

XEROX

SYSTEM
ADMINISTRATOR
HANDBOOK

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All text prepared on the XEROX 8010 Information System.

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Booklet One

INTRODUCTION

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THEY NEED YOU....



.... LIKE AN ORCHESTRA NEEDS A CONDUCTOR



INTRODUCTION

Your organization has made a commitment to both its future and yours by investing in a streamlined, sophisticated approach for developing, communicating, and handling information: the electronic office. Like an orchestra conductor, you are responsible for combining a number of diverse elements into a smoothly-running whole in this electronic office. As a system administrator for your organization's Xerox Ethernet internetwork, you are the focus for training new users, monitoring your network and the equipment in it, resolving problems, and maintaining contact between Xerox and your organization.

In this first booklet, you take a detailed look at:

- The types of user workstations that are available.
- The equipment you use, as a system administrator.
- The services available on your network.
- Your role as coordinator.
- A streamlined approach to using the six booklets in this *Handbook*.
- Basic procedures for using the services on your network.

USER WORKSTATIONS

A workstation is dedicated to the use of a single person at any one time. In one way or another, that person is using that workstation to do his or her work, whether that work is creating a document, reviewing a proposal, or replying to a memo. There are three basic categories of workstations that can be placed in your electronic office:

- **Workstations that are designed to be directly connected to the Ethernet.** Using the Ethernet, users of such workstations can mail, file, and print documents, both locally and remotely, as well as emulate other terminals.

Workstations that can be connected to the Ethernet include the Xerox 8010 Information System and the Xerox 860 Information Processor.

- **Workstations that are interactive terminals.** Any teletypewriter (or terminal that can act as though it were a teletypewriter) can access certain network functions. Such workstations connect to the network through a port on a server or a Xerox 873 communication interface unit and use a special service called the interactive terminal service.

One example of such an interactive terminal is the Xerox 820-II Personal Computer. But there are dozens of other interactive terminals, sold by various manufacturers, that can access network functions.

- **Workstations that are communicating word processors.** Word processors are frequently designed to be able to communicate to one another. It is possible to use this communication capability and then to design special software to allow such word processors also to communicate into the Ethernet network. Such word processors are not directly connected to the network; rather, they are connected through telephone lines and modems and a special service called the gateway service.

Word processors that can be used on the network in this manner are the Xerox 860 Information Processor and the Xerox 850 Information Processor.

EQUIPMENT USED BY THE SYSTEM ADMINISTRATOR

The basic piece of equipment used by any system administrator is called a server. Network servers are computers attached to the Ethernet. Unlike a user workstation, a server is not dedicated to the needs of a single user, but is shared by all the users of the network. Servers help to multiply the effectiveness of workstations by providing access to shared resources and communication facilities.

A typical server is shown in Figure 1. Depending on the software loaded in such a server and the optional hardware attached to it, it may be referred to as a print server, a file server, or a communication server.

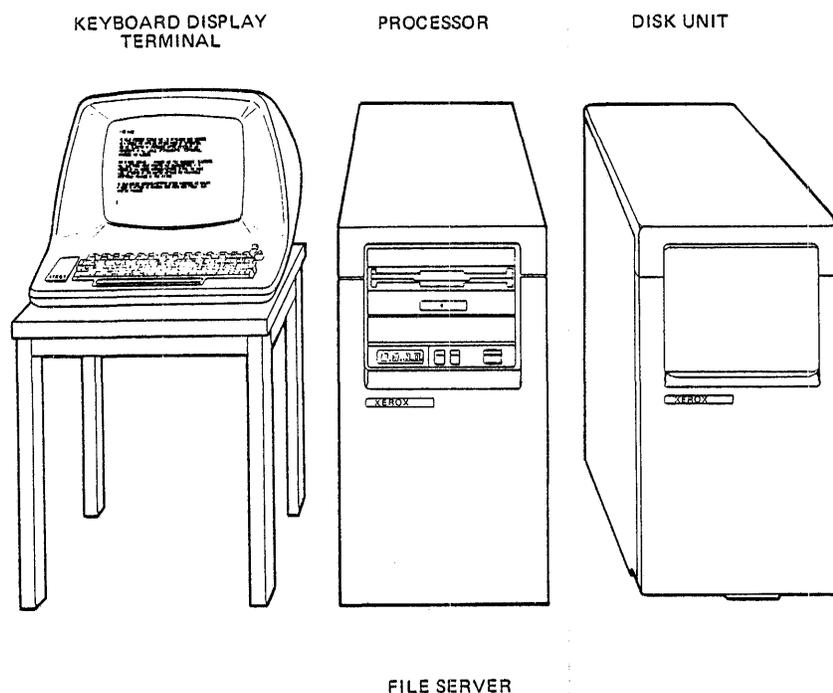


Figure 1. A Typical Server

Every server has these two components:

- **Server terminal.** This combination of a keyboard and display is your means of monitoring and controlling much of the network activity. A later part of this booklet discusses the basics of using this terminal.
- **Processor.** The larger unit that sits on the floor is the actual computer. It contains a fixed disk and may be connected to a much larger, separate removable disk drive.

Your Role

The front of the processor contains a maintenance panel (see Figure 2). On the left hand side of this panel is a four-digit display. The numbers displayed there are a maintenance panel code that you will refer to in several of the steps and tasks discussed in this *Handbook*. Next to it are two buttons, labeled B RESET and ALT B. These are used in starting the software to run on a server (referred to as booting the server). Finally on the far right is a rocker switch that can be used to turn the server's power on or off. The "1" position is on; the "0" position is off.

Just above the maintenance panel is the floppy disk drive. This drive is used when you need to read information from floppy disks, as when you first install software on a server, or when you need to write information to a floppy disk, as when you backup data files.

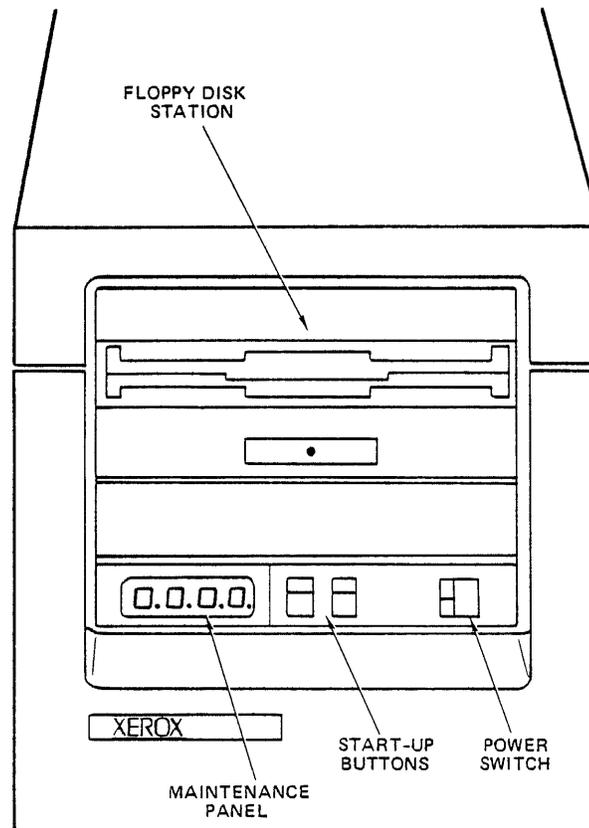


Figure 2. The Front of the Server Processor

In addition to the server terminal and the processor, a server may have attached peripherals. For example, a print server will have an electronic printer near it. Some file servers will have extra disk drives connected to them to provide additional file storage space. Communication servers are likely to have special communication kits and modems connected to them.

THE SERVICES AVAILABLE IN YOUR ELECTRONIC OFFICE

The server is just a piece of equipment unless it has **services** running on it. Services are programs that enable the server to provide certain kinds of functions or support to the users of the network. There are a number of different services available. Basically they fall into the following categories:

- **Services that provide a basic foundation for the network.** These services are needed to let users, services, and networks talk to one another. There are two such services:

The *internetwork routing service* is needed whenever two or more networks want to be able to talk to one another. It maintains the path of communication among the networks.

The *clearinghouse service* is needed on every network. It provides a database of users and services.

- **Services that provide a shared resource for network users.** These services provide a resource used to support one or more users. There are three services in this category:

The *file service* allows users to store work products on a storage device other than their workstations. It also allows work that is of interest to a group to be stored in a common place for access by individuals of that group.

The *print service* allows users to share a common electronic printer.

The *external communication service* allows users (and other services) to have access to RS232C ports found on servers and on Xerox 873 communication interface units. This service supports users whose 8010 workstations use 3270 or teletype emulation.

- **Services that allow users to communicate with one another through the internetwork.** One of the major functions that a network can provide is electronic mail. A number of services exist to support this.

The *mail service* (which exists within a file service) allows workstations directly connected to the network to use electronic mail.

The *interactive terminal service* allows interactive terminals to use electronic mail.

The *gateway service* allows communicating word processors (specifically, the Xerox 850 or 860 information processors) to use electronic mail.

A more complete description of each service follows.

Internetwork Routing Service

The internetwork routing service keeps a map of Ethernets. It knows its local network number, the network numbers of other Ethernets to which it is connected, and the various routes to those networks (by phone lines or direct wiring). In this way, it provides a unified internetwork environment for workstations and for other services.

The Clearinghouse Service: Keeping Track of Users and Services

You use the clearinghouse service to keep track of users on your network and the services available to you and those users. This is done by entering information into the clearinghouse service about each user and each service on that network.

A Word About Names

Every network object has a name by which it is known to the clearinghouse service. For a user, that name should be his actual full name, such as John J. Wilson. For a service, it might be a name that indicates its location, function, or some other attribute, such as Richmond for a file service in the Richmond office building.

In addition, a clearinghouse has a name associated with it called its domain name. A domain is a collection of named objects, such as users and services. For example, a company could have a network in Minneapolis; the domain name of this network might be Minneapolis. Every user and service listed in the same clearinghouse service would be part of the same domain.

In addition, every domain in an internetwork (even if the internetwork consists of only one domain) has an organization name. An organization is a collection of domains (usually corresponding to all of the domains within a single company or functional group). For example, General Machine Corporation might have several domains all with the same organization name, General Machine.

As a result, the fully-qualified name of a user is more than just his or her name. It is the user name, followed by domain name, followed by the organization name, using this format :

name:domain:organization

John J. Wilson:Minneapolis:General Machine would be the fully-qualified name of the user described in this section's example.

In general, this name is used whenever a person logs on to a workstation or server.

A Word About Choosing Domain and Organization Names

Either you or someone in your organization chooses domain and organization names. Xerox does not provide them. It is important that you choose names carefully, so that there is no need to later revise them. When selecting domain and organization names consider the following:

- Names should not be so short as to be cryptic (e.g. X3) or so long as to be an inconvenience to type (e.g. Applied Physics Lab).
- In general, domain names should reflect stable, geographical locations (e.g. MainPlant, or NY Office). Organization names should reflect a large grouping of domains. Typically, this means an organization name reflects the overall corporate name. Avoid giving names keyed to projects, divisions, or department names, since these tend to change frequently in most organizations.

- Avoid characters that could lead to confusion (such as hyphens or square brackets). Remember that not all workstation keyboards have the same set of characters available to them.

Keeping Track of Users in the Clearinghouse

You keep track of each user on your network by registering the following information:

- The user's fully-qualified name, which consists of his or her full legal name, domain name, and organization name. (By using the full legal name, you avoid potential problems as your network user base grows to include two or more individuals with the same last name.)
- Any aliases under which he or she wants to be known by network users. For example, John J. Wilson might have the following aliases: J. Wilson, Willie.
- Both the name of the mail service used by the person and the file service on which his or her 8010 desktop would be stored.
- The user's password.
- The person's status as a system administrator
- Optional descriptive information, such as the user's office location or phone number.

Using the clearinghouse, other services and workstations know where to send mail for the user and also can validate the user's password in order to allow him or her to use the network.

Keeping Track of Services in the Clearinghouse

You keep track of services available on each server by telling the clearinghouse what services are available on your network, so that when users request a service, their requests can be communicated to the correct server. You register the following information for each service:

- The service's name (for example, you can name your file service Richmond).
- The network number (where the server is located).
- The processor identification number of the server on which the service is installed.
- Optional descriptive information, such as the room in which the service is located

The Concept of Groups

One of the things you can create in the clearinghouse service is a group. A group is a collection of user names that share certain rights, such as being able to store information in a specific file drawer on a file service. By creating groups and adding user names to those groups, you can more easily control who has access to which file drawers.

Services that Provide Shared Resources

File Service

The file service is like an electronic file cabinet. After you create "file drawers" for users, they can store their work in these drawers, which are located on the file server. Because of the server's large storage capacity, a number of people can store work in the file service. If given permission, other users can then retrieve this work read it or amend it.

Your Role

The file service gives you and these users the ability to improve performance and productivity. For instance, several people writing a proposal can each store their sections in the file service, so other collaborators can see any section they wish. Or, clauses used frequently in contracts can be stored in a common file and retrieved by many different users when needed.

Print Service

The print service always runs on a server by itself. This server is attached to an electronic printer. Any document, record file, or folder created at a workstation that is connected to the Ethernet can be sent to this print service. Each request is placed in a queue by the service. When a document reaches the top of the queue, it is printed. Multiple copies of reports, proposals, bids, or any other document can be printed. Even documents containing different type fonts, or graphics such as bar charts, can be printed easily.

External Communication Service

The external communication service provides the control of RS232C ports, which are found on servers and on Xerox 873 communication interface units. The term "RS232C" refers to an industry standard for data communications. The term "port" refers to the connecting point between a piece of equipment and the means of data transmission, such as a telephone modem.

The external communication service permits 8010 users to use ports to reach host computers through 3270 or teletype emulation. This service is also needed to permit remote teletype-like workstations or communicating word processors to access network services through ports. Finally, this service is needed to support communication between two or more networks, through the internetwork routing service.

Services That Enable Users to Communicate With Other Users

There are three services available that enable users to communicate: the mail service, the gateway service, and the interactive terminal service.

Mail Service

The mail service exists as a subset of a specific file service and provides network users with electronic mail.

Typically, you have a single mail service for an entire internetwork because all users on an internetwork who wish to exchange mail must have a mail folder on the same file service. For example, if you have users on three networks who wish to exchange mail with one another, you need to select one file service on one of the networks to be the mail service for all three networks. In order for any user to receive electronic mail, you must create a mail folder for him or her.

Interactive Terminal Service

This service permits users of a Xerox 820-II or other teletypewriter-like terminal to send mail to or receive mail from other users on your network. All communication between the interactive terminal user and other network services goes through the interactive terminal service.

Gateway Service

This service permits standalone Xerox 860 or 850 communicating word processors to send mail to or receive mail from other users on your network. The gateway service requires that a person be assigned as a mail clerk, who then has the responsibility to forward mail sent in to the network by standalone 860 or 850 users.

YOUR ROLE AS COORDINATOR



THE SYSTEM ADMINISTRATOR
IS THE ONE WHO LEADS

Your Role

Your Tasks

You have six major tasks as a system administrator. They are:

1. Understanding how to use the workstations in your domain. You should, at your earliest convenience, study the introductory training material for each type of workstation in your domain. Booklet 4 contains more information about the types of training available for Xerox equipment.
2. Setting up your network. To set up your network, you must identify the servers and services you will be using, start up these servers and services, add users, create a filing system, set up mail folders, prepare the system to support on-line training, prepare 8010 workstations to support on-line help, load fonts and get the print service into operation. A guide to each of these steps is found in procedures 1 through 5 of this booklet and the steps contained in Booklet 2.
3. Keeping your network running. After your system is set up, you will have a number of daily or ongoing tasks. You will be adding new users or services as needed, monitoring disk space on the file service at intervals, starting and stopping services, backing up and restoring the clearinghouse and file services, controlling options on the print service, and monitoring the printer for paper jams and dry imager levels. Procedures for each of these tasks are found in Booklet 3.
4. Training new users. After your system is set up, you will be in charge of training new network users. A guide to this training is found in Booklet 4.
5. Training your assistant or replacement. To keep your network functioning at all times, it is necessary for you to train an assistant or replacement. Booklet 4 provides you with a procedure for training this person.
6. Solving network problems. Booklet 5 outlines problem-solving activities, lists error codes and recovery procedures, and provides procedures for you to run diagnostics on servers. Booklet 5 also contains a listing of maintenance panel codes and their recovery actions.

Specifically, if you are:

- Learning how to use the servers on your network, refer to procedures 1 through 5 in this booklet.
- Setting up your network, refer to Booklet 2 and the forms in Booklet 6.
- Monitoring your network on an ongoing basis, refer to Booklet 3.
- Training network users, refer to Booklet 4.
- Training your assistant or replacement, refer to Booklet 4.
- Solving network problems, refer to Booklet 5.
- Looking for information on a specific command, refer to the index behind the last tab.
- Looking for information on what to do about a specific maintenance panel code, refer to Booklet 5.

The Importance of Reporting Problems

Figure 3 is a sample Problem Report Form. We encourage you to submit these forms to your system analyst, detailing any malfunctions that may occur. Additionally, encourage users to submit Problem Report Forms to you detailing their workstation problems; forward such forms to your system analyst. These forms provide valuable data for Xerox developers and technical representatives as they work to make the system as responsive as possible to you and your network users.

Additional Problem Report Forms are available from your system analyst, or you can photocopy the form contained in Booklet 6. They are also stored as electronic forms as part of the Applications package that comes with 8010 software.

The Problem Report Form can be used to document specific problems found in this *Handbook* or any other documentation. However, Booklet 6 also contains a Customer Comment Form that you can use to report shortcomings or strengths of your *Handbook*. We encourage you to complete this form after you have used the *Handbook* for a month or two. Your reactions will help us revise the *Handbook* appropriately for future users.

| PROBLEM REPORT FORM 8000 NS PRODUCTS | Fill out completely and give to your System Analyst | Page 1 |
|---|--|--------------------------------|
| Date: _____ | Analyst Name: _____ | |
| Type of Request (A, B, or C): _____ | Mail Stop/Branch: _____ | |
| A Problem Report | Street Address: _____ | |
| B Enhancement Request | City and State: _____ | |
| C Documentation Error | Intelnet #: _____ | |
| | Outside Phone #: _____ | |
| Customer Name: _____ | | |
| Software Level: _____ | | |
| Hardware (8010, Comm Server, Character Printer, 29 MB File Server, etc.): _____ | | |
| Problem Area or Feature (Records Processing, Text Editing, Mail, Fonts, Equation Typing, Documentation, Document Storage/Retrieval, etc.): _____ Description (Use Continuation Sheet (Page 2) , if necessary. Give details leading up to the problem, and report any error messages, status codes, or log entries that relate to the problem in the order in which they occurred.): | | |
| IMPACT: _____ (1 Fatal, 2 Serious, 3 Moderate, 4 Annoying) FREQUENCY: _____ (A Every time, B Intermittent, C Only once) Attempted Solutions (Use Continuation Sheet (Page 2) , if necessary. Describe as you did the initial problem, including status codes, messages, log entries, etc.) | | |
| Documentation/Testcase Floppy Disk attached _____ | | |
| For Internal Use Only | | System Evaluation Number _____ |
| AR Number _____ | | Screened by _____ |
| | | AR Date _____ |

Figure 3. Problem Report Form

HOW TO USE THIS HANDBOOK

To function effectively as a system administrator, you should have an overview of both your network and your role in running it. You get that overview in this booklet. In addition, you should read the introductory pages at the beginning of Booklets 2 through 5. These pages summarize the procedures you follow to set up and maintain your network, train users, and solve network problems.

To actually perform a task, follow the detailed instructions given in each booklet. Each procedure is presented in a two-page format, as shown in Figure 4.

- The **Instructions** page on the righthand side contains an overview and step-by-step instructions for the specific action you are to perform.
- The **Example and Notes** page on the lefthand side contains an example of the procedure, along with system prompts and notes related to these prompts. Refer to the example page if you need clarification of the written procedure.

We suggest you read through the entire instruction page and then refer to the example and notes before you attempt any task.

| Example and Notes | Instructions |
|---|--|
| <p>Example 1: Test of server terminal keyboard</p> <pre>> Test RETURN Choose test to be performed: 1 Terminal 2 RS232C 3 Floppy 4 Echo Test 5 Communication Interface Unit Enter choice number: 1 RETURN Choose test to be performed: 1 Keyboard Test 2 Screen Test Enter choice number: 1 RETURN Terminal Test Diagnostics Version X.X Type any keys to test the keyboard; check the display for correct response Type the CTRL + C keys to stop the test. The letter 'A' key was typed. The numeral '5' key and the <SHIFT> keys were typed. The letter 'D' key and the <CTRL> keys were typed. The <RETURN> key was typed. <CTRL> <C> Done. ></pre> <p>Example 2: Test of server terminal screen (this example fills the screen with 'H's):</p> <pre>> Test RETURN Select a peripheral to be tested: 1 Terminal 2 RS232C 3 Floppy 4 Echo Test 5 Communication Interface Unit Enter choice number: 1 RETURN Choose test to be performed: 1 Keyboard Test 2 Screen Test Enter choice number: 2 RETURN Terminal Adjustment Diagnostics Version X.X Type any character to fill a line with that character. Type the CTRL + C keys to go on to the next adjustment. <CTRL> <C> Type any character to fill the screen with that character. Type the CTRL + C keys to go on to the next adjustment. ##### <CTRL> <C> ##### Type any characters to turn the cross-hairs pattern on. Type the CTRL + C keys to end the adjustment program. <CTRL> <C> Done. ></pre> | <p>ACTION 1G:</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"><p><i>Resolving problems common to all servers and/or 8010 workstations:</i></p><p>Testing the screen and keyboard</p></div> <p>Overview: You can use the Test command to test a server control terminal or 8010 workstation keyboard to make sure it is operating properly. You can also use the Test command to test the screen, to make adjustments, or check that it is displaying characters correctly.</p> <p>Procedure:</p> <ul style="list-style-type: none">• 8010 workstation: To perform a test of the terminal keyboard or screen, select the [TEST] command in the desktop auxiliary menu. An option sheet will appear. Choose the particular piece of equipment to test, and then select [START]. Consult section 22.10 of the 8010 Reference Guide for further information.• Server: To perform a test of the server terminal keyboard, type Test. Then choose the terminal and the keyboard on the additional prompts that appear. As you test various keys, you see a message on the screen and a number in the maintenance panel for each key that you test. Pressing <CTRL> and <C> stops the test. <p>To test the screen, type Test. Then choose the terminal and the screen on the additional prompts that appear. There are three adjustment aids: you can display a line filled with a typed-in character, a screen filled with a typed-in character, or a cross-hairs pattern. The adjustment program runs each adjustment aid in turn. Each adjustment aid will be run repeatedly for each character you type until you cancel the adjustment by pressing <CTRL> and <C>.</p> <p>Comments:</p> <p>On a server, the cross-hairs pattern is used by the service representative to align the screen so that it is properly centered. On a workstation, the cross-hairs pattern is used by the service representative to adjust alignment and focus.</p> <p>Typed-in characters give feedback showing that the keypress is correct.</p> |

Figure 4. Sample Procedure Page

Text Conventions

The writing conventions followed throughout this *Handbook* are as follows:

- Wherever a key or a menu item is mentioned, it is called out in text by angle brackets for keys (for example, <RETURN>) and square brackets for items that you find in a menu on an 8010 workstation (for example, [SHOW STRUCTURE]).
- On the Instructions page, command names are placed in boldface type, with initial letters capitalized (for example, List Services).
- On the Example and Notes page, anything that you must type in is shown in boldface type, with initial letters capitalized.

For example: Start Service? Y/N: **N** RETURN means you type the letter N and press the return key when you see this prompt. Note that key names are not placed in angle brackets on the Example and Notes page.

Naming Conventions Used in this Handbook

As you use this *Handbook*, you will discover that in each booklet the work skills are described by a different label. These labels were chosen to reflect the nature of the work.

- Booklet 1 describes **procedures**. The term procedures is used to indicate that each is a basic skill that will be used to complete skills taught later.
- Booklets 2 and 4 describe **steps**. The term steps is used to indicate that each skill must be done in a specific order. They are truly steps toward the overall goals of setting up a network and of training users on it.
- Booklet 3 describes **tasks**. The term tasks is used because each of these skills is a routine activity that must be done on a scheduled basis, following a change regarding your network's composition, or a change in your users' status. These tasks are independent of one another.
- Booklet 5 describes **actions**. The term actions is used because each of these skills is a recovery action taken in response to a problem situation. Without action on your part, the network will not function correctly.

BASIC PROCEDURES FOR USING THE SERVERS

The following pages contain five procedures that are basic as you begin your work. Read these procedures and then proceed to the steps outlined in Booklet 2 for starting up your network.

Examples:

```
>Logon RETURN
  User name: John J. Wilson:Marketing:GemSysCo RETURN
  Password: ***** (1)
> File Service
FS>
```

```
FS>Logoff RETURN
  Done. No user is logged on. (2)
```

Notes:

(1) Asterisks appear instead of characters in your password to prevent unauthorized people from seeing the password.

(2) Always log off when you leave a server to prevent unauthorized people from using it. See procedure 3.

The following abbreviations are used to indicate which service you are currently using:

| | |
|------|--------------------------------|
| CHS> | Clearinghouse service |
| ECS> | External communication service |
| FS> | File service |
| GWS> | Gateway service |
| IRS> | Internetwork routing service |
| ITS> | Interactive terminal service |
| PS> | Print service |

Note that no abbreviations exist for the mail service. The mail service is accessed through a file service.

PROCEDURE 1:

Use the server terminal to enter commands

Overview: To use the server terminal, you usually log on, enter commands by typing the command's name, respond to the prompts, and log off. There are several command conventions and also special function keys that will help in working with the terminal keyboard.

Procedure for Entering Commands: As you enter commands, the system will respond with specific prompts for information, in one of the five following formats:

| Type of prompt | How you respond to such a prompt |
|----------------|---|
| Text | Type up to 100 characters. |
| Yes/No | Type either Y or N. |
| Choice | From a numbered list, type the number of the choice you want. |
| Date | Type exactly in format --MM/DD/YY (e.g. 12/30/82). |
| Number | Type the exact number from the range given. |

Procedures for Processing Commands: The service will not act upon a command you type until you press <RETURN>. Pressing <RETURN> instructs the system that the command you entered should be processed. There are several conventions to aid you in entering commands:

- **<RETURN>**- If you press this key after typing the entire command or in the middle of a command, the system will try to complete and process the command.
- **<ESC>**- If you press this key while entering part of a command, the system will try to complete the entire command but will not process it. Press <RETURN> to process the command.
- **Space bar** - If you press the space bar after you have typed enough letters to identify a command word, the system will complete the word for you.

Procedure for Directing Your Commands to a Specific Service: To use many of the commands discussed in this *Handbook*, you must first direct your commands to a specific service by typing its name (such as File Service). When commands specific to a service are available to you, the prompt will show you which service you are addressing (for example, "FS>" indicates that file service commands are available). The command index (found behind the Index tab) lists each command and indicates the service that uses it.

Comments: Always remember to log off when you leave a server to prevent unauthorized persons from entering commands. Procedure 3 gives more information on how and why you need to log on and log off.

Example 1:

FS> Logos ? (1)

FS> ? (2)

Show Activity

List Services

Logon

Show Space, Time, User

Test

Clearinghouse Service

External Communication Service

Internetwork Routing Service

Example 2:

FS> L?

List Services

Logon

Notes:

(1) If the command you have typed is invalid or if there is more than one way to complete it, a flashing ? will appear. This is a signal to you that the system is not able to process the information you have typed.

(2) As system administrator, more commands than those listed above are available to you. These additional commands will be displayed when you press <?> after logging on.

PROCEDURE 2:

Correct mistakes and list commands available on the server terminal.

Overview: You can easily correct mistakes you make typing commands at the terminal by using specific keys. You can erase a character, word, or a line; or you can cancel an entire command. Also, you do not need to remember the exact wording of commands used at your servers. You can always type a question mark <?> to make the system show you the commands available to you.

Keys for Correcting Commands: By pressing <CTRL> and one of five other keys, you can correct, cancel, or change commands before they are processed.

| If pressed together | This result occurs |
|---------------------|--|
| <CTRL> + <H> | Erases one character at a time to the beginning of the current line. |
| <CTRL> + <W> | Erases the previous word. |
| <CTRL> + <X> | Erases the entire line back to the prompt character. |
| <CTRL> + <C> | Cancels the entire command if you have not yet pressed <RETURN>. |
| <SHIFT> + <CLEAR> | Clears the entire screen |

Using Help: You do not need to remember the exact wording of system commands.

- If you type a <?> on a new line (right after the prompt character), the system will list all the available commands. Some commands may be used only by the system administrator. They appear in the list only if you or another system administrator have already logged onto the server.
- If you type a <?> after typing one or more letters, the system will list all available commands beginning with those letters.
- If you type a <?> after typing a word, the system will list all available commands beginning with that word.

Comments: Some commands may result in a display that will not fit on the screen all at once. When the screen is full, the last line will say "(more?)" If you want to see more of the display, press any key. If you do not wish more information, press both <CTRL> + <C> to cancel the command.

```
>Logon RETURN
  User Name: Victor Endicott:Minneapolis:GemSysCo RETURN
  Password: ***** RETURN
>Logoff RETURN
  Done. No user is logged on
```

Notes:

Asterisks appear instead of characters in your password to prevent unauthorized people from seeing the password.

PROCEDURE 3:

Log on or log off a server

Overview: Before you can use many of the service's commands, you must tell the service who you are. The software then checks to be certain you are authorized to use the command in question. This process of identifying who you are and initiating a session is called logging on.

To log on, you type your fully-qualified name and your password.

When you have completed a session on the server terminal, you should always log off. This tells the server that you will no longer be using it. Once you log off, you need to log back on in order to use most commands.

Procedure:

To log on:

1. Type the word **Logon** and press the <RETURN> key.
2. Type your name and press the <RETURN> key. The name and password must be identical to the name and password with which you are registered in the clearinghouse service. If you have an alias, you may use that instead of your full user name. Capitalization does not matter.
3. Type your password and press the <RETURN> key. Remember to always keep your password a secret. You don't want your network users to be able to access the various service commands.

To log off:

1. Type **Logoff**.

Comments: When first setting up a network, you will not be able to logon as yourself until you have registered your name in the clearinghouse service. During this initial period of network usage, Xerox will provide you with both a special name and password that can be used.

Example:

```
CHS>Add File Service RETURN
  Name: Coral RETURN
  Network Number: 1-046 RETURN
  Processor Number: 2-852-828-495 RETURN
  Description: Next to cafeteria RETURN
  Confirm this File Service information? (Y/N): Y RETURN
  Done. Coral (File Service) added.
  Add another File Service? (Y/N): N RETURN
CHS>List File Services RETURN
  Pattern: *ra* RETURN
  Coral Net 1-046, Processor 2-852-828-495, Next to cafeteria
  Rasp Net 1-046, Processor 2-852-134-235, Outside Fred's office (Rm 35)
CHS>Change File Service RETURN
  Name: Coral RETURN
  Network Number: 1-046 RETURN
  Processor Number: 2-852-828-495 RETURN
  Description: Next to Cafeteria Basement RETURN
  Confirm this File Service information? (Y/N): Y RETURN
  Done. Coral (File Service) changed.
CHS>Delete File Service RETURN
  Name: Coral RETURN
  Deleting Coral. This File Service will no longer be registered
  Confirm? (Y/N): Y RETURN
  Done.
```

Notes: Unless otherwise noted, there is an add, delete, change, and list command for each of the following objects:

- Alias (no change command)
- Communication interface unit
- External communication service
- File service
- Gateway service
- Groups (no change command)
- IBM 3270 host
- Interactive terminal service
- Internetwork routing service
- Mail service
- Members (no change command)
- Print service
- Remote clearinghouse service (delete and list command only)
- RS232C port
- User
- Workstation

In addition, the file service contains add, delete, change and list commands for:

- File drawers
- Mail folders

PROCEDURE 4:

Understand general commands in the clearinghouse (Add, Delete, Change, List)

Overview: If you were to type ? while addressing the clearinghouse service, you would get a very long list of available commands. But in fact, clearinghouse commands fall into four main groups of actions. They all deal with the different kinds of objects registered in the clearinghouse service. If you keep these groups in mind, it can make your job easier as you set up a network or manage it.

These groups of commands involve the following types of actions:

- Adding an object
- Deleting an object
- Changing the information about an object
- Listing the objects that already exist

Procedure: To add an object, you type **Add** and then the type of object you wish to add (such as user). The service then gives you a series of prompts, asking for the information it will need to add that type of object. The sequence of prompts depends on the type of object being entered; for example, the prompts for adding a user are different from the prompts for adding an internetwork routing service.

To delete an object, you type **Delete** and then the type of object you wish to delete. You will need to confirm any deletion.

To change an object, you type **Change** and then the type of object you wish to change. The service will then show you the information already registered about that object and give you a chance to alter it.

To list objects already registered (for example, if you want to know what users are registered), you type **List** and then the type of objects for which you want a list. Whenever you use a List command, you are given the option of asking the system to only list objects that fit a pattern. For example, if you only wanted to list users whose names begin with a "T", you would respond to the Pattern prompt by typing **T***. The asterisk tells the system to ignore whatever comes after the "T." If you had typed ***T**, the system would list anything that ended with "T." And if you had typed ***T***, the system would have listed anything with a "T" anywhere in its name. For example, **T*** matches the name "T" and "Tunafish," but not "Cat" or "Metal" or "Rag." On the other hand, ***T** matches "Cat" and "T." Finally, ***T*** would match "T," "Tunafish," "Cat," and "Metal" - but not "Rag."

Comments: The file service also uses add, delete, change, and list commands to help you manage the file drawers and mail folders created in the file service.

Your notes:

PROCEDURE 5:

Load (or unload) a floppy disk

Overview: In many of your activities as a system administrator, you will need to load a floppy disk into your server's floppy disk drive.

A floppy disk is used to store electronic information, much as a cassette tape might be used to store sounds. Xerox uses floppy disks as a means of sending information to you that can then be added to your server or 8010 workstation. You will also use floppy disks as a way of safekeeping information stored on a server or 8010 workstation.

For both of these tasks, you will need to insert a floppy disk into your processor's floppy disk drive. (The location of this disk drive is shown in Figure 2 on page 1-6.)

Procedure: To load a floppy disk:

1. Locate the floppy disk drive on your processor. If the door is not open, press the long, narrow bar (it has a small circle in the middle of it) immediately below the drive.
2. Floppy disks normally are labeled to indicate which side should go in first, and which side should be on top. Use these labels to guide placing the disk into the open disk drive door.
3. When the disk is fully in the drive, you will hear a small click. Release the disk. (If the disk pops out, you did not place the disk entirely in the drive. Try again.)
4. Press down on the door firmly to close it. Your disk is now loaded.

To unload a floppy disk:

1. Press the long, narrow bar immediately below the drive.
2. Remove the disk and store it in its jacket. Then store the disk in a safe place.

Comments: If you have problems loading a disk for the first time, ask your Xerox Systems Analyst for a demonstration.

When storing floppy disks, keep them away from magnets, dust, and heat. Do not bend them. Do not write on their labels with ball-point pens or pencils of any sort. Any of these actions could damage the disk and prevent your successful use of it.

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BOOKLET TWO

SETTING UP A NETWORK

CONTENTS

You will use the steps in this booklet to set up your network. If you are setting up a new network, start with step 1 and continue through all needed steps. You may be able to skip certain steps if your network does not use certain components.

If you are adding to an existing network and need information on a specific step (such as adding a user), you can go directly to the step involved.

Forms needed are located in Booklet 6.

Step Description

Page Number

Steps needed to start any network:

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Example:

Form 1. Directory of Services

Network #: 1-034
Domain: South
Organization: GemSysCo

| <u>Processor #</u> | <u>Service</u> | <u>Name</u> | <u>Disk Size</u> | <u>Serial #</u> | <u>Location</u> |
|--------------------|-----------------------|----------------------------------|------------------|-----------------|-----------------|
| 2-852-132-281 | Clearinghouse Service | South | 29Mb | T22-043164 | Supply Room |
| | File Service | Sales FS (Alias: Help Server) | | | |
| | Mail Service | Courier | | | |
| | IRS | Link | | | |
| | ECS | IRS/ECS | | | |
| 2-852-126-393 | Print Service | First Floor | 29Mb | T22-041789 | Supply Room |
| | 8040 printer | | | X876-010353 | |
| 2-852-129-763 | File Service | Admin FS | 29Mb | T22-042589 | Repro Room |
| 2-852-126-863 | Print Service | Third Floor | 10Mb | T22-040029 | Repro Room |
| | 8040 printer | (Alias: Introduction) | | X876-010094 | |

STEP 1:

Complete form 1 to identify and name the services you have on your network

Overview: Before you set up your network, you must establish what servers you have and which services will be located at each server. After reading Booklet 1, you have begun to learn how the network services work together. By filling out form 1, you will gain a further understanding of the services that will be on your network.

Before filling out form 1, you must name your services. The purpose of giving services names is to make it convenient for users to communicate with them. When a print service is named First Floor, for example, a user can print a document by referring to its name, instead of the printer's network address (the identification number assigned by Xerox).

Procedure: Complete form 1. You may also find it useful to complete form 2 to have a written record of the workstations on your network. If you need assistance, talk to your Xerox analyst or the person in your organization responsible for network planning. The following notes may help you complete this form:

- **Processor #:** You do not need this information immediately. You can fill in this part of the form after you complete step 5 in this booklet.
- **Service:** Your network planner should already have a list of what services are to run on which servers. This list was needed when you purchased services from Xerox, and will be needed when software is installed and configured.
- **Name:** See the comments below to help you determine the names you will give to your services.
- **Disk Size:** Either your organizational contact or the Xerox analyst should know whether your servers have 10, 29, 40, 80, or 300 megabytes of disk storage.
- **Serial #:** This information can be found on the equipment itself. It will be needed for service calls.

Comments: It is important to determine a naming scheme to register and track network services. Names should be both simple to remember and type. Each object must have a unique name. See the opposite page for an example. Think about the following issues as you develop your names:

- Do you want your names to follow a format that clearly distinguishes one type of service (e.g. filing) from another (e.g. printing)?
- Are you willing to use whimsical names?
- If your organization has other networks installed, is it important that your naming schemes are compatible?
- Is your naming scheme flexible enough to permit continued growth?

Even though the domain name can be up to 20 characters long, you may want to keep it short, especially if your network is connected with other networks. Users will need to type domain names when they send mail to users who are registered in a different domain. More importantly, changing domain and organization names is a time-consuming task. You will, therefore, want to choose domain and organization names that will be long-lived.

Example:

The following prompts will appear only if this is the first server on the network on which you are installing software.

Time is not set.

Time zone offset from Greenwich (-12-12): -08 Return

Minute offset (0-59): 0 Return

First day of Daylight Savings Time (0-366): 121 Return (1)

Last day of Daylight Savings Time (0-366): 305 Return (2)

Current time February 20, 1983 2:34 PM

Do you wish to change the time? (Y/N?) Y Return

Please enter the date and time: 03/15/83 11:01:52 Return

Set time to March 15, 1983 11:01:52 AM

Okay?: (Y/N): Y Return

Notes:

Write any notes regarding your network installation here. You may want to list the order in which you plan to install software on your servers.

(1) and (2) The values 121 and 305 are default values for those states within the United States using daylight savings time. If the default value is correct, confirm by pressing <RETURN>. Otherwise, enter the appropriate values:

- For United States without daylight savings time (parts of Illinois and Arizona): 0,0
- For Canada: Same as the United States
- For United Kingdom: 89, and 303

STEP 2:

Begin to configure servers

Overview: A Xerox representative may perform these steps for you when you first set up your network; however, we recommend that you observe these procedures carefully so that you can perform them at a future date. The following provides an overview of the total process of configuring servers.

Procedure: The first step is to partition the disk on the server housing the clearinghouse service and then install software on that server. This is covered in steps 2 and 3 in this booklet. Then have your Xerox representative run the Configuration Utility to enable services to run on that server. After services have been enabled, you should activate services to run on that server; this is covered in steps 4 and 5 of this booklet. Repeat steps 2 through 5 for each remaining server on your network. After you have completed steps 2 through 5, register all your services in the clearinghouse service; this is covered in step 6. Finally, after all services have been registered, start the services by typing Y for a Normal Startup at each server on your network.

1. Use form 1 which lists the services that are running on each server. Make sure that:
 - Arrangements have been made to have your services enabled by a Xerox representative.
 - All the processors show some number on the maintenance panel, indicating that they are turned on. To turn on a processor, press the 0/1 rocker switch on the maintenance panel to the 1 position.
 - All the displays are turned on and that the intensity is reasonable. You should see a white rectangle in the upper left corner of the screen. To change intensity, turn the knob just above the <HOME> key.
2. At the first server on your network, insert the first floppy disk (Services X.X #1) into the floppy drive. Press both the B RESET and ALT B buttons, release B RESET, wait until 0002 appears in the maintenance panel and then release ALT B. **Remember:** Start with the server that is to house the clearinghouse service.
3. On the first server configured on a network, the installation process will ask you for the date and time. A series of prompts will appear. Press <RETURN> after you answer each prompt:
 - a. On the prompt for hour offset, type -5 for Eastern time zone, -6 for Central, -7 for Rocky Mountain, and -8 for Pacific. In all cases, type 0 for the minute offset. For the Daylight Savings Time prompts, type the appropriate numbers.
 - b. Type in the current month and time in this format: MM/DD/YY HH:MM:SS (e.g. 09/28/82 11:02:00). Use a 24-hour clock. Finally, confirm your entry.

Comments: Before you can configure a server that uses removable disk drives, you will need to format the disk packs that will be used in those drives. Instructions to format a disk pack are found in appendix A to this booklet.

Example:

Installation Utility X.X

Utility Options:

1. Partition for Services
2. Install Services
3. Start System
4. Start System Error Analysis
5. Start System with Remote Debugging enabled*
6. Start System with Special Debugging*

Enter choice number: 1 RETURN

WARNING - PARTITIONING A SYSTEM DISK DESTROYS ALL CONTENT

Continue? (Y/N): Y RETURN

SECOND CONFIRMATION REQUIRED

Continue? (Y/N): Y RETURN

Disk Partitioned

Utility Options:

1. Partition for Services
2. Install Services
3. Start System
4. Start System Error Analysis
5. Start System with Remote Debugging enabled*
6. Start System with Special Debugging*

Enter choice number: 2 RETURN

Ready to Install System Software

Continue (Y/N): Y RETURN

Installing software (part 1) . . .

This Floppy Disk is labeled "Fixed Disk Services X.X #1"

Insert Floppy Disk labeled "Fixed Disk Services X.X #2" in the Floppy Disk Drive

Installing software (part 2)

This Floppy Disk is labeled "Fixed Disk Services X.X #2"

Insert Floppy Disk labeled "Fixed Disk Services X.X #3" in the Floppy Disk Drive

Installing software (part 3)

System Software Installation Complete

Utility Options:

(Utility options are repeated here)

Notes:

Partitioning a disk will take several minutes to complete.

* These options ordinarily are used only by Xerox representatives to analyze software problems.

STEP 3:

Partition the server disk and install services.

Overview: When you partition the disk, you subdivide the disk space, allocating parts of it to each of several functions. A disk must always be partitioned before it can be used by a server to run services.

Warning: Partitioning the rigid disk is performed only when the server is installed for the first time. If you ever need to reload software, do not partition the disk again.

To partition a disk, follow the prompts that appear after the first services disk is ready (this was done in Step 2). You then select the "Partition for Services" option under the "Utility Options" heading. Because partitioning a disk causes all data to be erased, you will see a warning prompt and will be asked to confirm this procedure twice.

The utility options prompt will reappear after the disk has been partitioned. Select the **Install Services** option to install the services on your server.

Note: When partitioning a removable disk pack, be sure you choose the correct option of the Installation Utility so that you do not partition a 300 megabyte as a 80 megabyte or vice versa.

Procedure:

1. Be certain you have completed Step 2 in this booklet and loaded the first floppy disk. **Note:** Skip directly to the fourth step in this procedure if you are reloading software on an existing server.
2. When the utility options prompt appears, partition the disk by typing the number of the **Partition for Services** option and pressing <RETURN>.
3. Type **Y** and press <RETURN> to both confirmation prompts.
4. When the Utility Options reappear, select the **Install Services** option and press <RETURN>.
5. Type **Y** and press <RETURN> to the confirmation prompt.
6. After several minutes, the display will prompt you to insert the second disk. Remove the first and insert the second. Repeat this procedure for the third disk.

Comments: Remember to press <RETURN> each time you type a response to the system prompts. The numbers in the maintenance panel will change as software is started.

Example:

This is the Boot Diagnostics version 5.0.

THIS CONFIRMS THAT THE SYSTEM ADMINISTRATOR DISPLAY IS OPERATIONAL.

Network Services X.X

Restart Reason: User Restart

Normal Startup (Y/N): **N RETURN**

Select Startup Option:

1. Continue
2. Load System Error Analysis
3. Activate Service
4. Deactivate Service
5. Change Domain and/or Organization
6. File Check
7. Create User File System
8. Change Network Number

Enter choice number: **7 RETURN**

Creating User File System...Done

Creating System File Catalog...Done

Creating File Check Folder...Done

Normal Startup? (Y/N):

Notes:

You must reboot the system to get a normal startup prompt.

STEP 4:

Create a new user file system.

