching the Daisy Chain Cable*

Installing the Daisy Chain Cable

If you install more than one I/O card, you must connect them together with a daisy chain cable. The cable has four separate connectors, one for each of up to four cards. ■ **Note:** Although you receive a daisy chain cable with each I/O card, only one is needed to connect all the I/O cards.

To attach the daisy chain cable, slide the connectors over the edge connectors at the top of the I/O cards as shown in Figure 2-3. Carefully push any extra lengths of the daisy chain cable between the I/O cards.

Once you have installed the 8-channel I/O cards, you can replace the cover to the computer cabinet. You will now want to run system diagnostic procedures as outlined in the next section.

DIAGNOSTIC TESTING

By now you should have installed and cabled the personal computer hardware and the circuit cards. Next, you will want to consult your manufacturer's documentation to run the following list of diagnostic tests. The procedures may require the use of a disk that contains one or more of the diagnostic tests.

1) Power-On Self-Test

2) Hard Disk Test

3) Floppy Drive Controller Test

4) Data Communications Tests

5) Enhanced Graphics Adapter Test

If the tests do not indicate any problems, you can proceed to "Cabling the Network Management Hardware." If a test does indicate a failure, you may want to repeat the test. Follow the prescribed procedures in the manufacturer's documentation. If you cannot resolve the problem, and if you purchased the computer from Codex, contact Codex Customer Service.

CABLING THE NETWORK MANAGEMENT HARDWARE

The sections that follow describe how to connect the 9300 to the network devices that it supports. Before you begin, make sure the power to the computer and to the printer is off.

■ **CAUTION:** *All Codex cables supplied with the 9300 are shielded to comply with FCC requirements relative to emitting Radio Frequency Interference (RFI) to other electronic equipment. If you use non-Codex cables, make sure they are braided and shielded with metal shielded hoods.*

Regardless of which type of network device you want to connect, you will first connect the junction box to the 8-channel I/O card.

Cabling to a Junction Box

Each I/O card can support up to eight control channels. The control channel transmits management commands and downloads configuration data to the network devices. In turn, the devices use the control channel to transmit to the 9300 information about line conditions and port signaling.

Each I/O card has a 50-pin connector through which passes the input and output of all eight channels. To "separate" the control channels for connection to individual network devices, each I/O card needs a junction box.

The junction box, shown in Figure 2-4, connects to the 9300 through a 50-pin group cable. The group cable, shown in Figure 2-5, got its name because it carries the input and output for all eight network control channels that connect to the junction box. Because the group cable has identical connectors at both ends, you can use the connectors interchangeably. The connectors are "keyed," so they fit only one way.

To separate the individual control channels, the junction box has eight 8-pin connectors. Each connection will lead to the initial network-managed device on the control channel.

Installing the 9300 Hardware

Male Connector
for Group Cable

Female Connectors
for Device Cables
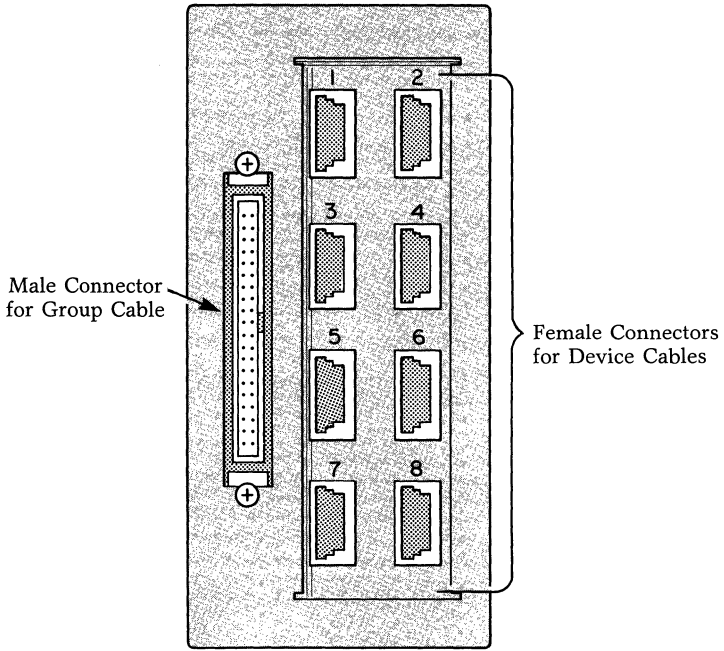
Figure 2-4. Junction Box

Installing the 9300 Hardware

Clips

Key

50-Pin Female Connector
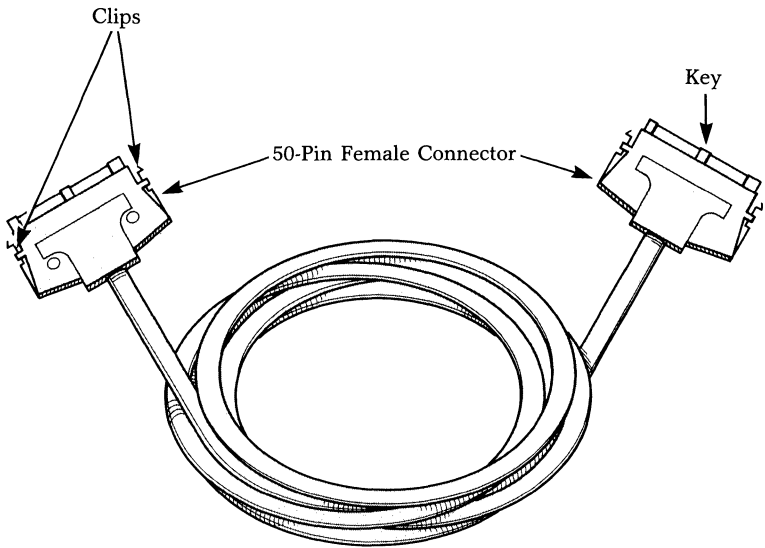
Figure 2-5. *Group Cable*