Overview: This step cannot be completed until your Xerox representative has configured the server.

By this step, you and your Xerox representative should have determined the configuration of services on your network (i.e. which services will run on each server). Before you create a new user file system, a Xerox representative must run the Configuration Utility to enable optional software features, which include most of the network services and communication protocols. The utility must be run after you have installed services. A good point at which to have it run is when the normal startup prompt appears after you have rebooted the server.

After the Configuration Utility has been run by the Xerox representative, you are ready to create a new user file system. (see comment below). This step must be completed on every new server.

Procedure:

1. After the Xerox representative has run the Configuration Utility, boot the system by pressing the B RESET button.
2. Answer N to the Normal Startup prompt. Then select the Create User File System option.

Comments: If you are installing new software on a server on which software was previously installed, this step should not be necessary. However, if you partitioned the disk when you loaded the software, you will have destroyed the file system that had existed. In such a case, you will need to perform this step.

Example:

Normal Startup? (Y/N): N RETURN

Select Startup Option:

- 1 Continue
- 2 Load System Error Analysis
- 3 Activate Service
- 4 Deactivate Service
- 5 Change Domain and/or Organization
- 6 File Check
- 7 Create User File System

Enter choice number: 3 RETURN

Network Number: 1-034 RETURN

Select Service

- 1 Clearinghouse Service
- 2 External Communication Service
- 3 Internetwork Routing Service
- 4 File Service
- 5 Gateway Service
- 6 Interactive Terminal Service

Enter choice number: 1 RETURN

Done. Clearinghouse Service Activated.

Clearinghouse Service provided on this server

Normal Startup? (Y/N) : N RETURN (1)

Select Startup Option

Normal Startup? (Y/N): Y RETURN

Server is attached to network number 1-034

Server domain: organization not set, please enter

Domain: South RETURN

Organization: GemSysCo RETURN

Server Domain is South

Server organization is GemSysCo

Clearinghouse Service provided on this server.

Opening Clearinghouse database

This clearinghouse service has not been named. Please enter its name.

Name:

(A series of messages will appear next, telling what services have been provided.)

Notes:

(1) Continue to select N for Normal Startup until you have activated all the services that you want to start on the server. Respond Y to the Normal Startup prompt when all the desired services have been activated.

If a file service was added and the electronic mail option was enabled by the Xerox representative, you will see a message that the system is initializing a new mail folder catalog. This mail folder catalog is where mail is initially stored before being forwarded to a recipient's mail folder.

STEP 5:

Activate a service to run on a specific server.

Overview: After software has been installed at a server, the Configuration Utility run, and a user file system created, you are ready to activate services. You must activate specific services on servers before they can be made available to users. (See comments below.)

Note: Remember, before services can be activated on a server, a Xerox representative must run the Configuration Utility to enable optional software to run on each server. (See step 4 for details.)

Procedure:

1. When the Normal Startup prompt appears, type **N**. The startup options will appear immediately.
2. Select the **Activate Service** option to activate a service. The service choices enabled by your Xerox representative will appear.
3. Type the number that corresponds to the service you wish to activate. Type **N** to the normal startup prompt if you wish to activate more services.
4. Repeat steps 2 and 3 above for each service you wish to activate. Form 1 will tell you which services are to be activated on each server.
5. When all services desired are activated on the server, respond **Y** to the Normal Startup prompt. If the prompt asks for the domain and organization, re-enter the information.
6. Type **List Services** at any time after a normal startup to display the services, their status (started or stopped), and the processor number for the server. At this time, use the List Services command to find out the processor number of the server and record it on your form 1.
7. Repeat steps 2 through 5 in this booklet for each of server on your network.

Comments: At the completion of this step, the clearinghouse and file services will be started automatically. When the communication services - internetwork routing, gateway, and interactive terminal service - are activated, the system will warn you that no ECS or RS232C ports have been added. Ignore these warnings. But remember that the communication services will not start until you complete all the steps up to and including step 15 in this booklet. The print service will not start until you complete step 20 of this booklet.

The procedure described above presumes that you have just loaded software from floppy disks. If your server has already been loaded with software and you decide at a later date you want to activate another service to run on the machine, the basic procedure is the same. To reach the prompt that asks if you want normal startup, boot (restart) the server. Boot a server by pressing the button labeled **B RESET**, found on the front processor panel.

At some some point, you may want to deactivate a service to minimize the load on a server. If you decide to deactivate a service, boot the server, select the **Deactivate Service** option, then select the service you wish to deactivate. Once this is done, continue with a normal startup.

Example:

```
>Logon RETURN
  User Name: (Supplied by Xerox)(1) RETURN
  Password: ***** RETURN
>Clearinghouse Service RETURN
Done.
Clearinghouse Service commands are now available.
CHS> Add File Service RETURN
  Name: Diamond RETURN
  Network Number: 2-689 RETURN
  Processor Number: 2-282-123-567 RETURN
  Description: Marketing Group files RETURN
  Confirm this File Service information? (Y/N): Y RETURN
  Done. Diamond (File Service) added.
  Add another File Service? (Y/N): N RETURN
CHS> Add Print Service RETURN
  Name: Emerald RETURN
  Network Number: 2-689 RETURN
  Processor Number: 2-282-321-654 RETURN
  Description: Reproduction Center RETURN
  Confirm this Print Service information? (Y/N): Y RETURN
  Done. Emerald (Print Service) added.
  Add another Print Service? (Y/N): N RETURN
```

Notes:

(1) Because you have not been registered as a user the first time you log on, you will need to use a special name and password supplied by Xerox. Once you are a registered user in the clearinghouse database, you must log on with your own user name.

STEP 6:

Register mail, file and print service in the clearinghouse

Overview: Even though services have been activated and started on a server, they cannot be used by workstation users until they are added, or registered, in the clearinghouse. The clearinghouse provides the directory that allows network users to access the various services. Each service is added the same way--by using the clearinghouse's "Add" commands.

Beginning with this step, most of your actions will involve using various service commands. To use those commands, you need to use the Logon command to type in your name and password. This proves to the service that you have a right to make the changes possible with the available commands.

Procedure:

1. Determine service names using form 1. Be sure you have recorded the processor and network numbers, as well as the location and description of the service's use, since you will need this information to complete this step.
2. Log on at the server and direct your commands to the clearinghouse service. If you have not yet been registered as a system administrator, use the special name and password supplied by Xerox. (You will register yourself as a system administrator in step 7.)
3. Type **Clearinghouse Service** <RETURN>. (Note: Whenever you use a command specific to a service, you must direct your commands to that service by typing its name. The index of commands at the back of booklet 1 will tell you with what service each command is connected. The letters before the server terminal prompt will tell you which service you are currently addressing. For example, seeing "CHS>" would tell you that you are directing your commands to the clearinghouse service.)
4. Type **Add** and the name of the object: File Service, Mail Service, or Print Service. Respond to the system prompts for the name, network number, processor number, and description.

Comments: When entering information after the "description" prompt, the word None will be replaced as you type information. To help you keep track of services, you can add any information you wish, up to 100 characters (for example, Room 584, for Accounting only; or Across from conference room, Building J).

If you have purchased electronic mail, you must register a name for the mail service in the clearinghouse service using the network number and processor number of the file service on which electronic mail resides.

Example:

```
> Clearinghouse Service RETURN
CHS> Add User RETURN
  First Name (and Middle Name, if desired): Joyce M. RETURN
  Last Name: Smith RETURN
  Password: ***** RETURN
  Description: Extension 2082
  System Administrator? (Y/N): Y RETURN (1)
  "Home" File Service: Courier RETURN (2)
    Domain: South RETURN
    Organization: GemSysCo RETURN
  Mail Stored On: Courier RETURN
    Domain Name: South RETURN
    Organization Name: GemSysCo RETURN
  Alias: Joyce RETURN
  Alias: J. S. RETURN
  Alias: RETURN
  Confirm this user information? (Y/N): Y RETURN
  Done. Joyce M. Smith (User) added.
  Add Another User (Y/N): N RETURN (3)
```

Notes:

- (1) **Warning:** Add your name to the clearinghouse service first and give yourself system administrator privileges. The Xerox special name and password can not be used after the first user is registered.
- (2) The file service you assign as the "home" service is the one on which 8010 desktops will be stored automatically.
- (3) If you respond Y to add another user, all the prompts for information will be repeated. As another user is added, the default prompts for the names of the file service and mail service will be the same as for the previous user.

STEP 7:

Add all users to the clearinghouse service.

Overview: The clearinghouse service is where all information about network services and users is stored. Only after a user is registered can he or she use the services available on the network.

Procedure: Use form 3 to record all user information. Check for proper spelling and discuss passwords and aliases with each person. Encourage users to select a password they will easily remember since they will use it often when logging on. They may also want at least one brief alias to be used in mailing. Make sure no two users have the same user name or alias. The maximum length for each name, alias, or password is 40 characters.

1. Fill out and take form 3 with you to the server as you add users.
2. Log on at the server and direct your commands to the clearinghouse service. To do this task, you must log on as a system administrator. Because you have not yet added yourself to the clearinghouse database, you will need to use the special name supplied by Xerox (see note below).
3. Type **Add User**. First, add yourself as a user, giving yourself system administrator status. Fill in the prompts, pressing <RETURN> after each step.
4. The system will ask you to confirm the user information. If you type **N**, all the prompts will be presented again, with the information you gave the first time. You may change any entries, either by typing a different response, or by backspacing over the characters and typing something different.
5. As a test, you might now want to log off and then log on again using the user name you just added for yourself. To do this, type **Logoff**. Then type **Logon** and type your user name and password.
6. Type **Add User** and continue the process until you have added all the names listed on your form 3. As you add more users, the prompts for file service and mail service will default to the previously registered user information. Press <RETURN> if the information for the new user is to remain the same, or type new information.

Comments: Only users who share the same mail service will be able to exchange mail. You will have to create a mail folder for each user in the designated file service. (See Step 9).

After you answer the Alias prompt, the system will prompt for another alias so you may add several one after the other. Pressing <RETURN> alone will terminate prompting for additional aliases.

Note: Be sure to add your name to the clearinghouse first and give yourself system administrator privileges. The special Xerox name and password will not work after the first user is registered.

Example:

```
CHS>Add Group RETURN
    Name: Analysts
    Done. Analysts(Group) added.
CHS>Add Member
    Group Name: Analysts RETURN
    Member: SmithRETURN (1)
        Domain Name: South RETURN
        Organization Name: GemSysCo RETURN
    Done. Joyce Smith:South:GemSysCo (Member) added to Analysts (Group)
    Add Another Member?(Y/N): Y RETURN
    Member:Systems Analyst (2)
        Domain Name: North RETURN
        Organization Name: GemSysCo
    Done. Systems Analysts:North:GemSysCo (Member) added to Analysts (Group)
    Add Another Member? (Y/N): N RETURN

CHS>Add Group RETURN
    Name: All South RETURN
    Done. All South (Group) added.
CHS> Add Member
    Group Name: All South RETURN
    Member: * (3)
        Domain Name: South RETURN
        Organization Name: GemSysCo RETURN
    Done. *:South:GemSysCo (Member) added to All South (Group)
    Add Another Member? (Y/N): N RETURN
```

Notes:

- (1) Here an individual user is added to the group "Analysts".
- (2) Here the group "Systems Analyst" is added as a member of the group "Analysts."
- (3) Here a pattern is used to add all members of the domain "South" as members of the group "All South." To avoid confusion when maintaining groups, it is better to put the pattern in a separate group.

STEP 8:

Add groups and group members to the clearinghouse service.

Overview: The group and member commands are used to give users access to file drawers. A group consists of a collection of members which may include individual users, other groups, or patterns. When creating groups, it is a good idea to follow the pattern or organizational structure of your company (i.e. organization chart) rather than create groups on a random basis.

- Individual users may be added as members of a group simply by entering the name of the user at the "member" prompt. The user's alias may also be entered.
- You may also enter the name of a group at the "member" prompt. If a group name is entered, all members of that group will inherit the access privileges of the group.
- If the pattern * is entered at the "member" prompt, all users of a given domain or organization will inherit the access privileges of the group. For example, if * is entered as the member, all members of the given domain and organization will inherit the access privileges of the group. If * is entered as the member and * is entered as the domain, all members of the entire organization will inherit access privileges of the group. To give access to all users, enter * as the member, domain, and organization.

Procedure: Record the names of groups and group members to be added to the clearinghouse.

1. Log on at the server and direct your commands to the clearinghouse service.
2. Type **Add Group**. Then enter the name of the group at the "Group Name" prompt.
3. Add members to the group by typing **Add Member**, and following the system prompts.

Comments:

The members of a group may be registered in the same domain as the group itself, or in another domain or organization. The group commands are Add Group, Delete Group, and List Groups. The member commands are Add Member, Delete Member, and List Members.

Example:

>File Service RETURN

FS> Add Mail Folder RETURN

Mail Folder Name: Mary RETURN

Confirm (Y/N): Y RETURN

Done.

FS> Add Mail Folder RETURN (1)

Mail Folder Name: Petra Jackson:South:GemSysCo RETURN (2)

Confirm (Y/N): Y RETURN

Done.

Notes:

(1) If you wish to add several folders at one time, retype the Add Mail Folder command.

(2) If you add mail folders for users on another network, you should identify them by their fully qualified names.

STEP 9:-**Set up mail folders for users**

Overview: If a mail service has been installed on your network, your users will need mail folders. Each user must have his or her own mail folder. When you add the mail folder, you may type the user's name or alias. However, the user's fully qualified name (e.g. Petra Jackson:South:GemSysCo) is the name that will be given to the mail folder. Also, if you change the user's name, you must change his/her mail folder's name.

Record the folder name on form 4 (found in Booklet 6). You will add a folder for each user who is to have mailing privileges.

Procedure:

1. Make certain the mail service has been registered in the clearinghouse. If it has not been registered, see step 6.
2. Check to make sure the user is registered in the clearinghouse.
3. Log on at the server and direct your commands to the file service that is providing the mail service.
4. Type Add Mail Folder and press <RETURN>.
5. Type the name or alias of the user for whom you wish to create a mail folder. If the user's name is registered in a clearinghouse on a different network, you must enter his or her fully-qualified name.
6. To test if all information has been added correctly, go to a workstation and send mail to the user for whom you just added a mail folder.

Comments: Only users whose mail folders are on the same mail service can exchange mail. Their clearinghouse entries must all have the same mail service entered in response to the "Mail Stored on" prompt, and each user must have a mail folder on that file service. (See note below.).

NOTE: Each user must have a mail folder on only one mail service. Violation of this rule can cause incorrect system operation, including difficulty in sending mail.

Example:

```
FS> Add File Drawer RETURN
  File Drawer Name: Reference Manual RETURN
  Owner's Name: Alexander RETURN
  Confirm? (Y/N): Y RETURN
Done

FS> Change File Drawer RETURN
  File Drawer Name: Reference Manual RETURN
  New File Drawer Name: Reference Manual RETURN
  New Owner's Name: D. Anderson RETURN
  Change Access List (Y/N): Y RETURN
  Enter User, Alias, or Group Name: Customer Documentation RETURN
  Adding new name to access list
    Permission to read? (Y/N): Y RETURN
    Permission to write? (Y/N) Y RETURN
    Permission to add? (Y/N): Y RETURN
    Permission to delete? (Y/N): Y RETURN
    Permission to change the access list? (Y/N) N RETURN
  Make another change to access list? (Y/N): N RETURN
  Confirm the above changes (Y/N): Y RETURN
Done
```

Notes:

If a drawer is being set up for the use of several users, any one of them can be considered the owner when registering the drawer.

To remove a user's name or group name from the access list, use the Change File Drawer command. Enter the group or user's name at the "Enter User, Alias, or Group name," prompt and set all accesses to N.

STEP 10:

Create file drawers for users.

Overview: Users can create documents, folders, and record files at workstations, then store them in file drawers on the file service. File drawers are created and deleted on the file service only by you, the system administrator.

You can create file drawers for individuals and groups, and you can assign access rights to protect the privacy and security of the work stored in such file drawers.

You could, for example, assign read, write, add, and remove access rights to the Reference Manual file drawer for each member of a group named Customer Documentation while assigning only the permission to read to another group.

The following describes each of the access right options:

- **Read** - the ability to retrieve a file or list the contents of a file drawer
- **Write** - the ability to change the contents of a file drawer
- **Add** - the ability to place new files into a file drawer or folder
- **Remove** - the ability to remove a file from the file drawer or folder. **Write** and **remove** permission are both needed to remove a file)
- **Change the access list** - the ability to change the access list of this file drawer. (This is not currently implemented.)

Procedure:

1. Use form 4 to document the names of the file drawers and also the owner's name. Discuss with users which drawers will be shared by other users or groups of users and what naming scheme they wish to use. Remember, no two drawers on the same file service may have the same name.
2. Log on at the server and direct your commands to the file service.
3. Type **Add File Drawer** for each drawer you wish to add. Follow the system prompts for the file drawer name and the owner's name.
4. Use the **Change File Drawer** command to change the drawer's name, owner, or access control.
5. Inform all users about existing common drawers. Ask them to let you know if they wish to have additional drawers.

Comments: If you want to see a list of all file drawers in your file service, use the **List File Drawers** command. (see Task C, in Booklet 3, for details).

Note: When a file drawer is first created, read, write, add and remove access rights are assigned to the owner. As the system administrator, you may change this access list at any time with the **Change File Drawer** command.

Example:

Form 5 Setting Up Ports for Communication

Use this form to record the information that will be needed as you register the ports in your clearinghouse service. You will need to fill out one of these sheets for each ports you register.

Directions: Write in your answer (or if on-line press <NEXT> to advance through fields) in the space provided before each question. When you register the port, the information you need to answer the system prompts will be listed in the order required.

| Questions to Answer | Notes |
|--|--|
| <p>Port1 _____</p> | <ul style="list-style-type: none"> Choose name. (The port can be 40 characters long.) |
| <p>1 _____</p> | |
| <p>1 _____</p> | <ul style="list-style-type: none"> Each port registered in your clearinghouse needs a different number. One scheme is to give the first line the number 1, the second 2, etc. Line Number range is 0, 32761 This answers where the port is attached. |
| <p>Port1CIU _____</p> | |
| <p>1 _____</p> | <ul style="list-style-type: none"> If the port is attached to an 8000 processor, this prompt is omitted. If the port is attached to an 8000 processor, this prompt is omitted. |
| <p>Port Number</p> | |
| <p>1, A1 5. B1 2. A2 6. B2 3. A3 7. B3 4. A4 8. B4</p> | |

This is an example of the first page of this form.

STEP 11:

Fill out a port form for each port on your network

Overview: The internetwork routing service, interactive terminal service, gateway service, and external communication service all need RS232C ports. For each one of the communication services you are running (IRS, ITS, or GWS), you will need a corresponding RS232C port. Each server may be configured with one local port or you may use Xerox 873 communication interface units (CIU) to provide additional ports.

The term **RS232C** refers to a specific industry standard involving data communications. Port refers to the connecting point between a server and the means of data transmission, such as a modem connected to telephone lines. For example, in order for a remote 860 workstation to reach the network, it must use telephone lines and modems to communicate into the gateway service on a server. The point where the modem is connected into the server is the port.

Procedure: Form 5, Setting Up Ports for Communication, found in Booklet 6, will help you gather the information needed to add these ports in steps 12 through 14. You will need to fill out a form for each RS232C port (including the ports on an 873 CIU) that is to be used for communication purposes. RS232C ports are used by the external communication service, gateway service, internetwork routing service, and interactive terminal service.

When you fill out these port forms, you will need to know the purpose for which you will use each port. The following may help you decide which ports will have to be registered and for what purposes.

- If your network uses internetwork routing service (IRS), you will need to register a port for each remote network it directly accesses through communication lines.
- If your network uses interactive terminal service (ITS), you will need to register one or more ports through which the teletype-like terminals can access the ITS and, thus, the electronic mail service.
- If your 8010 or 860 workstations are going to emulate teletypes, you will need to register one or more ports through which the workstations will access the host computer.
- If your workstations are going to emulate IBM 3270 display terminals, you must register a port through which the IBM 3270 host computer will be accessed. This port can not be located on an 873 CIU. It must be the local port on a server running ECS.
- If your network uses the gateway service, you will need to register a port through which standalone 860s and 850s can access that service. This port can not be located on an 873 CIU. It must be the local port on the server running the gateway service.

If you are not familiar with data communications, you may need help answering some of the questions on form 5. Talk to your Xerox analyst or to the vendor of your communications equipment for assistance.

Comment: RS232C ports are optional hardware.

Example:

CHS>Add External Communication Service RETURN

Name: Tiger RETURN

Network Number: 1-234 RETURN

Processor Number: 2-852-459-321 RETURN

Description: Supports Jungle CIU for ITS, IRS RETURN

Confirm this External Communication Service information? (Y/N): Y RETURN

Done. Tiger (External Communication Service) added.

Add another External Communication Service? (Y/N): N RETURN

CHS> Add Communication Interface Unit RETURN

Name: Jungle RETURN

Name of owning External Communication Service: Tiger

Processor Number of Communication Interface Unit: 2-852-478-325 RETURN

Description: Supports ITS, IRS RETURN

Type of Communication Interface Unit

1 One board ⁽¹⁾

2 Two board

Enter choice number: 1 RETURN

Confirm this Communication Interface Unit information? (Y/N): Y RETURN

Done. Jungle (Communication Interface Unit) added.

Add another Communication Interface Unit? (Y/N): N RETURN

CHS>Add RS232C Port RETURN

Name: IRSport RETURN

Line Number (0-32767): 1 RETURN

Port is connected to:

1. A Xerox 873 Communication Interface Unit

2. A Xerox 8000 Processor

Enter choice number: 1 RETURN

Name of Communication Interface Unit to which this port is connected: Extension

Port Number

1. A1

2. A2

3. A3

4. A4

5. B1

6. B2

7. B3

8. B4

Enter choice number: 1 RETURN

Name of External Communication Service which owns this Port: Madison ECS RETURN

Type of service for which this port is intended

1. Interactive Terminal Service

2. Internetwork Routing Service

3. TTY Emulation Service

4. Out of Service

Enter number of choice: 2 RETURN

Description: Not used

Confirm this RS232C Port information? (Y/N): Y RETURN

Done: IRSport (RS232C Port) added.

Add another RS232C Port (Y/N)? : N RETURN (example continued on page 2-26)

STEP 12:

**Add all needed communication services for your network
(except for internetwork routing service)**

Overview. In order to add the communication services to your network, you will need to register them in the clearinghouse service. The following describes the communication services, ports, how they interrelate, and the procedure for registering them in the clearinghouse service.

- The external communication service (ECS) controls the server's RS232C port and/or the ports on an 873 communication interface unit. The ECS determines which ports are under its control by asking the clearinghouse service. Every communication option (i.e. ITS, IRS, GWS, etc.) must have a port, and every port assigned to a communication service must have a controlling ECS.
- The 873 Communication Interface Unit (CIU) is a piece of hardware that gives you either 4 or 8 additional ports. It must be controlled by an ECS.
- An IBM 3270 host computer can be accessed by 8010 workstations that have 3270 emulation software installed. This requires dedicated use of a server's RS232C port. ECS must be installed and running on the server that has its port dedicated to the IBM 3270 host computer.
- 8010 workstations emulating teletype terminals must use a port that is controlled by ECS. The port may be on a server or an 873 CIU.
- The interactive terminal service (ITS) provides access to the electronic mail service for teletype-like terminals. It requires use of at least one port on a server or an 873 CIU and an ECS to control the port(s). The ECS, however, does not have to reside on the same server as the ITS.
- The gateway service (GWS) allows a user of a remote Xerox 860 or 850 workstation to send mail to an assigned mail clerk. It also permits the remote user to receive mail sent to his or her personal mail folder by other electronic mail users. ECS must be installed and running on the same server as the GWS to provide access to the local port.

Note: Adding an internetwork routing service is discussed in detail in step 14.

Procedure: Log on at the server and direct your commands to the clearinghouse service. If you add the objects in the following order, some prompts will be able to pick up needed information from previous entries. This will simplify the registration process. (Form 1 contains information that will help you answer the prompts.)

1. Add all services in any order (e.g. ITS, GWS), including the ECS. Follow the system prompts.
2. Add the CIUs. Follow system prompts.
3. Register all ports using the forms you filled out in step 11.
4. Add the IBM 3270 Hosts, if needed (see comment #3 on page 2-27). Follow system prompts. (Appendix B, this booklet, contains a table that may help you determine the emulator controller's address).

(Continued on page 2-27)

```
CHS>
CHS> Add IBM 3270 Host RETURN
      Name: Giant RETURN
      Description: First Floor, Rm 202 RETURN
      Enter the Emulated 3276 Controller's address (0-31): 12 RETURN (2)
      Enter the number of ports on the Emulated 3276 Controller (1-8): 2 RETURN
      Enter the RS232C port name through which the Host is accessed: Port2 RETURN (3)
          Domain Name: Research RETURN
          Organization Name: GemSysco RETURN
      The language supported by this emulated 3276 Controller is:
      1  Austrian
      2  Austrian (Alternate)

      9  English

      26 Swedish (Alternate)
      Enter choice number: 9 RETURN
      Is all the Emulated 3276 Controller information correct: Y RETURN
      Add another Emulated 3276 Controller to this IBM 3270 Host? (Y/N): N
      Confirm this IBM 3270 Host information? (Y/N): Y RETURN
      Done. Giant (IBM 3270 Host) added.
      Add another IBM 3270 Host? (Y/N): N RETURN
CHS> External Communication Service RETURN
ECS> Start RETURN
```

Notes:

- (1) Select 1 if the CIU has four ports; select 2 if the CIU has eight ports.
- (2) The controller address and number of ports should be obtained from the host site.
- (3) This is the name, domain, and organization of the RS232C port which is connected to the host computer.

After you have added a service, you should direct your commands to that service and use the Start command to get it started for the first time. If the service is on a different server, you should log on at that server, direct your commands to that service, and use the Start command.

(Continued from page 2-25)

STEP 12 (Continued):

**Add all needed communication services for your network
(except for internetwork routing service)**

5. To start the services for the first time, log on at the server running the service, type the name of the service (to reach the commands unique to that service), and then type Start. You must do this for each of the following services you added: ECS, GWS, ITS.
6. Test the RS232C ports. To do so follow step 13.

Comments:

1. If you add a gateway service, you will need to assign someone in your office to serve as a mail clerk. It will be the mail clerk's responsibility to check his or her assigned mail folder for mail that should be forwarded to other users. (See Task G, booklet 3.)
2. Any time information about an ECS is changed in the clearinghouse (e.g. CIU entry, RS232C port entry, etc.) the ECS must be stopped and restarted for the change to take effect.
3. Before registering the IBM 3270 host in the clearinghouse database, you may use the Set Buffer Size command to define the size of the buffers which hold data destined for the IBM 3270 host. This size, which defaults to 256 bytes, should be set to match the expectations of the host. To set the buffer size, log on at the server and direct your commands to the ECS. Type Set Buffer Size and follow the prompts.

Example: (this test should be run on each port)

ECS>Start RETURN

Done

ECS>Test RETURN

Choose test to be performed:

1. Terminal
2. RS232C
3. Floppy
4. Echo Test
5. Communication Interface Unit

Enter choice number: 2 RETURN

Enquiring RS232C port information from clearinghouse

Enter number of RS232C port to be tested:

1. IRSPort
2. ITSPortA
3. ITSPortB
4. ITSPortC
5. ITSPortD

Enter choice number: 5 RETURN

Selected port is registered as follows:

Port is registered as follows:

Port is local to this ECS

Synchronous port: bit synchronous mode used

Line speed for this port: 9600

Port registered as DTE. Begin loopback test.

Enter the number of frames to send (10-32000): 25 RETURN

Shall I ignore DSR (Useful to analog loopbacks)? (Y/N) N RETURN

Please insert loopback plug (or activate modem loopback).

Type any character when this is done.

Ending test...

Good frames sent 25

Percentage of good frames received: 100

Please remove loopback plug (or deactivate modem loopback)

Type any character when this is done.

Done.

STEP 13:

**Confirm that communication links operate and start communication service
(except for internetwork routing service)**

Overview: Because of the interplay of various manufacturer's products involved in any communication application, all communication components should be tested when first setting up the network.

Much of the procedure that follows will be done by your Xerox representatives. (Those portions are italicized.) They are included here because you may find these same tests useful when solving communication problems on your network after initial installation.

Procedure: For any port used by a communication service, there is a basic test you should complete. Then for each type of service, there are additional testing steps.

FOR ALL PORTS

1. *Test the RS232C ports as described in Action 1M, Booklet 5. First, conduct a loopback test on each local modem by placing the modem in analog loopback mode. If full-duplex, leased lines are used, also test the communication line and remote modem by placing the remote modem in digital loopback mode and running a second loopback test.*
2. After these test succeed, start the service (e.g. GWS, ITS) to which the port is assigned and proceed to one of the tests below.

FOR GATEWAY SERVICE (GWS)

1. Send a message from a remote 850 or 860 word processor to confirm that the communication link works.
 - If GWS does not answer a call, confirm that GWS is started and that the modem is working.
 - If GWS does answer a call but messages can neither be sent or received, confirm that the correct 850 or 860 operating procedures are being used. If a message is received on the server terminal, check it against Action 2B, Booklet 5.

FOR INTERACTIVE TERMINAL SERVICE (ITS)

1. Send a message from a remote interactive terminal. If the telephone rings but is not answered by the modem, check that the Ring Indicator (RI) lamp lights up for each ring.
 - If the RI light is not lit, check the modem and telephone line.
 - If the modem does not have a ring indicator light or if it is lit, check that ITS is started and working. If the port is controlled by an ECS on a separate server from ITS, run an echo test (Action 1L, Booklet 5) to confirm the two servers communicate. If the servers communicate, check the RS232C cable between the modem and port, and then the phone connection. If those both work, call Xerox.

Your Notes:

A large, empty rectangular box with a thin black border, intended for the user to write their notes. It occupies most of the page area below the header and above the footer.

STEP 13 (continued):

**Confirm that communication links operate and start communication service
(except for internetwork routing service)**

TO TEST 8010 WORKSTATIONS EMULATING TTY PROTOCOLS

1. Confirm that the modem being used is compatible with the host computer's modem, and that the RS232C port's configuration is compatible with the modem's setting.
2. On an 8010 enabled to run TTY, copy a TTY icon from the directory. If an error message is posted at this point, check and correct the clearinghouse database entry for the RS232C port.
3. Open the TTY icon and select [START] in the TTY option sheet. If an error message appears, check its meaning in the relevant chapter of the 8010 Reference Guide.

TO TEST 8010 WORKSTATIONS EMULATING 3270 PROTOCOLS

1. Talk to the person managing the 3270 host computer. Ask him or her to confirm the quality of the data channel (normally a leased line). Also, obtain the controller address as set during the host computer's system initialization (or sysgen).
2. Make certain the clearinghouse database has the correct 3270 information entered. Stop the ECS, if it is already started. Connect the ECS to the data channel. Start the ECS. As the ECS starts, it will post a message that gives the host controller address. Check to be certain it matches the controller address obtained from the person managing the 3270 host computer. If it does not, correct the clearinghouse database. Then stop and restart the ECS to make the change take effect.
3. On an 8010 enabled to run 3270, copy a 3270 icon from the directory. If an error message is posted at this point, check and correct the clearinghouse database entries.
4. Open the 3270 icon and select [START] in the 3270 option sheet. If an error message appears, check its meaning in the relevant chapter of the 8010 Reference Guide.

Example:

>Clearinghouse Service

CHS>Add Internetwork Routing Service

Name: Moonbeam RETURN

Network Number: 1-456 RETURN

Processor Number: 2-282-006-219 RETURN

Description: Room 22 RETURN

Confirm this Internetwork Routing Service Information? (Y/N) Y RETURN

Done. Moonbeam has been registered as an Internetwork Routing Service.

Add another Internetwork Routing Service? (Y/N): N RETURN

CHS> Add RS232C Port

. (For details on this part of the example, see step 12.)

CHS> Internetwork Routing Service RETURN

IRS> Start RETURN

IRS>Clearinghouse Service

CHS>Find Remote ClearinghousesRETURN

Finding remote Clearinghouses: this operation will take a few minutes.

Added Clearinghouse: Oswald (Net 1-234, Processor 2-282-912-934)

Updated Clearinghouse: Canary (Net 1-234, Processor 2-282-912-934)

Added Clearinghouse: Hastings (Net 1-235, Processor 2-282-912-346)

Done finding remote clearinghouses

Notes: To keep the clearinghouse database current, the Find Remote Clearinghouse command is performed automatically by the system if 10 to 12 hours have elapsed from the previous search (activated by either you or by the system).

However, for internets containing dial-up routing links, you will need to ask the remote system administrators to perform a manual Find Remote Clearinghouses command.

If a new clearinghouse service is added to the internetwork, you should make sure that a Find Remote Clearinghouse command is performed on all other clearinghouse services, so they can find out about the new clearinghouse service.

If the ECS and IRS have not already been started, you will need to start them after the RS232C port has been added, If they have already been started, you will need to stop and restart them. Then perform a Find Remote Clearinghouses command.

STEP 14:

Set up communications between your network and another network.

Overview: In order to communicate with other networks, you need to set up communications. You also need to add the external communication service if there is none already and then to add the internetwork routing service (IRS). An IRS allows local workstations and servers to talk to remote services through leased or manually dialed phone lines. With an IRS you will not see any differences in the equipment you are using, but you will be able to access services running on other networks. The work of the IRS is done internally, by taking packets of information from the local network and sending them to other networks. Such information may be sent through several IRSs before reaching its destination.

Your next step is to add a port for the IRS to use to reach that remote network.

Procedure:

1. Log on at the server and direct your commands to the clearinghouse service.
2. Type Add Internetwork Routing Service. Enter a name for the IRS as well as information about the server on which your IRS is running.
3. Add an RS232C port for your IRS to use, if it was not already added in step 12.
4. Log on at the server on which the IRS will run.
5. Activate IRS on the server (follow the procedures in step 5).
6. Test the communication links to ensure they are working properly (follow procedures in step 15).

Comments: For 8010 users, the directory will list each remote clearinghouse in the internetwork. 860 users need to be informed of the names and type of the remote services available.

Example (assuming all results are positive):

```
ECS> Start
  Done
ECS> Test RETURN
  Choose peripheral to be tested:
  1. Terminal
  2. RS232C
  3. Floppy disk
  4. Echo Test
  5. Communication Interface Unit
  Enter choice number: 2 RETURN
  Enquiring RS232C port information from clearinghouse
  Enter number of RS232C port to be tested:
  1. IRSport
  Enter choice number: 1 RETURN
  Selected port is registered as follows:
  Port is local to this ECS
  Synchronous port: bit synchronous mode used
  Line speed for this port: 9600
  Port registered as DTE. Begin loopback test.
  Enter the number of frames to send: 25 RETURN
  Shall I ignore DSR (Useful to analog loopbacks)? (Y/N): N RETURN
  Please insert loopback plug (or activate modem loopback).
  Type any character when this is done.
  Ending test...
  Good frames sent          25
  Percentage of good frames received: 100
  Please remove loopback plug (or deactivate modem loopback).
  Type any character when this is done.
  Done.
ECS> Internetwork Routing Service
IRS> Start RETURN
  Done
IRS> List Routes RETURN
  Network 1 is 8 steps away via port1
IRS> Test RETURN
  Choose peripheral to be tested:
  1. Terminal
  2. RS232C
  3. Floppy disk
  4. Echo Test
  Communication Interface Unit
  Enter choice number: 4 RETURN
```

STEP 15:

Confirm that internetwork communication links operate and start the internetwork routing services

Overview: An internetwork is a sophisticated collection of Xerox equipment, telephone lines, and modem equipment manufactured by various firms. When communication between two networks is first established, a series of tests should be run to ensure that all of the relevant equipment is operating correctly.

Many of the tests described in this step will be done by your Xerox representatives. These steps are italicized in the procedure that follows. They are included here because you may find these same tests useful when solving communication problems on your internetwork after initial installation.

Procedure: The tests that follow are a sequenced group of steps that assure communication is taking place from the simpler levels of your communication network to the more complex.

1. Insure that the relevant external communication services are started. (Task 1, Booklet 3)
2. *Place the modem on the local server running IRS into analog loopback mode. Run the RS232C loopback test (Action N, Booklet 5). Have the same task done on the remote server running IRS.*
 - *If this test fails and the port is on a server, call the Xerox representative.*
 - *If this test fails and the port is on a 873 CIU, replace the drop cable and modem, if possible, and retry. If it still fails, test the CIU (Action 1N, Booklet 5). If this test fails, check the information in the clearinghouse database regarding the CIU and the ports. If the information is incorrect, correct it, and then stop and restart the relevant ECS. If the test still fails, call the Xerox representative.*
3. *Place the local modem in normal mode. Place the remote modem in digital loopback mode (or attach a loopback plug). Run the RS232C port loopback test again. Repeat this step, by reversing which modem is considered the local modem and which is considered remote (i.e. running the RS232C test at the other IRS server).*
 - *If this test fails, there is a phone line or modem problem. Call the appropriate representative.*
4. Start the IRS on each network by logging on as a system administrator, directing your commands to the IRS, and typing Start. Wait one minute. Type List Routes. This will confirm your ability to reach the other network.
 - If this test fails, list the RS232C ports. If the port used for IRS is listed as "not connected," check that the modem is working and the cable is attached. If the port is connected, data is probably not being received from the remote network. This suggests only one IRS knows about the other. Check that the modems are set correctly and that each IRS is indeed started.

(Continued on page 2-37)

Example(continued):

IRS>Test RETURN

Choose peripheral to be tested:

- 1 Terminal
- 2 RS232C
- 3 Floppy disk
- 4 Echo Test
- 5 Communication Interface Unit

Enter choice number: 4 RETURN

Do you wish to initiate the echo test from a remote system element? (Y/N): N RETURN

Enquiring servers IDs

File Service ID's:

Fiddletown, host number 2-282-162-810

The host number of this machine is: 2 -282-778-661

The network number of this machine is: 2-282-559-010

What is the host number of the test partner: 2-282-162-810 RETURN

What is the network number of the test partner: 1-386 RETURN

Each '!' represents a successful echo operation.

Each '?' represents an unsuccessful echo operation.

Each '#' represents a packet which was echoed late.

Each '-' represents an echoed packet with good data but bad CRC.

Each ':' marks largest size pack has just been transmitted

Type CTRL + C key to end program.

```

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

```

Total packets to be echoed: 1271

Packets echoed successfully: 1269

Packets not echoed:0

Packets echoed back late: 0

Percentage of packets echoed successfully:100

Done.

IRS>

STEP 15(continued):

Confirm that internetwork communication links operate and start the internetwork routing services

5. Test the connection between the two internetwork routing services by using the echo test (see Action 1L, Booklet 5). Allow the test to run at least two minutes. If your IRS is running at 9600 baud, the echo test should be 100% successful. At lower speeds, you may have some packets arriving later than expected (shown with a #); this is not a problem.
 - If this test runs at less than 97%, check both the modem and telephone link. If necessary, refer to the appropriate manufacturer's documentation or redo items 2 and 3 of this step.
6. Once you successfully meet the above five conditions, you have confirmed the quality of your internetwork link.
9. Once the quality of your internetwork link has been confirmed, perform the Find Remote Clearinghouse command.

Comment: After an internetwork link has been established, it should be checked periodically. Use the Show Network Statistics command (booklet 5, Action 1H) for this purpose.

Example:

Utility Options:

1. Partition for Workstation
2. Install System Software
3. Install Data Files
4. Start System
5. Start System with Remote Debugging
6. Start System with Special Debugging

Enter Choice Number: 1 RETURN

WARNING - PARTITIONING A SYSTEM DISK DESTROYS ALL CONTENT

Continue? Y RETURN

SECOND CONFIRMATION REQUIRED

Continue? Y RETURN

Disk partitioned.

Utility Options

1. Partition for Workstation
2. Install System Software
3. Install Data Files
4. Start System
5. Start System with Remote Debugging
6. Start System with Special Debugging

Enter Choice Number: 2 RETURN

Ready to Install System Software

Continue? Y RETURN

Installing software (part 1)

This Floppy Disk is labeled "Workstation #1"

Insert Floppy Disk labeled Workstation #2 in Floppy Disk Drive

Installing software (part 2)

This Floppy Disk is labeled "Workstation #2"

Insert Floppy Disk labeled "Workstation #3" in Floppy Disk Drive

Installing Software (part 3)

System Software Installation Complete

Utility Options:

1. Partition for Workstation
2. Install System Software
3. Install Data Files
4. Start System
5. Start System with Remote Debugging
6. Start System with Special Debugging

Enter Choice Number: 3 RETURN

Ready to Install Data Files

Continue? Y

Installing Data files (part 1)...

This Floppy Disk is labeled "Workstation #3"

Insert Floppy Disk labeled "Workstation #4" in Floppy Disk Drive

Installing Data Files (part 2)

Data Files Installation Complete

(The utility options will be redisplayed at this point and the Configuration Utility must be run.)

STEP 16:—

Load software on 8010 workstations

Overview: Just as you had to load software on your servers before you could use them, you must load software onto your 8010 workstations. After software has been installed your Xerox representative will have to run the Configuration Utility to enable software options on each server. Before you load software, contact your representative and schedule a time for him or her to run the utility (see note below).

Similar to the servers, you will use a series of floppy disks to load the software.

Procedure:

1. Place the first floppy in the floppy disk drive of the 8010 workstation you wish to load.
2. Press both the B RESET and the ALT B buttons on the workstation front panel. Release the B RESET button immediately. Release the ALT B button when the processor panel reads 0002. After about two minutes a list of utility options will be displayed.
3. Select the **Partition for Workstation** option. This option requires two confirmations because it destroys any existing files on the disk.
4. After the disk is partitioned, the list of utility options reappears. Select the **Install System Software** option. After all the information is read from the floppy disk currently in the disk drive, you will see a message asking you to insert the second floppy disk. Insert the second floppy disk. Then you will see messages asking you to insert the third floppy disk.
5. After the software installation is complete, the utility options will reappear.
6. Select the **"Install Data Files"** option. After the data files have been installed from the third floppy disk, you will be asked to insert the fourth floppy disk. When the data files have been installed from the fourth floppy disk, a message that says "data files installation complete" will appear. The utility options will then be redisplayed and at that point, the Xerox representative must run the Configuration Utility.
7. Repeat steps 1 through 5 for each workstation on the network.

Comments: Various numbers will appear on the maintenance panel while loading or starting the 8010 workstation. Only 990 and 8000 should appear for more than a short time. If another number appears for a long time, check the problem solving procedures in Booklet 5.

Note: The Xerox representative must run the Configuration Utility on workstations after you have installed software on your workstations to enable software options (e.g. records processing, equations, advanced graphics, etc.). It must also be run when optional features are added to a workstation, or are moved from one workstation to another.

Example:

```
> Clearinghouse Service RETURN
CHS > Add Alias RETURN
    Add Alias for Name: FS1 RETURN
    New Alias to be Added: Help Server RETURN
    Done: Help Server now stands for FS1
    Add another alias (Y/N): N
CHS > Add Alias RETURN
    Add Alias for Name: MainPrinter RETURN
    New Alias to be Added: Introduction RETURN
    Done: Introduction now stands for MainPrinter
> File Service RETURN
FS > Add File Drawer RETURN
    File Drawer Name: Help RETURN
    Owner's Name: Jones RETURN
    Confirm (Y/N): Y
    Done
FS > Add File Drawer RETURN
    File Drawer Name: HelpLoad RETURN
    Owner's Name: Jones RETURN
    Confirm (Y/N): Y
    Done
```

Notes:

There is a space between Help and Server in the name Help Server.
The name HelpLoad has no spaces.

STEP 17:

Prepare the system to support on-line help and training, or to access help and training from a remote network.

Overview: When the first 8010 user is about to join the network, there are two actions you must perform in the clearinghouse service and two actions in the file service before you can load the floppies containing the on-line training.

Procedure:

1. Decide which file service (if you have more than one on the network) will be used to store the 8010 on-line help and training materials. These files require about (9000) disk pages, so you will probably want to use the largest-capacity file service on your network.
2. Log on at the server and direct your commands to the clearinghouse service. Use the Add Alias command to register the alias "Help Server" as an alternate name for the file service used to store on-line help and training files.
3. Decide which printer (if you have more than one) should be used by the 8010 on-line Introduction lesson. Use the Add Alias command to register the alias "Introduction" as an alternate name for that print service.
4. Log on to the server and direct your commands to the file service that has the alias "Help Server."
5. Use the Add File Drawer command to add two file drawers. One should be named "Help" and one should be named "HelpLoad." Use the "Change File Drawer" command to give read access to everyone or create a group and give read access privileges to everyone in the group (see Step 8 of this booklet). Give add access to yourself, the backup system administrator, and the person who will perform step 18.

Comments: Once you have followed these procedures, you can load the help and training floppy disks. See step 18.

Note: If the message "Remote help documents unavailable" appears when users are attempting to access help and training from remote networks, check that the internetwork routing service and the file service on which the help documents are stored, are operational.

To prepare the system to access help and training from a remote network:

If you are accessing help and training from a remote network, contact the remote System Administrator and get the following information for the remote help server: processor number, and network number. Then:

1. Log on at the server housing the clearinghouse database and direct your commands to the clearinghouse service.
2. Type Add File Service and enter Help Server at the name prompt. Continue and follow the system prompts and enter the network number, processor number and description supplied to you by the remote system administrator.