I/O Card
Connector

Group Cable
Connector Key
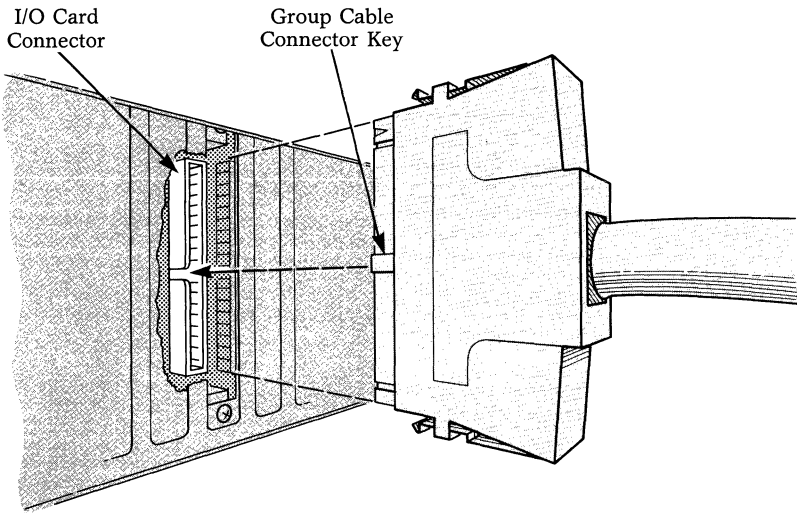
Figure 2-6.   Attaching the Group Cable to an I/O Card

To connect the junction box to the I/O card, proceed as follows:

1) With the key on the left, connect one end of the group cable to the port on the 8-channel I/O card (see Figure 2-6). Push the connector gently until it is firmly in place.

2) Hold the other cable connector so the key is on the right.

3) Holding the connector clips down, make the connection to the 50-pin port of the junction box (see Figure 2-7). The clips on the connector will lock when secure.

4) Check that both connectors are securely in place. You can then proceed to connect the device cables.

Hold clips down
when making the connection.

Group Cable
Connector Key
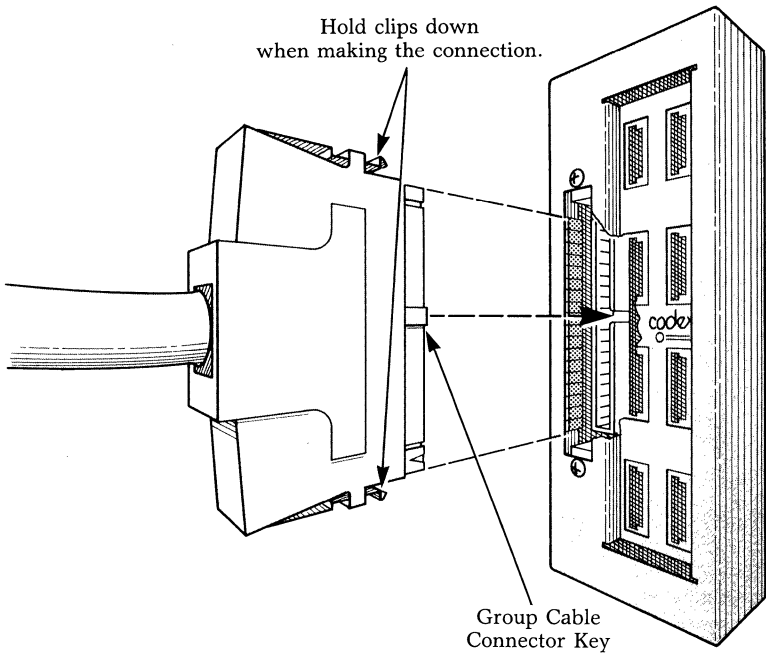
Figure 2-7. Attaching the Group Cable to a Junction Box

Cabling Tips

Before you start connecting network devices, make sure you keep a record of the cabling scheme. You will need this information when you configure both the system and the network. In fact, one of the first procedures of system operation is to define the operating characteristics of the control channels. To do this, you will need to know:

- The identification number (1, 2, 3, or 4) of the 8-channel I/O card, and

- The number of the control channel connector on the junction box.

When cabling network devices, use the connectors of the junction box in numerical sequence. Record both the number of the I/O card and the number of the junction box connector.

CABLING NETWORK DEVICES

The control channel continues from a junction box port to the control port of the network devices through a device cable. The device cable has an 8-pin modular connector on one end and a 25-pin connector on the other end. Table 2-1 shows the signals supported by the device cable. The Signal column identifies a signal by its EIA 232-C and CCITT V.24 signal designations.

To connect a network device to the junction box, insert the 8-pin connector into the next sequential port on the junction box. Attach the 25-pin connector of the device cable to the control port of the device.