Guide to loading help and training:

| Place the contents of this floppy | Into this file drawer, depending on your situation | | | |
|-----------------------------------|--|-------------------|-------------------------|-------------------------|
| | Situation 1 | Situation 2 | Situation 3 | Situation 4 |
| H&T #1 | Helpload | Help and HelpLoad | Help | Help |
| H&T #2 | Help | Help | Help | Do not copy from floppy |
| H&T #3 | Help | Help | Help | Help |
| H&T #4 | Help | Help | Help | Do not copy from floppy |
| H&T #5 | Help | Help | Help | Do not copy from floppy |
| H&T #6 | Help | Help | Do not copy from floppy | Do not copy from floppy |
| Total Disk Pages Used on Server | 9000 | 12,300 | 7,200 | 2,000 |
| Total Disk Pages Used on 8010 | 1,400 | 1,400 | 0 | 0 |
| Time Needed to Load | 1 hr, 30 min | 1 hr, 45 min | 1 hr, 15 min | 30 min |

Contents of each floppy:

- H&T #1 - Includes all help documents connected to error messages, property and option sheets, explanation of keys, help index and table of contents
- H&T #2 - Includes all help documents explaining procedures
- H&T #3 - Includes all files for introduction, basics module, go to work, and table of contents
- H&T #4 - Includes training modules for basic applications, advanced editing, formatting, graphics and removable storage
- H&T #5 - Includes training modules for network applications and fields, (mailing, filing, printing, creating fields, fill-in rules, tables, field fill-in, and working together
- H&T #6 - Includes the training modules for records processing, emulation, and equations - also includes a Tcustomer file (blank training module that can be used to develop your own customized training)

STEP 18:**Load floppy disks for on-line help and training.**

Overview: Help and training for 8010 workstations is contained on six floppy disks. The contents of these floppies must be stored on the file service. The size of your server's disk and the response time your users require determine exactly how you store this material on the file service.

Procedure:

1. Determine which of the following situations most closely fits your network.

Situation 1 A fast response for seeing help sheets (30 seconds or less) is important to your users. There are at least 1400 disk pages available on each 8010 workstation for storing the help system locally. You have at least a 29MB file server.

Situation 2 A fast response for seeing help sheets (30 seconds or less) is important. There are at least 1400 disk pages available on most workstations for storing the help system locally, but not on all. You have at least a 29MB file server.

Situation 3 You have not purchased any factored 8010 options, and would like to limit file spaced used by help sheets. You have at least a 29 MB file server.

Situation 4 You must use a 10 MB file server as your help server, or you want only the basic help and introductory training to be stored.

2. Log on to any 8010 workstation and create a desktop. Open the directory. In the resulting window, open the divider for filing, and then the "Help Server" file service. Copy both the Help and HelpLoad drawer icons to the desktop.
3. Place the first help floppy in the workstation floppy disk drive.
4. Move your pointer into the desktop auxiliary menu (the box with three horizontal lines in the upper right corner) and hold down the left mouse button. A list of commands will appear. Still holding down the left mouse button, move the pointer until it causes the command [COPY FROM FLOPPY] to highlight. Release the left mouse button.
5. After several minutes, a folder will appear on the desktop. Open the folder. Select the first icon listed with the left mouse button. Adjust the selection with the right mouse button so that all the icons are highlighted.
6. Press <MOVE> and then select either the Help drawer icon or the HelpLoad drawer icon as your destination. When the hourglass disappears, the contents of the folder will have been moved into the drawer you selected. They are now on the file server. (If you are placing the contents of the folder in two drawers, use <COPY> for the first drawer and <MOVE> for the second.)
7. Close and delete the empty folder.
8. Repeat steps 3-7 for each help and training disk.

Notes: Only those folders stored in the HelpLoad drawer will be copied to individual workstations when you load help into those workstations. If you do not load help in the local workstation, a workstation user can only access information stored in the Help drawer on the file server.

When information is stored locally on the workstation, it can usually be accessed in 30 seconds or less. When information is stored on the file drawer, it can take several minutes to retrieve.

You may want to use this space to record what information is stored in the HelpLoad drawer on your network, or what workstations have help loaded locally.

STEP 19:**Prepare an 8010 workstation to support on-line help and training
(optional)**

Overview: The on-line help and training is the 8010 users' complete training package. When 8010 help and training is installed on the file server, a user can access the help system from the file service. However it is also possible to have the documents stored on users' workstations. The advantage of local storage is speed. The disadvantage is a loss of available storage space.

The help system requires about 1400 disk pages of a workstation's disk space. Only one copy of the help system is stored on a workstation, no matter how many desktops (or users) are on that workstation.

Procedure: Either you or an 8010 user may load help documents into an 8010 workstation. To do so, follow this procedure:

1. Log on to the 8010 workstation. You may need to create a new desktop.
2. Press < HELP > as soon as the desktop comes up. The table of contents for the help system will appear in a few moments.
3. Move the pointer to the help window's auxiliary menu symbol (in the top righthand corner of the help window) and hold down the left mouse button. Two menu items will appear:

[LOAD NEW HELP DOCUMENTS]

[DELETE LOCAL HELP DOCUMENTS]

4. Still holding down the left mouse button, move the pointer to [LOAD NEW HELP DOCUMENTS] so that the command is highlighted. Then release the mouse button.
5. The help window will close, leaving only the auxiliary menu displayed. When the help documents are stored, the menu will disappear and a message that says storage is completed will appear. This process will take about 20 minutes.
6. Log off the workstation. If you created a desktop especially for this procedure, delete that desktop when you log off by selecting [DELETE] on the logoff option sheet.

Comments: If a workstation user wishes to regain the space occupied by the help system and give up the shorter access time, he or she can delete local help documents. To do so, they can select the (DELETE LOCAL HELP DOCUMENTS) command from the help window auxiliary menu.

None of the situations described in steps 17 and 18 result in training modules being stored locally on a workstation. As a result, it typically takes five minutes or so for a user to reach the first page of a training module. Moving between pages within that module, however, will be rapid.

Example:

```
PS>Install From Floppy RETURN
  Install from Floppy: Modern Fonts? (Y or N): Y RETURN
    Floppy File Version March 4, 1983 8: 48 AM
    Print Server File Version October 19, 1981 10:45 AM
  Install (Newer) Xerox.OIS. Modern? (Y or N): Y RETURN
  Installing Xerox. OIS. Modern....
    done.
    Floppy File Version March 4, 1983 10: 40 AM
    Print Server File Version March 4, 1983 10: 40 AM
  Install (Same Version) Xerox.OIS.Modern.Bold? (Y or N): N RETURN
  Floppy File Version March 10, 1983 1: 04 PM
  Install (New) Xerox.OIS.Modern. Italic? (Y or N): Y RETURN
  Installing Xerox.OIS.Modern. Italic....
    done.
  2 files from Modern Fonts installed
PS>
```

Notes:

As you install new fonts on your printer, you will decide whether to install a newer version of the same font or retain the old. The date of the version currently installed (if any) will be listed after the floppy file version date. You need not install the same version of a font since nothing will change. If for some reason you do not want to install a new font or a newer version of an existing font, respond N to the prompt.

STEP 20:

Load desired fonts onto your print server.

Overview: Every print server contains master copies of fonts. The word font refers to the combination of a particular type style and size. The words in this paragraph are in one font. The last paragraph on this page is in a different font.

The printer cannot print a font that is not stored on the server. Fonts are provided on floppy disks. The process of storing fonts on a print server is called installing fonts. Fonts are typically installed at two times:

- When the print service is initialized for the first time.
- When you buy new fonts or when Xerox releases new versions of fonts to you.

Procedure:

1. Log on to the print service, and type **Print Service** to make its commands available.
2. Insert the floppy disk named "Fonts X.X - Required Fonts" then type **Install from Floppy**. This disk contains both the fonts and the corresponding test patterns.
3. As fonts and test patterns are read into the server, respond **Y** to the prompt for each file except the "terminal" prompt. Respond **N** to this prompt for the required fonts floppy disk.
4. When the fonts and test patterns have been installed, remove the floppy disk.
5. Type **Print Test Pattern**. If a test pattern of acceptable quality is not printed, check the printer for toner. If there is enough toner in the printer and the test pattern is still unacceptable, call the Customer Support Center.
6. Install the remaining fonts desired, using the relevant floppy disk, and following steps 2-4 above.

Comments: Follow this sequence when installing font floppy disks:

Required Fonts 3.0 (always before Modern)
 Modern Fonts 2.0
 Modern Bold Fonts 2.0
 Modern.Bold.Italics Fonts 2.0
 Modern.Italic Fonts 2.0
 Basic Classic Fonts 2.0 -(Note: This is not needed if Math Classic is to be installed. Math Classic would overwrite Basic Classic)
 Math Classic Fonts 2.1
 Printwheel Fonts 3.0
 Printwheel FigureSize Fonts 3.0---(Needed if Printwheel Fonts 3.0 are installed.)

Example:

```
PS > Show Status RETURN
Xerox Print Service 5.0
  Queuing Started
  Printing Started
  Print Server Started October 14, 1982 2:54 PM
  Last Activity November 5, 1982 AM
  Printer Idle: Status: Okay
  Paper Handling:
    Paper Size in Both Trays = 8.5" x 11"
    Paper Feed: From Bottom or Top Tray
    Output Stacking: Aligned
    Print Order: Last Page Printed First
    Banner: Per Job
  Documents Printed: 11
PS >
```

Notes:

Any user can enter the Show Status command. If you log on as system administrator before typing the Show Status command, more information concerning print operation will be displayed. This information includes maximum queue pages and total volume pages.

STEP 21:

Establish standard operation of your printer.

Overview: After you load fonts in your printer, the print service will automatically start and the default paper-handling options will appear. You can retain that set of options, or you can change it to suit your general needs or for special jobs.

The five paper handling features available as options in your print service are:

1. **Paper Size:** The available sizes are 8.5" x 11", 8.5 x 14", and A4 (which is a standard European size). The size must be specified for both the top and bottom tray. Make certain that the trays installed in the printer match the options.
2. **Feed:** This option allows paper to be fed from the bottom and/or top feed trays in two different ways: from the bottom tray for documents and top for banner pages, or from either the top or the bottom. If the option for either top or bottom is chosen, the printer will switch automatically to the top tray when the bottom tray is empty (see note 1 below).
3. **Stacking:** This option controls the stacking of print jobs once they are completed and are sent into the output tray. Of the three choices, you should select aligned unless you have an output paper stacking drum, in which case you can select either aligned, document offset, or job offset (see note 2 below).
4. **Print Order:** This option specifies the order in which pages are to be marked. Select First Page Printed First if you have output stacking hardware which delivers marked pages face down in the output tray. Select Last Page Printed First if the output stacking hardware is not installed; marked pages will be delivered face up and the first page will be printed last.
5. **Banner:** This option sets the banner pages so that they can be produced between every document, between every set of copies of a document, or not at all (suppressed).

Procedure:

1. Log on at the server and direct your commands to the print service. Type `Show Status`. The system will show the current status of the printer.
2. If you decide to change the paper handling operations, see task , Booklet 3.
3. If the information on paper handling seems to fit your daily requirement, print a sample document as a test . Type `Print Test Pattern`. (For more information on monitoring the printer, see task E, Booklet 3.) You may type the `Show Status` command whenever your print service is started.

COMMENTS:

1. If two different paper sizes are specified (i.e. 8.5" x 11" in bottom tray and 8.5" x 14" in top tray), the only choice you'll have for this option is "as appropriate."
2. Document offset means that multiple copies within a single job will be offset from one another. Job offset means that each job will be offset from the next.

Example:

Large Capacity Disk Diagnostic (Version 5 of 18-Nov-82)

A "?" will further explain the options.

A "Break" will return to the prior menu.

PERSON RUNNING THE TEST

1. User
2. System Administrator
3. Tech Rep

Enter Choice Number: 2 RETURN

System Administrator:

Password: **** RETURN

1. Confidence Test
2. Format Disk
3. Physical Volume Scavenger
4. Manual Bad Page Log
5. Exit

Enter Choice Number: 2 RETURN

FORMAT DISK

UNIT TO BE SELECTED (1)

1. First Unit
2. Second Unit
3. Third Unit
4. Fourth Unit
5. Exit

Enter Choice Number: 1 RETURN

Number of passes to be run : 1 RETURN

WARNING! The following action will be destructive

Do you still wish to continue (Yes/No): Yes RETURN

Are you still sure (Yes/No): Yes RETURN

FORMATTING FIRST UNIT

Passes: 1 Run Time: 20 min

Bad Page: 122277 Cylinder: 214 Head: 9 Sector: 27

Logging Bad Pages

Formatting Done

Notes:

(1) The terms "First Unit" through "Fourth Unit" refers to the number of disk drives in this configuration.

Appendix A:

Format removable disk drives

Overview: Before you can use install software on a removable disk drive, those disks must be formatted appropriately. This formatting is done through a tool found on the removable disk diagnostic floppy disk.

Procedure:

1. Insert the disk to be formatted in the disk drive and spin it up. (For details on handling disk packs, see appendix A, Booklet 3).
2. Insert the diagnostic disk in the floppy disk drive of the file server processor. Press both the B RESET and ALT B buttons. Release the B RESET button immediately; release the ALT B button when the processor number reads 0005.
3. From the options that then appear on the terminal, type the number of the option for a system administrator. Type in your password.
4. When the resulting options appear, select the **Format Disk** option.
5. Type the number of the unit you are going to format.
6. Type the number of passes you want. One pass is sufficient for formatting a disk.
7. Confirm that you want this disk to be formatted. It will ask for two confirmations, because formatting a disk will destroy any contents already on it.
8. When the message appears that the disk is formatted, it is ready to be used in your disk drive.

Comments: Once the disk is formatted, you will partition it and then install services (loading software on disk 1).

APPENDIX B

IBM 3270 CONTROLLER ADDRESS INFORMATION

When adding an IBM 3270 host computer to the clearinghouse, you will be prompted for the controller address. That address must be a number between 0 and 31. If your computer site provides you with an address in another format, use the following table to determine the appropriate number between 0 and 31.

| Table 1 Controller Address to Character Mapping | | |
|--|-----------|------------|
| Controller Address | Character | EBCDIC Hex |
| 0 | SPACE | 40 |
| 1 | A | C1 |
| 2 | B | C2 |
| 3 | C | C3 |
| 4 | D | C4 |
| 5 | E | C5 |
| 6 | F | C6 |
| 7 | G | C7 |
| 8 | H | C8 |
| 9 | I | C9 |
| 10 | ¢ | 4A |
| 11 | . | 4B |
| 12 | < | 4C |
| 13 | (| 4D |
| 14 | + | 4E |
| 15 | or ! | 4F |
| 16 | & | 50 |
| 17 | J | D1 |
| 18 | K | D2 |
| 19 | L | D3 |
| 20 | M | D4 |
| 21 | N | D5 |
| 22 | O | D6 |
| 23 | P | D7 |
| 24 | Q | D8 |
| 25 | R | D9 |
| 26 | ! | 5A |
| 27 | \$ | 5B |
| 28 | * | 5C |
| 29 |) | 5D |
| 30 | ; | 5E |
| 31 | ¬ or ^ | 5F |

Ref: Figure 6-1, page 6-11, IBM 3270 Information Display System Component Description. Document GA27-2749-9. 10th ed., August, 1979.

APPENDIX C

SERVICE INTERDEPENDENCY

When you begin to add services to your server, use the following table to determine service compatibility. Find the service you wish to check, then refer to the legend.

| | File Service | Mail Service | Print Service | Inter-network | Gate-way | Inter-active | External Communication | 3270 Protocol |
|---------------|--------------|--------------|---------------|---------------|----------|--------------|------------------------|---------------|
| 3270 Protocol | - | - | X | - | X | - | !* | |
| ECS | - | - | X | !* | !* | + * | | |
| ITS | - | + * | X | - | - | | | |
| GWS | - | + * | X | - | | | | |
| IRS | - | - | X | | | | | |
| Print Service | X | X | | | | | | |
| Mail Service | !* | | | | | | | |
| File Service | | | | | | | | |

LEGEND

- X Can not co-reside
- ! Must co-reside
- Not an issue
- + Must be on same internetwork
- * See Note below

Note: An asterisk * means that one of the conditions in this matrix may not be true. For example ITS requires an ECS but an ECS does not require an ITS; the same is true of IRS and GWS. It also applies to the mail and file services (i.e. a mail service must co-reside with a file service, but a file service does not need a mail service). And ITS and GWS require a mail service, but a mail service does not require ITS or GWS.

APPENDIX D

SERVICE CONFIGURATION GUIDELINES

Although one server can run many services, it is not feasible to run all possible combinations. One factor limiting the number of services that should be running on the same server revolves around the number of network connections that a server can support simultaneously.

To determine if your configuration might involve too many network connections, do the following:

1. Estimate the heaviest load the server in question is likely to encounter. To do this, you must estimate the number of users each service on the server is likely to handle at any one time.
2. Use the service configuration guide on the next page and the figures you estimated in step 1 to identify whether your server's configuration will work.

The configuration guide is not precise. But it should help you identify those configurations that would have a high probability of being overloaded and thus cause deterioration in network performance. The problems resulting from such an overload would normally be short term communication problems. However, it is possible that an overloaded configuration could provoke more serious error conditions.

SERVICE CONFIGURATION GUIDE

| | # | Sub-total |
|---|-------------------|-----------|
| EXTERNAL COMMUNICATION SERVICE: | | |
| Number of active remote clients | _____ X 1 _____ | |
| (Remote clients include: | | |
| -Each separate port of an ITS not located on the same server as ECS | | |
| -TTY emulation window open at a workstation | | |
| -3270 emulation window open at a workstation) | | |
| FILE SERVICE: | | |
| Number of mail folders being actively accessed by a user of ITS located on another server | _____ X 1 _____ | |
| Number of 8010s or 860s performing filing operations (accessing file drawers and desktops) | _____ X 0.5 _____ | |
| Number of 8010s or 860s performing mail-related activities | _____ X 0.2 _____ | |
| Number of active GWS sessions (This is in addition to the number under GATEWAY SERVICE if the GWS and the FS are on the same server.) | _____ X 1.4 _____ | |
| GATEWAY SERVICE: | | |
| Number of active sessions | _____ X 1.5 _____ | |
| INTERACTIVE TERMINAL SERVICE: | | |
| Number of active sessions in which the user's mailbox is not on the same server as ITS | _____ X 1 _____ | |
| Number of active ports used by ITS which are controlled by an ECS not located on the same server as ITS | _____ X 1 _____ | |
| TOTAL OF PART 1 | | _____ |
| <i>If the total is greater than 10, this configuration is not likely to work well</i> | | |
| IF A COMMUNICATION INTERFACE UNIT IS USED, ALSO COMPLETE PART 2: | | |
| Number of active CIU ports | _____ X 1 _____ | |
| (To compute this figure, consider: | | |
| -Leased line IRS ports to be always active | | |
| -Dialup/autodialed ITS, IRS, and TTY emulation lines to be active, for the duration of the phone connection only | | |
| -Hardwired ITS and TTY emulation lines to be active, for the duration of the ITS/TTY session only) | | |
| TOTAL OF PARTS 1 AND 2 | | _____ |
| <i>If the total of both parts is greater than 15 this configuration is not likely to work well</i> | | |

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BOOKLET THREE

KEEPING A NETWORK RUNNING

CONTENTS

You will use the tasks in this booklet to perform specific jobs that are needed to keep your network running. Tasks A through G must be done on a scheduled basis. Tasks H through AA should be done on an as-needed basis.

If you ever need to add new users, services, or other network components, refer to the appropriate step in booklet 1.

| <i>Task Description</i> | <i>Page Number</i> |
|-------------------------|--------------------|
|-------------------------|--------------------|

Tasks that will be done routinely:

| | | |
|--------|--|------|
| Task A | Perform backup of a file service, using floppy disks | 3-3 |
| Task B | Perform backup of removable disk servers | 3-5 |
| Task C | Monitor the file service and delete desktops as necessary | 3-9 |
| Task D | Perform backup of the clearinghouse service | 3-13 |
| Task E | Monitor printer for dry imager and adequate paper supply | 3-15 |
| Task F | Monitor and control usage of the print service | 3-17 |
| Task G | If you have a gateway service, check that the mail clerk delivers mail | 3-19 |

Tasks that will be done on an as-needed basis:

For All Services

| | | |
|--------|---|------|
| Task H | Install new software or reinstall existing software | 3-21 |
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| Task J | Move a service to a different server | 3-25 |
| Task K | Change time for all services on your local network | 3-33 |
| Task L | Change network number | 3-35 |

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| | | |
|--------|---|------|
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| Task N | Restore the file service data, if necessary | 3-39 |
| Task O | Restore part of a specific backup disk using floppies, if necessary | 3-41 |
| Task P | Copy a portion of the file system to floppy disks, if necessary | 3-43 |

For Clearinghouse

| | | |
|--------|--|------|
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| Task R | Change user names, as needed | 3-47 |
| Task S | Maintain groups | 3-49 |
| Task T | Delete names of services, objects, or users as needed | 3-53 |
| Task U | Restore the clearinghouse service database, if necessary | 3-55 |
| Task V | Activate, and deactivate, a secondary clearinghouse | 3-57 |

For Print Service

| | | |
|--------|--|------|
| Task W | Change paper handling options on the printer | 3-61 |
| Task X | Delete fonts on your print service, if necessary | 3-63 |
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| Task Z | Correct printer image alignment | 3-67 |

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| | | |
|---------|---|------|
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|---------|---|------|

Appendix

| | | |
|----|---|------|
| A: | Disk Pack Use and Care | 3-73 |
| B: | Backing Up A File System Using Floppy Disks | 3-77 |
| C: | Mailing Interchange Guideline | 3-79 |

Example:

```
FS>Backup RETURN
Insert Floppy Disk
  Proceed? (Y/N): Y RETURN
"Backup of January 24, 1982 22:36 PM, #1" complete
Insert Floppy Disk
  Proceed? (Y/N): Y RETURN
"Backup of January 24, 1982 22:36 PM, #2" complete
Insert Floppy Disk
  Proceed? (Y/N): Y RETURN
"Backup of January 24, 1982 22:36 PM, #3" complete
3 Backup Disks created
Backup Disks from December 25, 1981 or earlier are obsolete
```

Notes:

The number of backup disks used will vary from day to day depending upon how many documents have been added or changed in the file service since the last time backup was run. The very first time backup is run at your server, it is likely to take quite a few floppy disks, because it will back up everything on the rigid disk.

If the file service is used to store 8010 on-line help and training, that material will be backed up the first day of each backup cycle.

The backup process will store not only the contents of file drawers, but also the contents of mail folders and any 8010 desktops stored on the file service. *Caution:* A file larger than the size of an empty double-sided, double-density floppy disk (about 2000 pages) will not be backed up because backup cannot split a file to write it on multiple floppy disks. In general, desktops are the only files that will approach this limit. If users wish to store their desktops and have the assurance of backup on the file service, they should store documents in file drawers or on floppy disks to keep their desktops under the 2000 page limit. The size of the desktop is displayed on the logon sheet auxiliary menu by selecting List local desktops.

TASK A:

Perform backup of a file service using floppy disks

Overview: You back up the file service by typing the Backup command and inserting floppy disks as you follow system prompts. The number of disks used each time will vary with the usage since the last backup. Once backup floppy disks are created, they must be labeled and stored carefully -- away from heat, strong light, and magnetic objects. You will keep the disks throughout the backup cycle. At the end of the cycle, you can reuse obsolete floppy disks.

Note: See Appendix B of this booklet for how backup works, and how to establish a backup schedule.

Procedure:

1. Log on at the server and direct your commands to the file service.
2. Type **Backup**. Insert the first floppy disk into the disk drive. Be sure the write-enable tape is on the floppy disk. If the tape is not on, you will receive a warning message. In this case, remove the floppy disk, adjust or add the tape, and reinsert the disk.
3. Respond **Y** to the **Proceed** prompt.
4. When each backup disk is complete, a message will be displayed. Remove the disk and label it with the date, sequential number for that day, and the name of the file service (for example, "Backup #2, 3/16/82, Coral").
5. Insert the next floppy disk (if a prompt requesting one appears) and repeat the process. Make sure you label each floppy as you remove it, before inserting the next one. (Note: Use a soft tip pen. A ball point pen or pencil could damage the disk.)
6. When backup is complete, you will see a message indicating the number of disks produced and the previous date from which backup disks are no longer useful.
7. Proceed to Task C to monitor disk space, if you wish.
8. On form 6 (found in booklet 6) record the number and date of floppy disks backed up, space available, and percent of space used.

Note: After you have completed the first backup cycle, you will begin to use the earlier obsolete floppy disks over again.

Example:

```

Normal Startup? (Y/N) N RETURN
  Select Startup Option (1)
    1  Continue
    2  Load Error Log Analysis
    3  Activate Service
    4  Deactivate Service
    5  Change Domain and /or Organization
    6  File Check
    7  Change Network Number
    8  Copy Disk
  Enter choice number: 8 RETURN
  The contents of drive 1 will be copied to drive 2
  Place a scratch disk pack in drive 2
  Proceed? (Y/N): Y RETURN
Done.

Halt.
    
```

Notes:

- (1) The choice number for a startup option may differ from those shown above, depending upon the situation. For example, the Change Network Number option appears only when all servers on the network are stopped. Otherwise, the Copy Disk option would be numbered 7.
- If you are not familiar with the use and care of disk packs, be certain to read appendix A, Booklet 3.
 - A rotational back-up procedure is recommended. There should be one current disk (on-line) and at least two backup disks to provide a two-day backup instead of just one. In the following example 2-week cycle, there are three disks:

| AT DAY'S END | DISK A | DISK B | DISK C |
|--------------|---------|------------------|------------------|
| Monday | on-line | Monday backup | Friday backup |
| Tuesday | on-line | Monday backup | Tuesday backup |
| Wednesday | on-line | Wednesday backup | Tuesday backup |
| Thursday | on-line | Wednesday backup | Thursday backup |
| Friday | on-line | Friday backup | Thursday backup |
| Monday | on-line | Friday backup | Monday backup |
| Tuesday | on-line | Tuesday backup | Monday backup |
| Wednesday | on-line | Tuesday backup | Wednesday backup |
| Thursday | on-line | Thursday backup | Wednesday backup |
| Friday | on-line | Thursday backup | Friday backup |

As you can see, using three disks allows each day's data to be backed up for 48 hours, instead of 24. This allows one extra measure of recovery should a malfunction occur during a backup operation.

TASK B:

| |
|--|
| Perform backup of removable disk servers |
|--|

Overview: If you have a removable disk server, you can use the Copy Disk startup option to copy the data from one disk pack to another. This option appears only if the server has either 80 megabyte or 300 megabyte disk drives. It is an alternative to the backup and restore commands available on other file servers.

When the Copy Disk backup option is used, you copy the file system and all data from one pack to another. It is recommended that you have a total of at least three data disk packs for your server, to insure against loss of a single backup copy.

Generally, you should copy from drive 1, the main drive (the disk drive that contains the original disk), to drive 2, the back up drive. The Copy Disk process should be run as often as is necessary to ensure adequate backup.

Copy Disk takes approximately 40 minutes to process for 80 megabyte disks, and 2 hours for 300 megabyte disks. It takes less time to complete if the disk is not full.

Note: See appendix B in this booklet for a description on how backup works on fixed disk servers.

Procedure: *Caution:* If you are not familiar with the care and handling of disk packs, read appendix A of Booklet 3, before attempting to do this task.

1. Determine which drive contains the disk with the latest file data. This should be the drive last booted from, and the only drive spinning. This is considered the main drive. The other is the backup drive.
2. Log on at the server and type **Stop Services**.
3. Boot from the main drive by holding both the B RESET and ALT B buttons on the processor and then releasing the B RESET button. If drive 1 is being used as the main drive, release the ALT B button as soon as the maintenance panel reads 0001; otherwise, release the ALT B button when the maintenance panel reads 0007. Type **N** to the Normal Startup prompt.
4. Place a disk pack in the back up drive and spin it up. (For details on how to spin up a drive, see appendix A to this booklet.) Select the **Copy Disk** option. This disk pack must have been formatted and partitioned previously (for details, see appendix A, Booklet 2).

If the backup drive switch is on **Read Only** when the Copy Disk option is selected, the system will reboot and display the message "restart reason: system error." Change the switch to **Read/Write** position.

Your Notes:

A large, empty rectangular box with a black border, intended for the student to write their notes. It occupies most of the page below the 'Your Notes:' label.

TASK B (Continued)

| |
|--|
| Perform backup of removable disk servers |
|--|

5. Type Y to the Proceed? prompt. This will start the copying process. When the copy has been made, the prompt will say "Done. Halt."
6. After the copy completes, spin down the back up drive. (For details on how to spin down a drive, see appendix A.) Remove the disk pack from the drive, mark it with the date and the name of the server, and store it in a safe place. It is a good practice to put it in a location away from the servers for protection in case of fire or other mishap.
7. Boot the server from the main drive by holding in both the B RESET and ALT B buttons on the processor and then releasing the B RESET button. If your drive 1 is being used as the main drive, release the ALT Button as the maintenance panel reads 0001; otherwise release the ALT B button when the maintenance panel reads 0007.

Comments: If a server's data is lost, you should restore it to its state when last copied by placing the most recent copy of the backup disk in either drive, and booting from it. Caution: it is advisable that you copy the backup disk immediately to protect against additional data loss.

Example 1:

FS> Show Space RETURN
14,000 disk pages used. 21,000 disk pages available. User Area 40% full.

Example 2:

FS> List File Drawers RETURN
List All File Drawers? (Y/N): Y RETURN
Show File Drawer Owners? (Y/N): Y RETURN
Show File Drawer Sizes? (Y/N): Y RETURN
Show File Drawer Access Lists? (Y/N): Y RETURN
Confirm (Y/N): Y RETURN
Standard Contracts
owner: Tinkler:West:GemSysCo
size: 1977 disk pages
access list:
Tinkler:West:GemSysCo
permission to read, write, add, delete, change access
Training Group:GemSysCo
permission to read, write, add, delete

Example 3:

FS> Delete File Drawer RETURN
File Drawer Name: PayrollReports RETURN
File Drawer is not empty. Delete it anyway? (Y/N): Y RETURN
Done

Example 4:

FS> Show Activity RETURN (1)
File Service is started

| User Name | Start Time | Last Action |
|----------------------|------------|-------------|
| Gordon:West:GemSysCo | 9:45 AM | 10:02 AM |
| Manley:West:GemSysCo | 9:48 AM | 10:05 AM |

FS>

Notes:

(1) Displays the users currently having a file drawer open, or in the process of mailing.

TASK C:

Monitor the file service and delete desktops as necessary

MONITOR FILE SERVICE DISK SPACE

Overview: You should check the amount of disk space used by your file service periodically to make sure it is not becoming too full. You may wish to check disk space after you have run the daily backup, or at any other time during the day. Disk space is measured in disk pages, which are 512 characters long; there are approximately 4-8 disk pages per printed document page, depending on how full each printed page is. (Refer to Examples 1, 2 and 3).

Procedure:

1. Type **Show Space**.
2. If the disk is getting full (approximately 75-80 percent) and you wish to see the size of each file drawer type **List File Drawers** and respond **Y** to the **Show File Drawer Sizes** prompt. Respond **N** to the file drawer size prompt if you want only a list of drawers and owner names.
3. If disk space is getting low, encourage users to remove documents or files that are no longer needed from their drawers. If users wish to retain copies of these documents or files for future use, they can store them on floppy disks.
4. Type **Delete File Drawer** for drawers that are no longer needed. If a drawer is not empty, a warning message will appear prompting you to confirm deletion.

Comments: Use **Show Space** to determine the total space in use. Use **List File Drawers** to see how the space is being used.

MONITOR THE USAGE OF THE FILE SERVICE

Overview: You may wish to check for current activity at your file service. This may be necessary if you want to do a specific task (such as stopping the file service or shutting down the server) and you want to make sure that no one is using the file service at that time. You do not need to log on as the system administrator to perform this command.

The **Show Activity** command will show you whether the file service is started, plus a list of current users, what time they started, and the time of their last actions. If no users are actively using the file service, the cursor will return to **FS>** without displaying any user names. (Refer to Example 4.)

Procedure:

1. Type **Show Activity** at file service.
2. Record current users of the file service, if necessary. If you need to perform a function such as stopping a service, respond **N** to the prompt which asks if you wish to disconnect active users. In this way, active users may finish their current activity, and no new users can begin an activity.

Examples:

FS> Delete Desktop RETURN

Desktop Name: McBain:LA South:GemSysCo Y RETURN

Desktop may not be empty. Delete it anyway? (Y/N): Y RETURN

Done

FS> List Desktops

List All Desktops? (Y/N): Y RETURN

Show Desktop Sizes? (Y/N): Y RETURN

Confirm (Y/N): Y RETURN

Anderson:LA South:GemSysCo

size: 213 pages (1)

Clayton:LA South:GemSysCo

size: 246 disk pages

Frahmann:LA South:GemSysCo

size: 587 disk pages

Total space used by listed desktops: 1,046 disk pages

Notes:

(1) A disk page is equivalent to 512 characters. A one page document is likely to require 4 to 8 disk pages of storage.

TASK C (Continued):

Monitor the file service and delete desktops as necessary

MONITOR THE FILE SERVICE AND DELETE DESKTOPS AS NECESSARY

Overview: If your network has 8010 workstations and if those workstation users store their desktops on the file service, they are using file service space. There may not be sufficient space to store all the desktops. Or, people may have created temporary desktops, stored them on the file server, and then forgotten about them. As a result, storage space may be used unnecessarily.

You can monitor the file service to see what desktops are stored and how much space they are consuming. If necessary, you can also delete desktops.

Procedure:

1. Log on at the server and direct your commands to the file service.
2. Type **List Desktops**. You can specify an individual desktop's name, or see the entire list of all desktops. You may also see their sizes.

If after reviewing the desktops, you discover desktops that need to be deleted, you should:

3. Type **Delete Desktop**.
4. Type the name of the desktop that you wish to delete. You can get this name from the listing obtained by the **List Desktops** command.

Comments: To delete a desktop from the file service, it is not necessary for that desktop to be empty. You should check to be certain the user no longer requires that desktop before you delete it. The **Delete Desktop** command, therefore, should be used with care to insure that no important documents are accidentally deleted when the desktops are deleted.

If an 8010 workstation has old desktops stored on it, you or a user can delete those desktops.

1. Log on to the workstation, using the name and password of the user who created the desktop.
2. Delete all real data icons, i.e., documents, folders, and record files. Delete the contents of the In-Basket, if any.
3. Select [DELETE DESKTOP] option when logging off.

Example:

```
>Clearinghouse Service RETURN
CHS>Backup RETURN
      Destination File Service: Dartmouth RETURN
      Domain Name: LA South RETURN
      Organization Name: GemSysCo RETURN
Opening connection to File Service . . . Done
Storing this database on the File Service . . . Done
Database backed up.
CHS>
```

Notes:

TASK D:

Perform backup of the clearinghouse service

Overview: The clearinghouse service **Backup** command is used to store a copy of the entire clearinghouse database on a file service. It is recommended that you back up the clearinghouse database to a file service that is on another server. This backup procedure causes the entire clearinghouse database to be saved in the file drawer named "Clearinghouse" on the selected file service. As regular file service backup is run, the clearinghouse database will be written on the backup floppy along with other files.

You should run backup when your clearinghouse is first created, and then again whenever the database is updated or changed. This ensures that you maintain a current file of all information. You will need this information if a major problem occurs, such as damage to the server housing your clearinghouse service.

Procedure: Before you run backup, create a clearinghouse file drawer on the file service on which you wish to back up the clearinghouse database. You should have full access to the clearinghouse file drawer (read, write, add, remove) to allow you to perform backup and other related functions.

1. Log on at the server and direct your commands to the clearinghouse service.
2. Type **Backup**. Follow the system prompts for file service, domain, and organization names.

Comments: Each time backup is performed, information is stored in the clearinghouse file drawer. To prevent your file service disk from becoming too full, you should periodically check the clearinghouse file drawer from a workstation and delete all but the most recent backup database versions.

Example:

```
PS> Print Test Pattern
      Enter copy count (1-999): 1 RETURN
      Test Pattern Queued for Printing.
PS>
```

Notes:

You will probably only need one copy of the test pattern but you may print as many copies as you wish.

TASK E:

Monitor printer for dry imager and adequate paper supply

Overview: Once the server is started and fonts have been installed, there is little if any interaction required with the terminal attached to the server. (If repairs are necessary, a Xerox Technical Representative will put the server into Repair Mode.)

However, you should monitor the daily functioning of the printer to ensure both adequate paper supply and a sufficiently dark printed image.

1. Check for adequate paper supply by checking the paper cassettes. If they are low on paper, add additional paper. Once you have shown users how to add more paper, they can do this themselves.
2. You can check the quality of the printed image by printing a test pattern. If the copy produced is light, or the shaded areas on the bottom are lighter than the top, add more dry imager. With normal usage, this test should be done on a daily basis; during slower periods of use, you may run the test weekly.

Procedure: The *Electronic Printer Operator Reference Guide* will help you answer questions regarding adding paper and dry imager. The additional small instruction booklet attached to the printer will help users decide what to do when certain codes appear (for example, when to add more paper).

To print a test pattern:

1. Log on at the server and direct your commands to the print service.
2. Type **Print Test Pattern**.
3. The **Enter copy count** prompt shows 1 as the default number of copies. Press <RETURN> for a single copy of the test pattern.
4. Examine the copy. If the image appears too light or uneven over the page, check if more dry imager is needed.

Comment: The printer output tray can not hold more than 100 pages. Depending on your office situation, you may also need to check throughout the day to ensure the output tray has not been overfilled. You may want to set up file trays or dividers (with a space labeled for each user or for segments of the alphabet) into which users could place printed copies until they are picked up by the individuals who printed them.

Example:

```
PS> List Documents RETURN
  1 All Documents
  2 Queued Documents
  3 Formatted Documents
  4 Marking Document
  5 Completed Documents
Enter choice number: 1 RETURN
--File Name      (Status, SentBy, Pages)--
Monthly Inventory (Printed, Frahmman:CP8:Xerox, 4)
Slide Presentation (Printed, Hansford:CP8:Xerox, 5)
Action Summary (Printed, Kasimow:CP8:Xerox, 2)
Task Analysis (Printed, Marengella:CP8:Xerox, 2)
Speech (Marking, Smith:CP8:Xerox, 1)
Xerox Proposal (Formatted, Smith:CP8:Xerox, 39)
6 Documents Listed.
PS> Cancel Documents RETURN
  1 All Documents
  2 Marking Document
  3 Queued Documents
  4 Formatted Documents
Enter choice number: 1 RETURN
1 Document Cancelled
PS> Stop Printing RETURN
Stopping Printing . . .
Done
PS> Start Printing RETURN
Printing Started
PS>
```

Notes:

If you do not log on as a system administrator before typing the List.Documents command, only the name and status of each document will be listed. Any user may enter the command to see this information.

Both queuing and printing are started automatically when the print server is started. If, however, you use the Stop Printing or Stop Queuing command, you will need to use the appropriate Start command to restart that process.

When the Stop Printing command is used, documents currently being formatted or marked are canceled. Those documents being formatted return to the printing queue. When printing is restarted, those documents will go once more into the formatting stage.

TASK F:**Monitor and control usage of the print service**

Overview: You may need to follow the status of documents as they proceed to and are completed at your printer. For example, you may want to check the current status of documents before you stop printing. There are also times when you may want to cancel the printing of jobs, or stop people from sending new jobs to the print service.

You can check the status of documents at any time. If you choose, you can also cancel the printing of documents at various stages. You can also stop the print service from accepting or printing any additional documents.

As you check the status of the print service or seek to cancel printing, you will find references to these four stages:

1. **Queued** means documents are waiting (in the order received) to be printed.
2. **Formatted** means the print service is finding the right fonts to use for a document, arranging the information to be printed and waiting to be transferred to paper (marked).
3. **Marking** means the document is currently being printed.
4. **Completed** means documents have been printed.

Procedure:

1. Log on at the server and direct your commands to the print service.
2. Type **List Documents**.
3. Select the option describing which documents you wish to check: all, queued, formatted, marking, or completed documents.
4. If you need to cancel the printing of some documents, type **Cancel Documents**. Select the option describing which documents you wish to cancel: all, queued, formatted, or marking.
5. If you need to prevent the print service from accepting any additional print jobs, type **Stop Queuing**.
6. If you need to prevent the print service from printing any print jobs already queued, type **Stop Printing**.

Notes:

Record the names of remote 860 and 850 workstation users who have mail folders and also note the daily time the mail clerk will check for mail.

TASK G:

If you have a gateway service, check that the mail clerk delivers mail.

Overview: The gateway service permits the operator of a remote 860 or 850 to send mail to other users via a mail clerk's folder; it is the mail clerk's job to forward the mail to the mail folder of specified users. You will want to establish a procedure with the assigned mail clerk to insure that he or she regularly checks the mail folder.

Procedure:

The mail clerk using an 860 workstation on the network will follow these steps:

1. At an established time daily, open his or her mail folder and move all documents to the local disk.
2. Inspect the first document to determine the recipients' names.
3. Select the document title, press <REPLACE>, then type a meaningful name for the title, such as "Jones 1."
4. Mail all documents to the appropriate recipients after inspecting and renaming them.

The mail clerk using an 8010 workstation will follow these steps:

1. Open his or her in-basket at set times or whenever the in-basket shows a "letter" in it.
2. Convert and open the documents and then forward the mail to appropriate recipients.

Comments: As the recipient requests his or her mail via an 850, the gateway service will automatically convert the mail document from 860 to 850 format during transmission. If the mail clerk is using an 8010 workstation, he or she can forward it in 8010 format only to other 8010 workstation users. To forward it to 860, 850, or ITS users, he or she must first convert it back to 860 format.

Users at 8010 or ITS workstations may choose to send mail in the form of a mail note which, in many cases, eliminates the need for conversion. (Refer to Appendix C of this booklet for a guideline on mailing interchange.)

Your Notes:

TASK H:

| |
|--|
| Install new software or reinstall existing software |
|--|

Overview: As new releases of software are issued to you by Xerox, you will load the services master floppy disks into your servers, and load a series of floppy disks for each 8010 workstation. You will follow the same steps as outlined in Booklet 2.

Make sure you follow the installation and enabling procedures, but **do not** select the utility option **Partition for Services** for services, or **Partition for Star** for 8010 workstations. This will repartition the disk. The partitioning step is performed only when the server or workstation is installed for the first time. All files and user data will be erased if you select this option when reinstalling.

Procedure:

1. Read any documents sent with the new release of software. Talk to your Xerox Systems Analyst if you have any questions.
2. Follow steps 2 through 4, Booklet 2, to install the new software for services, and step 16 to install new software for 8010 workstations. Remember: do not repartition the disk.

Comments In rare cases, it may be necessary to reinstall existing software in order to solve problems encountered with your server or 8010 workstations. (Such instances will be described in booklet 5.) This is done exactly in the same way as installing new software issued by Xerox.

Example 1:

```
>Stop Services RETURN
  Disconnect Active Users? (Y/N): N RETURN (1)
  Clearinghouse Service functions are now unavailable to the network.
  Done
>Clearinghouse Service RETURN
CHS>Start RETURN
  Clearinghouse Service functions are now available to network.
CHS>List Services RETURN (2)
  Network Services 5.0
  Service           Network       Processor     Status
  Clearinghouse Service 1-234      2-852-678-901 Started
  File Service "Iris"   1-234      2-852-678-901 Stopped
```

Example 2:

```
CHS> File Service RETURN
FS> Stop RETURN (3)
  Disconnect Active Users (Y/N) : N RETURN
  Done
FS> Start RETURN
  Done
```

Notes:

- (1) If you answer "N" to this question, no new users will be allowed to access services, including the internetwork routes, any terminal emulation sessions, etc., but all active users will be allowed to complete their sessions. This may take considerable time.
- (2) In the quiescent state, a List Services command will show the External Communication Services stopped, but a ? will show the only valid command is Stop.
- (3) If after a reasonable wait you wish to force users off, re-enter the Stop command and answer "Y".

You will need to restart a stopped service explicitly, using its Start command when you want users to be able to access that service once more.

Except for print services, each service has a start and stop command. In the print service, it is possible to start and stop various parts of the printing process. For details, see Task F in this booklet.

TASK I:

Start and stop services, as needed

Overview: All activated services are started automatically when the server is booted and Normal Startup is selected. At times, you may need to stop services to perform certain functions, such as a diagnostic procedure. You can either stop individual services or all services on a server.

When you enter the command to stop services, the prompt will ask you whether to disconnect active users. You will respond **Y** if you need to terminate abruptly, or **N** if you wish to allow current users to finish their procedure(s). No additional users will be able to begin a procedure or access these services, regardless of how you choose to disconnect already active users.

To start a service after it has been stopped, you will enter the service name (for example, clearinghouse service) and then enter the Start command. Note: Services must be started in the same order listed when you type **List Services** to allow those that depend on each other to acquire their information in the most efficient way. They should be stopped in the reverse order.

Procedure for stopping and starting all services on a server:

1. Log on at the server.
2. Type **Stop Services**.
3. Type **Y** or **N** to **Disconnect Active Users**. Wait for the Done message before doing another task.
4. Perform the required task.
5. Start each service on the server with its Start command.