From the first device on the control channel, control information is passed to other 9300-managed equipment over either analog or digital lines, over crossover cables, or over links connecting nodes. The method used in extending network control to devices varies with the network. For information on connecting other network devices, see the *9300 NMS Application Guide*.
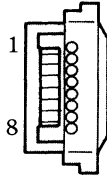
SUMMARY

This chapter explained how to install the personal computer, its peripheral equipment, and the network management hardware. It also explained how to cable the intitial network devices on a control channel to the I/O card. The next chapter explains how to load the 9300 system software packages.
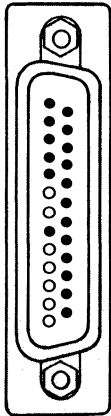
Table 2-1.
Interchange Circuit Connections for the Device Cable

Wire Color	Pin	Pin	Signal
Black	1	No Connection	—
Red	2 ———	2	BA/103, Transmitted Data
Brown	3 ———	3	BB/104, Received Data
Orange	4 ———	4	CA/105, Request To Send
Blue	5 ———	5	CB/106, Clear To Send
Green	6	No Connection	—
Yellow	7 ———	7	AB/102, Signal Ground
Violet	8 ———	8	CF/109, Data Carrier Detect
Braid	No Connection	1	AA/101, Protective Ground

1

8

Modular Connector

13   25

1   14

ISO 2110 Connector

Chapter 3
Loading Software (New Systems)

Contents

GENERAL

This chapter explains the sequence for loading the 9300 system software packages. It is intended for new customers who are loading software onto their 9300 NMS for the first time. The information in this chapter assumes that you have installed the personal computer and the 9300 network management hardware and that the results of the diagnostic tests showed no problems.

The vendor's instructions will provide the most current installation instructions. Before you continue with this chapter, therefore, make sure that you have the manufacturer's software installation instructions available for the following software packages:

- DOS operating system software
- Windows software
- Mouse software
- Reflex software
- SuperKey software

Complete instructions for loading the 9300 application software are included in this chapter.

The recommended sequence for loading software is listed next.

1) Run the Setup program.

2) Initialize the hard disk.

3) Partition the hard disk.

4) Format the hard disk.

5) Load the DOS operating system software.

6) Load the Windows software.

7) Load the Mouse software.

8) Load the Reflex software.

9) Load the SuperKey software.

10) Load the 9300 NMS Application software.

During the load procedures, the system will ask you to provide values for parameters. While the expected response for most values is evident, the loading instructions in this chapter list values that the 9300 will expect for certain parameters. If you are unsure about a parameter, see the manufacturer's documentation.

SOFTWARE RELEASE NOTICE

A software release notice accompanies each release of 9300 application software. The notice introduces you to the new version of software and explains resulting changes to the operation of the 9300 NMS, if any. The 9300 usually provides two types of software release notices, a printed release notice and an online software release notice.

The printed notice arrives with the software. Typically, the printed release notice contains information that you need to know before loading the new software onto the system, such as changes to loading instructions. We suggest that you insert the printed software release notice into the *9300 NMS Operator's Guide*.

The online software release notice arrives on the floppy disks and is loaded onto the system with the new software. The notice is in a text file in the \NMS directory. The online portion of the software release notice explains changes in system operation that are not described in the *9300 NMS Operator's Guide*. We suggest that you print a copy of the online release notice and make it available for all network operators.

SETUP PROCEDURE

The first step in loading software is to complete the Setup procedure as described in the manufacturer's documentation. During Setup, the system displays parameters that show how the system is configured. For Codex-supplied computers, the parameters should be as follows:

Flexible Disc Drive A: = 1.2 Mbytes

Flexible Disc Drive B: = NONE

Hard Disc Drive C: = Type 44

Hard Disc Drive D: = NONE

System Base Memory: = 640 kbytes

Extended Memory: = 0 kybtes

Primary Display: EGA, PGC or similar card

Follow the prompts on the display to configure the fields with the listed values.

The software packages, once copied onto the system, will reside on the hard disk. Before copying any software, you must first initialize, partition, and format the hard disk.

INITIALIZING THE HARD DISK

For a complete description of how to intitialize the hard disk, see the vendor's documentation. Once the hard disk is initialized, you may then partition it.

■ **CAUTION:** *Since the initializing procedure erases all data on the hard disk, do not reinitialize the disk once the 9300 is operational without first consulting Codex. Of course, since the system is new, there is no data on the disk for the initializing procedure to destroy.*

During initialization, if prompted for an interleave factor, enter a factor of 1.

PARTITIONING THE HARD DISK

Partitioning a hard disk "divides" it into two or more individual hard disks. A partition is a storage area that contains one or more volumes. Volumes, which are also referred to as "logical disks," are storage areas for files.

The DOS operating system can access a maximum of 32 Mbytes of any hard disk. Because the 9300 provides a 40-Mbyte hard disk, you will have to partition the disk so that DOS looks at it as two individual hard disks. Your disk will have two partitions: an MS-DOS Partition, which will have 32 Mbytes, and an MV Partition, which will have 8 Mbytes.

The MS-DOS Partition will have a single volume, which the system will refer to as Drive C. We recommend that you also assign the MV Partition a single volume, which the system will refer to as Drive D. For a complete description of how to partition the hard disk, see the vendor's documentation. Once you have partitioned the hard disk, you may then format it.

FORMATTING THE HARD DISK

Once you have initialized and partitioned the hard disk, you must then format the partitions.

■ **CAUTION:** *Formatting the hard disk destroys all data on it. As a rule, you should not reformat a disk once software has been loaded.*

Formatting the MS-DOS Partition

You will first format the MS-DOS Partition. For a complete description of how to proceed, see the vendor's documentation. When prompted to enter the Format command, enter the following line:

    FORMAT C:/S/V ⟨Enter⟩

Once the MS-DOS Partition is formatted, the system may ask if you want to enter a volume label for the hard disk. A label is not necessary and you can leave the field blank. If you want to enter a label, you can enter a name with up to 11 characters. A typical label is the date the format was done.

Formatting the MV Partition

The MV Partition will consist of 8 Mbytes. The command MVBUILD first creates the partition and then formats it. You can refer to this partition as Drive D.

Once the MV Partition is formatted, the system may ask if you want to enter a volume label for the hard disk. A label is not necessary and you can leave the field blank. If you choose to enter a label, you can use up to 11 characters. A typical label is the date the format was done.