Procedure for stopping a specific service:

1. Log on at the server.
2. Direct your commands at the service you wish to stop, (for example, file service).
3. Type **Stop**. Follow steps 3 and 4 above. To restart, type the name of the service again if you have directed commands to a different service. Then type **Start**.

Comments: To see which services are present and started on a server, use the **List Services** command. Services that are quiescing, i.e., in the process of stopping, may be listed as having the status "stopped."

Example:

On the "Old" server:

FS>Stop RETURN

FS>Backup RETURN

Insert Floppy Disk

Proceed? (Y/N): Y RETURN

"Backup of October 13, 1982 1:03 PM, #1 " complete

On the "New" server:

FS>Restore RETURN

Restore everything on backup disk? (Y/N): Y RETURN

Suppress feedback? (Y/N): N RETURN

Confirm each restore? (Y/N): N RETURN

Insert Floppy disk

Proceed? (Y/N): Y RETURN

(You will continue to insert all the floppy disks from the set of backup floppies for the complete cycle)

Insert floppy disk

Proceed? (Y/N): N RETURN

Return to "Old" server:

FS>Delete File Drawers RETURN

FS>Delete Mail Folders RETURN

FS>Delete Desktops RETURN

Normal startup (Y/N)? : N RETURN

Select Startup Option

1 Continue

2 Load Error Log Analysis

3 Activate Service

4 Deactivate Service

5 Change Domain and/or Organization

6 File Check

7 Create User File System

Enter choice number: 4 RETURN

Select service

1 Clearinghouse Service

2 External Communication Service

3 File Service

4 Gateway Service

5 Internetwork Routing Service

Enter choice number: 3 RETURN

Done. File Service Deactivated.

Normal Startup? (Y/N): Y RETURN

>Clearinghouse Service

CH>Change File Service RETURN

Name: Diamond Return

Network Number: 2-689 RETURN

Processor Number: 2-852-567-172 RETURN

TASK J:

Move a service to a different server

Overview: There are times when you might want to move services to other servers. For example, you may have installed a larger capacity file server, or you may wish to balance the load of services within your network.

The clearinghouse and file services which have databases require you to backup and then restore data to the new server. Services which do not have databases are easier to move. The following describes how to move:

- File service
- Clearinghouse service
- Other services

Contact the Xerox representative when you plan to move a service. The following tasks must occur in sequential order:

1. The Xerox representative enables the service on the new server.
2. You activate the service, and move databases if applicable on the new server.
3. You deactivate the service on the old server.
4. The Xerox representative disables service on the old server.

TO MOVE A FILE SERVICE:

Procedure: To move a file service, you first back up the service to floppies. Next you go to the new server, activate the file service and restore the data. After you restore the data to the new server, you deactivate the service from the "old" server and change the information in the clearinghouse.

1. Log on at the "old" server and direct your commands to the file service.
2. Type **Stop**.
3. Back up the service using the steps described in Task A of this booklet. You will need the complete backup cycle set of floppy disks.
4. Log on at the "new" server and direct your commands to the file service.
5. Type **Restore**.
6. Insert the floppy disks in the order described in Task N of this booklet.
7. Enter **Y** to restore everything. Respond **Y** or **N** to the prompts to suppress feedback and confirm each restore.

Your Notes:

TASK J (Continued):

| |
|---|
| Move a service to a different server |
|---|

8. Type **N** when you have restored all the floppy disks in the cycle.
9. Return to the "old" server.
 - If a file service is to remain on this server, do steps 10 through 13, and 19 through 21.
10. Type **Start**.
11. Delete information from the file service database by typing **Delete** plus the container of every file drawer, mail folder, and desktop.
12. Go to the server running the clearinghouse service; log on and direct your commands to the clearinghouse service.
13. Type **Add File Service**, and enter a new file service name with the processor number of the old server.

If you no longer want to have a file service running on this server, then:

14. Boot the machine. Answer **N** for **Normal Startup** prompt.
15. Select the **Deactivate Service** option.
16. Select **File Service**.
17. Answer **Y** to the **Normal Startup** prompt.
18. Have the Xerox representative disable the file service.
19. Go to the server running the clearinghouse service; log on and direct your commands to the clearinghouse service.
20. Change the network address of the service that was moved. (See Task Q for details).
21. Inform users to retrieve new file drawer and mail basket icons.

Your notes:

TASK J (Continued):

Move a service to a different server

TO MOVE A CLEARINGHOUSE:

Procedure: To move a clearinghouse service, you first back up the clearinghouse database to a file service. Next go to the new server, activate the clearinghouse service, and restore the database onto that server. Then return to the old server and deactivate the clearinghouse service. (These steps are similar to activating a secondary clearinghouse described in Task V of this booklet.)

Notes: 1) If you are moving the clearinghouse service to the same server used to backup the clearinghouse database, be sure to repeat the backup process (i.e., back up the restored clearinghouse database to another file service.) 2) A Xerox representative is not required to enable the clearinghouse service. 3) Deactivate service does not return disk space consumed by the clearinghouse database. The only way to recover the disk space used by the clearinghouse is to repartition the disk.

Be sure backup is up to date. If not, run backup, then do the following:

1. Go to the "new" server which will house the clearinghouse. Be sure there are at least 2,100 available free disk pages on the server.
2. Boot the server. (Press the button labeled B RESET on the front processor panel.)
3. Type **N** when the **Normal Startup** prompt appears.
4. Select the **Activate Service** option.
5. Select the **Clearinghouse Service**.
6. Type **N** for normal startup.
7. Select the **Continue** option.
8. Log on at the server and direct your commands to the clearinghouse service.
9. Type **Restore**. (See Task U for detail.)
10. Enter the name of the file service to which the clearinghouse was backed up, including its domain and organization names.
11. At the "old" server, log on at the server and direct your commands to the clearinghouse service.
12. Type **Stop**.
13. Boot the server. (Press the button labeled B RESET on the front processor panel.)
14. Type **N** when the Normal Startup prompt appears.

Your Notes:

TASK J (Continued):

Move a service to a different server

15. Select the Deactivate Service option.
16. Select the Clearinghouse Service.
17. Enter Y for normal startup.
18. Inform remote system administrators to delete the old clearinghouse name with the Delete Remote Clearinghouse command and then explicitly enter Find Remote Clearinghouses.

TO MOVE OTHER SERVICES:

Procedure: Moving other services is easier since they do not contain databases. You simply deactivate the service from the "old" server, activate it on the "new", and then change the information on the clearinghouse service.

1. Boot the "old" server. (Press the button labeled B RESET on the front processor panel.)
2. Type N when the Normal Startup prompt appears.
3. Select the Deactivate Service option.
4. Select the service you wish to remove.
5. Type Y for normal startup.
6. Go to the "new" server and boot it.
7. Type N when the Normal Startup prompt appears.
9. Select the Activate Service option, then select the service that you wish to move to this "new" server.
10. Type Y to the Normal Startup prompt.
12. Go to the server running the clearinghouse service; log on and direct your commands to the clearinghouse service.
13. Change the network address of the service that you moved. (See Task Q in this booklet for details, particularly if you change information about any of the following objects: IBM 3270 host, RS232C ports, or communication interface units.)
14. Inform users to retrieve new icons.

Example:

Time is not set.

Time zone offset from Greenwich (-12-12): -8 RETURN

Minute offset (0-59): 0 RETURN

First day of Daylight Savings Time (0-366): 121 RETURN (1)

Last day of Daylight Savings Time (0-366): 305 RETURN (2)

Do you wish to change the time? (Y/N?) Y RETURN

Please enter the date and time: 09/28/82 11:01:52 RETURN

Set time to September 28, 1982 11:01 AM

Okay?: (Y/N): Y RETURN

Utility Options:

1 Partition for Services

2 Install Services

3 Start System

4 Start System Error Analysis

5 Start System with Remote Debugging enabled

6 Start System with Special Debugging

Enter Choice Number: 3 RETURN

Network Services X.0

Restart Reason: User Restart

Normal Startup? (Y/N): Y RETURN

Clearinghouse Service Started

Network Services X.0 February 2, 1983 11:45 AM

>

Notes:

(1) and (2) The values 121 and 305 are default values for those states within the United States using daylight savings time. If the default is correct, confirm by pressing <RETURN>. Otherwise, enter the appropriate values:

- For U.S. without Daylight Savings Time (parts of Illinois, Arizona): 0, 0
- For Canada: Same as the U.S.
- For United Kingdom: 89 and 303

TASK K:

Changing time for all services on your local network

Overview: Should servers on your local network lose the correct time as a result of extended power loss, or perhaps a machine move to a different time-zone, you may need to set or change time.

Procedure: To set the correct time on your local network, power down all the servers within a network except the server housing the clearinghouse service. Then insert the Services #1 Master Disk normally used to install software into that server, and set or change time. **Note: Be careful not to partition the disk. Doing so will destroy all contents of the service. You will be using only the set time utility and then you will start the server.**

1. Power down all the other servers within the network, except the one housing the clearinghouse service.
3. Go to the server housing the clearinghouse service.
2. Insert the floppy disk (Services #1 Master Disk) into the floppy drive. Press both the B RESET and ALT B buttons, release B RESET, wait until 0002 appears in the maintenance panel and then release ALT B.
3. The prompt will ask you for the date and time. Press <RETURN> after you answer each prompt:
 - a. On the prompt for hour offset, type -5 for Eastern time zone, -6 for Central, -7 for Rocky Mountain, and -8 for Pacific. In all cases, type 0 for the minute offset. For the Daylight Savings Time prompts, type the appropriate numbers.
 - b. Type in the current month and time in this format: MM/DD/YY HH:MM:SS (e.g. 09/28/82 13:02:00 using the 24-hour clock). Then, confirm your entry.
4. The utility option menu will appear. Select the **Start System** option.
5. You will receive a normal startup prompt. When it appears, type Y.
6. Wait until the services are started and the normal prompt appears, then remove the floppy disk.
7. Boot all other servers by pressing the B RESET button.

Example:

Normal Startup? (Y/N): **N** RETURN

Select Startup Option

1. Continue
2. Load System Error Analysis
3. Activate Service
4. Deactivate Service
5. Change Domain and/or Organization
6. File Check
7. Change Network Number
8. Copy Disk

Enter choice number: **7** RETURN

Network Number: 1-432 **1-234** RETURN

Normal Startup? (Y/N): **Y** RETURN

Notes:

TASK L:

| |
|-----------------------|
| Change network number |
|-----------------------|

Overview: There may be an instance in which you will be required to change your network number. Since network numbers are assigned by Xerox, an instance requiring you to change your network number might occur if you entered the number incorrectly when you first loaded software. It is also possible that a server, with services loaded, would be physically moved or connected to a new network, and thus need to have its network number changed.

Procedure: Changing the network number is one of the startup options that appears when you boot a server. After changing the network number, you may also need to change a considerable amount of information in the clearinghouse database.

1. Power down each server on the network, except the one housing the clearinghouse service.
2. Boot the machine housing the clearinghouse service. Do this by pressing the B RESET button.
3. Type N to normal startup prompt.
4. Select the Change Network Number option. Note: This option is available only if all other servers on the network are turned off.
5. Answer the prompt for a new network number.
6. Type Y for a normal startup.

If the server has been physically moved or connected to a new network, you will not need to complete steps 7 through 9. You will, instead, need to register all the services on that server in the clearinghouse service of the new network.

7. Log on at the server and direct your commands to the clearinghouse service.
8. Change the entry for each of the following items registered in the clearinghouse: file service, mail service, communication interface unit, external communication service, gateway service, internetwork routing service, interactive terminal service.
9. Boot each server.

Example:

```
FS> Repeat Backup RETURN
    Enter Date to be repeated (MM/DD/YY): 11/24/82 RETURN
Insert floppy disk
    Proceed? (Y/N): Y RETURN
"Backup of November 24, 1982 8:34 PM, #1" complete
Insert floppy disk
    Proceed? (Y/N): Y RETURN
"Backup of November 24, 1982 8:34 PM, #2" complete
2 backup disks created
```

Notes:

TASK M:

Repeat a file service backup, if necessary

Overview: You may need to replace backup disks for a specific date if one or more of the backup disks is lost or damaged. To do so enter the date of the specific backup instance to be repeated and insert new floppy disks. Then place the new disks with the rest of your backup floppy disks for a particular cycle.

When **Repeat Backup** is run, the system copies every document that was initially backed up on that specified date--except for documents deleted from the file system since that original backup operation. Therefore, the backup disk produced by **Repeat Backup** may not be an exact duplicate of the original backup.

Procedure:

1. Log on at the server and direct your commands to the file service.
2. Type **Repeat Backup**.
3. Enter the date of the backup to be repeated when the prompt appears.
4. Follow the prompts to insert floppy disks.
5. Label and store the completed floppy disks with the other backup disks for the cycle.

Example:

>Restore RETURN

Restore everything on backup disk? (Y/N): Y RETURN

Suppress feedback? (Y/N): N RETURN

Confirm each restore? (Y/N): N RETURN

Insert floppy disk

Proceed? (Y/N): Y RETURN

(Here a list of all the files on this backup disk will be displayed. You will continue to insert all the floppy disks from the set of backup floppies for a particular day.)

Insert floppy disk

Proceed? (Y/N): N RETURN

Notes:

TASK N:**Restore the file service data, if necessary**

Overview: The entire file system can be restored to the server's disk from the backup disks. In other words, data will be written to its original location on the file system when you use the Restore command. This process may be necessary if there are problems with the file server and can also be used to move a file service to another server. (See task J for moving a service).

The most recent backup disks will restore the file service close to the state it was in before the failure. However, any documents filed after the most recent backup was run will not be restored.

If you lose a file system on a server with a removable disk, you can restore information by immediately making a copy of your backup pack. (See task B of this booklet).

Procedure:

1. Log on at the server and direct your commands to the file service.
2. Type Restore.
3. Respond Y to Restore everything on backup disk? Respond Y or N to the prompts to suppress feedback and confirm each restore. Normally, you would want to see the feedback, but would not want to confirm each restore.
4. The number of floppy disks needed to restore all the files will vary, depending on the size and number of files originally stored. Insert backup floppy disks in the following order:
 - Most recent complete set in sequential order
 - All of the disks of subsequent days for which backup was started but not completed (if any)
 - Disks for previous days in the backup cycle, most current to oldest
5. When you have restored the file system from all the floppy disks in the cycle, type N to the Proceed prompt, indicating that no more floppy disks remain.

Comments: If you wish to restore only part of backup disk, refer to Task O.

CAUTION: Your file service will have multiple copies of files (some of them empty folders) if you stop the restore cycle before it is completed and then restart it. This includes both the case of responding N to the prompt to proceed before you have restored all backup disks, or the case of continuing the restore if the server does an automatic restart for whatever reason. This is because each time a restore process is restarted, it forgets about earlier restorations.

If the restore operation is stopped for any reason, you will need to delete the file drawers already restored to the file server and begin the restore process over, beginning with the first disk.

Example 1:

> Show Backup Index RETURN

Backup disk "Backup of 24-Jan-82 10:31 AM, #1" contains

Managers

Parks

Weekly Status 12 pages; written 15-Jan-82 9:31 AM

J28 Justification 12 pages; written 10-Jan-82 12:23 PM

Thompson

Acme Proposal 10 pages; written 15-Jan-82 3:57 PM

Proj 27 Progress 5 pages; written 12 Jan-82 2:47 PM

Proj 28 Progress 10 pages; written 15-Jan-82 7:36 PM

Out for Review

Donaldson Proposal 21 pages; written 13 Jan-82 11:20 AM

Example 2:

> Restore RETURN

WARNING: Interruption of Restore for any reason will cause problems. Please see System Administrator Handbook for details. (1)

Restore everything on backup disk? (Y/N): N RETURN

Confirm each restore. (Y/N): Y RETURN (2)

Insert floppy disk

Proceed? (Y/N): Y RETURN

Enter container name: Managers RETURN

Enter container name: Parks RETURN

Enter container name: RETURN

Managers>Parks>Weekly Status 12 pages; written 15-Jan-82

Add file? (Y/N): N RETURN

Skipped

Managers>Parks>J28 Justification 12 pages; written 10-Jan-82

Change file? (Y/N): Y RETURN

Restored

Insert floppy disk

Proceed? (Y/N): N

>

Notes:

(1) See Task N for details.

(2) If you respond N to the prompt to confirm each restore, each file will be restored without your confirmation. If you respond Y, one of four messages may appear before a file or folder is created or the contents of an existing file are overwritten:

- Add file? - A Y response causes the contents and attributes of a file to be added to the file system.
- Change file? - A Y response causes the contents and attributes of an existing file to be updated.
- Add folder? - A Y response causes the folder and its attributes to be added to the file system. The containers of the folder will be added when they are restored later.
- Change properties? - A Y response causes the attributes of an existing folder to be updated.

TASK O:**Restore part of a specific backup disk using floppies, if necessary**

Overview: You may need to restore part of a backup disk if a user accidentally deletes some files and later wants them back, if you mistakenly delete an 8010 desktop, or if there is a problem with the file server. To help you locate the file on a backup floppy disk, you can use the Show Backup Index command. When you have the name of the file, you can restore that particular file to the file service. Note: This applies only to services in which backup is stored on floppies.

Procedure:

1. Determine the date on which the desired object was last stored or copied to the file system.
2. Insert the first backup floppy disk for that date into the disk drive.
3. Log on to the server and direct your commands to the file service. Type **Show Backup Index**.
4. As the contents of file drawers are displayed, note the exact title of the item you wish to restore. As the contents of the floppy are listed from the largest container (the drawer name) to the folder to the documents or record files within the folder, each subcomponent will be indented. There can be several layers of folders within folders, and documents or record files can also be stored directly into a file drawer. Write down the "path of names" to the item you wish to restore as in this example: Managers>Parks.
5. Once you have found the floppy containing the item you wish to restore (searching through several backup disks if necessary), keep that disk in the disk drive.
6. Type **Restore**. Respond **Y** if you want to confirm each restore (if you wish to check each title before it is restored) or **N** if you want all items within a file drawer or folder to be restored.
7. Type the container names as the prompts appear. Type the file drawer name (if you are restoring items stored in a file drawer) or **InBaskets** (if you are restoring a mail folder), or **Desktops** (if you are restoring a desktop).
8. Type the name of the next component of the object's name (as you wrote it down). This will either be the name of a folder or document, a mail folder, or desktop. Press <RETURN>. Then for mail or files, you will need to type the name of the next layer of container; it could be the name of the folder in which the object is stored, or it might be the object itself. Press <RETURN> again. Follow the exact sequence of names as you wrote it down.
9. When you have reached the level at which you want to restore (e.g., when you typed a file drawer name if you want to restore an entire drawer, or a folder name if you want to restore a single folder), press <RETURN> to the next "Enter container name" prompt.
10. Respond **N** to the Insert floppy disk? prompt when you have restored the item(s) from the floppy, indicating that you do not need to insert another floppy disk.

Comments: When restoring a particular item, make sure you use the backup disk for the day it was copied; the backup index for the day the item was placed on the file service will list both "written" and the date after the item's name. On later backup days, a place is kept on the disk for each drawer and folder; you will still see the drawer and folder names listed but no date will appear.

Example:

```
FS> Copy Container RETURN
    Enter container name: Training RETURN
    Enter container name: Memos RETURN
    Enter container name: RETURN
Insert floppy disk
    Proceed? (Y/N): Y RETURN
```

Notes:

Enter the container name then press <RETURN> when you have reached the exact object you wish to copy. *Caution:* If you do not specify a container name and press <RETURN> when the first container's name prompt appears, the entire file system will be copied. You will be prompted to insert another floppy in this case, just as you do when a container is too big for a floppy on the Backup command.

Note: A desktop is a single object, therefore, if larger than 2,000 pages cannot be copied using the Copy Container command.

TASK P:

Copy a portion of the file system to a floppy disk, if necessary

Overview: You may need to copy a portion of the file system to a backup disk. For example, several people in a group may have created parts of a report that have been filed in folders in a specific drawer. If this report is not currently being used but you wish to retain a copy of the folders for archival purposes, you could use this process. This procedure can be used for both fixed and removable disk servers.

The **Copy Container** command at the file service copies everything in the specified container regardless of when it was written or last backed up. It does not modify the backup process of your file service; it is an entirely separate procedure.

Specify exactly which container you wish to copy. The container may be a mail folder, desktop, or file drawer. First type the name of the container, then the title of each successive object (for example, folder name, then document name) until you reach the container or object you wish. Press <RETURN> after the container prompt to terminate the path.

Procedure:

1. Log on at the server and direct your commands to the file service.
2. Type **Copy Container**.
3. Type the name of the container (InBaskets, Desktops, or by individual file drawer names, e.g., Training, or Smith).
4. Type the name of each successively smaller object, from the largest container to the exact object. Mail folders (Inbaskets) and desktops have the same fully-qualified names as their owners (e.g. Daniel McIntire:Advertising:Succotash Tool).
5. Press <RETURN> once more after you reach the exact container.
6. Insert the floppy disk and type Y.
7. Remove the floppy when your copy is complete.
8. Label and store the floppy for future use.

Comments: To replace the contents of a disk created with the **Copy Container** command into the file service, you use the **Restore** command, just as though the disk were a backup disk. (See task N, this booklet.)

Example:

```
CHS>Change IBM 3270 Host RETURN
Name: Giant RETURN
Description : First Floor, Rm 1102 RETURN
Enter the Emulated 3276 Controller's address (0-31): 2 RETURN
Enter the number of ports on the emulated 3276 Controller (1-8): 4 RETURN
Enter the RS 232C port name through which the host is accessed: Port 2 RETURN
Domain: Boston RETURN
Organization Name: GemSysCo RETURN
The language supported by this emulated 3276 Controller is:
1 Austrian
2 Austrian (Alternate)
.
.
26 Swedish (Alternate)
Enter choice number: 9 RETURN
Is all the Emulated 3276 Controller information correct? (Y/N): Y RETURN
Add another Emulated 3276 Controller to this IBM 3270 Host? (Y/N): N RETURN
Confirm this IBM 3270 Host information? (Y/N): Y RETURN
Done. Giant (IBM 3270 Host) changed.
```

```
CHS>Change Mail Service RETURN
Name: Mailer RETURN
Network Number: 1-234 RETURN
Processor Number: 2-852-345-678 RETURN
Description: Room 1256 RETURN
Confirm this Mail Service information? (Y/N): Y RETURN
Done. Mailer (Mail Service) changed.
```

Notes:

There is a Change command for each of the following items:

- Communication interface unit
- External communication service
- File service
- Gateway service
- IBM 3270 host
- Interactive terminal service
- Internetwork routing service
- Mail service
- Print service
- RS232C port
- User
- Workstation

TASK Q:

Change information about services or users, as needed

Overview: You may change information about a user or any other object in your clearinghouse database using the Change command. For example, a user may request a new password, or need a different description if he or she changes offices.

Procedure: The basic procedure for changing information about an object is similar to the Add command.

1. Log on at the server and direct your commands to the clearinghouse service.
2. Type Change plus the kind of object that is being changed (for example, Change User).
3. Respond to the system prompts. For each prompt, the currently registered information is displayed. If that piece of information:
 - Remains the same, press <RETURN>. The information will remain unchanged.
 - Needs to be changed, enter the new information. As you type, the old information will be replaced. Then press <RETURN> to terminate the new information.
4. If you change information about IBM 3270 hosts, RS232C ports, or communication interface units, you must stop the external communication service (using its Stop command) and then restart it (using its Start command). The external communication service checks the clearinghouse for information only when it is started. Therefore, if you do not stop and restart the service, it will not know about the changes you have made.

Comments: The only object that can have its name changed using the Change command is a user (see Task R). If you wish to change the name of a service or other object in the clearinghouse, you must first delete the object (see Task T) and then add it again with its new name.

If you wish to make an existing alias refer to a different object, you must delete the alias and then add it again, naming the new object to which it should refer.

Example 1:

```
>File Service RETURN
FS> Delete Mail Folder RETURN
    Mail Folder Name: Toni Marangella:LA Branch:GemSysCo RETURN
    Done.

FS> Clearinghouse Service RETURN

CHS> Change User RETURN (1)
    Name: Toni Marangella RETURN
    First Name (and Middle Name, if desired): Lee RETURN
    Last Name: Marangella RETURN
    Password: ***** RETURN
    Description: System Administrator, LA Branch RETURN
    System Administrator? (Y/N): Y RETURN
    "Home" File Service: Rose RETURN
        Domain Name: LA Branch RETURN
        Organization Name: GemSysCo RETURN
    Mail Stored On: Violet RETURN
        Domain Name: LA Branch RETURN
        Organization Name: GemSysCo RETURN
    Confirm this User information. (Y/N): Y RETURN
    Done. Lee Marangella (User) changed.

CHS>File Service RETURN

FS> Add Mail Folder RETURN
    Mail Folder Name: Lee Marangella:LA Branch:GemSysCo RETURN
    Confirm (Y/N): Y RETURN
    Done.
```

Notes:

(1) If the user's name is changed, the following warning is issued:

Warning: If this user is to receive mail, there must be a mail folder named <fully-qualified name>.

TASK R:

| |
|------------------------------|
| Change user names, as needed |
|------------------------------|

Overview: The Change User command can be used to change any information about registered users - including their names. However, if you wish to change a user's registered name, you must follow some additional steps before and after you enter the change in the clearinghouse service. If you do not perform these additional steps, a user will not be able to retrieve his or her existing (old) desktop or mail with the changed (new) user name. Note: Because a user's distinguished name (i.e., full name, John E. Doe) can appear as a member of any number of groups (as well as his/her desktop and mail folder), changing the distinguished name also involves removing the old user name and adding the the new user name to all groups the old name was in. Refer to Booklet 2, Step 8, and Booklet 3, Task S.

Procedure:

1. Tell the user requesting a name change to move or delete all documents from his or her mail folder.
2. If the user has an 8010 workstation, he or she must store all documents, record files, and folders that are to be saved. These items can be moved to the file service or copied onto floppy disks.
3. After storing the documents and folders, the user must delete his or her desktop.
4. Delete the user's current mail folder from the file service. (If the folder is not empty, ask the user to repeat step 1.)
5. Log on at the server and direct your commands to the clearinghouse service.
6. Type **Change User**. Respond to system prompts, changing the name and other information, as desired.
7. Create a new mail folder for the user in the file service.
8. Remove the old user name and add the new user name to all groups of which he or she is a member. Access lists containing the user's old name must be changed to include his or her new user name.
9. If the user has an 8010 workstation, inform the user when steps 1-8 have been completed so that he or she can log on with the "new" name, create a new desktop, and retrieve the items he or she previously stored on the file service or on floppies.
10. If the full name is changed, the aliases registered for that user are automatically re-registered. If you only wish to change a user's alias, you should delete it and then add a new alias.
11. Inform other people on the network of the user's new name so they can address electronic mail properly.

Comment: Desktops can be "moved to file service," user name changed, then retrieved from the file service at logon. The file service keeps the fully qualified name but not the password. The 8010 workstation remembers the password.

Example 1:

```

CHS>Add Group RETURN
    Name: Training
    Done. Training (Group) added.
CHS>Add Member RETURN
    Group Name: Training RETURN
    Member: Hazel Clayton RETURN
        Domain Name: South RETURN
        Organization Name: GemSysCo RETURN
    Done. Hazel Clayton:South:GemSysCo (Member) added to Training (Group)
    :
CHS>Add Group RETURN
    Name: Development RETURN
    Done. Development (Group) added.
CHS>Add Member RETURN
    Group Name: Development RETURN
    Member: Dennis Frahmman RETURN
        Domain Name: South RETURN
        Organization Name: GemSysCo
    Done. Dennis Frahmman:South:GemSysCo (Member) added to Training (Group).
    :
CHS>Add Group RETURN
    Name: Training/Development RETURN
    Done. Training/Development (Group) added.
CHS>Add Member RETURN
    Member: Training RETURN
        Domain Name: South RETURN
        Organization Name: GemSysCo RETURN
    Done. Training:South:GemSysCo (Member) added to Training/Development (Group)
CHS>Add Member RETURN
    Member: Development RETURN
        Domain Name: South RETURN
        Organization Name: GemSysCo RETURN
    Done. Development:South:GemSysCo (Member) added to Training/Development
    (Group).
CHS>Delete Member RETURN
    Group Name: Training RETURN
    Member Name: Alice Miska RETURN
        Domain Name: South RETURN
        Organization Name: GemSysCo RETURN
    Deleting Alice Miska:South:GemSysCo (Member) from Training (Group).
    Confirm? (Y/N): Y RETURN
    Done.
    
```

Example 2:

```

CHS>List Members RETURN
    Group Name: Training RETURN
    Hazel Clayton:South:GemSysCo
    Vanessa Otto:South:GemSysCo
    Cookie McBain:South:GemSysCo
    Donna Jensen:South:GemSysCo
    
```

TASK 5:

Maintaining groups

Overview: In booklet 2, step 8, you learned how to add groups and members. When you delete, or change an old user name, you must make these changes to all groups of which he or she is a member. To efficiently perform this task, you should maintain a written log listing the registration of members and groups. As members and groups change with your network, this list can help you determine what groups an individual is a member of.

Procedure:

1. Log on at the server and direct your commands to the clearinghouse service.

To delete a member:

- Type **Delete Member**, then give the name of the member (members could be a user, another group, or a pattern) and the name of the group in which he or she is a member; see booklet 2, step 8.) Repeat this step for every group of which he or she is a member.

To delete a specific group:

- Type **Delete Group**, then enter the name of the group. The group need not be empty to be deleted. (Refer to example 3 on the following page.)

To see the members within a specified group in the local domain:

- Type **List Members**, then enter the specified group name (members could be a user, another group, or a pattern.)
- Type **List Groups**, then specify the group by entering the pattern. For example, if you wish to see a list of all groups within the local domain, press <RETURN> after the **Pattern: *** prompt. If you wish to see specific groups, (for example, all groups beginning with the letter "A") type **A*** after the **Pattern** prompt. (Refer to example 3 on the following page.)

Comments: When setting up groups, you could follow a hierarchical structure. Your own department organization, typically detailed in an organization chart, is a good example.

Example 3:

```
CHS>List Groups RETURN  
      Pattern: * RETURN
```

```
Analysts  
Applications  
Development  
Development/Training
```

```
CHS>List Groups RETURN  
      Pattern: A* RETURN
```

```
Analysts  
Applications
```

```
CHS>Delete Group RETURN
```

```
      Name: Analysts RETURN
```

```
      Delete Analysts. This Group will no longer be registered.
```

```
      Confirm? (Y/N): Y RETURN
```

```
      Done.
```

Notes:

TASK 5 (Continued)

Maintaining groups

For instance, if you have two departments within your organization, one named Training, the other named Development, you could create two groups using those department names and add the appropriate individuals as members to each of their respective groups. (See the example on page 3-48.) If members of both departments needed access privileges to a specific file drawer, you can create a third group called Training/Development and add the Training group and Development group as members. Later, if a member is deleted from the Training group, he or she is automatically deleted from the larger Training/Development group. This hierarchical structuring thereby eliminates your need to enter individual lists of members every time group access privileges need to be set.

Example:

FS>Delete Mail Folder

Mail Folder Name: Alice Smythe:Boston:GemSysCo RETURN

Mail Folder is not empty.. Delete it anyway? (Y/N): Y RETURN

Done

FS>Clearinghouse Service RETURN

CHS>Delete File Service RETURN

Name: Edmond RETURN

Deleting Edmond. This File Service will no longer be registered.

Confirm? (Y/N): Y RETURN (1)

Done.

CHS>Delete User RETURN

Name: Alice Smythe RETURN

Deleting User Alice Smythe. This user will no longer be registered.

Confirm? (Y/N): Y RETURN

Done.

CHS>Delete Remote Clearinghouse RETURN

Name: Limehouse RETURN

Deleting Limehouse. This Remote Clearinghouse will no longer be registered.

Confirm? (Y/N): Y RETURN

Limehouse is in service; deletion cancelled (2)

CHS>Delete Member RETURN

Group Name: Analysts RETURN

Member Name: Smythe RETURN

Domain Name: Boston South RETURN

Organization Name: GemSysCo RETURN

Deleting Smythe:Boston South:GemSysCo (Member) from Analysts (Group).

Confirm? (Y/N): Y RETURN

Done.

Notes:

- (1) If you enter an incorrect name or misspell it, type N after the confirm prompt. The delete prompts will then be repeated and you will have a chance to correct any errors.
- (2) You cannot delete a remote clearinghouse which is currently in service.

Users may have file drawers on many file services. In such cases, you must log onto each file service and delete the relevant drawers.

There is a Delete command for each of the following items:

- Alias
- Communication interface unit
- External communication service
- File service
- Gateway service
- Group (the group does not need to be empty to be deleted).
- IBM 3270 host
- Interactive terminal service
- Internetwork routing service
- Mail service
- Member
- Print service
- Remote clearinghouse
- RS232C port
- User
- Workstation

TASK T:

Delete names of services, objects, or users as needed

Overview: If you no longer wish to have an object registered in the clearinghouse database, you can delete it. In the clearinghouse service, there is one Delete command for each type of object in the database. In the file service, there is one Delete command for file drawers, one for mail folders, and one for desktops.

Procedure:

To remove a registered object from the clearinghouse database:

1. Log on at the server and direct your commands to the clearinghouse service.
2. Type **Delete** plus the type of the object (e.g. Delete Print Service). Follow the system prompts.
3. Confirm that you wish to delete the object by typing **Y**.

If you are deleting a user, be certain to delete the mail folder for that user and any file drawers owned by that user that will no longer be needed.

To delete a file drawer, mail folder, or desktop from the file service:

1. Log on at the server and direct your commands to the file service.
2. Type **Delete Mail Folder**, then give the name of the user whose mail folder you wish to delete. Type **Y** to confirm the deletion.
3. Type **Delete File Drawer**, then give the name of the drawer that will no longer be needed.
4. Type **Delete Desktop**, then give the name of the desktop you wish to delete.

Comments: If mail folders or file drawers are not empty, a warning message appears prompting you to confirm the command before the object is deleted. Before deleting, make sure to check that users have stored any documents or folders they wish to save in file drawers or on floppy disks. For more information on deleting desktops, see Task C in this booklet.

If you wish to deactivate a service on a server (as opposed to deleting its name from the clearinghouse database), see Comments to step 5, booklet 2.

Example:

```

>Clearinghouse Service RETURN

CHS>Restore RETURN
  Source File Service Name: Diamond (1) RETURN
    Domain Name: Accounting RETURN
      Organization Name: ApexCo RETURN
        Domain to be restored:
          Domain Name: Accounting RETURN
            Organization Name: ApexCo RETURN
Opening connection to File Service. . .Done.
Retrieving database from the File Service. . .Done
Restarting the Clearinghouse Service with the new database.
Opening Clearinghouse database...
The Clearinghouse database has just been restored; its name may be wrong.
Please confirm or change this Clearinghouse Service's name.
  Name: Windfall RETURN (1)
Done. Clearinghouse database open.
CHS: Finding Remote Clearinghouses; this operation will take a few minutes.
Clearinghouse Service functions are now available to network.
CHS>
  
```

Notes:

- (1) If the database is being restored onto the same service, the name that appears is correct and you should confirm by pressing <RETURN>; if the database is restored onto a different service, enter the new name for the new clearinghouse service.
1. If the file service's name cannot be found, either the clearinghouse data base was destroyed or the name has been mistyped. This message will appear:


```

Name not found. Do you want to give the network address? (Y/N):
  Network Number:
  Processor Number:
      
```

If you respond Y, enter the network number and processor number; if you respond N, the Source File Service prompt reappears and you can reenter the name.
 2. If the clearinghouse database has been completely destroyed on your server, you may need to first log on as "Xerox" using the special Xerox password, add yourself as a user with system administrator privileges, add the file service containing the backed-up clearinghouse database, and then log off. Then you should log back on using your system administrator name to run the restore operation. This temporary clearinghouse database is needed to authenticate the restore operation; it will be overwritten by the restored database. (See task V on activating a secondary clearinghouse.)
 3. If the clearinghouse database and the file service on which it is backed up are on the same server and if that server had a major failure, it may be necessary to restore the file service before restoring the clearinghouse database.

TASK U:

Restore the clearinghouse service database, if necessary

Overview: The Restore command can be used to restore the clearinghouse database in case of system failure, or in cases where you incorrectly change a number of items in the clearinghouse and want to go back to the most recently backed up database. The Restore command uses the latest clearinghouse backup information stored in the file service (see Task D). The clearinghouse service will be stopped during this process and automatically restarted when you finish.

Procedure:

1. Log on to the server and direct your commands to the clearinghouse service.
2. Type Restore.
3. When the Source File Service prompt is displayed, enter the name of the file service to which the clearinghouse database was backed up, including its domain and organization names.
4. If the name of the file service you enter is not found (because the clearinghouse database has been destroyed) or if you mistyped the name, a message will appear (see Note 1.) If you misspelled the name, type **N** and retype the name. Otherwise, type **Y** and then enter the network number and processor number of the file service. (These numbers can be found on Form 1, which you filled out when setting up your network.)
5. Once the file service has been located, the system displays the current domain and organization names from which the database was backed up. If you wish to retain these names, press **<RETURN>**. If you wish to change either of these names, type the new ones. Under normal circumstances, you do not want to change these names.
6. When the restoration is complete, you will see a message indicating that the clearinghouse service has been automatically started.

Example:

```

Normal Startup? (Y/N): N RETURN
  Select Startup Option:
    1 Continue
    2 Load System Error Analysis
    3 Activate Service
    4 Deactivate Service
    5 Change Domain and/or Organization
    6 File Check
    7 Create User File System
  Enter choice number: 3 RETURN
  Select Choice
    1 Clearinghouse Service
  Enter choice number: 1 RETURN
Done. Clearinghouse Service activated.
  Normal Startup? (Y/N): Y RETURN
>Logon RETURN (1)
  User Name: John Q. Anders: Boston:GemSysCo RETURN
  Password: **** RETURN
>Clearinghouse Service RETURN
  Done.
Clearinghouse Service commands now available
CHS>Restore RETURN
  Source File Service: BlueJay RETURN
  Domain Name: Boston RETURN
  Organization Name: GemSysCo RETURN
  Domain to be restored:
  Domain Name: Boston RETURN
  Organization Name: GemSysCo RETURN
Opening connection to File Service. . .Done.
Retrieving database from the File Service. . .
Restarting the Clearinghouse Service with the new database
Opening Clearinghouse database...
The Clearinghouse database has just been restored; its name may be wrong
Please confirm or change this Clearinghouse Service's name.
  Name: Gopher2 RETURN
Done. Clearinghouse database open
CHS: Finding Remote Clearinghouses; this operation will take a few minutes.
Clearinghouse functions are now available to network.
CHS>

```

Notes:

- (1) If you are activating the secondary clearinghouse for the very first time, you will need to log on as Xerox using the special Xerox system administrator's password. In addition, you will need to supply the network and processor number of the file service when prompted. Since you are logged on at the same machine as the file service, type List Services to get these numbers. You should do this before the Restore command. See Task U for details.

TASK V:

Activate, and deactivate, a secondary clearinghouse

Overview: A clearinghouse service is used to register users and services on your network. When a clearinghouse service goes down, the system has no way of finding the names and network addresses of services or users. As a result, users cannot print, send or receive mail, or access file drawers. To recover from such a loss of communications, you can bring up a secondary clearinghouse to run temporarily. **Note:** You should bring up a secondary clearinghouse only when the server running the primary clearinghouse cannot be restarted, i.e., when it exhibits a persistent hardware or software failure.

A secondary clearinghouse can be brought up only if you have more than one server on your local network. A good guideline is to run the secondary clearinghouse on the same server as the file service where the clearinghouse database is backed up. Be sure there are at least 2,100 available free disk pages on the server when you activate the secondary clearinghouse for the very first time. Subsequent activations require 1,050 free disk pages.

Procedure: To establish the secondary clearinghouse, you activate the clearinghouse service on the appropriate server, then restore the most recent version of the clearinghouse database you backed up on the file service.

1. Boot the server. (Press the button labeled B RESET on the maintenance panel.)
2. Type N when the Normal Startup prompt appears.
3. Select the **Activate Service** option.
4. Select the **Clearinghouse Service**.
5. Type Y for normal startup.
6. Log on and direct your commands to the clearinghouse service. **NOTE:** If you are activating the secondary clearinghouse for the first time, you must log on as Xerox and enter the special password supplied by Xerox.
7. Type **Restore**. (See Task U for detail.)
8. Enter the name of the file service on which the primary clearinghouse was backed up, including its domain and organization names. Note: If you are activating the secondary clearinghouse for the first time, you will be prompted for the network and processor number of the file service.
9. Enter the name of the secondary clearinghouse. A good naming convention is to use the name of the primary clearinghouse and add a "2" on the end. For example, if the primary clearinghouse is "Gopher" then the secondary would be "Gopher2".
10. Log off from the clearinghouse service when the restoration is complete.
11. Inform remote system administrators to delete the old clearinghouse file service using **Delete Remote Clearinghouse** and explicitly enter **Find Remote Clearinghouses** so that their databases will automatically learn the network address of this secondary clearinghouse service.

Your Notes:

TASK V (Continued)

Activate, and deactivate, a secondary clearinghouse

When the primary clearinghouse has returned to service, you can deactivate the secondary clearinghouse using the following steps:

1. Reboot the server.
2. Type N when the Normal Startup prompt appears.
3. Select the Deactivate Service option.
4. Select the Clearinghouse Service.
5. Enter Y for normal startup.
6. Inform remote system administrators to explicitly enter Find Remote Clearinghouses.

Example 1:

```
PS> Set Paper Handling RETURN
  1 Exit Selection
  2 Paper Size
  3 Feed
  4 Stacking
  5 Print Order
  6 Banner
Enter choice number: 2 RETURN
Specify Top Tray Paper Size
  1 8.5" x 11"
  2 8.5" x 14"
  3 A4
Enter choice number: 2 RETURN
Specify Bottom Tray Paper Size
  1 8.5" x 11"
  2 8.5" x 14"
  3 A4
Enter choice number: 1 RETURN
Paper Size in Top Tray = 8.5" x 14"
Paper Size in Bottom Tray = 8.5" x 11"
Select Paper Handling Option
  1 Exit Selection
```

Example 2:

```
PS> Set Paper Handling RETURN
  1 Exit Selection
  2 Paper Size
  3 Feed
  4 Stacking
  5 Print Order
  6 Banner
Enter choice number: 4 RETURN
Specify Output Stacking Mode (1)
  1 Aligned
  2 Document Offset
  3 Job Offset
Enter choice number: 3 RETURN
Output Stacker installed? (Y/N): Y RETURN
Output Stacking = Job Offset
Select Paper Handling Option
  1 .....(2)
```

Notes:

- (1) In this example, you can activate Document Offset and Job Offset only if your printer is equipped with an output paper stacking drum.
- (2) The select option will reappear until Exit Selection (option 1) is chosen or <CTRL> + <C> (to cancel the command) is pressed.

TASK W:

Change paper handling options on the printer

Overview: You can change the paper handling options on your printer for special print jobs, for example to load different paper sizes. Certain versions of the 8040 printer will also have stacking drums, which deliver the sheets face down and allow documents or jobs to be offset (in relation to the next document or job) in the stack.

Procedure: To change paper handling options, type the Set Paper Handling command and select the option desired. Additional prompts will appear. Type 1 (Exit Selection) when you have finished changing the options.

1. Log on at the server and direct your commands to the print service.
2. Type **Set Paper Handling**.
3. Select the option you want to change (paper size, feed, stacking, print order, or banner).
4. Select the change desired from the list that appears.
5. Type 1 (Exit Selection) when you have changed all the options desired.
6. Run the special print jobs that required non-standard options. (Normally, a user will have asked you to change these options for his or her print job. Ask the user to print the documents requiring these special options and notify you when the printing is done.)
7. Remove any special paper. Refill the paper bins with standard paper.
8. Type **Set Paper Handling** again and return the printer to your standard operation.

Comments: Step 21, Booklet 2, has additional information on the five paper handling options.

Example 1:

PS> Delete Fonts RETURN

Delete Xerox.OIS.Modern. (Y/N): N RETURN
Delete Xerox.OIS.Modern.Bold. (Y/N): N RETURN
Delete Xerox.OIS.Modern.Italic. (Y/N): N RETURN
Delete Xerox.OIS.Classic. (Y/N): Y RETURN
Deleting Xerox.OIS.Classic...done
1 font deleted

PS>

Example 2:

PS> List Fonts RETURN

Xerox.OIS.Modern. (950 Pages, Created October 21, 1982 8:08 AM)
Xerox.OIS.Modern.Bold. (982 Pages, Created October 22, 1982 2:06 PM)
Xerox.OIS.Modern.Italic. (965 Pages, Created October 22, 1982 2:40 PM)
3 fonts listed.

PS>

Notes:

OIS.Modern is the default font. Under normal circumstances, it should not be deleted.

TASK X:

Delete fonts on your print service, if necessary

Overview: You may find it necessary to remove unused fonts to increase the document queue space on the print server. The deletion should be done with caution since it will affect all users of the printer.

Procedure:

1. Check with users to make sure they do not need to use the fonts you wish to delete.
2. Log on at the server and direct your commands to the print service.
3. Type **Delete Fonts**.
4. The system will issue prompts for the deletion of each font currently installed on the print service. You respond **Y** or **N** depending upon which fonts you wish to delete.
5. When the system completes the deletions, it will report the number of fonts which were deleted.
6. Type **List Fonts** to check the names and version dates of fonts on your print service.
7. Log off from the print service.