For a complete description of the MVBUILD command, see the vendor's documentation. Once this procedure is complete, you can then load the software packages onto the hard disk.

INSTALLATION OVERVIEW

During the installation procedure, the software is copied from floppy disks to the hard disk. Load the software packages in the order specified in this section.

1) Load the DOS operating system software.

2) Load the Windows software.

3) Load the Mouse software.

4) Load the Reflex software.

5) Load the SuperKey software.

6) Load the 9300 NMS Software.

Each floppy disk has a protective jacket and a write-protect tab. The tab covers a notch on the disk jacket. When the tab is on, information can be read from the disk, but the disk cannot be updated or written to. When the tab is off, the disk can be both read and written to.

Make sure the write-protect tab is always on the following disks:

- DOS disks
- Windows disks

■ **Note:** Disks that contain 9300 software are permanently write-protected.

In addition, once the system is operational, you should write-protect disks that contain copies of events and disks that contain copies of network configuration information.

When inserting a floppy disk in Drive A, make sure the notch or write-protect tab is on the left and that the disk label is facing upwards. After the disk is inserted, put the drive lever down.

Loading DOS

The following steps outline the procedure for loading DOS.
Please refer to the manufacturer's documentation for details.

1) Use the "make directory" command to create a directory
   called DOS on the hard disk.

2) Change the current directory to DOS.

3) Copy all the files from the DOS disk in Drive A to Drive
   C.

4) If a supplemental disk is included, copy all the files on
   that disk into the same directory on the hard disk.

You are now ready to load the Windows software.

Loading Windows Software

Refer to the vendor's documentation to load Windows software.
During the procedure, prompts appear asking you to select
parameters. While most selections are self-explanatory, you
may want to refer to the following list of items when respond-
ing.

• Load Windows into the directory \WINDOWS.

• You will have to know the type of mouse and the type of
  color monitor that are attached to your system. Codex
  supplies the HP-Mouse.

• Indicate which type of printer is running with the 9300. If
  your printer is not listed as a choice, select one that has like
  operating characteristics.

• Set the printer to run on **LPT1**.

■ **Note:** Microsoft Windows for the HP does not automatically
prompt you to load the WRITE/PAINT program, but you will
need WRITE in order to read the *9300 Online Software Release
Notice*. Follow the vendor's instructions to load the files from
the WRITE/PAINT disk to the \WINDOWS directory.

When you are done, remove the last disk from the drive. You
can now load the mouse software.

Loading Mouse Software

The mouse software includes a driver for the mouse. The following information will help you respond to some of the prompts. (For detailed instructions, refer to the manufacturer's documentation.)

- Load the mouse files using the following path: \MOUSE1.

- Accept the selection to modify CONFIG.SYS.

- You need not load the second mouse disk (if provided).

- *Do not* reboot DOS if prompted after you have loaded the mouse software. Instead, remove the disk from the drive and load the Reflex software.

Loading Reflex

The steps for loading the Reflex software are outlined next. (For detailed instructions, refer to the manufacturer's documentation.)

- Use the "make directory" command to create a directory called \REFLEX on Drive C.

- Change the current directory to \REFLEX.

- Copy the files from the Reflex disk in Drive A to Drive C.

Loading SuperKey

The following steps outline the procedure for loading the SuperKey software. (For detailed instructions, refer to the manufacturer's documentation.)

- Use the "make directory" command to create a new directory called \SKEY.

- Change the current directory to \SKEY.

- Copy the files on the SuperKey floppy disk to Drive C.

- Change the directory back to the root.

Loading 9300 Application Software

After you have loaded all other software packages, you can copy the 9300 software onto the hard disk. The 9300 software is shipped on two floppy disks.

In addition, Codex provides a third disk that contains sample configurations, which you may want to load onto your system after it is completely operational. The online software release notice, RNxxx.WRI, explains how to copy the configurations.

To load the 9300 software, proceed as follows:

1) Make sure the DOS prompt for Drive C is displayed.

2) Insert Disk #1 into Drive A.

3) Type:

> A: ⟨Enter⟩

The prompt for Drive A should display.

4) Type:

> INSTALL ⟨Enter⟩

A series of screens appears. Wait until the information stops scrolling.

5) Press any key to accept the dafault and to continue. The system then copies the files from Disk #1 onto the hard disk. It should take approximately 1 minute to copy all the files.

6) When instructed, remove Disk #1 and insert Disk #2 into the drive.

7) Press any key to start copying Disk #2. After some Disk #2 files are copied, the following message displays:

> * * *   WARNING   * * *
>
> * * * Saving existing C: \WINDOWS \WIN.INI as
> C: \WINDOWS \WININI.SAV * * *
>
> If you have installed MS/Windows applications other than the
> Codex 9300, or have installed other MS/WINDOWS I/O devices,
> it MAY be necessary to merge the contents of both
> C: \WINDOWS \WIN.INI and C: \WINDOWS \WININI.SAV
> before using these non-9300 features.
>
> These modifications can be made with the NOTEPAD.EXE application.
>
> * * *   Type ANY key to continue installation.   * * *
> (Type "⟨CTRL⟩C" to quit installation.)

If you also intend to use the Windows software for an application other than just the 9300, you may have to merge some Windows files. Regardless of whether you intend to merge these files, continue loading the 9300 software by proceeding to Step 8. When you are finished loading 9300 software, turn to the last section of this chapter for more information on merging system files.