Example:

```
PS> Shutdown Engine RETURN  
Are You Sure? (Y or N): Y RETURN  
  
PS> Wakeup Engine RETURN (1)
```

Notes:

(1) While the print engine is warming up, the display will indicate L1 status.

Shutdown Engine and Wakeup Engine commands can be activated only on 8040 printers with output stacking drums.

Task Y:

Control the use of power on output stacking printers

Overview: If you have an 8040 output stacking drum printer, you can reduce its power consumption during slower periods of use, for example at the end of the work day. You do this by putting the print engine in low power mode with the Shutdown Engine command. The printer will also enter this mode automatically after 90 minutes of not being used.

When the printer is in the low power mode, the command Wake Engine will return the printer to full power mode. The engine requires approximately 3 minutes to warm up before it becomes operational. The printer will also enter full power mode automatically when a printing job has been initiated.

Procedure:

To reduce power consumption:

1. Log on at the server and direct your commands to the print service.
2. Type **Shutdown Engine**.
3. Enter **Y** to the confirmation prompt.

To return the printer to full power mode:

1. Log on at the server and direct your commands to the print service.
2. Type **Wakeup Engine**.

Example:

```
PS>Select Test Pattern RETURN
  1 AlignmentPattern.interpress
  2 CAM.interpress
  .
  .
  .
Enter choice number: 1 RETURN
Specify Paper Size
  1 8.5" x 14"
  2 8.5" x 11"
Enter choice number: 2 RETURN
Enter copy count (1-999): 3 RETURN
Test Pattern Queued for Printing.
PS>Set Registration RETURN
Enter Registration Value for the Long Axis (10-43): 23 RETURN
Enter Registration Value for the Short Axis (1-30): 8 RETURN
Long Axis Registration = 23
Short Axis Registration = 8
PS>
```

Notes:

TASK Z:

Correct printer image alignment

Overview: At the time of installation, the Xerox technical representative adjusts printer image alignment with the Set Registration command. From time to time, you may need to readjust the registration based on the alignment pattern of your print service. To check or adjust the registration, perform the following steps.

Procedure:

1. Log on at the server and direct your commands to the print service.
2. Type **Select Test Pattern**.
3. Select the **AlignmentPattern.interpress** option.
4. Select the appropriate **Specify Paper Size** option.
5. Type **3** when the **Enter Copy Count (1-999)** prompt appears.
6. Three copies of the alignment pattern will be printed. Check them for proper alignment. The "0" marks should align with the left edge and the bottom edge of the paper. If the image is not properly aligned on the paper or an offset value is needed, perform the remaining steps.
7. Type **Set Registration**.
8. The screen will display **Enter Registration Value for the Long Axis (10-43):**. You need to enter the value for top to bottom registration. (The value 23 is the norm for most printers). Entering 23 should align the "0" marks with the bottom edge of the paper. Entering any number greater than 23 will move the image up the paper. Any number less than 23 will move the image down. You can not enter a value less than 10 or greater than 43. Each increment of 1 will move the image approximately 1/16 of an inch. Using the prints made in step 5 determine the value needed.
9. The screen will display **Enter Registration Value for the Short Axis (1-30):**. The value for side to side registration can now be entered. (The value 8 is the norm for most printers). Entering 8 should align the "0" marks with the left edge of the paper. Entering any number greater than 8 will move the image to the right. Any number less than 8 will move the image to the left. You can not enter a value less than 1 or greater than 30. Use the copies made in step 5 to determine the value needed.
10. Repeat steps 2 through 5.
11. Three copies of the alignment pattern will again be printed. Check for correct registration. If registration is not correct, repeat steps 7 through 11.

Example 1:

IRS> List Ports RETURN

4 Internetwork Routing Service ports
Port LocalBayhill: in use, not connected (1)
Port CS1Port2: in use, not connected
Port CS1Port3: busy
Port CS1Port4: released
No ports have connections established

IRS> Release Port RETURN

Port Name: CS1Port2 RETURN
Releasing . . .
No ports have connections established.
Port released

IRS> Use Port RETURN

Port Name: CS1Port2 RETURN
Port CS1Port2 acquired.

Notes:

(1) The messages that appear after each port mean the following:

- *In use, connected* - The port has been secured and the modem is ready for transmission. This does not necessarily mean the remote IRS is responding. The List Routes command can help you determine that.
- *In use, not connected* - The port has been secured, but the modem is not ready for transmission. If manual dialing must occur, this is the time to do it. A Xerox 873 port will show this message until communication between the IRS and it is established.
- *Busy* - The port is being used by another service. Attempts to secure the port will reoccur every 60 seconds.
- *Released* - The release port command has been used; or, the ECS has removed the port from service.
- *Bad CH entry* - The entry for the port in the clearinghouse is invalid in some way.

TASK AA:

Manage communications usage
(Access to remote networks and remote users' access to ECS)

Overview: There are times when you will want to limit the availability of certain kinds of communication on your network. Basically, there are three situations:

1. You want to limit access to remote networks. For example, a remote network may be inoperative for several weeks. Or, you need to run a diagnostic test on a port used by IRS and, thus, need to release it temporarily.
2. You want to limit users from using ports controlled by the external communication service, to access such system elements as an IBM 3270 host computer.
3. You want to monitor activity on ports assigned to ITS.

Procedure: In situation 1, you should:

1. Log on at the server and direct your commands to the internetwork routing service.
2. To find out what ports are currently being used, type **List Ports**. (You will see messages indicating the current state of each internetwork routing service port as it is attempting to establish communications with a remote network).
3. To remove a port (and therefore access to a remote network) from service, type **Release Port** and respond to the system prompts. Note: Removing a port from service may make all networks previously reached through the port unreachable. You can use **List Routes** before **Release Port** to see which networks may be affected.
4. To return a port to service, type **Use Port** and respond to the system prompts.

When you use the IRS command to release a port, that port's release is temporary. If the server housing the IRS is booted, or if the IRS is restarted, the port will return to normal use. To permanently remove a port from IRS use, you must change the way the port is registered in the clearinghouse service.

In situation 2, you should:

1. Log on at the server and direct your commands to the external communication service.
2. To prevent remote users from using all ports controlled by this ECS, type **Inhibit Remote Access**.
3. To allow remote users to use those ports, type **Allow Remote Access**.

In situation 3, you should:

1. Log on at the server and direct your commands to the interactive terminal service.
2. Type **Set Tracing** and respond **Y** to the **On** prompt to begin ITS tracing.

Example 2:

```
ECS>Inhibit Remote Access RETURN
  Disconnect active users? (Y/N):N RETURN (1)
  ECS: Remote Access is quiescing.
  ECS: Remote Access is inhibited.
ECS>Allow Remote Access RETURN
  ECS: Remote Access is allowed.
```

Example 3:

```
ITS>Set Tracing RETURN (2)
  On? (Y/N): Y RETURN
  ITS: February 5, 1983 10:32 AM Port Pantera-EP11 (line 6): created.
  ITS: Feburary 5, 1983 10:33 AM Port Pantera-EP11 (line 6): - connection lost.
```

Notes:

- (1) If you answer **N** to this prompt, the service allows users currently using those ports to continue such use until they end their sessions. Answering **Y** automatically disconnects such users.
- (2) This displays the current state of interactive terminal port activity. (The alternate option is "Off".)

TASK AA (Continued)

Manage communications usage
(Access to remote networks and remote users' access to ECS)

3. Once tracing has begun, port activity messages will appear as port activity occurs. Messages will display information referring to user logon, user logoff, and other port communication activity information.
4. Type **Set Tracing** and respond **Y** to the **Off** prompt to disable this option.

Note: If you wish to see the state of each ITS port, type **List Ports**. You will see messages indicating the current state of each interactive terminal service port.

Comments: A remote user is a person or service working from a processor (other than the one containing ECS) that is using a port controlled by the ECS. Examples include 8010 workstations connecting to an IBM 3270 host through an RS232C port controlled by ECS, or an interactive terminal service functioning on a different server and using an ECS controlled port to communicate with remote terminals.

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Appendix A:

Disk Pack Use and Care

INTRODUCTION

Your 80 or 300 megabytes (Mb) servers use removable disk packs for file storage, thus are known as removable disk servers. The ability to remove these disks from your large capacity file server gives you versatility for backup and archiving of files stored on your network. Effective use of these servers requires knowledge about the care and handling of removable disk packs.

The purpose of this appendix is to:

- Detail how to protect and store disk packs
- Describe how to install and remove a disk pack from a disk drive
- Describe how to start file services running using the disk pack in either drive 1 or 2

PROTECTING AND STORING DISK PACKS

Like floppy disks, disk packs are a magnetic means of storing data. The disk packs you will work with come in two sizes: 80 Mb or 300 Mb of storage. The first is used in a 80 Mb disk drive and the second is used in a 300 Mb disk drive. The two sizes of disk packs can not be interchanged.

Each disk pack has three main components: a storage canister, the disk pack itself, and the bottom dust cover.

Disk packs are manufactured with precision to insure their surfaces are flat and smooth. Dust and foreign objects will interfere with their proper functioning. To prevent damage to the disk, follow these guidelines:

- Always store the disk pack in the canister with the dust cover attached.
- Do not drop a pack or strike it against other objects. Bent disks will not work.
- Use a pen or felt tip marker when preparing labels to attached to the top of the canister. Pencils and grease pencils can leave a residue. **Do not attach labels to the disk pack itself.**
- Never touch the recording surface of the pack. Always use the handle of the storage canister as described in the section that follows.
- Never store disks near magnetic objects or in direct sunlight. Magnetic objects can change the reliability of the data written on the disk pack. Direct sunlight causes the temperature of the pack and canister to exceed acceptable levels.
- Store disks flat on shelves. The storage shelves should be located in a relatively clean environment.
- If the disk packs are stored on edge, it should only be in storage racks designed for this purpose.
- If disks are stored in a room other than the one in which they will be used, allow the packs to sit in the room for two hours before using. This is to insure the packs are at room temperature.
- Keep the shipping carton in which you received the pack. Use this same carton if you need to return the disk pack.

INSTALLING AND REMOVING A DISK PACK FROM A DRIVE

You should read through the following instructions entirely before attempting to install or remove a disk pack for the first time.

To install a pack:

1. Be sure the main power of the drive has been on and operating for two minutes before you begin. If not, contact your Xerox representative.
2. Open the lid to the pack area. The lid's latch is located at the top center of the front of the drive.
3. Check the pack area to be certain there are no objects in it.
4. Squeeze together the levers in the center of the bottom dust cover and remove the cover. (You will not be able to remove it if you do not squeeze the levers together.) Place the dust cover in a clean area.
5. Gently lower the disk pack into the pack area. It should be set onto the spindle that rises up from the middle of the pack area.
6. Twist the handle to the storage canister with a clockwise twist until the handle can turn no further and then lift off the storage canister.
7. Immediately close the pack area lid to prevent entry of dust.
8. Set the storage canister into the bottom dust cover and set them in the indentation in the top rear cover of the disk drive. There is a space designed for this.
9. Place the START/STOP switch back into the start position. When the green light stops blinking and is steady, the disk drive is ready to use. You can now boot the server using this disk drive (as described in the final section of this appendix).

To remove a pack:

1. Place the START/STOP switch in the stop position. Wait until the green light goes off.
2. Open the pack area lid.
3. Place the storage canister over the disk pack so that the post at the center of the disk fits into the storage canister handle.
4. Rotate the storage canister handle counterclockwise until a clicking sound is heard. This means that the pack has separated from the spindle. It is now safe to lift the pack out.
5. **Gently** lift the pack vertically out of the drive by the storage canister handle.
6. **Immediately** close the pack area lid.
7. While squeezing the levers in the center of the bottom dust cover, attach it to the storage canister.
8. Store the disk in an appropriate place.

STARTING A SERVER FROM EITHER DISK DRIVE

When you have a removable disk server, it is possible to run your services using a disk pack in one or the other of the disk drives. If you want to use the disk in drive 1 you must boot the machine differently than if you want to use the disk in drive 2. The drives must have the Read/Write - Read Only switch in the Read/Write position.

To boot the machine from drive 1, you:

1. Press the B RESET buttons on the server.

To boot the machine from drive 2, you:

1. Press both the B RESET and ALT B buttons on the server.
2. Release the B RESET button, still holding down the ALT B button.
3. Wait until the maintenance panel number reads 0007 and then release the ALT B button.

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Appendix B:

Backing Up A File System Using Floppy Disks

INTRODUCTION

As the system administrator, you should backup the file system to provide a level of protection in the event of damage to or accidental deletion of files or the entire file system. By loading a floppy disk and then entering the Backup command information is copied to it. These floppy disks can then be used to restore any missing information back into the file service when necessary. (If you need to backup the file service, see Task A of this booklet; if you wish to restore the system, see Tasks N.)

(With removable disk servers, backup is done differently. You use the "Copy Disk" startup option which copies the file system of a 80 Mb or 300 Mb disk pack to another pack on the same server. If you need to perform backup of removable disk file servers, see Task B of this booklet).

ESTABLISHING A BACKUP CYCLE FOR FILE SERVICES USING FLOPPY DISKS

When you run Backup, only those documents that have been newly added to the file service, or have been changed and refiled since the last backup, or have not been backed up since the first day of the cycle, will be copied onto floppy disks. The disks are kept for a specific period of time known as the backup cycle. Once the number of cycle days has passed, the floppy disks are reused and the cycle begins again. To establish a backup schedule for file services using floppy disks, do the following:

Procedure:

1. Establish how frequently to run backup and how long a backup cycle will last. As a general rule, we suggest running backup daily on a 30-day cycle. However, you can select other schedules.

To determine how often to run backup, consider the following:

- If documents are being stored and retrieved several times a day, backup should be run every working day.
- If documents are placed mainly for long-term storage and do not change often, backup can be run less frequently. We recommend that Backup be run at least once a week.

To determine the length of the cycle, consider the following:

- Shorter than a 30-day cycle will mean that you will need to back up everything on your file service more frequently; this can be very time-consuming, especially if one of the services is storing the 8010 on-line help and training.

Backing Up A File System Using Floppy Disks

- Longer than a 30-day cycle will result in less material being backed up and less time spent each day doing a backup. You will need at least one disk for each day in the cycle.
2. Log on at the server and direct your commands to the file service.
 3. Type **Set Backup Parameters**. Enter the number of days in your cycle.
 4. Either log off the file service or proceed to the next procedure to perform your first backup.

(If your file service runs on a removable disk server, refer to task B in Booklet 3 to determine a more appropriate backup cycle.)

Note: If you wish to change the number of days in your cycle, enter the **Set Backup Parameters** command. When the number of days prompt appears, enter the new number and it will overwrite the old one.

If you change the number of days in your backup cycle, disks already created for the old cycle should be retained for the longer of the two cycle times. For example, if you change the cycle from 30 to 15 days, save existing floppy disks for 30 days.

The following is an example of what you see on the screen when you set backup:

```
FS>Set Backup Parameters RETURN
  Last backup was January 14, 1983 (or Backup not yet run)
  Number of days in Backup Cycle (1-90): 30 RETURN
Done
```

Appendix C:

Mailing Interchange Guidelines

8010 or ITS users may choose to send mail in the form of a mail note. 850 or 860 workstations however, can neither read nor receive mail notes. The maximum length of a mail note is 8000 characters. In many cases, mail notes eliminate the need for conversion. Therefore, 8010 users can send mail notes to ITS users directly and similarly, ITS users can send mail notes to 8010 users.

The following are mailing interchange guidelines you can share with users. The chart shows which mail format can be used for particular recipients. For example, if an 8010 user wished to send mail to an ITS recipient, look under the sender column for 8010, then under the ITS recipient column to find the format option(s). The 8010 sender for example, can send messages to ITS users in Mail Note or 860 format or both.

| | RECIPIENT | | | | |
|---|-------------------------|--------|---------|---------|-------------------|
| | 8010 | E-860* | C-860** | C-850** | ITS |
| SENDER | | | | | |
| 8010 | Mail Note, 8010, 860 | 860 | 860 | 860 | Mail Note, 860 |
| E-860 | 860 | 860 | 860 | 860 | 860 |
| C-860 | 860 | 860 | 860 | 860 | 860 |
| C-850 | 850*** | 850*** | 850*** | 850*** | 850*** |
| ITS | Mail Note, 860 | 860 | 860 | 860 | Mail Note, 860 |
| * Ethernet 860 ** Communicating 860 or 850 ***The Gateway Service converts between 850 and 860 document format according to the same rules followed by the Xerox 860s when it communicates with a Xerox 860 | | | | | |

NOTE: The gateway service can communicate with only one remote system at a time.

Mailing Interchange Guidelines

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BOOKLET FOUR

TRAINING YOUR USERS

CONTENTS

The system administrator takes a leading role in training new users on network functions. As users become more familiar with their workstations and the network functions available to them, they continue to work with the system administrator when problems arise.

As a system administrator, you should read through all of the steps described in this booklet. By doing so, you will have a better understanding of your role in supporting users.

| Step | Description | Page Number |
|--------|---|-------------|
| Step 1 | Obtain necessary manuals to support training | 4-3 |
| Step 2 | Prepare the network for new users | 4-5 |
| Step 3 | Demonstrate a workstation to a new user | 4-7 |
| Step 4 | Guide new users through relevant training | 4-9 |
| Step 5 | Respond to users' on-going questions and answers | 4-11 |
| Step 6 | Develop additional training for 8010 users (optional) | 4-13 |
| Step 7 | Train a back-up or replacement system administrator | 4-15 |

MATERIALS REQUIRED

Workstations directly attached to the network

8010 Information System

- 8010 Information System Learner's Guide
- Use and Care of Your Workstation
- 8010 Information System Reference Guide (optional)

860 Information Processor

- Operator Manual, Book One: Fundamentals
- Operator Manual, Book Two: Word Processing
- 860 Information Processing System Reference Manual
- 860 Information Processing System Ethernet Communications Manual
- The following disks: Master Word Processing Disk, Diagnostic Disk, Training Disk, Master Ethernet Communications Disk, and two blank disks

Workstations that are interactive terminals

(such as the Xerox 820-II personal computer)

- Software, if any, needed by that terminal to communicate
- ITS User's Guide

Workstations that are communicating word processors

860 Information Processor

- Operator Manual, Book One: Fundamentals
- Operator Manual, Book Two: Word Processing
- 860 Information Processing System Reference Manual
- 860 Information Processing System Communications Point-to-Point Teletypewriter Manual
- The following disks: Master Word Processing Disk, Diagnostic Disk, Training Disk, and two blank disks

850 Information Processor

- Check with your Xerox representative on current training support for the 850

STEP 1:**Obtain necessary manuals to support training**

Overview: All training for Xerox equipment that use network functions is self-paced training. As a result, students can complete their training at their own speed, at times convenient to them. To support such training, you need only to be certain that the necessary manuals and material are available for student use.

Procedure: To prepare your site for training, use the following checklist:

1. Determine which types of workstations are used at your site. Then use the table on the facing page to determine which manuals are needed.
2. Determine how many users will be training on each type of workstation to determine how many manuals are needed. In general, you will want each user to have his or her own copy of the training materials.
3. Check the number of existing manuals you have. Usually, one copy of each guide is provided with each machine ordered.
4. Talk to your Xerox representative to order any extra manuals needed.

PREPARATION STEPS

For all users

1. Add each user's name to the clearinghouse service (Step 7, Booklet 2)
2. Add a mail folder in the file service housing the mail service for each user of an interactive terminal or a communicating word processor, as well as any other user planning to use electronic mail (Step 9, Booklet 2)
3. Add the user's name to any groups necessary to permit appropriate access to desired file drawers (Step 8, Booklet 2)

For 8010 users

1. Be certain that help and training is loaded on the internetwork (Steps 17-18, Booklet 2)
2. If desired, load help locally on the workstation on which the training will occur (Step 19, Booklet 2)

For interactive terminal users

1. Determine what type of workstation the user will be studying at and decide if the default settings for ITS's display will work or will need to be adjusted.

You can use the following space to record alternate settings:

Width:

Height:

Padding:

STEP 2:**Prepare the network for new users**

Overview: Before any new user starts his or her training, you should be certain that all needed steps have occurred to allow that user to reach network functions. If these steps have not been taken, the user will certainly have trouble completing the exercises in his or her self-paced training.

Procedure:

1. First, add the user's name to the network, as described in Booklet 2. The facing page lists the substeps needed.
2. For 8010 users, be certain that help and training material is loaded on a file service somewhere on the internetwork since all 8010 training occurs on-line.

Many system administrators wonder if they should load help documents onto a user's workstation, as described in step 19, Booklet 2. If you have users who expect to use the help system frequently, this should be done. It will result in faster response time and higher user satisfaction.

To load help locally, you must place the help you want stored locally into the HelpLoad drawer. As the system administrator, you can place whichever help or training documents you want into this drawer (based on what is used most frequently in your organization). For example, if you expect your users to have frequent questions about graphics, you might place only the help sheets relating to graphics in this drawer. Your Xerox systems analyst can help you decide what information should be placed in the HelpLoad drawer and thus be stored on the workstations.

3. For interactive terminal users, you should determine the appropriate display format for their particular machine.
 - The default value for height is 24 lines
 - The default value for width is 79 characters
 - The default padding value is 0

These default values are appropriate for the Xerox 820 and 820-II personal computers. For other equipment, check the documentation provided with the equipment or contact its manufacturer.

DEMONSTRATION GUIDELINES

For workstations directly attached to the network:

8010 Information System

1. Describe the components of the workstation
2. Log on and demonstrate how to copy objects from the directory and how to get to a training module
3. Show where common network elements, such as the printer, are located

860 Information Processor

1. Describe the components of the workstation
2. Log on and demonstrate some word processing capabilities, as well as how an item might be mailed or printed
3. Show where common network elements are located

For interactive workstations:

1. Describe the components of the workstation
2. Demonstrate how to load the communications software, if necessary
3. Demonstrate how to log on to interactive terminal service and send a message

For communicating word processors

1. Describe the components of the workstation
2. Demonstrate how to load the communications software
3. Demonstrate how to log on to gateway service and send a message

STEP 3:**Demonstrate a workstation to a new user**

Overview: Although the training for workstations is designed to be self-paced, the human touch can often help to overcome a student's initial fears or concerns about a new tool. Seeing a short demonstration can make the student more at ease and enhance the quality of his or her training.

Procedure: When planning a demonstration:

1. Determine in advance what you will want to show. Prepare your own outline. You can use the information on the facing page as a guide for the material you might want to cover.
2. If your demonstration requires pre-existing material (for example, an electronic mail message), be certain to create it.
3. Practice the demonstration before giving it to a student. Remember that this is a new user's introduction to an unaccustomed work tool, and you want it to be a positive experience.

Comment: To answer effectively many of the questions that come to you, you must be able to do basic tasks on all types of workstations on your network. However, you may want to ask another user who is more familiar with a particular workstation's use to give these demonstrations to new users.

YOUR NOTES

STEP 4:**Guide new users through relevant training**

Overview: Depending on your organization's requirements, you may want to take an active or a passive role in guiding users through training. Xerox-provided training is designed to be capable of working by itself without your active involvement. You may however want to intersperse training or applications specific to your organization with the Xerox-provided material.

Procedure: Your basic responsibility is first to give a demonstration and second to hand out the relevant training material (as listed in Step 1 of this booklet). The new user should then follow the instructions in the training material to complete the training.

Comment: Most users of the 8010 workstation do not need to know all of its features right away. For that reason, the training for the workstation is modular. New users should be encouraged to study training modules only as they need them; there is no need to take all of the training in the first week of use.

If new 8010 users want help deciding which modules to study, ask them to read the introduction to each module in the *Learner's Guide*. If they still can't decide, suggest that they go to the beginning of the module and print a copy of the module's Action Summaries. This will give the user a better understanding of what the module teaches.

CUSTOMER SUPPORT CENTER TELEPHONE NUMBERS

United States (with the exception of Texas): 800-527-0955

Texas (with the exception of Dallas): 800-442-5142

Dallas: 960-3696

TELEPHONE NUMBERS FOR OTHER RESOURCES

Your Xerox marketing representative:

Your Xerox systems analyst:

Your organization's telecommunications manager:

Your organization's data processing manager:

Your organization's facilities manager:

Expert users in your organization:

STEP 5:**Respond to users' on-going questions and problems**

Overview: While you might hope that your users would never need to bother you once they have begun their training, they will run into problems now and then - problems for which you may or may not have solutions.

You can not be expected to be an expert on every workstation on your network. But you can serve as a resource for responding to users' questions and problems.

Procedure: When users encounter problems that they cannot immediately solve, you should take the following steps to solve them:

1. Encourage users to refer to documentation before they call you for assistance. Your time is valuable and should not be spent researching answers that the user could find out by him or herself.
2. If the user can not solve the problem, have him or her call you. Because you have access to more information and are more fully trained, you may know the answer to the problem. Use this *Handbook* to help you solve the problem.
3. If necessary, call on other support from within your organization to try to solve the problem. For example, you may want to talk to your telecommunications manager if you suspect there is a problem with communication equipment connecting two of your networks. If a person is having trouble communicating with a host computer, you may need to work with the manager in charge of that computer. The facilities manager may need to be involved with questions involving power problems, air conditioning, or laying of additional Ethernet cable. Finally, there may be individuals in your organization who have a far better working knowledge of specific workstation capabilities than most others.
4. If you cannot solve the problem with your own resources, call the appropriate Xerox Customer Support Center number (see facing page).

Comment: To encourage users to better handle their problems, you can use various means to build communication among users. Ideas you might consider include:

- Monthly newsletters, sent as electronic mail, that describe solutions to common problems, clever applications developed in your organization, and the like.
- Occasional group meetings, in which users meet to discuss common concerns.
- Advanced application workshops, in which work specific to your organization is discussed.

USE THIS SPACE TO RECORD YOUR ON-LINE TRAINING.

- Part 1. Your title:
Its contents:
- Part 2. Your title:
Its contents:
- Part 3. Your title:
Its contents:
- Part 4. Your title:
Its contents:
- Part 5. Your title:
Its contents:
- Part 6. Your title:
Its contents:
- Part 7. Your title:
Its contents:
- Part 8. Your title:
Its contents:
- Part 9. Your title:
Its contents:
- Part 10. Your title:
Its contents:
- Part 11. Your title:
Its contents:
- Part 12. Your title:
Its contents:
- Part 13. Your title:
Its contents:
- Part 14. Your title:
Its contents:
- Part 15. Your title:
Its contents:
- Part 16. Your title:
Its contents:
- Part 17. Your title:
Its contents:
- Part 18. Your title:
Its contents:
- Part 19. Your title:
Its contents:
- Part 20. Your title:
Its contents:

STEP 6:

Develop additional training for 8010 users (optional)

Overview: What if you are faced with the same user questions repeatedly? Are there certain memo formats that your company wishes users to follow? Are there specific procedures you wish each 8010 user in your network to know? If so, you may want to create your own training modules.

You can create your own training for 8010 users by replacing the blank documents that are currently stored in the on-line training module, "Custom Training for Your Organization," with your own documents.

Procedure: To put your training documents on-line, carefully follow the procedures outlined below carefully. It is possible to damage the existing on-line help system if the [?] links are tampered with or changed.

1. Write your new training instructions.
2. Log on to an 8010 workstation as a system administrator. Copy the Help drawer icon to the desktop from the help server in the directory.
3. Select the Help drawer and open it.
4. Select the folder called TCustomer and open it.
5. Select the document titled Customer Part 0 and copy it to your desktop.
6. Select the document titled Customer Part 1 and copy it to your desktop.
7. Open the document titled Customer Part 1. Notice the format with links inserted. These links must not be deleted or destroyed. Insert the information you want in this document. Then paginate and close the document.
8. Move the edited document back into the TCustomer folder and delete the old Customer Part 1 document. (Note: You can identify the old Customer Part 1 by comparing its creation date with that of the document just created.)
9. Select and open the document titled Customer Part 0.
10. Replace the temporary title next to Part 1 with a title that describes what is contained in your edited Part 1 document.
11. Continue the process to add information to parts 2 through 20 as needed.

You may create one or more help documents at any time. Be certain to let 8010 users know that they can access your special company training by selecting the link titled "Custom Training for Your Organization."

OUTLINE OF SYSTEM ADMINISTRATOR TRAINING

1. The Role of the System Administrator (Read Booklet 1)
2. People with Whom the Administrator Interacts (Discuss with current system administrator)
3. Overview of Servers, Services, and Workstations (Current system administrator provides a walkthrough description of existing network)
4. Bringing Up a Network (Read Booklet 2; current system administrator and new system administrator do as many tasks together as possible)
5. Keeping a Network Running (Read Booklet 3; current system administrator and new system administrator do as many tasks together as possible)
6. Training Users (Read Booklet 4)
7. Problem Solving (Read Booklet 5; new system administrator work to solve problems that appear in on-the-job training)
8. Printer Operation (Current system administrator demonstrates printer care, using 8040 Printer Operator Guide)
9. Procedures (Discuss with current system administrator)

STEP 7:

Train a back-up or replacement system administrator

Overview: Each system administrator using this *Handbook* will have different experiences running the network. Whatever your duties are as a system administrator, they are crucial to maintaining the network. If someone tries to act as a system administrator without the proper training, it is possible for him or her to shut down the network temporarily or to damage other users' work. That is why someone must be designated and trained as your assistant in case you are not available.

In general you will be responsible for training your own assistant. Also, in the event that you leave your current position, you must train your replacement. You will have become the most knowledgeable person about the network and can, therefore, give the best training.

Procedure: The outline on the facing page gives a suggested sequence of activities you might use to train either a backup system administrator or a replacement administrator. In addition, you might want to teach that person topics specific to your organization or internetwork.

Comment: Xerox offers a one-week workshop on system and network administrator duties. If you wish that your back-up or replacement attend this workshop, contact your Xerox marketing representative for more details.

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BOOKLET FIVE

TROUBLESHOOTING YOUR NETWORK

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USING THIS BOOKLET

If a service, server, or workstation on your network develops a problem, it is your responsibility to pinpoint that problem as precisely as possible and to identify a way of dealing with it. This booklet is designed to help you perform these tasks in a minimum of time.

Pinpointing the Problem

The section titled "Isolating the Problem" that begins on page 5-4 contains directions for specific and general problem solving. If your problem deals with a specific service or you need to take a specific action, follow the directions in step 1. If you need to troubleshoot a problem, follow the directions in steps 2 through 6. You are directed to call the Customer Support Center where necessary.

Dealing With the Problem

If it is necessary to call the Customer Support Center, you should be prepared to tell them:

- The site layout and description.
- The version of software being used on each network device involved.
- The identification numbers on the 8010 processor or the server that is suspected of causing the problem.
- A description of the problem, including the number on the maintenance panel, the error message you are receiving, and/or a description of the error behavior.

The Customer Support Center, in turn, contacts other Xerox resources to help solve problems.

- If the problem is diagnosed as hardware-related, the Customer Support Center contacts the Technical Service Center. They then dispatch a Xerox technical representative to your site.
- If the problem cannot be diagnosed or corrected, a market support specialist or systems analyst will be contacted either by the Customer Support Center or the technical representative.

Customer Support Center telephone numbers:

| | |
|--|----------------|
| United States (with the exception of Texas): | 1-800-527-0955 |
| Texas (with the exception of Dallas) | 1-800-442-5142 |
| Dallas | 960-3696 |

ISOLATING THE PROBLEM

Dealing With Specific Problems

1. Are you working with a specific service, or do you know what action you want to take?

If Yes, check the table of contents and proceed either to the section describing the service or the specific action to be taken.

If No, proceed to the general troubleshooting guidelines, questions 2 through 6.

General Troubleshooting Guidelines

2. Does the maintenance panel show a number other than 8000?

If Yes, consult action 1E and Appendixes A and B in this booklet.

If No, continue with this list.

3. Is the problem caused by inadequate information on how to use a function of the server or workstation?

If Yes, try to find the answer through the available help, training, and reference materials. If you cannot find the answer, call the Customer Support Center.

If No, continue with this list.

4. Does an 8010 workstation feature seem to be unusable?

If Yes, are you certain the feature has been purchased? If it has been purchased, call the Customer Support Center.

If No, continue with this list.

5. Is an 8010 workstation displaying a message indicating that a service is not operating correctly?

If Yes, go to the Network Troubleshooting Guide that starts on the next page. To make your troubleshooting easier, check off each step as you go along. Be sure not to skip any step, because the actions indicated for each step are only correct if all previous steps have been followed. You will need to know the network and processor numbers for the service that cannot be accessed.

If No, continue with this list

6. Is the problem related to only one system (8010 or server)?

If Yes, consult action 1F.

If No, consult the Network Troubleshooting Guide on page 5-5.

ACTION 1A:

Resolving problems common to all servers and/or 8010 workstations:

Resolving startup errors

Overview: You can encounter problems as you start up a server: the machine's identification may be incomplete or the system disk may not be partitioned properly. Depending on the type of message you receive, you should either attempt to resolve the problem or call the Customer Support Center.

On the 8010 workstation, startup errors are indicated by codes other than 8000 that appear in the maintenance panel for extended periods of time.

Procedure:

Server:

Identification incomplete. If the code on the maintenance panel does not reach 8000 and the server, release, date, and time identification do not appear, the software was not loaded successfully. Try reloading the software (step 2, Booklet 2). If the code on the maintenance panel still does not reach 8000 and the server, release, date, and time identification do not appear, call the Customer Support Center.

System disk not partitioned properly. If you see a message stating "Initialize User Area?" followed by "Server cannot be started. Please call the Customer Support Center.

8010 workstation:

Follow the instructions in action 1E, this booklet, to determine how to proceed. Also refer to section 22.6.1 of the *8010 Reference Guide*.

Example:

Network Services X.X

Restart Reason: User Restart

Normal Startup? (Y/N): **N RETURN**

Select Startup Option

- 1 Continue
- 2 Load System Error Analysis
- 3 Activate Service
- 4 Deactivate Service
- 5 Change Domain and/or Organization
- 6 File Check
- 7 Create User File System

Enter choice number: **2 RETURN**

When loading is complete, the following message is displayed:

System Error Log Analysis Ready

Select Option

- 1 Startup System
- 2 Show System Error Log
- 3 Reset System Error Log

Enter choice number: **1 RETURN**

Notes:

In addition to option 1, Startup System, you can select two other options when loading is complete:

- If you select option 2, Show System Error Log, you will see the contents of the error log. If there are no errors logged, you see the following: "No errors logged."
- If you select option 3, Reset System Error Log, any previously logged information is discarded.
- When you finish looking at the log, always choose the Startup System option

ACTION 1B: —

Resolving problems common to all servers and/or 8010 workstations:

Reloading the error-analysis software on a server

Overview: Normally the error-analysis software is loaded automatically when you first start up a server. If you see code 7001, 7002, 7003, or 7004 in the maintenance panel of a server, this error-analysis software has become disabled. You must reload it from the startup options that appear when you type **N** in response to the Normal Startup prompt.

Procedure: You reload the error-analysis software by typing **N** in response to the Normal Startup prompt, and then selecting the Load System Error Analysis option. Once you receive the System Error Log Analysis Ready prompt, you select the Startup System option to restart the system.

Comments: The server will not operate without the error-analysis software loaded.

Example 1: Automatic Restart

```
Network Services X.X  
Restart Reason: System Error  
    Normal Startup? (Y/N): Y RETURN  
Server is attached to network number 55  
Server Domain is Payroll  
Server Organization is SampleCorp  
File Service provided on this server  
File Service Started  
Network Services X.X March 23, 1983 2:25 PM  
>
```

Example 2: Show System Error Log

```
> Show System Error Log RETURN  
    Direct call,      gf: 24620, pc: 274,   text: Out of VM for resident memory  
    Uncaught signal, gf: 7204,  pc: 1612,  code: 56301, msg: 1
```

Notes:

After an automatic restart, if no response to the prompt is given within 5 seconds, the system automatically answers Y to do a normal startup.

Write down the information you see after you type Show System Error Log so you can relay it to the Customer Support Center.

ACTION 1C:

Resolving problems common to all servers and/or 8010 workstations:

**Restarting the system automatically from a server;
using the Show System Error Log command**

Overview: A server responds to certain kinds of software problems by logging the error and automatically restarting itself. If one of these problems occurs, the system attempts to recover by reloading software from the system disk into the processor. The restart is called "automatic" because the system does it without a command from you.

If your system does not appear to be operating properly after an automatic restart, use the Show System Error Log command and then call the Customer Support Center.

Procedure: When the system restarts automatically, you see the same messages on the control terminal screen that you do when you start up the system normally. The only difference is the restart reason shown on your screen is "System Error" rather than "User Restart."

If your system restarts itself several times in succession or restarts more than once a day, type Show System Error Log when the second prompt appears. Then call the Customer Support Center and pass along the information for analysis.

Comments: Any users who were connected to the server when the restart began were disconnected. They can now try again. No documents or files should be lost, but users may have to repeat the last operation or two that they performed before being disconnected.

Example (Server):

Network Services X.X

Restart Reason: User Restart

Normal Startup? (Y/N): Y RETURN

Server is attached to network 55.

Server Domain is Payroll

Server organization is SampleCorp

File Service provided on this server

File Service started

Network Services X.X March 23, 1983 2:25 p.m.

ACTION 1D:

Resolving problems common to all servers and/or 8010 workstations:

Restarting the system manually (booting the system)

Overview: You will need to restart the system after you complete many of the error analysis procedures outlined in this booklet (see Comment section below for exception). This procedure is also called "booting the system."

Procedure: You restart the system as follows:

Server:

1. Press and release the B RESET button.
2. When the maintenance panel code reads 8000, you will receive a Normal Startup? (Y/N): prompt. Type Y and press <RETURN> to restart the system.

8010 workstation:

1. Press and release the B RESET button.
2. When the screen turns black and the bouncing square appears, type any letter or number to bring up the logon options. It will take several minutes before the bouncing square appears.

Comment: After error log analysis, the system must be started with the error log analysis command, Startup System.

Example:

Sample entry from Appendix B, Maintenance Panel Codes:

MP Code: 0090

Recovery Key: 3

Sample entry from Appendix C, Recovery Key Explanation:

Key

Explanation

3

Record the code, reboot if necessary (Booklet 5, Action 1D), and retry the operation. If the retrial succeeds, treat the code as an intermittent failure. Otherwise, call your Customer Support Center.

ACTION 1E: —

Resolving problems common to all servers and/or 8010 workstations:

Reading maintenance panel codes

Overview: If a code other than 8000 appears on the maintenance panel of an 8010 processor or a server, consult Appendixes B and C for recommended actions.

Procedure: If you see a code other than 8000 on the maintenance panel, you should proceed as follows:

1. In Appendix B, find the maintenance panel code that corresponds to the one you see on the server or 8010 workstation in the MP Code column. (Write down this maintenance panel code in case you need to report it to the Customer Support Center later.)
2. Note the recovery key code that corresponds with the maintenance panel code in the Recovery Key column.
3. Proceed to Appendix C, Recovery Key Explanation, and perform the action that corresponds with the recovery key number indicated in Appendix B.

Comments: If, after trying the recommended action, you still experience a problem, call the Customer Support Center.

Example:

```
10 Megabyte Diagnostic Storage Program X.X
>Fault Analysis
    MP code = xxxx
>PV Scavenger
    No problems found
>Bad Page Utility
>Media Scan
0 Soft Errors
0 Hard Errors
>List Bad Pages
No new pages
>Exit
Successful completion
>Boot
(The processor or server now reboots. You can now remove the disk.)
```

Notes:

Other messages that can appear in the "PV Scavenger" area are:

- **Please reconstruct bad page table or irreparable damage** - Call the Customer Support Center number listed on the first page of this booklet.
- **Please re-install software** - Try reinstalling the software (Booklet 2, step 2) before you call the Customer Support Center.

Operator options are:

- **Boot** - Reboots the 8010 workstation or server so you or the user can again log on.
- **Fault Analysis** (shown in example above) - If you suspect disk errors that have not shown up in the diagnostics, you can run this test. If a test fails, you will see a code in the maintenance panel that you can look up for appropriate recovery action (action 1E, this booklet).
- **Logon** - Used by technical representative or system analyst. Not for your use unless you are directed to do so by the Customer Support Center.
- **Quit** - Terminates the program without causing a power-off or boot operation.

ACTION 1F:

Resolving problems common to all servers and/or 8010 workstations:

Diagnosing problems using the diagnostic master floppy disks

Overview: The diagnostic master floppy disks verify the operation of the processor, memory, and rigid disk of an 8010 workstation or a server. There are two diagnostic master floppy disks: one for 10-, 29-, and 40-megabyte fixed disks and one for 80- and 300-megabyte removable disks. By using the appropriate diagnostic master floppy disk, you insure that the rigid disk is recovered, with critical areas and bad pages fixed whenever possible.

Procedure:

1. Insert the diagnostic master floppy disk into the floppy disk drive.
2. Press the ALT B and B RESET buttons on the server or 8010 workstation.
3. Release the B RESET button. Numbers on the maintenance panel will begin to cycle. Continue to hold down the ALT B button until the maintenance panel numbers read 0005. Then release the ALT B button. If the numbers on the maintenance panel cycle beyond 0005 before you are able to release ALT B, wait for them to cycle back to 0005 or start again, pressing both buttons.
4. The diagnostics now execute automatically. Diagnostics will run for approximately 4 minutes. If they run successfully, you will see the message "Successful completion" on your screen.

If the processor or server is working correctly after the diagnostics are run, it is not necessary to call the Customer Support Center. At that point, you can reboot the system by pressing and releasing B RESET or typing Boot.

The diagnostic testing results in a maintenance panel code of 1199 for a 10 MB fixed disk and 1799 for a 29 MB fixed disk. You must reboot the server to get back to the 8000 maintenance panel code.

If your display reports the rigid disk error message "New Pages," make note of the pages and call the Customer Support Center.

Comments:

If you have to terminate this operation before it is complete, press <STOP> on the 8010 workstation or <BREAK> on the server. Then press and release B RESET to return to normal operation.

ACTION 1G:

Resolving problems common to all servers and/or 8010 workstations:

Testing the screen and keyboard

Overview: You can use the Test command to test a server control terminal or 8010 workstation keyboard to make sure it is operating properly. You can also use the Test command to test the screen, to make adjustments, or check that it is displaying characters correctly.

Procedure:

- **8010 workstation** - To perform a test of the terminal keyboard or screen, select the [TEST] command in the desktop auxiliary menu. An option sheet will appear. Choose the particular piece of equipment to test, and then select [START]. Consult section 22.10 of the *8010 Reference Guide* for further information.
- **Server** - To perform a test of the server terminal keyboard, type Test. Then choose the terminal and the keyboard on the additional prompts that appear. As you test various keys, you see a message on the screen and a number in the maintenance panel for each key that you test. Pressing <CTRL> and <C> stops the test.

To test the screen, type Test. Then choose the terminal and the screen on the additional prompts that appear. There are three adjustment aids: you can display a line filled with a typed-in character, a screen filled with a typed-in character, or a cross-hairs pattern. The adjustment program runs each adjustment aid in turn. Each adjustment aid will be run repeatedly for each character you type until you cancel the adjustment by pressing <CTRL> and <C>.

Comments:

On a server, the cross-hairs pattern is used by the service representative to align the screen so that it is properly centered. On a workstation, the cross-hairs pattern is used by the service representative to adjust alignment and focus.

Typed-in characters give feedback showing that the keypress is correct.

Example 1:

> Show Network Statistics RETURN

Choose what to display:

1. Ethernet Statistics since server restart
2. Reset Incremental Ethernet Statistics
3. Incremental Ethernet Statistics since reset
4. Phone Line Statistics since server restart
5. Reset Incremental Phone Line Statistics
6. Incremental Phone Line Statistics Reset

Enter choice number: 1 RETURN

Do you wish statistics for a remote system element? (Y/N): N RETURN

Echo Server Packets echoed: 0

Echo Server Words echoed: 0

Packets Forwarded: 0

Words Forwarded: 0

Packets Received: 352

Words Received: 36114

Ethernet Quiet: 71

Packets Sent: 337

Words Sent: 11002

Example 2:

> Show Network Statistics RETURN

Choose what to display:

1. Ethernet Statistics since server restart
2. Reset Incremental Ethernet Statistics
3. Incremental Ethernet Statistics since reset
4. Phone Line Statistics since server restart
5. Reset Incremental Phone Line Statistics
6. Incremental Phone Line Statistics Reset

Enter choice number: 3 RETURN

Seconds: 868

Echo Server Packets echoed: 0

Echo Server Words echoed: 0

Packets Forwarded: 0

Words Forwarded: 0

Packets Received: 349

Words Received: 38608

Ethernet Quiet: 54

Packets Sent: 329

Words Sent: 11043

Bits Per Second Received: 711

Bits Per Second Sent: 203

ACTION 1H:

Resolving problems common to all servers and/or 8010 workstations:

Using the Show Network Statistics command on a server

Overview: You use the Show Network Statistics command when other diagnostic procedures, such as the echo test (action 1L, this booklet) lead you to suspect that a server is not behaving normally relative to communication.

The Show Network Statistics command gives you access to statistics that describe the behavior of a server's communication media interface hardware and software. The communication media can be the Ethernet or the internetwork routing service phone line. All servers have a set of Ethernet statistics associated with their communication activity. Only internetwork routing services, the links between Ethernets, have a set of phone line statistics. The Ethernet or phone line statistics can apply to the local server or to a remote server located on the same internetwork.

Procedure: Type **Show Network Statistics** after the prompt. You are presented with six options. The first three options are used to display Ethernet statistics. The remaining three options are used to display phone line statistics. Phone line statistics are only available for RS232C ports used by the internetwork routing service.

- **Ethernet Statistics Since Server Restart:** The statistics reflect the service's Ethernet activity since it was last restored (rebooted).
- **Reset Incremental Ethernet Statistics:** If this option is selected, no statistics are displayed. Instead, a "snapshot" of the current phone line statistics is taken from the selected remote or local server. This snapshot is used later when the Incremental Ethernet Statistics Since Reset option is selected.
- **Incremental Ethernet Statistics Since Reset:** This option does not ask for a server to be specified. Instead, the server specified as part of the last reset option is used. If this option is selected before any previous Reset Incremental Ethernet Statistics option is selected, the statistics displayed will be invalid.
- **Phone Line Statistics Since Server Restart:** These statistics reflect the internetwork routing service RS232C port's phone line activity since it was last restarted.
- **Reset Incremental Phone Line Statistics:** If this option is selected, no statistics are displayed. Instead, a "snapshot" of the current phone line statistics is taken from the selected remote or local server. This snapshot is used later when the Incremental Phone Line Statistics Since Reset option is selected.
- **Incremental Phone Line Statistics Since Reset:** This option does not ask for a server to be specified. Instead, the server specified as part of the last reset option is used. If this option is selected before any previous Reset Incremental Phone Line Statistics option is selected, the statistics displayed will be invalid.

If a message is displayed when you use the Show Network Statistics command, refer to action 1I to interpret it.

Table 1-1. Messages Associated With the Show Network Statistics Command**Ethernet Problem Indicators****Software Receive Overrun:**

Indicates the number of packets this station was unable to receive due to insufficient buffering. Usually this means that this station has been too busy with other activity. It is a natural occurrence if there are heavy bursts of traffic. Suspect too many services on this server if the number is more than 5% of packets received. Contact your Xerox Systems Analyst.

Packets With Bad CRC:

Indicates the number of packets received with bad cyclic redundancy checking (CRC). Normally this is due to a collision, and the number should increase with increased collisions. There is the possibility of either sender hardware failure or a receiver options board problem. Notify the Customer Support Center if the number is more than 5% of packets received, especially if the count does not follow collisions.

Bad Alignment, CRC OK:

Indicates the number of packets received but not aligned on a byte boundary. CRC is OK. This may be an indication of a bad options board or perhaps a transceiver problem. Notify the Customer Support Center if the number is more than 5% of packets received.

Bad CRC, Bad Alignment:

Indicates the number of packets received with both bad alignment and bad CRC. Most likely this is due to a collision. Notify the Customer Support Center if the number is more than 5% of packets received, especially if the count does not follow collisions. It is probable that there is a bad options board, perhaps in the sender.

Packet longer than 600 bytes:

Indicates the number of packets received that are longer than an NS packet. Verify the existence of a transmitter of a different vendor; otherwise, suspect an options board problem in the sender and notify the Customer Support Center.

Hardware Receive OverRun:

Indicates the number of packets that could not be received because the hardware is too slow. Notify the Customer Support Center if the number is more than 5% of packets received. Suspect the options board of the receiver.

Bad Receive Status:

Indicates the total number of packets received with bad status, including bad CRC, bad alignment, packet too long, and receive overrun. Notify the Customer Support Center if the number is more than 5% of packets received. This is an indication of a probable bad options board.

ACTION 11:

*Resolving problems common to all servers and/or 8010 workstations***Responding to messages associated with the
Show Network Statistics command**

Overview: When you are using the Show Network Statistics command, you occasionally encounter informational or error messages. These messages are listed in table 1-1.

Procedure: The message that you see on your screen appears in bold print in the table. Your action appears below the message. The following types of messages appear in the table:

- **Ethernet problem indicators:** These statistics represent events that are deviations from perfect Ethernet transmission. The nature of the medium and the transmission methods result in a large number of obscure error conditions. These conditions are rarely significant in small numbers. Their occurrence should not be considered problematic unless the frequency exceeds the thresholds mentioned below. They should be examined when other diagnostic methods indicate concern with the station's ability to communicate on the Ethernet. They should be monitored occasionally as preventive maintenance.
- **Ethernet station load statistics:** These statistics are useful for monitoring purposes if the activity level of the server is of interest. They should be used in a relative manner, by comparing them with previously recorded statistics or Ethernet problem indicators.
- **Ethernet operational events:** These statistics may be useful if echoing with a station fails, and echoing with other stations is inconvenient or impossible to attempt. They can help determine which station is not communicating successfully. Normally, echoing to or from other stations suffices.
- **Phone line problem indicators:** The statistics help to diagnose malfunctioning options boards, modems, cables, and phone lines. Most of them should be used in conjunction with the number of packets successfully sent or received, since they may occur naturally in small numbers. These indicators should be examined occasionally as preventive maintenance, since higher-level software and protocols will attempt to compensate for problems that they represent. The thresholds listed are approximate. Dramatic changes, even while remaining within the threshold, may be an indication that a problem is forthcoming.
- **Phone line load statistics:** The load statistics for the phone line are extremely helpful in monitoring the capacity of an internetwork routing service configuration. Using the measures of throughput and the congestion statistics, the configuration can be studied for possible overloading. Since much of the traffic that flows between networks comes in bursts, the statistics should be used with this in mind. The most useful monitoring can be done with the Incremental Phone Line Statistics, since the observation period can be controlled. Short term observation of the statistics can be useful when trying to verify that congestion is presently occurring. Monitoring should be performed over periods long enough to smooth the effect of traffic bursts if it is being done to evaluate long-term load. The most useful statistics are marked with an asterisk in the listing.
- **Phone line operational events:** These statistics are more explanatory than indicative of problems.

**Table 1-1. Messages Associated With the Show Network Statistics Command
(Continued)****Ethernet Problem Indicators (Continued)****Ethernet Quiet:**

Indicates the number of periods (5 seconds) during which no packet passes by on the Ethernet. Normally there are always some packets passing over the Ethernet. Suspect drop cable connection, transceiver, or options board problems. Call the Customer Support Center.

Late Collision:

Indicates the number of packets in which a collision occurred during the late part of the packet being transmitted, indicating some station failed to sense the Ethernet is busy either due to hardware failure or faulty design. Notify Customer Support Center if the number is more than 1% of packets sent. It is probable that there is a bad options board elsewhere.

Hardware Send UnderRun:

Indicates the number of packets not transmitted due to the inability of the sending hardware to maintain 10 MBPS. Notify the Customer Support Center if the number is more than 5% of packets sent. It is probable that there is a bad options board.

Bad Send Status:

Indicates the number of packets not transmitted due to too many collisions or inability of sending hardware to maintain 10 MBPS. Notify the Customer Support Center if the number is more than 5% of packets sent. It is probable that there is a bad options board.

Stuck Output:

Indicates the number of packets not transmitted because Ethernet appeared continuously busy for 2.5 seconds. Notify the Customer Support Center if the number is more than 1% of packets sent. This could indicate a transceiver problem, including the problem of a stuck transceiver when there is no other traffic on the Ethernet.

Ethernet Station Load Statistics**Packets Forwarded:**

Indicates the number of packets forwarded to other networks by the internetwork routing service, if it is running in this station.

Words Forwarded:

Indicates the number of 16-bit words forwarded to other networks by the internetwork routing service, if it is running in this station.

Packets Received:

Indicates the number of packets destined for this station and received with good status. This count includes broadcast packets.

**Table 1-1. Messages Associated With the Show Network Statistics Command
(Continued)**

Ethernet Station Load Statistics (Continued)

Words Received:

Indicates the number of 16-bit words destined for this station and received with good status. This count includes broadcast packets.

Packets Sent:

Indicates the number of packets transmitted successfully from the options board. There is no indication that the packet was actually transmitted to the Ethernet.

Words Sent:

Indicates the number of 16-bit words transmitted successfully from the options board.

Packets sent after n collision(s):

Indicates the number of packets transmitted successfully after one or more collisions (the packets transmitted to the Ethernet successfully in attempt $n + 1$). It is also an indication of the load on the Ethernet, if all components are operating properly. Collisions are commonplace on a busy network. Suspect a transceiver or options board problem if the number is greater than 10% of the packets sent and there are fewer than 50 stations on the network. Contact the Customer Support Center.

Too Many Collisions:

Indicates the number of packets unable to transmit due to excessive collisions. This is rare. Suspect a transceiver or options board problem if the number is greater than 10% of the packets sent and there are fewer than 50 stations on the network. Contact the Customer Support Center.

Ethernet Operational Events

Echo server words echoed:

Indicates the number of words (16 bits each) echoed by the built-in echo server.

Echo server packets echoed:

Indicates the number of packets echoed by the the built-in echo server. This counter is useful for diagnosing why an echo test has failed.

**Table 1-1. Messages Associated With the Show Network Statistics Command
(Continued)**

Phone Line Problem Indicators

Bad send status:

Indicates the number of packets not transmitted due to a hardware problem. Notify the Customer Support Center if the number is more than 1% of packets sent. Suspect the options board.

Packets rejected:

Indicates the number of packets received that were of an unknown packet type, most likely due to a transmission error or due to a partial packet received during data lost (refer to the "Receive error, data lost in hardware" description that follows). Notify the Customer Support Center if the number is more than 5% of packets received. Suspect the options board.

Receive error, data lost in hardware:

Indicates the number of packets not successfully received due to hardware overrun. Notify the Customer Support Center if the number is more than 5% of packets received. Suspect the options board. Reducing the modem speed might be a temporary solution.

Receive error, bad CRC:

Indicates the number of packets unsuccessfully received due to transmission errors or sending errors. Notify the Customer Support Center if the number is more than 5% of packets received. Suspect the phone line, modems, cables, or sending options board. Run the RS232C loopback test (action 1M or 1N). Ignoring this condition will cause general performance degradation of the internetwork link. Be suspicious of errors rates in excess of 1%. Reducing the modem speed might be a temporary solution.

Receive error, no get:

Indicates the number of packets unsuccessfully received due to overly busy software. If number is greater than 1% of packets received, suspect too many services running on the station.

Receive error, unknown:

Notify the Customer Support Center if the number is more than 1% of packets received. Suspect the options board.

Receive error, frame timeout:

Indicates the number of packets unsuccessfully received due to a (damaged) packet being too long. Notify the Customer Support Center if the number is more than 1% of packets received. Suspect the options board.

**Table 1-1. Messages Associated With the Show Network Statistics Command
(Continued)****Phone Line Problem Indicators (Continued)****Receive error, device error:**

Indicates the number of packets unsuccessfully received due hardware error. Notify the Customer Support Center if the number is more than 1% of packets received. Suspect the options board.

Too long since last receive, port reset:

Indicates the number of times that no packets were received from the remote station for more than 80 seconds. Normally, an internetwork routing service will send a packet at least every 30 seconds. Suspect that the remote station is inoperable or that the remote internetwork routing service has been stopped. Investigate the possibility that the remote station is sending, but that the local station is not receiving (bad cables or modems).

Can't send, packet discarded:

Indicates the number of packets not sent because hardware status is disallowed. This is usually an indication that the DSR is up (modem is ready) but there is no clock. Check the modem and cables. Run the RS232C loopback test (actions 1M or 1N). Notify the Customer Support Center if the number is more than 1% of packets sent. Suspect the options board.

Phone Line Load Statistics (the most useful statistics are marked with an asterisk)*** Bits per second sent:**

Indicates the utilized throughput when sending from this station. If this number is greater than 25% of the linespeed for a period greater than 10 minutes, the phone line is being heavily utilized, and it may be desirable to increase the linespeed. The statistic "Congestion, packet discarded" should be examined for associated congestion due to over-utilization. This statistic is available in the incremental mode only.

*** Bits per second received:**

Indicates the utilized throughput in the receiving direction. If this number is greater than 25% of the linespeed for a period greater than 10 minutes, the phone line is being heavily utilized, and it may be desirable to increase the linespeed. This statistic is available in the incremental mode only.

*** Packets sent:**

Indicates the number of successfully transmitted packets. Use this statistic for its relative value.

**Table 1-1. Messages Associated With the Show Network Statistics Command
(Continued)**

Phone Line Load Statistics (Continued)

Bytes sent:

Indicates the number of successfully transmitted 8-bit bytes.

*** Packets received:**

Indicates the number of successfully transmitted packets. Use this statistic for its relative value.

Bytes received:

Indicates the number of successfully transmitted packets.

*** Congestion, packet discarded:**

Indicates the number of packets discarded in order to prevent congestion in the internetwork routing service. The internetwork routing service holds a sending queue for each phone line. If a new packet would be delayed too long waiting on the queue, it is discarded instead. Higher-level software compensates for packets discarded at this level. If the number is greater than 10% of the linespeed, consider increasing the linespeed. If this is not possible, have users reduce remote network activity (relocate remote services if possible).

Phone Line Operational Events

Driver sending, DSR low:

Indicates the internetwork routing service was sending when the modem was not ready. This is a transient condition, since the internetwork routing service will discontinue sending soon after it detects DSR low.

DSR dropped by modem:

Indicates the number of times that the modem became unready (lowered DSR). DSR is lowered when a manually dialed modem interconnection is disconnected. DSR might be lowered by a failing modem, cable, or communication interface unit. This indication can be used to determine which end disconnected first on a dialed connection, since it will not occur on the side that disconnected first.

Driver deleted while sending:

Indicates the number of times that the internetwork routing service was stopped while trying to send a packet.

YOUR NOTES:

A large, empty rectangular box with a black border, intended for the user to write their notes. It occupies most of the page's vertical space.

Example 1: Server floppy disk drive standard test

> Test RETURN

Choose test to be performed:

- 1 Terminal
- 2 RS232C
- 3 Floppy
- 4 Echo Test
5. Communication Interface Unit

Enter number of choice: 3 RETURN

Choose test to be performed:

- 1 Clean Read/Write Heads
- 2 Standard Test
- 3 Display Summary Log
- 4 Format Diskette
- 5 Exercise Floppy
- 6 Command File Test

Enter choice number: 2 RETURN

Floppy Disk Diagnostics Version X.X

(The following appears only with a diskette in the floppy unit)

Please insert the diagnostic diskette

NOTE: Any other diskette will cause erroneous results.

Type any character when this is done. RETURN

Done. *(If an error occurs, the following lines appear:)*

Please call the CSC; tell them the maintenance panel code.

Type any character when this is done. RETURN

Example 2: Server floppy disk drive head-cleaning

> Test RETURN

Choose test to be performed:

- 1 Terminal
- 2 RS232C
- 3 Floppy
- 4 Echo Test
- 5 Communication Interface Unit

Enter number of choice: 3 RETURN

Choose test to be performed:

- 1 Clean Read/Write Heads
- 2 Standard Test
- 3 Display Summary Log
- 4 Format Diskette
- 5 Exercise Floppy
- 6 Command File Test

Enter number of choice: 1 RETURN

Floppy Disk Diagnostics Version X.X

Please insert a head-cleaning diskette.

Type any character when this is done. RETURN

Head cleaning in progress.

Head cleaning now completed.

Please remove head-cleaning diskette from the unit.

Type any character when this is done. RETURN

No error was found.

Done.

ACTION 1J:

Resolving problems common to all servers and/or 8010 workstations:

Testing the floppy disk drive and cleaning the read/write heads

Overview: The standard test for the floppy disk drive tests whether the drive can go from ready to not ready and vice versa, and whether the drive can read, write, and seek properly.

You should clean the read/write heads of the floppy disk drive periodically. If the drive is used once each day, the heads should be cleaned every week with the head-cleaning diskette.

Procedure:

Testing the floppy disk drive (make sure you have a diagnostic diskette in the drive):

- **8010 workstation** - To test the floppy disk drive, select the [TEST] command in the desktop auxiliary menu. An option sheet will appear. Choose [FLOPPY DISK DRIVE] and then [STANDARD TEST]. Consult section 22.10.4 of the *8010 Reference Guide* for further information.
- **Server** - To test the floppy disk drive, type the Test command. Then select Floppy Disk and Standard Test on the additional prompts that appear.

NOTE: Always remove the diagnostic diskette from the floppy disk drive after testing is complete.

Cleaning the read/write heads (make sure you have a head-cleaning diskette; you will need to insert it when directed to do so by the system):

- **8010 workstation** - To clean the read/write heads of the floppy disk drive, select the [TEST] command in the desktop auxiliary menu. An option sheet will appear. Choose [FLOPPY DISK DRIVE] and then [CLEAN READ/WRITE HEADS]. Consult section 22.10.4 of the *8010 Reference Guide* for further information.
- **Server** -To clean the read/write heads, type the Test command. Then select Floppy Disk and Clean Floppy Heads on the additional prompts that appear.

On 8010 workstations and servers with the feature that allows the numbers on the maintenance panel to cycle to 0010, you can clean the read/write heads by doing the following (check first with your Xerox analyst to see if this feature is installed):

1. Press the ALT B and B RESET buttons on the server.
2. Release the B RESET button. Numbers on the maintenance panel will begin to cycle. Continue to hold down the ALT B button until the maintenance panel numbers read 0010. Then release the ALT B button. If the numbers on the maintenance panel cycle beyond 0010 before you are able to release ALT B, wait for them to cycle back to 0010.
3. Watch the numbers on the maintenance panel. When you see 0076, insert the head-cleaning diskette into the floppy disk drive. Then press ALT B. The maintenance panel will go to 0077, indicating that the heads are cleaning. This process may be repeated as needed. When the maintenance panel returns to 0076, remove the head-cleaning diskette.

NOTE: Always remove the diskette from the floppy disk drive after head cleaning is complete.

Comments: Consult your Xerox sales representative to order a head-cleaning diskette if you do not have one.

Table 1-2. Floppy Disk Error Messages**Backup disk incompatible with this version of software**

The floppy disk presented to Restore or Show Backup Index was created with a release of the file service that is incompatible with the current release. Perform another backup (Booklet 3, task A).

Cannot find floppy disk drive

Either the file service is being run on a hardware configuration without a floppy disk drive, or that drive or its controlling hardware is inoperative. Run diagnostics if the floppy disk drive appears to be broken (action 1J).

Cannot read this floppy disk

The floppy disk cannot be read, probably because of physical or magnetic damage to the floppy disk. Attempting to read the floppy disk again may prove successful, but this is unlikely since the system makes several attempts to read the floppy disk before it issues this message. A different copy of the floppy disk should be used if one exists. Perhaps this disk is blank or was written by some other product.

Cannot write on this floppy disk

This message may occur for either of two reasons: the floppy disk has too many bad spots to be usable for backup; or while writing data on the floppy disk, the data was found to have been written incorrectly. This strongly suggests that the floppy disk is damaged and should be discarded. It is also possible that the floppy disk hardware is damaged, although this is unlikely if other backup disks can be written without problems.

Floppy disk drive inoperative

Run diagnostics (action 1J).

Floppy disk not placed in floppy disk drive correctly

The floppy disk was placed in the floppy disk drive incorrectly (upside down or backward) or not at all, or the drive door was not closed. Place the disk in the drive again.

Floppy disk removed too soon

The floppy disk was removed from the drive before it was permissible to do so. When trying to read from or write to the floppy disk, the system detected that the floppy disk drive door had been opened since the floppy disk was first accessed. Redo the operation.

Floppy disk write protected

The write enable tab is not correctly fastened. Remove the floppy disk and check the write enable tab.

Not a backup disk

The floppy disk presented to Restore or Show Backup Index does not appear to have been created by one of the backup commands. This includes floppy disks that are unformatted or formatted by other products. It also includes floppy disks which the Backup command started to write but was unable to complete.

ACTION 1K:

Resolving problems common to all servers and/or 8010 workstations:

Responding to floppy disk error messages on a server

Overview: When you are using a floppy disk to back up or restore data on a server, you occasionally encounter error messages. These messages are listed in table 1-2.

Procedure: The type of error message that you see on your screen appears in bold print in the table. Your action, along with a description of the problem if necessary, appears below the error message.

Comments: If you continue to have problems after performing the action prescribed in table 1-2, call the Customer Support Center.

ACTION 1L:

Resolving problems common to all servers and/or 8010 workstations:

Running an echo test

Overview: The echo test is used for determining the state of the communication path between servers, communication interface units, networked 860s, and 8010s on an internetwork. The communication path can include workstations, servers, Ethernets, and telephone lines.

Procedure:

1. Obtaining processor and network identification numbers

For this test, you need the processor numbers and network numbers for each test partner. You get these numbers from Form 1 and Form 2 (Booklet 6) that you filled out for your network. Alternatively, you can do the following to obtain these numbers:

- 8010 workstation - Select the [TEST] command in the desktop auxiliary menu. An option sheet will appear. The first two lines that appear contain the network and processor numbers for the workstation.
- Server - Use the List Services command on the appropriate server to get its network and processor numbers.

2. Running an echo test from an 8010 workstation

To send echo packets, select the [TEST] command in the desktop auxiliary menu. An option sheet will appear. Enter the network and processor numbers of the test partner, and then select [START]. The test partner can be any 8010 workstation, any server, any 873 communication interface unit, or any 860. You may specify a server by entering the name of any network service (as registered in the clearinghouse service) running on that server.

A number of symbols will appear on the workstation screen as the test is run. You end the test by pressing and holding <STOP>. It will inform you how many packets were echoed and what percentage of these echoes were successful. When you test with another machine on your network, the effectiveness should normally exceed 96 percent; if the test is conducted over telephone lines, the effectiveness may be somewhat less. Consult section 20.10 of the *8010 Reference Guide* for further information.

3. Running an echo test from a server

To send echo packets, type the Test command and choose the Echo Test when the additional prompt appears. Then enter the network and processor identification numbers of the test partner.

The program will send echo packets until you press <CTRL> and <C>. It will tell you how many packets were echoed and what percentage of these echoes were successful. When you test with another machine on your network, the effectiveness should normally exceed 96 percent; if the test is conducted over telephone lines, the effectiveness may be somewhat less than 96 percent.

Comments:

The packets sent in an echo test vary in size, starting with small packets. The packet size increases up to a maximum and then starts over.

Example (RS232C port with autodialer test):

> Test RETURN

Choose test to be performed:

- 1 Terminal
- 2 RS232C
- 3 Floppy
- 4 Echo Test
- 5 Communication Interface Unit

Enter choice number: 2 RETURN

Inquiring RS-232C port information from Clearinghouse. . .

Enter number of RS232C port to be tested (the following numbers are examples):

- 1 DiagLocalSync
- 2 ciu659-port8
- 3 ciu659-port7
- 4 CIU659-port6
- 5 ciu659-port5
- 6 CIU659-port4
- 7 CIU659-port3
- 8 ciu659-port2
- 9 ciu659-port1

Enter choice number: 9 RETURN

Selected port is registered as follows.

Port has Vadic dialing hardware. Begin dialer test.

CIU which owns this port: CIU659:AlphaServices-PA:Xerox

Port number: A1

Port is registered as asynchronous.

Line speed for this port: 1200

Port is registered as DTE. Begin loopback test.

Choose the test to perform on this port

- 1 Echo Test
- 2 Dialer Test

Enter choice number: 2 RETURN

Type the telephone number you wish to call: 615-2235 RETURN

Dialing. . . Dialing. . . <CTRL> <C>

Dialing has been aborted.

Done.

> Test RETURN

Choose test to be performed:

- 1 Terminal
- 2 RS232C
- 3 Floppy
- 4 Echo Test
- 5 Communication Interface Unit

Enter choice number: 2 RETURN

Notes: At the end of the test, the maintenance panel should return to 8000.

* Data Set Ready

ACTION 1M:

Resolving problems common to all servers and/or 8010 workstations:

Testing an RS232C port with an autodialer

Overview: In this test, you send information out through one port and loop it back through the same port to make sure the port is operating properly. This test is for an RS232C port with an autodialer attached to it. If the port you are testing does not have an autodialer, use the procedure outlined in action 1N.

Procedure: You can test an RS232C port only if the clearinghouse service and the local external communication service have been started and all installation procedures have been followed. This test must be run from the server that is running the external communication service which "owns" the port in question.

Autodialer Test:

1. If the RS232C port you are testing is used for 3270 emulation, terminate communication with the 3270 host by entering the external communication service **Inhibit Remote Access** command.
2. Type the **Test** command and choose **RS232C** when the "Choose test to be performed:" prompt appears. This test program will then query the clearinghouse service for a list of ports that are controlled by the external communication service local to that server. You then choose one of these listed ports for testing (use the information recorded on Form 5).
3. The modem attached to the phone line should be set for normal operation (check the modem installation manual for this information).
4. Select the port to be tested from the list presented after the "Enter number of RS232C ports to be tested" prompt.
5. After you have selected the port to be tested, the program will list information about that port. When the prompt "Choose the test to perform on this port" appears, select the **Dialer** test option.
6. Enter the phone number of a telephone near you at the "Type the telephone number you wish to call" prompt. Be sure to type in the exact number (leaving out dashes) as if you were dialing normally. In other words, if the phone requires that you dial a prefix of 9 before the number, enter 9 at the prompt along with the regular number.
7. Wait for the phone to ring. It may take up to twenty seconds for the system to dial the number. If the phone rings, pick it up and then hang up. This means that the autodialer is working. If the phone does not ring after one minute, the autodialer test has failed. Press **<CTRL> <C>** to end the test.

RS232C Port Test

Follow steps 1 through 6 in action 1N to test the RS232C port.

Comments:

Refer to action 1N for a listing of maintenance panel codes displayed during this test.

After 4510 is displayed, the maintenance panel will count up from 0 until 30, or less. It will stop at 3 if DSR is to be ignored; it will stop before 30 if DSR becomes true. The maintenance panel then jumps to the number of frames selected, then counts down as the frames are sent.

Example (RS232C port without autodialer test):

> Test RETURN

Choose test to be performed:

- 1 Terminal
- 2 RS232C
- 3 Floppy
- 4 Echo Test
- 5 Communication Interface Unit

Enter choice number: 2 RETURN

Inquiring RS-232C port information from clearinghouse

Enter number of RS232C port to be tested (the following numbers are examples):

- 1 DiagLocalSync
- 2 ciu659-port8
- 3 ciu659-port7
- 4 CIU659-port6
- 5 ciu659-port5
- 6 CIU659-port4
- 7 CIU659-port3
- 8 ciu659-port2
- 9 ciu659-port1

Enter choice number: 8 RETURN

Selected port is registered as follows.

CIU which owns this port: CIU659:AlphaServices-PA:Xerox

Port Number: A2

Port is registered as asynchronous.

Line speed for this port: 1200

Port is registered as DTE. Begin loopback test. (1)

Enter the number of frames to send. (10-32000): 50 RETURN

Shall I ignore DSR* (useful for analog loopbacks)? (Y/N): Y RETURN

Please insert loop-back plug (or activate modem loopback).

Type any character when this is done.

Quitting...(Be patient.)

Good Frames Sent 25

Percentage of Good Frames Received 100% (2)

Please remove loop-back plug (or deactivate modem loopback).

Type any character when this is done.

Done.

Notes:

At the end of the test, the maintenance panel should return to 8000.

* Data Set Ready

(1) If you are running an echo test on an RS232C port with an autodialer, the prompt displayed after this line will be different. Instead of being asked to enter the number of frames to send, you will be asked to select the echo test or the dialer test.

(2) If the percentage is above 95%, the test has been successful.

ACTION 1N:

*Resolving problems common to all servers and/or 8010 workstations:***Testing an RS232C port without an autodialer**

Overview: In this test, you send information out through one port and loop it back through the same port to make sure the port is operating properly. If the port you are testing has an autodialer, perform action 1M to test the autodialer.

Procedure: You can test an RS232C port only if the clearinghouse service and the local external communication service have been started and all installation procedures have been followed. This test must be run from the server that is running the external communication service which "owns" the port in question.

1. If the RS232C port you are testing is an internetwork routing service port, you must release it by accessing the internetwork routing service and typing **Release Port**. If the RS232C port is used by the gateway service, the gateway service must first be stopped by typing **Stop**. If the port is used for 3270 emulation, terminate communication with the 3270 host by entering the external communication service **Inhibit Remote Access** command. No special action is required for ports controlled by an interactive terminal service.
2. Place the switch on the modem controlling the local RS232C port in the analog loopback position. Make sure the modem raises the DSR RS232C signal while in analog loopback mode. (Check the modem installation manual for instructions for setting this mode.)
3. Type **Test** and select the RS232C test. This test program will query the clearinghouse service for a list of ports that are controlled by the external communication service local to that server. You then choose one of these listed ports for testing. (Use the information you recorded on Form 5.)
4. Run the echo test. Choose the number of frames to send as follows:

| | |
|--------------------------------------|--------------------------------------|
| For a line speed of 300, choose 25 | For a line speed of 4800, choose 175 |
| For a line speed of 1200, choose 50 | For a line speed of 9600, choose 300 |
| For a line speed of 2400, choose 100 | |
5. In most cases, you should respond **N** to the prompt asking if DSR should be ignored. If the modem cannot supply DSR (refer to step 2) while in analog loopback mode, respond **Y**. Also, if you are testing a port on an 873 communication interface unit, this prompt will not appear. Then activate the modem loopback and type any character on your keyboard. The test should take approximately 2 minutes. If it takes over 5 minutes, type **<CTRL> <C>** and call the Customer Support Center.
6. When the test is complete, deactivate the modem loopback and type any character on your keyboard. Restore the port to its owning service. For the internetwork routing service, type the **Use Port** command. For the gateway service, restart the service by typing the **Start** command. For a port used for 3270 emulation, restore communication with the 3270 host by entering the external communication service **Allow Remote Access** command. Now try to use the port. If you cannot use the port, call the Customer Support Center and relay the test results to them.

Comments: You will see a number of maintenance panel codes displayed during this test. The most important codes are:

| | |
|------|---|
| 4500 | The test has begun successfully. This will be displayed until ports are listed. |
| 4501 | Problem with hardware or channel is being used. Stop other services on this server. |
| 4510 | Test started. |
| 4520 | Too much time passed while waiting for the "data set ready" signal. |
| 4598 | Test ending. |
| 4599 | Test complete. |

Example (communication interface unit test):

IRS> Test

Choose a peripheral to be tested:

- 1 Terminal
- 2 RS232C
- 3 Floppy
- 4 Echo Test
- 5 Communication Interface Unit

Enter choice number: 5 RETURN

Now manually boot the unit.* Type CTRL + C to finish the test

The following is the unit processor number:

949-187-941-120

The boot request was for run files.

The 873 will be booted

The following is the unit processor number:

949-187-941-121

The boot request was for run files.

The 873 will be booted.

<CTRL> <C>

Done

IRS>

Notes:

- * You boot the 873 communication interface unit by turning the key switch.

The test will continue listening until <CTRL> <C> is typed. Therefore, all 873 communication interface unit boot requests will be recorded. Notice that on a two-board communication interface unit, each board issues a boot request, and each board has a different processor number. Only the first number is entered into the clearinghouse database.

ACTION 10:

Resolving problems common to all servers and/or 8010 workstations:

Testing the communication interface unit

Overview: In this test, you make the 873 communication interface unit send a boot request, causing a server to display the communication interface unit's processor number.

Procedure: To perform this test, type the **Test** command at any server on the same Ethernet as the communication interface unit to be tested. Choose the communication interface unit test. A message will appear on the screen telling you to boot the 873 communication interface unit. You do this by turning the key on the front of the unit. The 873 will also boot itself if you remove power to the 873 and then turn it back on.

The processor number of the 873 will be displayed if the boot request is received. If the "owning" external communication service was not running when this test was performed, you must reboot the unit in order for it to become operational.

Comments: This test can occur without the communication interface unit having been registered in the clearinghouse database. Its processor number may be retrieved in this manner and later entered into the clearinghouse database.

If anyone is communicating with ports, booting will hang up the phone line and make them lose data. Booting should be done when people are not using any of the ports on the 873 communication interface unit.

Example (obtaining server identification):

>Test RETURN

Choose peripheral to be tested:

1. Terminal
2. RS232C
3. Floppy
4. Echo Test
5. Communication Interface Unit

Enter number of choice: 4 RETURN

Do you wish to initiate the echo test from a remote system element? (Y/N): N RETURN

Inquiring Server IDs. . .

File Service IDs:

Ashov's Printer, Host Number 2-852-130-741, Network number 90

Bentley-FS, host number 2-852-129-123, Network number 65

Print Service IDs:

Burma, Host number 2-852-129-035, Network number 65

Peru, host number 2-852-128-918

The Host number of this machine is: 2-852-126-936

The Network number of this machine is: 105

What is the Host number of the test partner: 2-852-128-918 <CTRL> <C>

Notes:

There is a default host number after the prompt: "What is the host number of the test partner?" If you want to test a new machine, enter the number of the new test partner at this prompt.

ACTION 1P:

Resolving problems common to all servers and/or 8010 workstations:

**Renumbering a server or workstation processor
when an input/output (IOP) board is changed**

Overview: If a service representative replaces a board in either a server or an 8010 workstation, check with him/her to see if it is an input/output (IOP) board. If it is an IOP board, ask him/her to put the identification chip (called the ID PROM chip) from the existing IOP board on the new IOP board.

If the ID PROM chip of a server is changed, you will have to re-enter the clearinghouse database entries for each service on that server, and 8010 users will have to replace icons (file drawers, printers, etc.) on their desktops. You must also change your records to reflect the new number for the processor.

Procedure:

When an IOP board is replaced in a server processor:

1. Verify the server processor number by performing action 1L (running an echo test). Pressing <CTRL> <C> after the words "What is the Network number of the test partner:" cancels the test after you have verified the server processor number.

If this server processor number is changed, write it down and continue to step 2; if the processor number is not changed, the identification procedure is complete.

2. Log on at the server housing the clearinghouse service and change the entry for each service running on the server with the changed IOP board to reflect the new server processor number (refer to Booklet 3, task O).
3. If the external communication service is contained on the server, stop and-restart all services on that server(Booklet 3, task I).
4. Notify users of 8010 workstations on your network to delete affected icons and add new ones to their desktops. For example, if the file service has a new processor number, 8010 users will have to delete and retrieve new file drawer icons. If the print service has a new processor number, 8010 users will have to delete and retrieve new printer icons. If the external communication service has a new processor number, 8010 users will have to delete and retrieve all terminal emulation icons using ports owned by that external communication service.
5. If the clearinghouse service has a new processor number, type the Find Remote Clearinghouses command to find all other clearinghouse services. No other action is required.

When an IOP board is replaced in an 8010 workstation processor:

1. Select [TEST] in the desktop auxiliary menu. Note and save the processor number from the menu that is displayed. Once you have recorded the new processor number, select [CANCEL].
2. Record this number on form 1, Booklet 6. Delete the old number.

Example (Server):

Network Services X.X

Restart Reason: User Restart

Normal Startup? (Y/N): N RETURN

Select Startup Option

- 1 Continue
- 2 Load Error Log Analysis
- 3 Add Service
- 4 Remove Service
- 5 Change Domain and/or Organization
- 6 File Check
- 7 Create User File System
- 8 Change Network Number

Enter choice number: 6 RETURN

Please call the CSC.

Password: ***** (1)

Notes:

(1) You must call the Customer Support Center to obtain the password.

When file check is run on an 8010 file system, there may be files found whose folder or file drawer has been damaged. These "orphan" files are placed in a folder and stored on a special desktop named "Lost and Found." The user is notified of the desktop when he or she logs on.

Access to the lost and found desktop can be controlled as follows:

- If security is an issue, a user named "Lost and Found" can be registered in the clearinghouse database with a password known only to the system administrator. The system administrator can then log on with that name and password and delete, file, mail or copy them as necessary.
- A user named Lost and Found can be registered in the clearinghouse with no password. Any user can then log on with that name and delete mail, copy, or file those files as necessary.
- If no user is registered as Lost and Found, there is free access to the desktop, but the files cannot be filed or mailed, only copied to floppy disks.
- If the clearinghouse service is down, the lost and found desktop cannot be accessed.

ACTION 1Q:

Resolving problems common to all servers and/or 8010 workstations:

Running a file check

Overview: A file system can become damaged due to software failure, hardware failure, or a power loss. If this happens, the software generally detects this situation and informs you of the need for running file check when the system restarts. A user at an 8010 workstation will see 7501 in the maintenance panel; at the server terminal, you will see a message indicating you should run a file check in order to repair the file system so it is available to users.

Procedure:

The file check program uses several basic methods for dealing with problems. On a server, the file check follows this sequence:

- It first attempts to rebuild the structure of the file system, placing objects in the correct containers.
- If an object cannot be repaired, it is deleted.

Before you run a file check, attempt the recovery procedures outlined in Appendix A.

Disk diagnostics (action 1F) should be run before the file check.

On a server processor:

To run the file check program, type **N** after the "Normal Startup? (Y/N):" prompt and select the File Check option. The file check program will then run after you enter the password provided by Xerox.

If the program does not know where to place an object (for example, a document, folder, or record file), it creates a drawer with a name composed of "File Check" and the current date and time.

After the file check program is complete, look at the log corresponding to that file check. The procedure is contained in action 1R.

On an 8010 processor:

If the 7501 code appears on the maintenance panel, hold down the <F> and <C> keys until the numbers change to 7502. Then release both keys. The system will then run the file check (7500) and continue the startup procedure. Refer to the *8010 Reference Guide*, section 22.6.1.

If the 7508 code appears on the maintenance panel, hold down the <C> and <V> keys until the numbers change to 7502. Then release both keys. The system will then run file check and continue the startup procedure.

Comments: Once the file check operation begins, it will continue until the program has restored the file system. The following are estimates of the time needed to run the file check:

10 MB fixed disk: 30 minutes
80 MB removable disk: 3 hours

29 MB fixed disk: 1 hour
300 MB removable disk: 14 hours

Example:

Network Services X.X
Restart Reason: User Restart
Normal Startup? (Y/N): Y RETURN

> List File Check Logs RETURN
FileCheckLog 24-Jan-82 4:55:38
FileCheckLog 27-Mar-82 1:32:59

> Show File Check Log RETURN
1 FileCheckLog 24-Jan-82 4:55:38
2 FileCheckLog 27-Mar-82 1:32:59
Enter choice number: 2 RETURN
Date of File Check - March 27, 1982 8:32 AM
The File Check was complete

Name: Interview Report
File ID: 0 125000 1633 45600 14366
Type: Folder
Number of Problems: 1
Error Type 5 - Illegal Attribute Value
Attribute Type: BackedUpOn
End of log.

> Delete File Check Log RETURN
Select File Check Log
1 FileCheckLog 24-Jan-82 4:55:38
2 FileCheckLog 27-Mar-82 1:32:59
Enter choice number: 2 RETURN

Notes:

If there are no file check logs on the server, you will see the following message:

No File Check Logs exist.

ACTION 1R:

Resolving problems common to all servers and/or 8010 workstations:

Accessing file check logs on a server

Overview: The file check operation on a server provides logs that you can read. These logs are retained in the file system itself and can be listed, displayed, and deleted. Each log consists of a sequence of problem entries, each corresponding to a particular file. The following is a sample entry:

Name: Interview Report
File ID: 0 125000 1633 45600 14366
Type: Folder
Number of Problems: 1
Error Type 5 - Illegal Attribute Value
Attribute Type: BackedUpOn

Keep these logs on the terminal screen in front of you if you decide to discuss them with the Customer Support Center.

Procedure: You should look at the file check log after the file check program is complete. To view these logs, proceed as follows:

1. Type **Y** after the Normal Startup? (Y/N): prompt.
2. When the next prompt appears, type **List File Check Logs**, to display a list of the file check logs remaining on the disk.
3. Then type **Show File Check Log**, to display the latest file check log.
4. After you have displayed the file check log, check the error type numbers against those shown in action 1S to see if they are relevant to your users.

Comments: You can also type **Delete File Check Log** to delete an old file check log.

Table 1-3. File Check Error Messages**Error 1 - changed to directory**

An NSFile (A), that was not a directory has been made one because another NSFile (B) claimed to be contained within it. After scavenging, file A will be a directory and contain file B.

Error 2 - duplicate page

During scavenging, several disk pages were discovered that claimed to be the same page of an NSFile; the scavenger arbitrarily chooses one of these pages as being valid and the other is deleted.

Error 3 - duplicate segment ID

The contents of the segment directory within an NSFile indicated two segments with the same identifier (which must be unique for all segments of an NSFile); one of the two is modified to the value indicated to make it unique.

Error 4 - deleted file

No corrective action was taken to save a file because of other problems encountered, so the file was deleted; in all cases, at least one other problem will accompany this one.

Error 5 - illegal attribute value

The value encountered by the scavenger for this attribute did not represent a legal value (e.g., times greater than "today"); the value of the attribute is reset to a default (legal) value.

Error 6 - illegal attribute value for nondirectory

The reported attribute contained a value not allowed for an NSFile which is not a directory; the value of such an attribute is reset to a default (legal) value.

Error 7 - illegal segment ID

An entry of the segment directory within an NSFile contained an invalid value for a segment identifier; the scavenger changes the bad value to a valid and unique one.

Error 8 - invalid attribute value

The value encountered by the scavenger for this attribute did not represent a valid value (e.g. strings with illegal characters); the value of the attribute is reset to a default (valid) value.

Error 9 - deleted leader extension

Because of other problems, the leader extension of an NSFile had to be deleted.

Error 10 - missing leader extension

An NSFile indicated that it had an extended leader but none was found; the indication of an extended leader is reset for this file.

ACTION 1S:

Resolving problems common to all servers and/or 8010 workstations

Responding to file check error messages on a server

Overview: When errors are encountered during a file check, the system makes appropriate entries in the file check log and attempts to correct the problem. Table 1-3 lists the error messages you can encounter when file check is running on a server.

Procedure: All of the problems represented by the messages in table 1-3 will have been corrected by the file check program to the best of its ability. Your only recourse after a file check is to restore from backup the file or files represented by the error messages (Booklet 3, task O).

Comments: In the message descriptions in table 1-3, you will see some new terms:

- **NSFile** refers to any file (document, folder, file drawer) that is stored on a server. If the file can contain another file, it may be referred to as a directory.
- **Leader page** refers to a part of the internal structure of the file that contains the attributes of the file.
- **Segment** refers to a piece of a file.
- **Segment Directory** is a list of the segments in a file.
- **Children** refers to any file(s) contained in a file drawer, folder or divider. For example, a document contained in a file drawer is the child of that file drawer.
- **Orphan** refers to the remaining contents of a file drawer, folder, or divider, after the file drawer, folder, or divider has been deleted.

Table 1-3. File Check Error Messages (Continued)**Error 11 - reinserted leader extension**

A leader extension file was detached from its primary NSFile and was reattached by the scavenger.

Error 12 - leader extension has wrong type

The leader extension file indicated by the content of an NSFile leader was not of the proper type; the bad leader extension file is deleted and the NSFile leader is changed to indicate that the leader is no longer extended.

Error 13 - leader extension has wrong volume

The leader extension file indicated by the content of an NSFile leader was not found on the correct volume; the bad leader extension file is ignored and the NSFile leader is changed to indicate that the leader is no longer extended.

Error 14 - leader extension has zero length

The leader extension file indicated by the content of an NSFile leader had no content (was zero length); the bad leader extension file is deleted and the NSFile leader is changed to indicate that the leader is no longer extended.

Error 15 - loop in hierarchy

An NSFile was encountered which claimed to be a child of one of its descendants; the loop is broken.

Error 16 - missing pages

After reconstructing the mapping of files to the pages representing their contents, the indicated pages were not found; each such page is reinitialized with null values.

Error 17 - orphan file

An NSFile was encountered which had no valid parent; such a file is relegated to an orphan folder constructed to hold such files.

Error 18 - orphan leader extension

A leader extension file was found for which no NSFile could be found; the leader extension file is deleted.

Error 19 - orphan page

During scavenging, a disk page was encountered which did not appear to belong to any file but appeared to contain data; the contents of the page are lost.

Error 20 - orphan segment

No NSFile could be found that contained a valid segment entry for the indicated segment and the NSFile designated within the segment did not indicate a valid NSFile; the orphaned segment is deleted.

Table1-3. File Check Error Messages (Continued)**Error 21 - deleted segment**

Because of other reported problems, it was necessary to delete the indicated segment.

Error 22 - missing segment

The segment directory of an NSFile indicated a segment file which could not be located; the entry for such a segment is deleted from the segment directory.

Error 23 - reinserted segment

The indicated segment was reinserted into the segment directory of an NSFile.

Error 24 - segment has wrong type

The file designated by the content of a segment directory entry was not of the proper type; the entry is removed and the file is deleted.

Error 25 - segment has wrong volume

The file designated by the content of a segment directory entry was not on the correct volume; the entry is removed from the segment directory.

Error 26 - segment has zero length

A segment file was encountered which was zero-length; the segment directory entry is removed and the previous contents of the segment are lost.

Error 27 - string is too long

The value of a string attribute exceeded the maximum allowable length for string values; the value is truncated to a length not exceeding the allowable maximum.

Error 28 - too many segments

The segment directory of an NSFile contained too many entries; the count of entries is reduced to the maximum allowed and extraneous entries are ignored.

Error 29 - unreadable pages

Certain pages representing the content of a file could not be read from the disk; an attempt is made to rewrite the contents of each such page to allow them to be read, but if this fails the file containing the pages will be lost.

Error 30 - bad variable attributes

The storage area for variable-length attributes (i.e., string attributes such as name, owner, etc.) was ill-formed and could not be recovered; previous values for these attributes are lost, and their new values are nulled (appear uninitialized).