8) Press any key to continue loading the 9300 software. The following message displays:

> WARNING
>
> * * *   Saving existing C: \AUTOEXEC.BAT as
> C: \AUTOEXEC.SAV   * * *
> * * *   Saving existing C: \CONFIG.SYS as C: \CONFIG.SAV   * * *
>
> If you have installed any start-up features other than those
> required for the Codex 9300, it MAY be necessary to merge
> the contents of both
> C: \AUTOEXEC.BAT and C: \AUTOEXEC.SAV
> &
> C: \CONFIG.SYS and C: \CONFIG.SAV
> before using these non-9300 features
>
> These modifications can be made with the NOTEPAD.EXE application.
>
> * * *   Type ANY key to continue installation.   * * *
> (Type "⟨CTRL⟩C" to quit installation.)

If DOS is used for an application other than for the 9300, you may have to merge some DOS files after the installation is completed (see the section "Merging System Files" at the end of this chapter).

9) Press any key to continue. The following is displayed:

Codex 9300 Software Installation Complete

* * *   This 9300 system must be reinitialized   * * *
before operating new software.

* * *   Remove any diskette from floppy drive A, and   * * *

* * *   Strike "⟨CTRL⟩⟨ALT⟩⟨DEL⟩" keys simultaneoulsy to re-
start.   * * *

10) The software loading procedures are complete. Press CTRL + Alt + DEL at the same time.

The first item to appear is the *9300 Online Software Release Notice*, which is explained next. After reading and exiting the notice, refer to the *9300 NMS Operator's Guide* for instructions on how to use the 9300 NMS.

VIEWING THE ONLINE RELEASE NOTICE

The *9300 Online Software Release Notice* explains additions or changes to 9300 software. The information in this notice may not be documented elsewhere, so read the notice carefully. You may want to make a copy available to other network operators.

The notice is in the file \NMS \RELxxx.WRI, where xxx is the release number of the software. For example, REL200.WRI represents the online notice for Release 2.00 of the 9300 application software.

The file displays in the WRITE program, which is a part of the Windows software. This file displays automatically **only the first time** that the 9300 is started following a new software load. To view the file at a later time, proceed as follows:

1) From the Executive display, set the directory to \NMS.

2) Double click on the filename RELxxx.WRI. The system starts the WRITE program and displays the first page of the release notice.

3) To read the rest of the notice, press the Pg Dn key, which is to the right of the main keyboard. (You can also use the vertical scroll bar.)

Printing the Online Notice

You can use the system printer to obtain a printed copy of the online software release notice. You should keep a printed version of the release notice available for all network operators. With the notice displayed, open the File menu and select "Print."

Exiting from WRITE.EXE

If you want to exit from the notice, and if no 9300 applications are running, press CTRL+Alt+DEL at the same time. The system reboots, placing you at the 9300 logon display. You may then proceed with the logon procedure.

If you are running a 9300 application when you view RELxxx.WRI, exit as follows. Open the WRITE.EXE System menu and select "Close." You may then return to other 9300 applications.

MERGING SYSTEM FILES

Whenever Windows is loaded, a file called WINDOWS \ WIN.INI is loaded. When 9300 software is loaded, this file is replaced by a new WINDOWS \ WIN.INI file that supports 9300 features. The file that had been loaded originally is saved as WINDOWS \ WININI.SAV. If you will be using other applications as well as the 9300 application, use NOTEPAD.EXE in Windows to copy parameter settings from WINDOWS \ WININI.SAV to WINDOWS \ WIN.INI. Be very careful when merging. For example, you will not want to change color-related parameters for the 9300 in WINDOWS \ WIN.INI.

Other system files affected by 9300 installation are AUTOEXEC.BAT and CONFIG.SYS. When 9300 software is loaded, these files are replaced by new files that support 9300 features. Any files previously stored as AUTOEXEC.BAT or CONFIG.SYS are renamed AUTOEXEC.SAV and CONFIG.SAV. If you wish to retain the information in the original files, you must merge AUTOEXEC.BAT with AUTOEXEC.SAV and/or CONFIG.SYS with CONFIG.SAV, respectively.

The vendor documentation for your Windows software will show you how to use the NOTEPAD.EXE application to merge these files. You can also use EDLIN, the DOS editor.

If you do merge files, you must reboot the 9300 when you are done by pressing CTRL + Alt + DEL at the same time. Rebooting the system allows the file changes to take effect.

SUMMARY

This chapter outlined the procedures to load the 9300 system software packages onto the hard disk. Make sure that all floppy disks are returned to their jackets and stored in one place.

Chapter 4
Loading Software
(Existing Systems)

Contents

GENERAL

Periodically, Codex may make available a new version of 9300 application software. New software releases often contain new features and/or support for new devices. This chapter explains procedures that you should be aware of when loading a new version of 9300 software onto the system.

INSTALLING REVISED SOFTWARE

Instructions for loading new releases of software will be explained in the software release notice that accompanies the package of software.

WARNING

If you do not install new software as described in the software release notice, you risk the possibility of corrupted configuration database files.

Once the software is loaded, read the rest of the sections in this chapter to determine if you need to complete any other procedures before restarting the 9300. When you restart the 9300 to resume network monitoring, you will want to perform a Network/Cold activation on the selected offline configuration.

SOFTWARE RELEASE NOTICE

A software release notice accompanies each new release of 9300 application software. The notice introduces you to the new version of software and explains resulting changes to the operation of the 9300 NMS, if any. The 9300 usually provides two types of software release notices, a printed release notice and an online software release notice.

The printed notice arrives with the software. Typically, the printed release notice contains information that you need to know prior to loading the new software onto the system, such as changes to loading instructions. Once you have read the printed notice, you can load the new 9300 application software. We suggest that you insert the printed software release notice into the *9300 NMS Operator's Guide*.

The online software release notice arrives on the floppy disks and is loaded onto the system with the new software. The notice is in a text file in the \NMS directory. The online portion of the software release notice explains all changes that you need to know about system operation. We suggest that you print a copy of the online release notice and make it available for all network operators.

VIEWING THE ONLINE RELEASE NOTICE

The *9300 Online Software Release Notice* explains additions or changes to 9300 software. The information in this notice may not be documented elsewhere, so read the notice carefully. You may want to make a copy available to other network operators.

The notice is in the file \NMS\RELxxx.WRI, where xxx is the release number of the software. For example, REL200.WRI represents the online notice for Release 2.00 of the 9300 application software.

The file displays in the WRITE program, which is a part of the windowing software. This file displays automatically **only the first time** that the 9300 is started following a new software load. To view the file at a later time, proceed as follows:

1) From.the Executive display, set the directory to \NMS.

2) Double click on the filename RELxxx.WRI. The system starts the WRITE program and displays the first page of the release notice.

3) To read the rest of the notice, press the Pg Dn key, which is to the right of the main keyboard. (You can also use the vertical scroll bar.)

Printing the Online Notice

You can use the system printer to obtain a printed copy of the online software release notice. You should keep a printed version of the release notice available for all network operators. With the notice displayed, open the File menu and select "Print".

Exiting From WRITE.EXE

If you want to exit from the notice and if no 9300 applications are running, just press CTRL + Alt + DEL at the same time. The system reboots, placing you at the 9300 logon display. You may then proceed with the logon procedure.

If you are running a 9300 application when you view RELxxx.WRI, exit as follows. Open the WRITE.EXE System menu and select "Close". You may then return to other 9300 applications.

REENTERING USER PROFILES

A new release of software may require you to reenter a User Profile for each network operator. Check the list of User Profiles in SYSCFG.EXE. You may have to reenter the profiles. This may be a good time to change user passwords, if you have not done so recently.

RUNNING REVCHECK

After restarting your 9300 system, run the REVCHECK.EXE application. The procedure produces one of two messages to indicate whether the expected NMS files are indeed loaded and ready for use. To run this application, proceed as follows:

1) From the Executive display, select REVCHECK.EXE.

2) Press any key to start the file check.

The following message appears if the expected versions of all files are found intact:

> REVCHECK COMPLETE/NO ERRORS FOUND

If REVCHECK.EXE detects a discrepancy in the files, the following message appears:

> REVCHECK FAILS

The system will also display messages to indicate the nature of the problem. Run REVCHECK.EXE again and note the message(s) for referral to Codex Customer Service.

Once you run REVCHECK.EXE, the filename NMSREV.LST appears in the Executive display. You can print this file to see which files and revision levels are expected.

RECONFIGURING CONTROL CHANNELS

A new release of software may require you to redefine operation of each control channel. The software release notice that accompanies the software will explain whether this step is necessary. If redefining the control channel is necessary, it should be done before anyone tries to activate the network.

Defining the control channels is part of the SYSCFG.EXE application. To check the control channel configuration, open SYSCFG.EXE and, from the View/Configure menu, select Asynchronous Ports. Follow the instructions in Chapter 3 of the *9300 NMS Operator's Guide*.

CONVERTING THE DATABASE

Periodically, a new version of the 9300 application software will require you to convert the offline configurations to make them compatible. The conversion is a simple procedure and is done using the Convert command, which is part of the UTILITY.EXE application. A section of the software release notice will tell you whether you must convert the offline configurations before renewing operation. *Do not* convert the configurations unless instructed to do so.

SUMMARY

This chapter explained procedures that you may have to follow to successfully complete the loading of a new version of 9300 application software. Once you have checked through these procedures, you can restart the 9300 and continue network management operations.

Chapter 5
Ordering Information and
Return Procedures

Contents

GENERAL

This chapter includes product codes for ordering the 9300 systems and associated options. It also includes procedures for returning defective equipment to Codex.

ORDERING INFORMATION

Table 5-1 lists product codes for ordering the 9300 Network Management System (NMS) and associated options.

EQUIPMENT RETURN PROCEDURES

Equipment returns to Codex fall under one of three categories: expiration of lease, factory repair, or service replacement. These categories and their equipment return guidelines are explained in the following sections.

Expiration of Lease

Customers who return equipment to Codex on expiration of the lease period should contact their district or regional Codex Sales Office for return authorization and instructions. A list of these offices follows. When you contact the sales office, you will be asked to provide the following information:

- Product name and description
- Serial number
- Customer order number
- Reason for return

Table 5-1.
Product Codes

Product Code	Description
Hardware	
24951	110V Hewlett-Packard Vectra ES/12 PC. Includes Mouse, 13-inch (33.0 cm) Enhanced Graphics Display, printer, printer cable, DOS software, one 8-channel I/O card with one junction box, one group cable, and eight device cables.
24952	220V Hewlett-Packard Vectra ES/12 PC. Includes Mouse, 13-inch (33.0 cm) Enhanced Graphics Display, printer, printer cable, DOS software, one 8-channel I/O card with one junction box, one group cable, and eight device cables.
Software	
24970	Current release of 9330 Integrated Management System software, which supports modems, STDMs, TDMs, and Line Drivers. Includes Windows software, Reflex software, SuperKey software, and updated documentation.
24971	Current release of 9320 Modem Management System software, which supports modem and line driver devices. Includes Windows software, Reflex software, SuperKey software, and updated documentation.
24981	Software upgrade to current release of Integrated Management System software. Intended for customers who already have a system and who are not on the software subscription plan.
Options	
24960	8-Channel Expansion Kit. Includes one Codex 8-channel I/O card, one junction box, one 50-foot (15.2m) group cable, and eight 4-foot (1.2m) device cables.
24961	Spare 4-foot (1.2m) device cable
24962	100-foot (30.4m) optional group cable
24966	25-foot (7.6m) optional device cable

Factory Repair

Customers who return equipment to Codex for factory repair should telephone the Codex Return Service Coordinator at Mansfield, Massachusetts, (617) 364-2000, extension 2100, for return authorization and instructions. When you call Codex, you will be given a Return Material Authorization (RMA) control number. Mark this number clearly on the shipping container for ease of identification and faster service. The RMA control number is simply a shipment control tool and does not affect the provisions of a sales or lease agreement. You will then be asked to provide the following information for each piece of equipment you return:

- Product name and description
- Serial number
- Customer order number
- Failure symptoms

Service Replacement

Any defective equipment and parts that were previously replaced by Codex Customer Service should be returned to the same regional service office that originally replaced the item. A list of regional Codex Customer Service Offices follows.