Table 1-3. File Check Error Messages (Continued)**Error 31 - wrong number of children**

The number of children indicated for a directory disagreed with the actual number found by scavenging; the value of this attribute is set to the correct value.

Error 32 - wrong segment ID

The segment identifier within a segment directory entry did not agree with that contained within the segment file itself; the identifier within the segment file is changed to agree with the segment directory entry.

Error 33 - wrong size in bytes

The stored value for the size of the file in bytes did not agree with the actual number of bytes found; the value of this attribute is set to the actual number of bytes found.

Error 34 - wrong size in pages

The stored value for the size of the file in pages did not agree with the actual number of pages found; the value of this attribute is set to the actual number of pages found.

Error 35 - zero length

A file was encountered which has no contents; previous contents of the file are lost, but the file is reinitialized to have default attribute values.

Error 37 - new root created

The root of the file system was lost and recreated.

Error 38 - orphan directory created

This directory was created to hold orphan files.

YOUR NOTES:

Table 1-4. Common Services Error Messages**Cannot reach Clearinghouse**

During logon, your name and password must be verified with the clearinghouse. The clearinghouse is either not running, or it is not reachable through the internetwork. Use the List Services command on the server that houses the clearinghouse to see if it is running. If it is running, run an echo test between the two servers (action 1L).

Disk drive 1 not started**Disk drive 2 not started**

This message will only appear on a server with a removable disk. The disk in this drive is not spinning and ready for writing. Verify that the two-way switch that is found on the front of the drive and labeled "START" and "STOP" is in the start position. Verify that the green light to the left of this switch is lit and is not flashing.

Disk pack in drive 1 contains invalid file system**Disk pack in drive 2 contains invalid file system**

This message will only appear on a server with a removable disk. This message may appear while attempting to run the Copy Disk command. Install new software on that disk (Booklet 2, Appendix A). If that does not correct the problem, verify that the disk hardware is functioning properly with diagnostics, and run the physical volume scavenger of the diagnostics utility (action 6A).
NOTE: Do not repartition the disk containing the data you wish to copy

Disk pack in drive 1 not partitioned correctly**Disk pack in drive 2 not partitioned correctly**

This message will only appear on a server with a removable disk. This message may appear while attempting to run the Copy Disk command. The disk to be copied to was not partitioned as expected. Perhaps it was partitioned for the OS 3.0 print service, or for another product, or for an old version of services. Verify that this is the disk you want to use, and repartition it (action 6B).

Incorrect password

The password entered as you logged on does not match the recorded password. Perhaps the password was typed incorrectly. Retype the password. If necessary, change the password (Booklet 3, task Q).

Invalid Domain

The name given as the domain name either contains characters that are not permitted for such a name, or the name is too long or too short. Log on again, paying special attention to the domain name.

Invalid Organization

The name the user gave as the organization name either contains characters that are not permitted for such a name, or the name is too long or too short. Log on again, paying special attention to the organization name.

Name not found

The name under which you are attempting to log on is not registered with the clearinghouse service. Perhaps you typed your name incorrectly. Log on again.

ACTION 1T:

Resolving problems common to all servers and/or 8010 workstations
Responding to common services error messages that appear on servers

Overview: Table 1-4 lists the error messages you can encounter when you are using any server.

Procedure: The error message that you see on your screen appears in bold print in the table. Your action, along with a description of the problem if necessary, appears below the error message.

Comments: If you continue to have problems after performing the action prescribed in table 1-4, call the Customer Support Center.

Table 1-4. Common Services Error Messages (Continued)**No services started**

This message will appear if the Stop Services command is invoked, but no service has been started. No recovery action is needed.

No Software Options enabled

If the Configuration Utility has not been run, this message will appear during startup (immediately after a "normal" startup and when the software first has to look at the file system during "abnormal" startup).

No File Check Logs exist

This message will appear if the List File Check Log or Show File Check Log command is invoked, but there are no file check logs to show. No recovery action is needed.

Problem encountered with the Clearinghouse

Either the clearinghouse is not functioning properly, or an incompatible version of software is installed on the server running the clearinghouse service. Reinstall software (Booklet 3, task H).

User Area not found

This message appears when services are being started. Partition the disk for services. It would appear if services were installed on a disk used for Print Service 4.0 or on some other disk not partitioned for services.

User does not have System Administrator privileges.

Only system administrators may log on at the server. If you wish to give this privilege to a user, use the clearinghouse service command Change User.

User File System Not Found

This message appears when services are being started. Either the user file system was never initialized or the user file system is damaged. Two choices are given to continue. Choose to initialize the volume if this is the first time services have run on this server (Booklet 2, steps 2 and 3). Choose to run file check if the server has already been initialized (action 1Q). Both choices require you to enter a special password available from the Customer Support Center.

Server cannot be started. Please call the CSC

This message appears when services are being started and indicates that there is a hardware problem. Call the Customer Support Center.

Error Analysis Area not initialized

This message appears when services are being started. Services will not run if the error analysis software has not been initialized correctly. Answer "Y" to the prompt "Reinitialize the Error Analysis area."

YOUR NOTES

Table 2-1. External Communication Service Messages

MESSAGES - SERVICE STARTUP

- ECS:** Searching Clearinghouse for resources belonging to <ECS name>.
This is an informational message during startup. No action is required.
- ECS:** Assuming control of path to IBM 3270 Host <host name> using default buffer size <number of bytes in output block> bytes, and controller number <controller number> through RS232C port <port name>.
- ECS:** Assuming control of path to IBM 3270 Host <host name> using user set buffer size <number of bytes in output block> bytes, and controller number <controller number> through RS232C port <port name>.
These are informational messages reporting additional activity in the external communication service. If the buffer size does not match the expectations of the IBM 3270 host computer, the Set Buffer Size command should be used.
- ECS:** Reconfiguring Communication Interface Unit <CIU name>, Board <A or B>.
This is an informational message during startup, indicating that some of the data concerning that communication interface unit board has changed in the clearinghouse database since the last time the external communication service was started. No action is required.
- ECS:** Unable to configure board because line speeds of RS232C port entries not within any valid range. Board and ports will be ignored.
This message appears immediately following "ECS: Reconfiguring Communication Interface Unit <CIU name>, Board <A or B>." Follow the standard procedure outlined in action 2A. At the clearinghouse service, correct the speeds of asynchronous ports on the indicated communication interface unit board using form 5 in Booklet 6.
- ECS:** Unable to configure board because unsupported dialer(s) specified for CIU. Board and ports will be ignored.
This message appears immediately following "ECS: Reconfiguring Communication Interface Unit <CIU name>, Board <A or B>." Currently you can have either a Ven-Tel or a Racal-Vadic dialer on a communication interface unit board, but not both. Follow the standard procedure outlined in action 2A.
- ECS:** Unable to configure board because of disk error. Board and ports will be ignored.
This message appears immediately following "ECS: Reconfiguring Communication Interface Unit <CIU name>, Board <A or B>." There may not be enough room for the file the external communication service is trying to write. Type the Show Space command (Booklet 3, task C). If space is not the problem, call the Customer Support Center.
- ECS:** Unable to configure board because parity option not available on CIU. Board and ports will be ignored.
This message appears immediately following "ECS: Reconfiguring Communication Interface Unit <CIU name>, Board <A or B>." Follow the standard procedure outlined in action 2A. At the clearinghouse service, change the parity option for the RS232C port to be either odd, even, or none.

ACTION 2A:

Keeping the communication services running:
Responding to external communication service messages

Overview: When you are using the external communication service, you occasionally encounter informational or error messages. These messages are listed in table 2-1.

Procedure: The message that you see on your screen appears in bold print in the table. Your action appears below the message.

Where noted in the table, you should follow this standard procedure:

- Stop the external communication service (Booklet 3, task I).
- Correct the clearinghouse database entry (Booklet 3, step Q).
- Restart the external communication service (Booklet 3, task I).

Comments: If you continue to have problems after performing the action prescribed in table 2-1, call the Customer Support Center number listed on the first page of this booklet. If your first action should be to call the Customer Support Center, it is stated in the table.

Table 2-1. External Communication Service Messages (Continued)

- ECS:** Unable to configure board because synchType option not available on CIU. Board and ports will be ignored.
 This message appears immediately following "ECS: Reconfiguring Communication Interface Unit <CIU name>, Board <A or B>." Currently the "synchType" is driven by the owning service for each port. "Gateway Service" and "IBM 3270" are owning services not supported on a communication interface unit. Call the Customer Support Center for information about supported types. Follow the standard procedure outlined in action 2A. Change the RS232C entry at the clearinghouse service.
- ECS:** Unable to configure board because can not allocate adequate buffers for port functions. Board and ports will be ignored.
 This message appears immediately following "ECS: Reconfiguring Communication Interface Unit <CIU name>, Board <A or B>." Call the Customer Support Center.
- ECS:** Unable to configure Communication Interface Unit, <CIU name> board <A or B> because unsupported dialer(s) specified for CIU. Board and ports ignored.
 Currently you may have either a Ven-Tel or a Racal-Vadic dialer on a board of a communication interface unit, but not both. Follow the standard procedure outlined in action 2A.
- ECS:** Unable to configure Communication Interface Unit, <CIU name> board <A or B> because synchType option not available on CIU. Board and ports ignored.
 Currently the "synchType" is driven by the owning service for each port. Call the Customer Support Center for information about supported types. Follow the standard procedure outlined in action 2A. Change the RS232C entry at the clearinghouse service.
- ECS:** Invalid port number assigned to active port <port name>. Port is ignored.
- ECS:** ERROR - RS232C port, <port name> will be ignored. It is assigned to the same hardware as RS232C port, <port name>.
- ECS:** ERROR - Communication Interface Unit, <CIU name> will be ignored. It is assigned to the same hardware as Communication Interface Unit, <CIU name>.
- ECS:** Port <port name> assigned to this ECS belongs to CIU <CIU name> which is not assigned to this ECS. Port is ignored.
 There is an inappropriate data entry currently in the clearinghouse database. If the external communication service performed an inappropriate action, follow the standard procedure outlined in action 2A.
- ECS:** ERROR - Unable to assume control of IBM 3270 Host.
 This message is issued following the message "Assuming control of path to IBM 3270 Host," indicating that there is a conflict in assignment of the RS232C port required to access the IBM 3270 host. Correct the problem entry in the clearinghouse database. Stop and restart the external communication service.
- ECS:** ERROR - Unable to find internal data file.
 This message is appropriately displayed the first time the external communication service is started after the user area on the disk is created. At all other times it indicates a loss of a data file in the user area. All communication interface units will be reconfigured as a precaution, and the IBM 3270 host buffer size will be reset to the default value.

Table 2-1. External Communication Service Messages (Continued)

- ECS:** No RS232C Hardware found. ECS not started.
 The external communication service was assigned to control the local port to an 8000 processor; however, no RS232C hardware exists for that port. Either call the Customer Support Center to add the RS232C hardware or follow the standard procedure outlined in action 2A. Set the clearinghouse service entry for that port to "Out of service."
- ECS:** ERROR - Invalid network number for External Communication Service <ECS name>. Entry ignored.
- ECS:** ERROR - Invalid network number for Communication Interface Unit <CIU name>. Entry ignored.
 The network number for either the external communication service or the communication interface unit is not the same as the current network number. Follow the standard procedure outlined in action 2A.
- ECS:** Lost entry for External Communication Service <ECS name>. Entry ignored.
- ECS:** Lost entry for Communication Interface Unit <CIU name>. Entry ignored.
- ECS:** Lost entry for RS232C port <port name>. Entry ignored.
- ECS:** Lost entry for IBM 3270 Host <host name>. Entry ignored.
 During the startup process, an entry in the clearinghouse database has been deleted. If the external communication service performed an inappropriate action, follow the standard procedure outlined in action 2A.
- ECS:** Clearinghouse Service not responding. Try later.
 If the clearinghouse service continues not to respond, investigate the availability and status of the clearinghouse service by using the List Services command on the server that houses the clearinghouse service. If it is running, run an echo test between the two servers (action 1L). Once the clearinghouse service responds, restart the external communication service.
- ECS:** Couldn't find matching ECS entry in Clearinghouse.
 The external communication service has not started. Follow the standard procedure outlined in action 2A. Register the service in the clearinghouse database.
- ECS:** Error, ignoring RS232C port, <port name>. The option, TTY protocol, has not been purchased for this machine.
- ECS:** Error, ignoring RS232C port, <port name>. The option, IBM 3270 protocol, has not been purchased for this machine.
 Call the Customer Support Center for information on enabling software options. Follow the standard procedure outlined in action 2A. Correct the RS232C port entry in the clearinghouse database.

Table 2-1. External Communication Service Messages (Continued)

- ECS:** Warning - No RS232C port assigned to this External Communication Service.
- ECS:** Warning - No active RS232C port assigned to this External Communication Service.
Although the external communication service may start, since any ports assigned to it are marked "Out of Service," it is not functional. Follow the standard procedure outlined in action 2A. Register the appropriate RS232C ports in the clearinghouse database correctly.
- ECS:** Warning - No active RS232C port assigned to Communication Interface Unit, <CIU name>, Board <A or B>.
Although the external communication service will boot the communication interface unit if requested, no ports on the board will be accessible to any user. If this is not appropriate, follow the standard procedure outlined in action 2A.
- ECS:** Error in address of Communication Interface Unit, <CIU name>. Can not compute address of Board B. Board ignored.
The address in the clearinghouse database does not fit the pattern and range assigned to board A of communication interface units. The external communication service can not compute the address of any subsequent boards and will consider the communication interface unit to be a single-board unit. Follow the standard procedure outlined in action 2A.
- ECS:** <3 or 4> board Communication Interface Unit not supported. Only the first two boards of <CIU name> will be supported.
Follow the standard procedure outlined in action 2A. Change the communication interface unit entry in the clearinghouse database in order to avoid this message in the future.
- ECS:** Warning - Ignoring IBM 3270 Host path to <host name> with invalid RS232C port option, Owing Service Type, on <port name>.
The "Type of service for which this port is intended" field in the RS232C port entry for <port name> in the clearinghouse data base is not set to "IBM 3270." If the external communication service performed an inappropriate action, follow the standard procedure outlined in action 2A.
- ECS:** Insufficient resources. Please stop ECS dependent services (IRS, GWS, ITS) and try again. ECS not started.
Stop any of the above listed services which are using ports controlled by this external communication service (Booklet 3, task I). Start the external communication service, and then restart the other services (Booklet 3, task I). You may need to boot the server.

Table 2-1. External Communication Service Messages (Continued)

- ECS:** Warning - Ignoring path with no ports on controller for IBM 3270 Host <host name> using controller number <controller number> through RS232C port <port name>.
The "Number of ports on controller" field in the IBM 3270 host entry in the clearinghouse is 0. If the external communication service performed an inappropriate action, follow the standard procedure outlined in action 2A.
- ECS:** Warning, invalid time stamp for Communication Interface Unit Clearinghouse entry <CIU name>. Entry will still be used.
- ECS:** Warning, invalid time stamp for RS232C port Clearinghouse entry <port name>. Entry will still be used.
The external communication service will still use this entry; however, since it does not know when it was made, it must assume it is new, thereby reconfiguring and force-booting the appropriate board. If this problem persists, call the Customer Support Center.
- ECS:** Unable to write CIU boot file named: <file name>.
There may not be enough room for the file the external communication service is trying to write. Type Show Space command (Booklet 3, task C). If space is not a problem, call the Customer Support Center.
- ECS:** Will not be able to boot Communication Interface Unit <CIU name> Board <A or B>, since it needs file <file name>.
This message will follow the "ECS: Unable to write CIU boot file named: <file name>." message and tell you which communication interface units were affected by the problem. These units, if already booted, will continue to function, but you will not be able to reboot them until the problem is fixed. Call the Customer Support Center
- ECS:** Unsupported linkType for IBM 3270 Host <host name>, RS232C port <port name>. Path will be ignored.
This version of the external communication service supports neither SDLC nor connections through communication interface unit RS232C ports to IBM 3270 hosts. Follow the standard procedure outlined in action 2A.

Table 2-1. External Communication Service Messages (Continued)

WHILE SERVICE IS OPERATIONAL

- ECS:** Will attempt to reestablish lost connection to modem to IBM 3270 Host using controller number <controller number> through RS232C port <port name>.
Determine the cause of the lost connection by checking with the IBM 3270 Host personnel, and correct the problem. If the connection is not reestablished, call the Customer Support Center.
- ECS:** Connection to modem to IBM 3270 Host using controller number <controller number> through RS232C port <port name> is established.
This is an informational message, indicating the connection to the host has been reestablished. No action is necessary.
- ECS:** **Error - in booter.**
There has been an internal system error in the communication interface unit booter, which is part of the external communication service. Communication interface units already booted will continue to function, but you cannot boot any additional units until you have stopped the external communication service and restarted it (Booklet 3, task 1).
- ECS:** **Error - on CIU file open.**
- ECS:** **Error - on CIU file read.**
- ECS:** **Error - on CIU file execute address.**
There is an error in a boot file. Stopping and restarting the external communication service should force the file to be rewritten. Stop and restart the external communication service (Booklet 3, task 1). If the problem is not corrected by this action, call the Customer Support Center.
- ECS:** **Warning - Communication error while trying to send first block to <CIU address>.**
- ECS:** **Warning - Timeout while trying to send first block to <CIU address>.**
- ECS:** **Warning - Communication error while trying to boot <CIU address>.**
- ECS:** **Warning - Timeout while trying to boot <CIU address>.**
You may be experiencing hardware problems. The external communication service will try to reboot the communication interface unit. If it does not reboot, call the Customer Support Center.
- ECS:** **Warning - No Boot Files for <CIU address>.**
The communication interface unit has internal settings that allow it to request two different types of boot files. Currently the external communication service supports only one type. This message is indicative of improper switch settings. Call the Customer Support Center.

Table 2-1. External Communication Service Messages (Continued)

- ECS: Warning - Couldn't force boot <CIU address>.**
 This message appears after repeated unsuccessful attempts to boot the communication interface unit with updated files, or when you stop the external communication service before it has completed booting the communication interface unit. When both the external communication service and the communication interface unit are operational, you should ensure that the communication interface unit is booted with the updated files by turning its boot key.
- ECS: Configuration Error to IBM 3270 Host using controller number <controller number> through RS232C port, <port name>.**
 This message indicates a difference between the configuration of the IBM 3270 host at the clearinghouse service and the way it is perceived by the host (for example, the host may think there are eight ports for the controller while the clearinghouse database specifies four). The external communication service will continue to support some number of users on this connection. You should correct the problem entry either at the IBM 3270 host or at the clearinghouse service. If the solution involves changing the clearinghouse service entry, follow the standard procedure outlined in action 2A.
- ECS: Polling has stopped from IBM 3270 Host using controller number <controller number> through RS232C port <port name>.**
 Determine the cause of the stopped polling, checking with the IBM 3270 host personnel, and correct the problem. Note that several minutes will elapse between the time that the host stops polling and the time that this message is issued.
- ECS: Polling has (re)started from IBM 3270 Host using controller number <controller number> through RS232C port <port name>.**
 This is an informational message, indicating that polling from the host has (re)started. This message is issued as soon as polling is detected, but only if enough time had elapsed to detect that polling had stopped previously.
- ECS: WARNING - Unable to save value. This change will be remembered ONLY until the server is rebooted.**
 This message is issued in response to the Set Buffer Size command and indicates that the external communication service was unable to write to its internal data file.
- Buffer size changed. Will temporarily disconnect from IBM 3270 Host.**
 This is an informative message issued in response to the Set Buffer Size command.

Table 2-2. Gateway Service Messages

WHILE SERVICE IS STARTING

GWS: Another Gateway Service is also defined for this server - ignored: <name>.

GWS: Gateway Service is started.

GWS: Gateway Service is stopped.

GWS: Gateway Service not started.

GWS: The name of this Gateway Service is <name>.

GWS: This Gateway Service is using local port <port name>.

GWS: This Gateway Service is using Mail Clerk <Mail Clerk name>.

These are informative messages, issued during startup. No action is required.

GWS: No entry for this Gateway Service in Clearinghouse <domain:organization>.

GWS: No RS232C Ports assigned to this Gateway Service in Clearinghouse <domain:organization>.

The gateway service is stopped automatically. Correct the clearinghouse service entries (Booklet 3, task Q) and then restart the gateway service.

COMMON TO SERVICE STARTUP AND OPERATION

GWS: Clearinghouse Service is busy. Try later.

GWS: Clearinghouse Service not responding. Try later.

GWS: Clearinghouse Service reports problem: <problem>. Correct problem and try again. <problem> may be one of the following:

bad protocol

courier error

illegal domain name

illegal local name

illegal org name

no such domain

no such local

no such org

property ID not found

unexpected

wrong property type

GWS: Mail Clerk <name> is not registered in the Clearinghouse.

GWS: Mail Folder does not exist for Mail Clerk <Mail Clerk name>.

GWS: Mail Service is busy. Try later.

GWS: Mail Service not responding. Try later.

The gateway service is stopped automatically. Try to resolve the problem by performing step 13 of Booklet 2, and then restart the gateway service. If this does not work, call the Customer Support Center.

ACTION 2B:

Keeping the communication services running:
Responding to gateway service messages

Overview: When you are using the gateway service, you occasionally encounter status messages. These messages are listed in table 2-2.

Procedure: The message that you see on your screen appears in bold print in the table. Your action, along with a description of the problem if necessary, appears below the message.

Comments: If you continue to have problems after performing the action prescribed in table 2-2, call the Customer Support Center.

The 860 or 850 user does not see any of these messages, so you should note them in case the user calls for more information.

Table 2-2. Gateway Service Messages (Continued)

GWS: Mail Service reports problem: <problem>. Correct problem and try again..
 <problem> may be one of the following:

- access
- authentication
- connection
- server configuration
- software error
- communication medium
- location
- service
- transfer
- undefined
- unexpected

The gateway service is stopped automatically. Try to resolve the problem by performing step 13 of Booklet 2, and then restart the gateway service. If this does not work, call the Customer Support Center.

WHILE SERVICE IS OPERATIONAL

GWS: System error initializing communication port <port name>

This error message most frequently occurs when the controlling external communication service is stopping or is not started.

GWS: Can't post mail. User disconnected.

GWS: Can't retrieve mail. User <name> disconnected.

GWS: Mail Folder does not exist for User <name>.

GWS: Mail Service reports no more space. Try later.

Prevent new users from calling in until the problem is corrected. These messages indicate either a temporary mail service overload or a communication problem. If the problem does not correct itself, call the Customer Support Center.

GWS: Connection inactive too long for local port <port name>. User disconnected.

GWS: User connection broken for local port <port name>.

GWS: User connection established for local port <port name>.

These are informative messages. No action is required.

GWS: User <alias> is not registered in the Clearinghouse.

GWS: Mail Folder empty for User <name>.

GWS: Mail not retrieved. Reason: no <what> supplied.

- <what may be>
- user name
- password

GWS: Mail not retrieved. Reason: <what> for user name.

- <what> may be
- incorrect password
- no Clearinghouse entry

These are informative messages to aid you in explaining to a Xerox 850 or 860 user why he/she received the message "REQUEST NOT FOUND" at his/her communicating word processor. No action is required.

Table 2-2. Gateway Service Messages (Continued)

GWS: Untranslatable document received. User disconnected.

This message is displayed when a Xerox 850 operator tries to send an improperly formatted document (one prepared, for example, on a European 850). The 850 operator is disconnected and must modify the document before resending it.

GWS: Untranslatable document <document name> left in Mail Folder <name>.

While sending a document to a Xerox 850 user, the gateway service was unable to translate from 860 to 850 document format. The untranslatable document remains in the user's mail folder. The intended recipient must retrieve the document via a Xerox 860 or a Xerox 8010, modify it appropriately, then re-mail it before it can be retrieved by a Xerox 850.

GWS: Mail Folder empty for User <name>.

GWS: Mail not retrieved. Reason: no <what> supplied.

<what> may be one of the following:

user name

password

GWS: Mail not retrieved. Reason: <what> for user name.

<what> may be one of the following:

incorrect password

no Clearinghouse entry

These are informative messages to aid you in explaining to a Xerox 850 or 860 user why he/she received the message "REQUEST NOT FOUND" at his/her communicating word processor. No action is required.

Table 2-3. Interactive Terminal Service Error Messages

ITS: Interactive Terminal Service is halting. No ports are operative due to non-retryable errors.

This message is issued asynchronously if all of the ports assigned to the interactive terminal service have failed. The individual port failures should be investigated and then the interactive terminal service should be restarted. If you did not note the port failure reasons, you should make sure tracing is enabled. Then restart the interactive terminal service and note the failure reasons as they occur.

Interactive Terminal Service is started.

Interactive Terminal Service is stopped.

Interactive Terminal Service already quiescing.

Interactive Terminal Service already starting.

Interactive Terminal Service quiescing.

Informative messages issued during startup and shutdown. No action is required.

ITS: Clearinghouse Service not responding. Try later.

This error message follows an automatic start or an explicit Start command. Investigate the availability and status of the clearinghouse service. Restart the interactive terminal service as soon as the clearinghouse service is available.

ITS: Couldn't find matching ITS entry in Clearinghouse.

ITS: Couldn't find any RS232C Ports for this ITS in Clearinghouse.

These error messages follow an automatic start or an explicit Start command. The interactive terminal service is stopped automatically. Follow the standard procedure outlined in action 2C, making sure you have an interactive terminal service entry for this server in the clearinghouse data base and that you have assigned RS-232-C ports to this interactive terminal service.

ITS: Heap error.

ITS: Insufficient space error.

ITS: Server error: Too many service options total. ITS not available.

These error messages follow an automatic start or an explicit Start command. The interactive terminal service is stopped automatically. The messages mean that there are insufficient resources (most likely, memory) on the server to support the interactive terminal service; "resources" in this case do not include the RS232C ports. Call the Customer Support Center.

Messages for List Ports command:

This ITS has <number> names. They are:

Informative message issued in response to the List Ports command only if ITS has more than one name. No action is required.

ACTION 2C:

Keeping the communication services running:

Responding to interactive terminal service error messages

Overview: When you are using the interactive terminal service, particularly when you are starting it up, you occasionally encounter error messages. These messages are listed in table 2-3.

Procedure: The error message that you see on your screen appears in bold print in the table. Your action, along with a description of the problem if necessary, appears below the error message.

Where noted in the table, you should follow this standard procedure:

- Stop the interactive terminal service (Booklet 3, task I).
- Correct the clearinghouse database entry (Booklet 2, step 12).
- Restart the interactive terminal service (Booklet 3, task I).

Comments: If you continue to have problems after performing the action prescribed in table 2-3, call the Customer Support Center. If your first action should be to call the Customer Support Center, it is stated in the table.

If the interactive terminal service is already started and additional ports become assigned for its use or an already-assigned port that has failed is brought back to service, the service must be stopped and then restarted.

Table 2-3. Interactive Terminal Service Error Messages (Continued)

<number> ports assigned to ITS. ITS is currently initializing.

<number> ports assigned to ITS. ITS is currently quiescing.

<number> ports assigned to ITS. ITS is currently started.

<number> ports assigned to ITS. ITS is currently stopped.

One of these informative messages is issued in response to the List Ports command. When the interactive terminal service is "initializing" or "quiescing," the number of ports that the interactive terminal service indicates are assigned to it may be observed to be incrementing (as ports are acquired) or decrementing (as ports are released), respectively.

No ports operative

Informative message issued in response to the List Ports command after all ports controlled by this interactive terminal service have been listed and none of the ports are operative. No action is required.

ITS:Port <port name> (line <line number>): idle.

ITS:Port <port name> (line <line number>): in use by <user name:domain:organization>.

ITS:Port <port name> (line <line number>): session ending.

ITS:Port <port name> (line <line number>): session starting.

ITS:Port <port name> (line <line number>): stopped.

Informative messages issued in response to the List Ports command. No action is required.

ITS:Port <port name> (line <line number>): is being aborted.

ITS:Port <port name> (line <line number>): is being created.

ITS:Port <port name> (line <line number>): is being initialized.

ITS:Port <port name> (line <line number>): is being reserved.

Informative messages issued in response to the List Ports command while the interactive terminal service is attempting to establish communication with a port. No action is required.

Port <port name> (line <line number>): port usage preempted . . . retrying.

Informative message issued in response to the List Ports (as well as Set Tracing) command. Interactive terminal service ports may be assigned in a manner which allows their preemption when inactive. The service periodically attempts to reacquire its preempted ports. No action is required.

Port <port name> (line <line number>): bad ECS data in RS232C Port Clearinghouse Entry (<bad data>).

Message issued in response to the List Ports (as well as Set Tracing) command. It indicates that the interactive terminal service was unable to establish communication with the specified RS232C port because the port's owning external communication service name was invalid or was not found in the clearinghouse database. Investigate the availability of the clearinghouse service and make sure that you have an external communication service entry in the clearinghouse database for the RS232C ports assigned to this interactive terminal service.

Table 2-3. Interactive Terminal Service Error Messages (Continued)

Port <port name> (line <line number>): bad RS232C Port Clearinghouse Entry (not configured as asynchronous).

Port <port name> (line <line number>): bad RS232C Port Clearinghouse Entry (not configured as full duplex).

Message issued in response to the List Ports (as well as Set Tracing) command. The interactive terminal service did not attempt to communicate with that port. Follow the standard procedure outlined in action 2C, making sure that the RS232C port information in the clearinghouse database is correct and appropriate (port must be full duplex and asynchronous), and that the "owning" external communication service is running and has a valid name that is entered in the clearinghouse database.

Port <port name> (line <line number>): cannot find ECS or line as specified in RS232C Port Clearinghouse Entry.

Port <port name> (line <line number>): ECS <name> software error . . . retrying.

Port <port name> (line <line number>): ECS <name> stopped or unavailable . . . retrying.

Port <port name> (line <line number>): inconsistent RS232C Port data - error creating stream.

Port <port name> (line <line number>): lost communication path with ECS <name> . . . retrying.

Port <port name> (line <line number>): space problem during create.

Port <port name> (line <line number>): too many active users . . . retrying.

Messages issued in response to the List Ports (as well as Set Tracing) command. The interactive terminal service was unable to establish communication with the specified port. Follow the standard procedure outlined in action 2C, making sure that the RS232C port information in the clearinghouse database is correct (port must be full duplex and asynchronous), that the "owning" external communication service is running, and that the communication and modem equipment is properly connected and powered on.

Table 2-3. Interactive Terminal Service Error Messages (Continued)

Messages for Set Tracing command:

ITS: <timestamp> Port <port name> (line <line number>): <user-info> - connection lost.

ITS: <timestamp> Port <port name> (line <line number>): <user-info> - connection terminated by Operator.

ITS: <timestamp> Port <port name> (line <line number>): created.

ITS: <timestamp> Port <port name> (line <line number>): <user-info> ended.

ITS: <timestamp> Port <port name> (line <line number>): <user-info> inactive too long; issuing disconnect.

ITS: <timestamp> Port <port name> (line <line number>): <user-info> logged off.

ITS: <timestamp> Port <port name> (line <line number>): <user-info> logged on.

ITS: <timestamp> Port <port name> (line <line number>): <user-info> session ending due to heap error.

ITS: <timestamp> Port <port name> (line <line number>): <user-info> session ending due to insufficient space error.

ITS: <timestamp> Port <port name> (line <line number>): <user-info> unusual end.

Informative messages issued asynchronously if tracing has been enabled with the Set Tracing command. No action is required.

ITS: Port <port name> (line <line number>): does not have the TTY option enabled. Check product factoring for ECS <name>.

This message is issued in response to the List Ports (as well as Set Tracing) command. The interactive terminal service will not attempt communication with that port since the teletypewriter option has not been purchased. Call the Customer Support Center for information on enabling software options.

ITS: <timestamp> Port <port name> (line <line number>): port usage preempted . . . retrying.

Informative message issued in response to the Set Tracing (as well as List Ports) command. Interactive terminal service ports may be assigned in a manner which allows their preemption when inactive. The service periodically attempts to reacquire its preempted ports. No action is required.

ITS: <timestamp> Port <port name> (line <line number>): bad ECS data in RS232C Port Clearinghouse Entry (<bad data>).

Message issued in response to the Set Tracing (as well as List Ports) command. It indicates that the interactive terminal service was unable to establish communication with the specified RS232C port because the port's owning external communication service name was invalid or was not found in the clearinghouse database. Investigate the availability of the clearinghouse service and make sure that you have an external communication service entry in the clearinghouse database for the RS232C ports assigned to this interactive terminal service.

Table 2-3. Interactive Terminal Service Error Messages (Continued)

ITS: <timestamp> Port <port name> (line <line number>): cannot find ECS or line as specified in RS232C Port Clearinghouse Entry.

ITS: <timestamp> Port <port name> (line <line number>): lost communication path with ECS <name> ... retrying.

ITS: <timestamp> Port <port name> (line <line number>): ECS <name> software error ... retrying.

ITS: <timestamp> Port <port name> (line <line number>): ECS <name> stopped or unavailable ... retrying.

ITS: <timestamp> Port <port name> (line <line number>): inconsistent RS232C Port data - error creating stream.

ITS: <timestamp> Port <port name> (line <line number>): space problem during create.

ITS: <timestamp> Port <port name> (line <line number>): too many active users ... retrying.

Messages issued in response to the Set Tracing (as well as List Ports) command. The interactive terminal service was unable to establish communication with the specified port. Follow the standard procedure outlined in action 2C, making sure that the RS232C port information in the clearinghouse database is correct (port must be full duplex and asynchronous), that the "owning" external communication service is running, and that the communication and modem equipment is properly connected and powered on.

ITS: <timestamp> Port <port name> (line <line number>): bad RS232C Port Clearinghouse Entry (not configured as full duplex).

ITS: <timestamp> Port <port name> (line <line number>): bad RS232C Port Clearinghouse Entry (not configured as asynchronous).

Message issued in response to the Set Tracing (as well as List Ports) command. The interactive terminal service did not attempt to communicate with that port. Follow the standard procedure outlined in action 2C, making sure that the RS232C port information in the clearinghouse database is correct and appropriate (port must be full duplex and asynchronous).

Example:

```
Network Services X.X
Restart Reason: User Restart
  Normal Startup? (Y/N): Y RETURN
Server is attached to network number 105
Server Domain is Marketing
Server Organization is SampleCorp
External Communication Service provided on this Server
Internetwork Routing Service provided on this Server
ECS: Searching Clearinghouse for resources belonging to Lancia
External Communication Service Started
IRS: The name of this Internetwork Routing Service is Rolls
IRS: Port Lancia-EP11 acquired
IRS: Port Lancia-LP acquired
Internetwork Routing Service Started
Network Services X.X March 16, 1983 10:44 A.M.
IRS: Connection established for port Lancia-EP11
> Internetwork Routing Service RETURN
IRS> List Routes RETURN
  Network 1 is 8 steps away via port Lancia-EP11
  Network 2 is 8 steps away via port Lancia-EP11
IRS>
```

Notes:

If a network is not listed by this command, this server has no route to that network. Users on your network cannot access any services on the other network and cannot send mail to other users registered in that network's clearinghouse database.

ACTION 2D:

Keeping the communication services running:
Detecting internetwork routing service problems

Overview: Users will detect malfunctions of the internetwork routing service when they are not able to access services on remote networks. The program that is attempting to access the remote service will report this information as an error message. Although there are no specific diagnostics for pinpointing the failure to a phone line, modem, or server, it is possible to locate the internetwork link that is experiencing the failure.

Procedure:

1. When routes to remote services appear to be unavailable, use the List Routes command for confirmation. Type **Internetwork Routing Service** to get to the **IRS>** prompt. Then type **List Routes**. If a network is not listed by this command, the server has no route to that network. The problem may be in the internetwork routing service on the remote network or it may be a communication hardware failure.
2. To try to isolate the problem further, run the echo test (refer to action 1L) to check system elements on the local network and remote networks. The test should indicate very low rates of packet loss for local network tests and tests between adjacent networks. Use the RS232C test (action 1M or 1N) to check the modems and leased line.
3. Once you isolate the problem, try restarting the internetwork routing service on the affected servers or processors (Booklet 3, task I). You may also be able to repair a phone-line-related problem. If not, call the Customer Support Center number listed on the first page of this booklet.

Comments: There are no error messages associated with the List Routes command.

Note that if a route is listed from the List Routes command, this only indicates that at least one packet was received from a nearby router in the last 4 minutes. To check that a specific destination network is available at a specific moment, the echo test must be used.

Table 2-4. Internetwork Routing Service Messages

Internetwork Routing Service is started.

IRS: No ports have connections established.

IRS: One or more ports not yet acquired. Will try again.

IRS: Port <port name> acquired.

IRS: Port <port name> is busy, cannot be acquired. Will try again.

IRS: The name of this Internetwork Routing Service is <name>.

Informative messages issued during startup. Issued asynchronously. You see "IRS: " preceding the message if startup is automatic; you see an indented message (eight leading spaces) if startup is manual. No action is required.

IRS: Port <port name> is not controlled by the ECS, cannot be acquired.

Enter the name of the port in the clearinghouse database.

IRS: The ECS is not active, port <port name> cannot be acquired. Will try again.

Start the external communication service.

Internetwork Routing Service not started.

IRS: Cannot reach Clearinghouse.

IRS: No name listed for this IRS in <domain:organization>.

IRS: No RS232C ports in <domain:organization> assigned to this IRS.

IRS: Problem encountered with Clearinghouse.

Error messages issued during startup. Issued asynchronously. You see "IRS: " preceding the message if startup is automatic; you see an indented message (eight leading spaces) if startup is manual. Check to make sure that the clearinghouse service is enabled and that the entries in the clearinghouse database for this internetwork routing service and its RS232C ports are correct.

Stopping . . .

Internetwork Routing Service is stopped.

Informative messages issued during shutdown. No action is required.

IRS: Connection established for port <port name>.

IRS: Connection not established for port <port name>.

IRS: No ports have connections established.

IRS: Port <port name> acquired.

IRS: Port <port name> has failed.

Informative messages issued when the state of a port changes; issued asynchronously. The changes relate to the acquiring of ports, to the connectivity of the ports, and to the general state of the internetwork routing service. No action is required.

ACTION 2E:

Keeping the communication services running:
Responding to internetwork routing service messages

Overview: When you are using the internetwork routing service, you occasionally encounter status messages. These messages are listed in table 2-4.

Procedure: The message that you see on your screen appears in bold print in the table. Your action, along with a description of the problem if necessary, appears below the message.

Where noted in the table, you should follow this standard procedure:

- Stop the internetwork routing service (Booklet 3, task I).
- Correct the clearinghouse database entry (Booklet 2, step 14).
- Restart the internetwork routing service (Booklet 3, task I).

Comments: If you continue to have problems after performing the action prescribed in table 2-4, call the Customer Support Center.

If the internetwork routing service is already started and additional ports become assigned for its use or an already-assigned port that has failed is brought back to service, the Use Port command is provided to allow the service to acquire the port without having to stop and restart the service.

Table 2-4. Internetwork Routing Service Messages (Continued)

1 Internetwork Routing Service port.

<number> Internetwork Routing Service ports.

No ports have connections established.

Port <port name>: bad CH entry.

Port <port name>: busy.

Port <port name>: in use, connected.

Port <port name>: in use, not connected.

Port <port name>: released.

Informative messages issued in response to the List Ports command. No action is required. A port may be in one of several states, as indicated by the following status phrases:

- Bad CH entry: The entry for the port in the clearinghouse database is invalid.
- Busy: The port is in use by another service. The system attempts to secure the port once per minute.
- In use, connected: The port has been secured and the modem is ready for transmission. If manual dialing must occur, it has already occurred. The remote internetwork routing service is not necessarily responding. The List Routes command helps determine whether an internetwork link has been established.
- In use, not connected: The port has been secured, but the modem is not ready for transmission. If manual dialing is necessary, it should be done at this time. This will be true of a Xerox 873 port until communication between the internetwork routing service and it is established.
- Released: The Release Port command has been issued locally or the external communication service has taken a local port out of service. The second condition is reported by means of an asynchronous message.

Network <network number> is not currently accessible.

Network <network number> is 1 step away via port <port name>.

Network <network number> is 1 step away via the local network.

Network <network number> is <number> steps away via port <port name>.

Network <network number> is <number> steps away via the local network.

Network <network number> is the local network.

No ports have connections established.

Informative messages, used to determine the current logical interconnectivity of the internetwork. These messages are issued in response to the List Routes command. If a network is "1 step away," there will be one internetwork routing link on the path between the local network and the companion internetwork routing service on the destination network. Note that this path between routers can include Ethernet links as well as RS232C line connections. A network that requires traversing two links is "2 steps away," and so on. If the path to a destination network is "via port <port name>," routing is taking place through a local internetwork routing service port by that name. Routing "via the local network" is routing handled by another internetwork routing service on the local network. If a network is "not currently accessible," communication difficulties have made it impossible to reach that network. The destination network will become unknown to the local internetwork routing service if communication is not restored within a short period of time. No action is required.

Table 2-4. Internetwork Routing Service Messages (Continued)

No ports have connections established.

Releasing . . .

Port released.

Informative messages issued in response to the Release Port command. No action is required.

Port already released.

Port not known to this Internetwork Routing Service.

Error messages issued in response to the Release Port command. The name of the port may have been specified incorrectly. Make sure that the port is correctly specified.

Port <port name> acquired.

Informative message issued in response to the Use Port command. No action is required.

Warning: port is not assigned to this IRS.

port parameters have not been checked.

Special informative messages, issued in response to the Use Port command, where the user is "Xerox." No action is required.

Cannot reach Clearinghouse.

Port is already acquired, connection established.

Port is already acquired, connection not established.

Port is assigned to a different IRS.

Port is busy, cannot be acquired. Will try again.

Port is not assigned to an IRS.

Port is not controlled by the ECS, cannot be acquired.

Port name not found.

Problem encountered with Clearinghouse.

The ECS is not active, port cannot be acquired. Will try again.

Error messages issued in response to the Use Port command. The name of the port may have been specified incorrectly. The Use Port command does not allow the user to reassign a port to the internetwork routing service. This must be done at the clearinghouse service. If the port is assigned to another internetwork routing service or another service, an attempt to use it will fail. Follow the standard procedure outlined in action 2D.

Table 3-1. Clearinghouse Service Error Messages

Naming-Related Messages and Errors:

<Name> may not contain any of these characters: * [] < > , ; : @"

These special characters are reserved for other purposes and may not appear in names. Re-enter the name in acceptable form.

<Name> is already a registered **<object>**.

This message indicates that an Add command was rejected because an object of the requested type with the same name was already registered in the local database. No action is necessary unless a new object is known to be necessary, in which case some other name must obviously be chosen.

Warning: **<Name>** is also registered as a **<object>**.

A Delete command deleted an object with the given name, but noticed that the same name is also in use for one or more other objects. This message is a reminder to consider whether the other objects of the same name should also be deleted.

<Name> is also registered as **<object>**.

An Add or Change command registered the named object in the database, but that name is also registered as some other type of object. Generally, it is preferable to use a given name in an unambiguous manner to prevent confusion among human users, but the clearinghouse database will allow multiple meanings for a name if that is desired.

<Name> is already an alias for **<name>**.

An Add (or Change User) command has been rejected because the specified name is already used as an alias. At any time, a given name can be the distinguished name of one or more objects, or it can be an alias, but not both. Either choose another name for the new object, or use Delete Alias to eliminate the conflicting alias.

Warning: No **<object>** named **<name>** is registered.

A command found that **<name>** (provided as a parameter in the operation) was not registered in the local database as an object of the indicated type.

<Name> is not registered.

A Delete or Change command was rejected because the named object was not registered in the database. Check the spelling of the name, or use the appropriate List command to verify the object's existence.

ACTION 3A:***Keeping the clearinghouse operational:*****Responding to clearinghouse service error messages**

Overview: When you are using the clearinghouse service, you occasionally encounter error messages. These messages, along with suggested procedures for correcting them, are listed in table 3-1.

Procedure:

If you encounter an error message of the type listed in table 3-1, perform the action suggested. If this action does not solve the problem, contact the Customer Support Center.

Comments: Often error messages are encountered because data was typed in incorrectly. Recheck your spelling before proceeding with error recovery procedures.

Table 3-1. Clearinghouse Service Error Messages (Continued)

Warning: The remote domain <domain:organization> is unknown to this Clearinghouse
A command (typically an Add or Change command) required a full three-part name as a parameter (e.g., the mail service name in Add User) but the domain and organization components of the name did not correspond to any remote domain known to this clearinghouse database. Check for correct spelling (including blanks and punctuation) of the domain and organization names; use the List Remote Clearinghouses command if correct spelling is in doubt. If the spelling appears correct, or the desired domain is not shown by the List Remote Clearinghouses command, try a Find Remote Clearinghouses command. If this does not solve the problem, contact the System Administrator of the (alleged) domain.

No <object matching <pattern> is registered.

A List command failed to find any objects of the appropriate type matching the specified pattern. If this was not the expected result, check the pattern to insure that it is correct.

No <object> has been registered.

No objects of the indicated type exist in the local database. If this was not the expected result, then the desired object(s) may have been deleted, or may not have been registered in the first place.

User-Related Messages and Errors:

First, Middle, and Last names together (including blanks) must total 40 characters or less.

Names cannot exceed a total of forty characters. In the unlikely case that this is a problem, some shorter form of the name (e.g. middle initial if full middle name was attempted) must be used.

Warning: If this user is to receive mail, there must be a mail folder for <user:domain:organization>.