QUESTIONS ABOUT EQUIPMENT RETURN PROCEDURES

Customers who have questions about equipment return procedures should call the Codex Return Service Coordinator, (617) 364-2000, extension 2100, for advice and assistance. Customers who require either on-site service or unit-exchange service should telephone their regional Codex Customer Service Office for information and instructions.

REPACKAGING GUIDELINES FOR EQUIPMENT RETURN

Data communications equipment or parts that are to be returned to Codex for any reason must be properly packaged to prevent damage in shipment and handling.

If the original packing material and shipping container are available, reuse these items to return equipment. If these items are not available, package the equipment for shipment as follows:

- Secure movable and exposed parts before shipment so they will not become loose in shipment and cause damage or be damaged.

- Package cathode ray tubes (CRTs) and other fragile items securely in approximately 4 inches (10.2 cm) of foam cushioning.

- Do not use abrasive or dusty materials for cushioning.

- Ship all equipment in wooden crates or double-wall corrugated containers, or strap it to cushioned pallets. Package items weighing more than 18 pounds (8.2 kg) in double-wall or stronger containers.

- Use internal cushioning in conjunction with wooden crates to prevent the contents from shifting in the crate and suffering external mechanical damage or internal shock damage.

- When you return more than one item in the same shipping container, wrap each unit separately in at least 1/2-inch (1.27-cm) air-cell (bubble-pack) material, and package it in a corrugated single-wall container. The package can then be shipped in a double-wall container with other similarly packaged items.

- Place each printed circuit (PC) card in an individual conductive bag, wrap the PC card in a double layer of 3/16-inch (0.48-cm) air-cell (bubble-pack) material, and ship it in a corrugated double-wall container. Alternatively, put each PC card in an individual conductive bag, and then place it between layers of convoluted urethane foam in a shipping folder, only one PC card per folder.

Specific Packaging Guidelines

In returning equipment to Codex, package the item as described below.

- *Preferred.* Return the equipment in its original shipping material and shipping container.

- *Alternative.* Enclose the equipment in a single-wall container. Cushion this container at all eight corners with corner pads (or use expanded polystyrene [EPS] or polyethylene foam) and ship in a double-wall container. Strap equipment racks to a cushioned pallet, cover them with sheet plastic, and ship them via a padded moving van.

- *Minimally Acceptable.* Cushion the equipment with at least 5 inches (12.7 cm) of foam-in-place, and ship in a double-wall container. Protect racks with 3 inches (7.6 cm) of polyfoam/high-density cushioning, and enclose them in a wooden shipping crate.

Exceptions to Packaging Guidelines

The Codex Return Service Coordinator is available to answer your questions about packaging requirements. If you believe that packaging is required that deviates from the guidelines just described, please call the Codex Return Service Coordinator, Codex Corporation, Mansfield, Massachusetts, (617) 364-2000, extension 2100, for advice and assistance. Exceptions to these guidelines are allowed only with the permission of the Return Service Coordinator.

DISTRICT AND REGIONAL CODEX SALES OFFICES

ALABAMA

2820 Columbiana Road
Suite 210M
Birmingham, AL 35216
Tel: (205) 979-0355

ALASKA

3601 C Street
Suite 200
Anchorage, AK 99503
Tel: (907) 562-3204

ARIZONA

8902 N. Central Avenue
Suite 101
Phoenix, AZ 85020
Tel: (602) 944-6940

CALIFORNIA

500 Airport Boulevard
Suite 200
Burlingame, CA 94010
Tel: (415) 342-9741

5001 Airport Plaza Drive
Suite 150
Long Beach, CA 90815
Tel: (213) 421-0086

6701 Fourth Avenue
Suite 100
Sacramento, CA 95817
Tel: (916) 451-3007

5333 Mission Center Road
Suite 344
San Diego, CA 92108
Tel: (619) 296-6283

17671 Irvine Boulevard
Suite 208
Tustin, CA 92680
Tel: (714) 838-5515

20720 Ventura Boulevard
Suite 340
Woodland Hills, CA 91364
Tel: (818) 992-4004

COLORADO
7828 Vance Drive
Suite 280
Arvada, CO 80003
Tel: (303) 425-6345

CONNECTICUT
100 Western Boulevard
Salmonbrook Office Park
Glastonbury, CT 06033
Tel: (203) 633-9431/9432

30 Commerce Park
Milford, CT 06460
Tel: (203) 874-1965

FLORIDA
851 Douglas Avenue
Suite 117
Altamonte Springs, FL 32714
Tel: (404) 952-9330

2688 N.W. 99th Avenue
Coral Springs, FL 32714
Tel: (305) 344-8853

16109 W. Course Drive
Tampa, FL 33626
Tel: (813) 961-8323

GEORGIA
2121 Newmarket Parkway
Suite 130
Marietta, GA 30067
Tel: (404) 952-9330

HAWAII

See Tustin, California

IDAHO

355 N. Orchard
Suite 210
Boise, ID 83706
Tel: (208) 322-4800

ILLINOIS

150 N. Michigan Avenue
Suite 2100
Chicago, IL 60601
Tel: (312) 781-7320

1014 E. Algonquin Road
Suite 106
Schaumburg, IL 60195
Tel: (312) 576-2036

INDIANA

6525 E. 82nd Street SW
Suite 115
Indianapolis, IN 46250
Tel: (317) 842-7017

KANSAS

10000 W. 75th Street
Suite 106
Shawnee Mission, KS 66204
Tel: (913) 677-2002

LOUISIANA

3925 North I-10 Service Road
Suite 109-0
Metairie, LA 70002
Tel: (504) 885-7013

MARYLAND

Airport Square IV
939 Elkridge Landing Road
Suite 120
Linthicum, MD 21090
Tel: (301) 850-4546

MASSACHUSETTS

690 Canton Street
Suite 105
Westwood, MA 02090
Tel: (617) 461-6161

MICHIGAN

Sheffield Office Park
Suite 122
3310 W. Big Beaver Road
Troy, MI 48084
Tel: (313) 649-4230

MINNESOTA

8300 Norman Center Drive
Suite 560
Minneapolis, MN 55437
Tel: (612) 835-7927

MISSOURI

231 South Bemiston
Suite 1230
St. Louis, MO 63105
Tel: (314) 863-1900

NEBRASKA

1722 St. Mary's
Suite 216
Omaha, NB 68102
Tel: (402) 444-1645

NEW HAMPSHIRE

125 E. Dunstable Road
Nashua, NH 03062
Tel: (603) 880-4378

NEW JERSEY

777 Passaic Avenue
Clifton, NJ 07012
Tel: (201) 470-9001

Plaza Office Center
Suite 409
Route 73 and Fellowship Road
Mount Laurel, NJ 08054
Tel: (609) 235-5871

NEW YORK

708 Third Avenue
New York, NY 10017
Tel: (212) 557-2700

656 Kreag Road
Pittsford, NY 14534
Tel: (716) 223-7800

5158 Old Kings Highway
Saugerties, NY 12477
Tel: (914) 338-3332

NORTH CAROLINA

3707 Latrobe Drive
Suite 450
Charlotte, NC 28211
Tel: (704) 366-9600

4411 W. Market Street
Suite 200-B
Greensboro, NC 27407
Tel: (919) 855-3865

OHIO

8078 Beechmont Avenue
Cincinnati, OH 45230
Tel: (513) 474-4411

6500 Busch Boulevard
Suite 210
Columbus, OH 43229
Tel: (614) 436-2370

7123 Pearl Road
Suite 108
Middleburg Heights, OH 44130
Tel: (216) 886-4444

OKLAHOMA

7136 S. Yale
Suite 300
Tulsa, OK 74136
Tel: (918) 494-0126

508 W. Vandament
Suite 100
Yukon, OK 73099
Tel: (405) 354-2212

OREGON

7185 S.W. Sandburg Road
Suite 200
Tigard, OR 97223
Tel: (503) 620-7276

PENNSYLVANIA

500 Sainte Claire Plaza
Pittsburgh, PA 15241
Tel: (412) 941-4235

TENNESSEE

5115 Maryland Way
Suite 40
Brentwood, TN 37027
Tel: (615) 377-0740

1355 Lynnfield Road
Suite 245
Memphis, TN 38119
Tel: (901) 767-3010

TEXAS

8500 Mopac Expressway North
Suite 809
Austin, TX 78759
Tel: (512) 346-1941

9441 LBJ Freeway
Suite 214
Dallas, TX 75243
Tel: (214) 690-5221

8 Greenway Plaza
Suite 814
Houston, TX 77046
Tel: (713) 629-6910

UTAH

3285 E. Danforth
Salt Lake City, UT 84121
Tel: (801) 278-5402

VIRGINIA

1800 Diagonal Road
Suite 200
Alexandria, VA 22314
Tel: (703) 684-0400

7814 Carousel Lane
Suite 300
Richmond, VA 23229
Tel: (804) 747-1620

WASHINGTON

12835 Bellevue-Redmond Road
Suite 203
Bellevue, WA 98005
Tel: (206) 453-0510

WISCONSIN

10855 W. Potter Road
Wauwatosa, WI 53226
Tel: (414) 475-7533

INTERNATIONAL SUBSIDIARY/DISTRIBUTOR OFFICES

ARGENTINA
T.T.I.
Sarmiento 663-20 Piso
1041 Buenos Aires
Tel: 54 (1) 460-177

AUSTRALIA
J.N. Almgren Pty. Ltd.
16 Smith Street
Chatswood, N.S.W. 2067
Tel: 61 (2) 406-6177

AUSTRIA
Schrack Daten Systeme GESMBH
Gutrundstrasse 189
A-1100 Vienna
Austria
Tel: 43 (222) 643-608

BELGIUM
SA MOTOROLA NV
Chausse de la Hulpe 178
1170 Brussels
Tel: 32 (2) 660-8980

BRAZIL
Elebra Telecon S/A
Av. Eng. Luiz Carlos Berrini, 1461
04571 - Sao Paulo - SP
Tel: 55 (11) 533-9977

CANADA
Motorola Information Systems Ltd.
9445 Airport Road
Brampton, Ontario L6S 4J3
Tel: (416) 793-5700

CHILE

PAICT
Av. Nueva Los Leones 0252-Depto 202
POB 16843 coraeo 9 Providencia
Santiago
Tel: 56 (2) 232-2056

COLOMBIA

Colcomp S.A.
Calle 76#11-28
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