A Change User command changed the distinguished name of the user. This message is a reminder that the user's mail folder on the mail service must also be changed to match the new distinguished name. Note that other things associated with the user may also be affected (e.g. access privileges, stored desktops, etc.).

Table 3-1. Clearinghouse Service Error Messages (Continued)

CIU-Related Messages and Errors:

Warning: External Communication Service <name> is not on the same network as this Communication Interface Unit.

A Change Communication Interface Unit command has updated the name of the owning external communication service. The new owning external communication service, however, is registered as being on another local network. If the owning external communication service is actually on the same local network, change its entry in the clearinghouse database to reflect that fact. Otherwise, correct the entry for the communication interface unit to reflect ownership by some external communication service that is on the same local network.

Warning: The asynchronous ports on this board of this Communications Interface Unit do not fall within one of the legal line speed ranges.

An Add RS232C or Change RS232C Port command has registered a port, resulting in an overall configuration of line speeds that is not allowed on a single board of a communications interface unit. Change one or more RS232C port entries to produce a legal set of line speeds.

Warning: RS232C Ports assigned to <service> must be controlled by an External Communication Service on the same processor as <service>.

An Add RS232C or Change RS232C Port command has indicated that the port is assigned to a service that does not reside on the same server as the external communication service controlling the port. Furthermore, the service is one that can be assigned only to ports controlled by a co-resident external communication service. (For OS 4.0, service will be either internetwork routing service or gateway service.) Arrange the configuration so that the service and the external communication service are on the same machine, and update the clearinghouse database to reflect this fact.

Clearinghouse Operational Messages and Errors:

The Clearinghouse database on this server has not been initialized.

Please enter the Domain and Organization to be served by this Clearinghouse.

This message will appear when the local database is initialized for the first time. Enter the requested information and the local database will be created.

This Clearinghouse will serve <domain:organization>.

This message indicates that the local database has been created. No action is necessary.

Group-Related Errors:

<Name:domain:organization> is not a member of group <group>.

A Delete Member operation has been rejected because the indicated member cannot be found in the group. Check the spelling, and if necessary, use List Members to confirm that the unwanted member is in fact not present. Note that patterns in groups can cause them to effectively include members not explicitly listed by name.

Table 3-1. Clearinghouse Service Error Messages (Continued)**Backup/Restore Errors:****Failed! Communications Failure.**

A Backup or Restore command has failed to complete successfully due to network communication failure. Try again later; if the error persists and other network communication appears to be working, contact the Customer Support Center

Failed! File Service not responding.

A Backup or Restore command has failed because the requested file service is not responding. Check the state of the file service, and take any steps needed to restore it to service. If other network usage of the file service appears to be working, contact the Customer Support Center

Failed! No File Service at the given address.

A Backup or Restore command has failed because no file service is in operation at the specified address. Verify that the desired file service is actually in operation. If the file service was specified by name (normal case), check the file service's entry in the clearinghouse database and correct its address if necessary. If the file service was specified by manually entering its address (abnormal case), recheck the address and enter it correctly.

Failed! File Service is busy; try later.

A Backup or Restore command has failed because the file service was too busy servicing other traffic at the time the command was attempted. Try again later when the load is lighter.

Failed! File Service speaks an incompatible version of the protocol.

A Backup or Restore command has failed because the requested file service implements an incompatible version of the protocol. Upgrade the file service to the same release level as the clearinghouse service.

Failed! Cannot authenticate user: <name>.

A Backup or Restore command has failed because the file service could not verify the identity of the logged-on system administrator. This may occur if the you are logged in as the special 'Xerox' user, which should not be the case during normal administrative activities (e.g., backup and restore). Log off and then log on using your normal user name. The only other way that this error can occur is if your own user entry in the clearinghouse database has been changed or deleted; in this case, repair your user entry and try again.

Failed! Access violation.

A Backup or Restore command has failed because the access list of the file drawer named "Clearinghouse" does not permit access by the logged-on system administrator. Modify the access list on the file drawer to permit access and try again.

Failed! No "Clearinghouse" file drawer.

A Backup or Restore command has failed because the file drawer named "Clearinghouse" does not exist on the specified file service. Use a different file service, or create a "Clearinghouse" file drawer (with suitable access list) on the one that failed and try again.

Table 3-1. Clearinghouse Service Error Messages (Continued)**Failed! Not enough space on local disk to perform Restore.**

A Restore command has failed because there is insufficient disk space available on the server running the clearinghouse service. This will invariably be the result of excessive space usage by a co-resident file or mail service. If the co-resident service is a mail service, ask users to read their mail. If the co-resident service is a file service, eliminate some files from the file service (e.g. move to floppy disks or to another file service). The List Mail Folders and List File Drawers commands can be used to determine the most promising places to recover disk space. The Restore command requires 1025 free disk pages.

Failed! "Clearinghouse " file drawer is full.

A Backup command has failed because there is insufficient disk space available on the server running the file service. Check the clearinghouse file drawer (using the 8010, 860, etc) and delete any unneeded backup snapshots. If there are only one or two snapshots in the drawer (for each domain), eliminate some other files from the file service (e.g. move to floppy disks or to another file service) to obtain sufficient space. Then try again.

Failed! Unexpected Filing Error.

Failed! Failure during file transfer

Failed! Could not complete backup.

Failed! Could not complete restore.

Try again; if the error persists, contact the Customer Support Center.

Failed! No backed up database for this domain on given File Service

A Restore command has failed because there is no copy of the requested domain in the clearinghouse file drawer on the requested file service. Check that the proper file service is being used, that the domain name is correct, and that the required backup snapshot has not been inadvertently deleted.

Clearinghouse service still running with old database.

Any of above error messages (Failed! ...) will be immediately followed by this message, indicating that the failed Backup or Restore operation has not damaged the local database.

Clearinghouse Fatal Error:**Clearinghouse fatal error. Return code = <code>.**

The clearinghouse service software has encountered an unexpected fatal error condition. Note the value of the code and contact the Customer Support Center.

Example (from *Xerox 8040 Series Electronic Printer Operator Reference Guide*):

PRINT QUALITY PROBLEM CHART

PROBLEM

Print too light.

WHAT TO DO

- Check the Dry Imager supply (add if required).
- Rotate the Dry Imager Control Knob clockwise.
- Call your System Administrator.⁽¹⁾

Notes:

(1) Ensure that the user has completed the first two actions. If print quality is not good, call the Customer Support Center.

ACTION 4A:

Keeping the printer operational:

Printer operation, print quality, paper jams

Overview: To troubleshoot the printer, follow the directions in the problem-solving section of the *Xerox 8040 Series Electronic Printer Operator Reference Guide* (or the applicable section of the operational guide for your printer).

Procedure: Follow the list in the "What to Do" column. If you cannot solve the problem, call the Customer Support Center.

Comments: If you see the status codes L2 or L4, go to action 4B.

Example:

```
>Print Service RETURN
PS>Start Diagnostic RETURN
  Are you sure? (Y/N): Y
  Select From . . .
    1  Exit
    2  Command/Status Turnaround Test
    3  Image Test
  Enter choice number: 3
```

IF THE TEST FAILS, YOU WILL SEE ONE OF THE FOLLOWING MESSAGES:

Image Test...Failing: Code #1, VideoData: Stuck, LineSync: N/A, VideoClock: N/A.
Automatic Reboot Required! Hit Any Key to Proceed.

Image Test...Failing: Code #2, VideoData: Stuck, LineSync: N/A, VideoClock: N/A.
Automatic Reboot Required! Hit Any Key to Proceed.

Image Test...Failing: Code #3, VideoData: ok, LineSync: stuck low, VideoClock: ok.
Automatic Reboot Required! Hit Any Key to Proceed.

Image Test...Failing: Code #4, VideoData: ok, LineSync: stuck low, VideoClock: stuck.
Automatic Reboot Required! Hit Any Key to Proceed.

Image Test...Failing: Code #5, VideoData: ok, LineSync: stuck high, VideoClock: ok.
Automatic Reboot Required! Hit Any Key to Proceed.

Image Test...Failing: Code #6, VideoData: ok, LineSync: stuck high, VideoClock: stuck.
Automatic Reboot Required! Hit Any Key to Proceed.

Image Test...Failing: Code #7, VideoData: ok, LineSync: ok, VideoClock: stuck low.
Automatic Reboot Required! Hit Any Key to Proceed.

Image Test...Failing: Code #8, VideoData: ok, LineSync: ok, VideoClock: stuck high.
Automatic Reboot Required! Hit Any Key to Proceed.

Image Test. . .Aborted: Test Pattern File Problem.

```
Select From . . .
  1  Exit
  2  Command/Status Turnaround Test
  3  Image Test
  Enter choice number: 1
```

IF THE TEST IS SUCCESSFUL, YOU WILL SEE:

Image test. . .Working.

```
Select From . . .
  1  Exit
  2  Command/Status Turnaround Test
  3  Image Test
  Enter choice number: 1
```

ACTION 4B:

Keeping the printer operational:
Responding to L2 and L4 error codes

Overview: L4 codes should be reported to the Customer Support Center. If you see an L2 code, you should run the image test and report the results to the Customer Support Center.

Procedure:

- **L2 code:** Run the image test by typing **Print Service** to get to the **PS>** prompt, and then typing **Start Diagnostic**. After confirming that you want to run a diagnostic test, you specify the number corresponding to the image test.

If the results of running the image test indicate a failure, call the Customer Support Center (the failure "Aborted: Test Pattern File Problem" indicates that the image test file loaded from the Required Fonts floppy disk is not present).

- **L4 code:** Call the Customer Support Center.

Comments: Do not run the command/status turnaround test. It requires special equipment which only a Xerox service representative can provide.

Table 4-1. Print Service Error Messages

Document appearance warnings on banner pages (only the first appearance warning is printed on the banner sheet. Other warnings are indicated by: ... and <number> more):

Image Off Paper On Page <number> At [inches] <x>, <y>.

The entire image cannot be printed on the sheet. The user will have to reformat or repaginate the document before resubmitting it to the printer.

Character <code> [octal] Is Not In Font <name>

The specified character code is not printable. The user will have to replace the character with one that is printable in that font or change the font.

Font '<name1>' Substituted For '<name2>'.

Corresponding 'Modern<type>' Substituted For ''.

The specified font, *name2*, is not present on the print service and has been replaced by *name1* (usually Modern) in the printed output. No action is necessary.

Font '<name>' Does Not Contain <number> Point Characters.

Font '<name>' Does Not Contain <number> Point (rotated <90> degrees) Characters.

The specified character sizes are not printable. The user will have to reformat the document before resubmitting it to the printer.

Document error messages (documents cannot be printed):

Banner Only: Job Purged from <queue> at System Restart.

The document was found in the communications, formatter, marker, or in-process queue on the print service when the system was restarted. It was not reprinted. This may indicate that the document itself was malformed and caused the restart, because they are usually retried once. The user should check the document formatting before resubmitting it to the printer.

Banner Only: Document Not Printed because of <error>

Due to a transmission, formatting, marking, or other error, the document could not be printed. The user should check the document before resubmitting it to the printer.

Document Error (page <number>): parse failure; <message>

The document is malformed or otherwise unreadable by the formatter. The message will be one of the following: no such command, illegal command ordering, stack type error, stack underflow, stack overflow, missing font identification, illegal page rotation, illegal page translation, illegal page scale, or unreasonable transformation. The user should reformat the document before resubmitting it to the printer.

Document Error (page <number>): plate too complicated; <message>

The specified page is too complex to format for marking. The message will be one of the following: too many fonts, too many inkwells, too many greys, or too much marker space. The user should make the page less complex before resubmitting it to the printer.

Insufficient Free Pages on Disk to Format and Print <document name> Document Aborted

There is insufficient working space on the rigid disk to finish formatting the document. Break the document into smaller sections and retry.

ACTION 4C :

Keeping the printer operational:
Responding to print service error messages

Overview: When you or your users are printing documents, you occasionally encounter error messages, either on the banner page of the document or on the server terminal. These messages are listed in table 4-1.

Procedure: The error message that you see either on the banner page or on the server terminal screen appears in bold print in the table. Your action, along with a description of the problem, appears below the error message.

Comments: If you continue to have problems after performing the action prescribed in table 4-1, call the Customer Support Center.

Table 4-1. Print Service Error Messages (Continued)

Document Error (page <number>): too many plates;

The document is too long to print. It may print if it is split into smaller pieces.

Document Error (page <number>): feature not implemented; <message>

The document is unreadable by the formatter. The user must reformat it before resubmitting it to the printer.

Document Error (page <number>): font problem; <message>

The document is malformed or beyond the print image specification language subset, or else the font file itself is damaged. The message will be one of the following: malformed installed font, missing character, missing CS0, unreasonable rotation, or unreasonable translation. The user must either reinstall the font or reformat the document in a different font before resubmitting it to the printer.

Document Error (page <number>): logic error; <message>

Depending on the message, you will perform the following recovery actions:

- Arithmetic overflow: Reload software (Booklet 3, task H)
- Bad initial data: Reload software (Booklet 3, task H)
- Bad raster area calculation: Reload all fonts (Booklet 2, step20)
- Can't get here: Check the document. If it is not malformed, reload the software (Booklet 3, task H)

Messages that may appear on your print server screen:

Printer Status = C3 - Please Check Paper Handle.

Printer Status = C4 - Please Check Paper Cassette.

Printer Status = E2 - Please Clear Paper Path.

Printer Status = E3 - Please Clear Paper Path.

Printer Status = E4 - Please Empty Output Tray.

Printer Status = E5 - Please Close Door.

Printer Status = F5 - Please Empty Stacker Tray.

Printer Status = J1 - Please Add Toner.

Printer Status = Offline - Press OnLine Key.

Printer Status = 99 - Press Clear

Perform the actions indicated next to the status code.

Printer Status = L2 - Image Fault, Please Call System Administrator.

Printer Status = L4 - Command Status Fault, Please Call System Administrator

Perform action 4B.

Table 4-1. Print Service Error Messages (Continued)

Printer Status = Low Power Mode.
Printer Status = L1 - Warming, Please Wait.
Printer Status = Okay.
Repair Mode entered.
Repair Mode exited.

These messages indicate status only. No action is required.

Missing Default Font! Install Fonts and 'Start Printing' to continue.

This usually indicates that a document has attempted to print before any fonts have been installed. It could also indicate that the required Modern font has been deleted. Reload fonts (Booklet 2, step 20).

Table 5-1. File Service Error Messages**Backup Disk incompatible with this version of software**

The floppy disk presented to Restore or Show Backup Index was created with a release of the file service which is incompatible with the current release. Perform another backup (Booklet 3, task A).

Backup parameters not set

The Backup command may not be run before the Set Backup Parameters command has been run. Run the Set Backup Parameters command.

Cannot find floppy disk drive

Either the file service is being run on a hardware configuration without a floppy disk drive, or that drive or its controlling hardware is inoperative. Run diagnostics if the floppy disk drive appears to be broken (action 1J).

Cannot read this floppy disk

The floppy disk cannot be read, probably because of physical or magnetic damage to the floppy disk. Attempting to read the floppy disk again may prove successful, but this is unlikely since the system makes several attempts to read the floppy disk before it issues this message. A different copy of the floppy disk should be used if one exists. Perhaps this disk is blank or was written by some other product.

Cannot set backup parameters

This message might appear during the execution of the Set Backup Parameters command. The server should be restarted (Booklet 3, task I) and file check run (action 1Q).

Cannot write on this floppy disk

This message may occur for either of two reasons: the floppy disk has too many bad spots to be usable for backup, or while writing data on the floppy disk, the data was found to have been written incorrectly. This strongly suggests that the floppy disk is damaged and should be discarded. It is also possible that the floppy disk hardware is damaged, although this is unlikely if other backup disks can be written without problems.

Date outside of current cycle

When attempting to execute the Repeat Backup command, the date for which backup was requested was outside of the current backup cycle. Use a different date.

Desktop busy

The command requires control of a desktop that is currently being accessed by someone else. Try again later.

Desktop not found

There is no desktop with this name on this server. Check the spelling of the name that was typed.

ACTION 5A:

Keeping the file service running:

Responding to file service error messages

Overview: When you are using the file service, you occasionally encounter error messages. These messages are listed in table 5-1.

Procedure: The error message that you see on your screen appears in bold print in the table. Your action, along with a description of the problem if necessary, appears below the error message.

Comments: If you continue to have problems after performing the action prescribed in table 5-1, call the Customer Support Center.

Table 5-1. File Service Error Messages (Continued)**File Drawer already exists**

Each file drawer on the same server must have a unique name. You tried to add a new file drawer with a name that has been taken.

File Drawer Busy

The command requires control of a file drawer that is currently being accessed by someone else. Try again later.

File Drawer not found

There is no file drawer with this name on this server. Check the spelling of the name that was typed.

File System Busy

Either the file service is being heavily used at the moment, or the command requires control over a part of the file system that is in use by someone else. Try again later.

File System full

The command being executed needs to use storage on the system disk, but the system disk does not have enough free space. Delete some unnecessary files from the server, and try again.

Floppy disk drive inoperative

Run floppy disk diagnostics (action 1J).

Floppy disk not placed in floppy disk drive correctly

The floppy disk was placed in the floppy disk drive incorrectly (upside down or backward) or not at all, or the drive door was not closed. Place the disk in the drive again.

Floppy disk removed too soon

The floppy disk was removed from the drive before it was permissible to do so. When trying to read from or write to the floppy disk, the system detected that the floppy disk drive door had been opened since the floppy disk was first accessed. Redo the operation.

Floppy disk write protected

The write enable tab is not correctly fastened. Remove the floppy disk and check the write enable tab.

Mail Folder already exists

Each mail folder on the same server must have a unique name. You tried to add a new mail folder with a name that has been taken.

Table 5-1. File Service Error Messages (Continued)**Mail Folder busy**

The command requires control of a mail folder that is currently being accessed by someone else. Try again later.

Mail Folder not found

There is no mail folder with this name on this server. Check the spelling of the name that was typed.

Name not found

The user asked that a specific file be restored from floppy disk, but there is no file on that floppy disk with that name and within that directory. Perhaps the name was typed incorrectly. Show the backup index of the floppy disk to see which files are available for restoration (Booklet 3, task N).

Name not found in Clearinghouse

Mail folders are given user names. When you added a new mail folder, the name provided for the folder did not match the name or alias of any user registered with the clearinghouse service. Either the name was spelled wrong or the user needs to be registered with the clearinghouse service (Booklet 2, step 7).

Not a backup disk

The floppy disk presented to Restore or Show Backup Index does not appear to have been created by one of the backup commands. This includes floppy disks that are unformatted or formatted by other products. It also includes floppy disks which the Backup command started to write but was unable to complete.

Undelivered Mail Folder not Found**Choose Desired Action**

- 1 Create a new Undelivered Mail Folder
- 2 Run File Check

Enter choice number:

This message and prompt would appear during the start up of a file service that supports electronic mail. Running file check should bring the file back, so it is the preferred choice (action 1Q). If the file check does not fix the problem, create another undelivered mail folder.

Example:

LARGE CAPACITY DISK DIAGNOSTIC [Version X.X of 30-Jan-83]

A '?' will further explain the options.

A 'BREAK' will return to the start of the prior menu.

PERSON RUNNING THE TEST

- 1 User
- 2 System Administrator
- 3 Tech Rep

Enter Choice Number: 2 RETURN

System Administrator

PASSWORD: *****

TIME REQUIRED

PLEASE WAIT! Getting time from server.

TEST SELECTION:

- 1 Confidence Test
- 2 Format Disk
- 4 Run Physical Volume Scavenger
- 5 Manual Bad Page Log
- 6 Exit

Enter Choice Number: 1 RETURN

RIGID DISK CONFIGURATION (the following are examples)

First Unit = 80 MB

Is the above configuration correct: (Yes/No): Yes

CONFIDENCE TEST

Running: First Unit Unit Type: 80 MB Run Time: 5 minutes

SUBTEST (subtests are named as they run. The following is an example)

Read Header Check

SUCCESSFUL COMPLETION

Type any character to continue:

Notes:

If you want to run another test at the end of the confidence test, type any character. If you want to discontinue testing, remove the floppy disk and reboot.

ACTION 6A :

*Resolving problems common to removable disks***Running a confidence test**

Overview: Any time you suspect disk problems, you should run the confidence test to verify the disk.

Procedure: To run this test as a system administrator, you need to obtain a special password from your system analyst or the Customer Support Center. You can also run it as a user. No special password is required in that case. If you run it as a user, however, you will receive less data.

1. Insert the diagnostic floppy disk into the floppy disk drive.
2. Hold down the B RESET and ALT B buttons.
3. Release the B RESET button. The numbers on the maintenance panel will now begin to cycle. When they reach 0005, release the ALT B button.
4. Select **System Administrator** as the Person Running the Test. Enter the special password.
5. Select the **Confidence Test** option. The test will then run automatically. If any of the subtests detects an error condition, you will be prompted to call the Customer Support Center for service.
6. When the test is complete, remove the floppy disk from the floppy disk drive and reboot the server (action 1D).

Comments: If the removable disk configuration indicates that one or more units are not ready, you will be given a prompt asking if you want to call for service. If you still wish to continue, type any character when the Type Any Character to Continue prompt appears.

Example:

LARGE CAPACITY DISK DIAGNOSTIC [Version X.X of 30-Jan-83]

A '?' will further explain the options.

A 'BREAK' will return to the start of the prior menu.

PERSON RUNNING THE TEST

- 1 User
- 2 System Administrator
- 3 Tech Rep

Enter Choice Number: 2 RETURN

System Administrator

PASSWORD: *****

TIME REQUIRED

PLEASE WAIT! Getting time from server.

TEST SELECTION:

- 1 Confidence Test
- 2 Format Disk
- 3 Run Physical Volume Scavenger
- 4 Manual Bad Page Log

Enter Choice Number: 4 RETURN

SCAVENGE DISK

UNIT TO BE SELECTED

- 1 First Unit
- 2 Second Unit
- 3 Third Unit
- 4 Fourth Unit
- 5 Exit

Enter choice number: 1 RETURN

SCAVENGING FIRST UNIT

No problem found.

Type any character to continue: <CTRL> <C>

Notes:

1. If you want to run another test at the end of the scavenger test, type any character. Otherwise, remove the floppy disk and reboot,
2. If a problem is found, you may see a message such as the following:
A problem was found.
Attempting repair.
Internal structures repaired.
Type any character to continue:
You will then be returned to the Unit to Be Scavenged prompt.
3. If a message displays which indicates repairs could not be made, call the Customer Support Center for further instructions.

ACTION 6B:

Resolving problems common to removable disks

Running the physical volume scavenger

Overview: You run the physical volume scavenger to correct disk errors. **NOTE:** You run this test only when you are instructed to do so by the Customer Support Center.

Procedure: To run this test, you will need to obtain a special password from the Customer Support Center.

1. Insert the diagnostic floppy disk into the floppy disk drive.
2. Hold down the B RESET and ALT B buttons.
3. Release the B RESET button. The numbers on the maintenance panel will now begin to cycle. When they reach 0005, release the ALT B button.
4. Select System Administrator as the Person Running the Test. Enter the special password.
5. Select the Run Physical Volume Scavenger option. Select the unit to be run on. It will then run automatically.
6. If the test completes successfully, remove the floppy disk from the floppy disk drive and reboot the server (action 1D). Otherwise, report the results of the test to the Customer Support Center and ask for further instructions.

Comments: If the selected removable disk unit is not ready or cannot be found, you will be given a prompt asking if you want to call for service. If you still wish to continue, type any character when the Type Any Character to Continue prompt appears.

Example:

LARGE CAPACITY DISK DIAGNOSTIC [Version X.X of 30-Jan-83]

A '?' will further explain the options.

A 'BREAK' will return to the prior menu.

PERSON RUNNING THE TEST

- 1 User
- 2 System Administrator
- 3 Tech Rep

Enter Choice Number: 2 RETURN

System Administrator.

PASSWORD: *****

TIME REQUIRED

PLEASE WAIT! Getting time from server.

TEST SELECTION:

- 1 Confidence Test
- 2 Format Disk
- 3 Run Physical Volume Scavenger
- 4 Manual Bad Page Log

Enter Choice Number: 5 RETURN

MANUAL BAD PAGE LOG

UNIT TO BE SELECTED

- 1 First Unit
- 2 Second Unit
- 3 Third Unit
- 4 Fourth Unit
- 5 Exit

Enter choice number: 1 RETURN

MANUAL BAD PAGE LOG FIRST UNIT

Bad page to be logged: 122249 RETURN

Are you sure? (Yes/No): Yes

Exit? (Yes/No): Yes



Notes:

1. If you answer yes to the Exit? prompt, you will see the Bad Page to Be Logged prompt and you may enter additional bad pages.
2. If you answer no to the Exit? prompt, you will return to the TEST SELECTION menu.
3. When you have logged all bad pages, remove the floppy disk and reboot.

ACTION 6C:

Resolving problems common to removable disks

Running the manual bad page log routine

Overview: You run the manual bad page log routine to enter specific pages in the bad page table. **NOTE:** You run this test only when you are instructed to do so by the Customer Support Center.

Procedure: To run this routine, you need to obtain a special password from the Customer Support Center.

1. Insert the diagnostic floppy disk into the floppy disk drive.
2. Hold down the B RESET and ALT B buttons.
3. Release the B RESET button. The numbers on the maintenance panel will now begin to cycle. When they reach 0005, release the ALT B button.
4. Select **System Administrator** as the Person Running the Test. Enter the special password.
5. Select the **Manual Bad Page Log** option, and then choose the disk drive for which bad pages will be logged.
6. Enter the bad pages as instructed by the Customer Support Center.
7. Remove the floppy disk from the floppy disk drive and reboot the server (action 1D).

Comments: If the rigid disk configuration indicates that one or more units are not ready or cannot be found, you will be given a prompt asking if you want to call for service. If you still wish to continue, type any character when the Type Any Character to Continue prompt appears.

BOOKLET 6

FORMS

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INTRODUCTION

This booklet includes forms for setting up your network, keeping it running, and troubleshooting problems. You may make copies of these forms and fill them out by hand, or you may fill them out on an 8010 workstation.

To fill them out on an 8010, simply copy the "System Administrator Forms and Templates" folder onto your desktop from the O.S. 4.0 Applications folder. The forms stored in this folder use fill-in rules. Instructions for filling in the forms are included in the folder.

Form 2 Directory of Workstations

| Workstation | Component | Software | Owner | Serial # | Location |
|-------------|-----------|----------|-------|----------|----------|
| | Processor | | | | |
| | Display | | | | |
| | Keyboard | | | | |
| | Printer | | | | |
| | | | | | |
| | Processor | | | | |
| | Display | | | | |
| | Keyboard | | | | |
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| | Processor | | | | |
| | Display | | | | |
| | Keyboard | | | | |
| | Printer | | | | |
| | | | | | |
| | Processor | | | | |
| | Display | | | | |
| | Keyboard | | | | |
| | Printer | | | | |

Form 3 Users On Your Network

Use this form to track the users registered in your clearinghouse. Note that all users who wish to exchange mail with each other must have their mail stored on the same file service. You may use more than one file service for mail, but you will then have separate mail communities.

| |
|-----------------------|
| First Name: |
| Last Name: |
| Password: |
| System Administrator: |
| Home File Service: |
| Mail Stored On: |
| Alias: |
| Other: |
| |
| First Name: |
| Last Name: |
| Password: |
| System Administrator: |
| Home File Service: |
| Mail Stored On: |
| Alias: |
| Other: |
| |
| First Name: |
| Last Name: |
| Password: |
| System Administrator: |
| Home File Service: |
| Mail Stored On: |
| Alias: |
| Other: |

Form 4 File Drawers and Mail Folders on Your File Service

File drawers and mail folders added in the file service must indicate a registered user as owner. The mail folder must be added in the same file service whose name was recorded after the "mail stored on" prompt when you registered the user.

| File Service Name: | | |
|--------------------|-------|--------------|
| Filing | | Mail Folders |
| File Drawer | Owner | |
| | | |

Form 5 Setting Up Ports for Communication

Use this form to record the information that will be needed as you register the ports in your clearinghouse service. You will need to fill out one of these sheets for each port you register.

Directions: Write in your answer (or if on-line, press <NEXT> to advance through the fields) in the space provided before each question. When you register the port, the information you need to answer the system prompts will be listed in the order required.

Questions to Answer

Notes

| | |
|--|---|
| <p>_____ Port Name</p> | <ul style="list-style-type: none"> ● Choose name. (The port name can be 40 characters long, however, if you wish to see the characters on the emulation icon, keep your entry to a maximum of nine characters.) |
| <p>_____ Line Number</p> | <ul style="list-style-type: none"> ● Each port registered in your clearinghouse needs a different number. You may assign your own numbers or use the sytem-provided numbers. One scheme to use is to give the first line the number 1, the second 2, and so forth. |
| <p>_____ Port is Connected To 1. a Xerox 873 CIU 2. a Xerox 8000 processor</p> | <ul style="list-style-type: none"> ● This answers where the port is physically located, i.e. what server or CIU it's on. |
| <p>_____ Name of CIU to which the port is connected</p> | <ul style="list-style-type: none"> ● If the port is connected to an 8000, this prompt is omitted. |
| <p>_____ Port Number 1. A1 2. A2 3. A3 4. A4 5. B1 6. B2 7. B3 8. B4</p> | <ul style="list-style-type: none"> ● If the port is connected to an 8000 processor, this prompt is omitted. ● If the port is connected to a single board 873, use A1, A2, A3, or A4. ● If the port is connected to a double board 873, you can use B1, B2, B3, and B4 in addition to the numbers available for a single board. |

Questions to Answer

Notes

_____ Name of External
Communication Service which
owns the port.

- This is the same as the "Name of External Communication Service which owns this Communication Interface Unit." If the entry for the corresponding CIU has already been added, this information is taken from that entry, and the prompt will not appear.

_____ Type of service

1. Interactive Terminal Service
2. Internetwork Routing Service
3. Gateway Service
4. IBM 3270 Host Service
5. TTY Emulation Service
6. Out of service

- With what type of service are you trying to communicate?
 1. Xerox 820 or teletype-like terminal
 2. Another Ethernet network
 3. An 860 or 850 not directly connected to Ethernet

The numbers above correspond to the numbers on the left (type of service). When registering an 873 port, the Gateway and IBM 3270 options will not be displayed.

If you chose options 1, 2, or 3 to the last question, you will also need to answer the next three questions.

_____ Name of Service

- For these three questions be certain you are using the names that have been used in registering the service you're trying to connect to this port.

_____ Domain

_____ Organization

_____ May this service be preempted
for another use when the port is
inactive? (Y/N)

- "Y" allows other applications (i.e Teletype Emulation) to use an inactive port generally used by another service. This is available only to allow ports assigned to an Interactive Terminal Service to be preempted for teletype emulation.

_____ Description

- "None" can be replaced with information (limited to 100 characters) about the port or the connected equipment.

Questions to Answer**Notes**

For synchronous ports (those assigned to Gateway Service, Internetwork Routing Service, or IBM 3270 Emulation) the following information must be entered:

| | | |
|--|---|--|
| | <p>The equipment connected to the port is</p> <ol style="list-style-type: none"> 1. Full duplex 2. Half duplex | <ul style="list-style-type: none"> ● If your port is on an 873, you can connect only full duplex equipment. ● If the port is assigned for IBM 3270 emulation, and is connected to a multi-drop communication line, you must specify half-duplex. |
| | <p>Line speed of equipment connected to the port</p> <ol style="list-style-type: none"> 1. 1200 bps 2. 2400 bps 3. 3600 bps 4. 4800 bps 5. 7200 bps 6. 9600 bps or higher | |

For asynchronous ports (those assigned to Interactive Terminal Service or Teletype Emulation) the following information must be entered:

| | | |
|--|---|--|
| | <p>Should this port behave as a</p> <ol style="list-style-type: none"> 1. modem (DCE) 2. terminal (DTE) | <ul style="list-style-type: none"> ● If a modem is connected to the port, then the port should be set to behave as a terminal. ● If a terminal is directly connected to the port, the port should be set to behave as a modem. ● Local ports to 8000 processors always behave as terminals, so this prompt does not appear. |
|--|---|--|

Questions to Answer

Notes

Line speed of equipment

1. 75 bps
2. 11 bps
3. 150 bps
4. 300 bps
5. 600 bps
6. 1200 bps
7. 2400 bps
8. 3600 bps
9. 4800 bps
10. 7200 bps
11. 9600 bps or higher

- When setting up CIU configurations, you may only have async speeds that are within the same range on the same board. If you try to violate this restriction, CHS should warn you and ECS should refuse to configure the CIU. (Line speeds shown will vary depending on whether the port is connected to a CIU or 8000 processor.)

1st range--110

2nd range-- 75, 150, 300

3rd range--150, 300, 600

4th range--300, 600, 1200

5th range--600, 1200, 2400

6th range--1200, 2400, 4800

7th range--2400, 4800, 9600

(If the port is connected to an 8000 processor, the following prompts are omitted.)

Number of data bits in each character

1. five
2. six
3. seven
4. eight

- Most equipment will have 7 data bits.

Number of stop bits

1. One
2. Two

- If the baud rate of your equipment is below 300, select 2.
- In all other cases, select 1.

Parity

1. None
2. Odd
3. Even

- For most situations, even parity is used.

Questions to Answer

Notes

_____ Does equipment have autodial equipment? (Y/N)

Autodialer type is

- 1. Racal-Vadic
- 2. Ven-Tel

- The 873 CIU supports only the dialer types listed. The 8000 processor supports only the RS-366 interface for dialing.

_____ Does equipment support XOn/XOff flow control (Y/N)

- Flow control is dependent on the remote host or terminal which will communicate via this port.

_____ Enter value of XOn character

_____ Enter value of XOff character

KEEP A COPY OF YOUR COMPLETED PROBLEM REPORT

PLEASE FILL OUT THE FORM COMPLETELY AND ATTACH ANY DOCUMENTATION NEEDED TO EXPLAIN THE PROBLEM OR SUPPORT THE ENHANCEMENT REQUESTED.

TO HELP US EXPEDITE A RESPONSE TO YOU, PLEASE INCLUDE COMPLETE ADDRESS INFORMATION:

- Submitter Name
- Mail Stop/Branch
- Street Address
- City and State.

TYPE OF REQUEST -- Please use the following definitions and enter the corresponding letter in the "Type of Request" field:

- | | |
|----------------------------------|--|
| A PROBLEM REPORT | Problem that causes a crash or inconvenience and irritates user. |
| B REQUEST FOR ENHANCEMENT | Suggestion for system improvement. |
| C DOCUMENTATION ERROR | Inaccurate or confusing passage from the Help, training, or reference materials. |

IMPACT -- Please use the following definitions and enter the corresponding number in the "Impact" field:

- | | |
|-------------------|---|
| 1 FATAL | Problem causes a persistent crash, a "lock up", or prevents a work from being done. Consistent or frequent crashes or problems, not a one-time, non-recurring error. |
| 2 SERIOUS | Occasional crash or other error that makes it difficult, but not impossible, to get a job done. Problem necessitates a complex workaround or causes other inefficiencies. |
| 3 MODERATE | Problem causes an inconvenience, adds steps to a job, or makes the system confusing to a user, but does not prevent work from being done. |
| 4 ANNOYING | A nuisance problem that irritates user, but does not prevent constructive work from being done. |

DOCUMENTATION -- The following documentation should always accompany a Problem Report when available:

- Error Log Entries (File Check Logs, or System Error Analysis Logs.)
- Maintenance Panel Codes
- Messages
- Sample printouts, or a floppy disk containing a copy of the problem document
- Other information or samples that enable someone else to duplicate the error

PROBLEM REPORT FORM
8000 NS PRODUCTS

Fill out completely
and give to your System Analyst

Date: _____ Analyst Name: _____
Type of Request (A, B, or C): _____ Mail Stop/Branch: _____
A Problem Report Street Address: _____
B Enhancement Request City and State: _____
C Documentation Error Intelnet #: _____
Outside Phone #: _____
Customer Name: _____

Software Level: _____
Hardware (8010, Comm Server, Character Printer, 29 MB File Server, etc.): _____

Problem Area or Feature (Records Processing, Text Editing, Mail, Fonts, Equation Typing, Documentation, Document Storage/Retrieval, etc.): _____

Description (Use **Continuation Sheet (Page 2)**, if necessary. Give details leading up to the problem, and report any error messages, status codes, or log entries that relate to the problem in the order in which they occurred.):

IMPACT: _____ (1 Fatal, 2 Serious, 3 Moderate, 4 Annoying)

FREQUENCY: _____ (A Every time, B Intermittent, C Only once)

Attempted Solutions (Use **Continuation Sheet (Page 2)**, if necessary. Describe as you did the initial problem, including status codes, messages, log entries, etc.)

Documentation/Testcase Floppy Disk attached _____

For Internal Use Only System Evaluation Number _____
Screened by _____
AR Number _____ AR Date _____

Date: _____

Analyst Name: _____

Problem Area or Feature: _____
Description (Continued):

Attempted Solutions (Continued):

GLOSSARY OF TECHNICAL TERMS

Glossary of Technical Terms

Activate. The act of causing a previously installed service to actually run on a server. All activated services will be started automatically each time the server is booted.

Alias. A shorthand name for a user, service or other registered entry in the clearinghouse database. In most situations, it can be used in place of the distinguished name. Note that an alias stands for only the first component of a three-part name, and may thus need to be fully-qualified (alias:domain:organization) when the domain and organization components cannot be inferred from context.

Backup. The procedure by which a copy of important information is saved in case of later loss or damage of the original copy. The file service and the clearinghouse service each provide appropriate backup facilities, allowing recovery from database loss via their respective restore commands.

Boot. The act of restarting a processor by pushing the boot button (labeled B RESET) on the maintenance panel of a server or workstation. In some cases, alternate forms of booting are invoked using the second button (labeled ALT B) on the maintenance panel.

CHS. See Clearinghouse Service.

Clearinghouse service. The network service that provides a "directory" of registered users, services, and other resources, allowing relevant information about each item to be looked up by name. An internetwork can contain any number of clearinghouse services, each holding a single domain of the overall database.

Commands. The typed instructions entered on the server terminal to instruct the service software in some way. For example, to register a new user, the system administrator types the Add User command.

Communications interface unit. The Xerox 873, a microprocessor-controlled, multi-port communication facility providing up to eight RS232C ports to support a variety of communications, including electronic mail, internetwork routing, and terminal emulation. The ports are controlled by a designated external communication service and are accessed via the Ethernet.

Deactivate. The act of removing a service from active status on a server. When a service has been deactivated, it will no longer be started automatically when the server is booted.

Diagnostics. Software tests that can be used to test the correct operation of the various elements of the network system, including servers, workstations, disks, RS232C ports, modems, phone lines, etc. When abnormal operation suggests that a problem exists, diagnostics can be used to verify and pinpoint it.

Disable. The act of removing the authorization for a given software option to run on a given server or workstation. This action is performed, as appropriate, by your Xerox representative.

Distinguished name. The fundamental name of a user, service, or other registered entry in the clearinghouse database. One or more aliases may be defined as shorthand for the distinguished name. A distinguished name can appear in fully-qualified form (name:domain:organization), but can usually be shortened when the domain and organization components are clear from the context.

Domain. A group of registered items in the clearinghouse database. A domain describes the community of users on a given Ethernet, and the servers and other resources connected to that network and administered by the local system administrator.

ECS. See external communication service.

Enable. The act of authorizing a given software option to run on a given server or workstation. Options purchased from Xerox are enabled by your Xerox representative.

Ethernet. The high-speed local area network that provides the main communication vehicle of the Xerox 8000 Network System. An Ethernet consists of a coaxial cable with associated taps and connectors, and is capable of supporting over 1000 workstations and servers over distances of up to 2.5 kilometers.

External communication service. The network service that provides point-to-point communication facilities by controlling one or more RS232C ports, located on the server on which it runs, or on an associated communications interface unit.

File drawer. A logical storage compartment on a file service that holds the information associated with a single user, project, group, etc.

File service. The network service that provides shared high-volume storage for users on a large rigid disk connected to the server on which it runs. Each file service holds many file drawers, and can thus be thought of as a large electronic file cabinet.

Fixed disk. The 10, 29, and 40 megabyte rigid disk units available on servers and workstations, which do not utilize removable disk packs.

Floppy disk. The removable flexible plastic diskettes that fit into the floppy disk drives on servers and workstations. They are used for such purposes as software installation, database backup, and document archiving.

FS. See file service.

Fully-qualified name. The full three part name of a user, service, or other registered entry in the clearinghouse database. The three components are written in the form, "name:domain:organization." In many cases the fully-qualified name is not needed, and can be shortened to "name:domain" or just "name", because the missing components can be inferred from the context.

Gateway service. The network service that allows communicating word processors (Xerox 850, Xerox 860 with communication option) to utilize the electronic mail facility provided by the mail service.

Group. A named collection of users who can be granted access rights to file drawers as a group. A group can contain individual users and/or entire other groups. Alternatively, a group can contain a pattern, in which case it implicitly contains all users whose names match that pattern.

GWS. See gateway service.

IBM 3270 host. In general, this refers to an IBM (or plug-compatible equivalent) mainframe computer to which 3270-class terminals are attached. In the Xerox 8000 NS context, it refers specifically to the entry in the clearinghouse service which represents such a host for purposes of access via the 3270 terminal emulation feature of the 8010 workstation and the 3276 controller emulation feature of the external communication service.

IRS. See internetwork routing service.

Install. The act of loading the services software from the installation floppy disks onto the rigid disk of a server. The software must be installed before it can run on the server.

Internetwork. A compound, multi-site, store-and-forward communication network comprising Ethernets, point to point links, and internetwork routing services. The internetwork (or internet) provides the underlying foundation for the entire Xerox 8000 NS product line.

Internetwork routing service. The network service that routes communication traffic among multiple Ethernets, thus creating, from a collection of Ethernets and point-to-point links, a single unified internetwork.

Interactive terminal service. The network service that allows interactive terminals (including personal computers with terminal emulation software, such as the Xerox 820 and 820-II running Ascom) to utilize the electronic mail facility provided by the mail service.

ITS. See interactive terminal service.

Logon and logoff. The actions of signing onto the server terminal before issuing system administrator commands, and of signing off again when finished. The ability to log on is protected by a password, and is allowed only to users registered as system administrators. In the absence of a logon, only a limited set of commands is available at the server terminal (e.g. Show Status on the print service).

Mail folder. A logical container on the mail service that holds the mail addressed to a particular recipient. The mail folder serves as the user's post-office box, holding the mail until it is examined from the user's workstation.

Mail service. A particular file service designated to provide mail storage and delivery. The electronic mail software option must be enabled on the server on which the mail service runs.

Maintenance panel. The small panel behind the black flip-down cover on the front of an 8000 NS processor (server or 8010 workstation). The maintenance panel contains the maintenance panel code display (4 digits) and two buttons, marked B RESET and ALT B.

Maintenance panel code. The value shown in the 4-digit display on the maintenance panel, indicative of the state of the hardware and software of the machine. In normal operation, the code displayed is 8000.

Modem. The "modulator-demodulator" unit that connects an RS323C port to a telephone line. Compatible modems are needed at both ends to enable communication.

Network number. The unique numeric code that identifies a given Ethernet in the internetwork. It is used in conjunction with the processor number to route data among the machines in the internet.

Organization. A collection of domains in the overall clearinghouse database, corresponding to a top-level entity such as an entire company. Many internets will contain only a single organization, although very large corporate internets may contain several, corresponding to subsidiary companies.

Partition. The act of initializing the server disk before installing software on the server. This action is done only when software is first installed, since any subsequent partitioning will destroy all data stored on the disk.

Pattern. A string containing one or more asterisks (*) that can be used, in certain contexts, in place of a name to specify a set of names which match the pattern.

Print service. The network service that provides hardcopy printing using an electronic printer connected to the server on which it runs.

Prompt. The "hint" provided by the server terminal interface when command type-in is needed. The prompts range from a simple ">" when a new command can be entered, to an explicit statement of what is required (e.g. "Enter choice number:").

Processor. The computer in an 8000 NS server or 8010 workstation.

Processor number. The unique numeric code that identifies a given processor, and is used as its basic address in the internetwork.

PS. See print service.

Removable disk. The 80 and 300 megabyte rigid disk units available on servers, which utilize industry standard removable disk packs.

Restore. The procedure by which a backup copy of a file service or clearinghouse service database is brought back into service to recover from loss or damage to the original copy.

RS232C port. A physical connection socket (with its associated electronics) that conforms to the industry standard RS232C specification. Such ports are located on 8000 NS servers and on 873 communication interface units.

Secondary clearinghouse. A spare clearinghouse that is activated when the server running the primary clearinghouse fails and cannot be restarted immediately. The secondary clearinghouse runs on the server where the backup clearinghouse database is stored.

Server. A hardware unit shared among the users of the internetwork, providing facilities such as shared peripheral devices and inter-user communication. The software running on a server comprises one or more services.

Service. A software package running on a server and providing, via the internet, one or more facilities to enhance the productivity of users at their workstations.

Start. The final step in putting a service into operation. Starting a service makes its facilities available to clients via the network.

Stop. The opposite of starting a service. Stopping a service makes its facilities unavailable to network clients.

System administrator. The person responsible for setting up and maintaining the smooth operation of a Xerox 8000 NS Ethernet installation. Typically, a multi-site internetwork will have a number of system administrators, with one (or more) assigned to each Ethernet site.

Teletype emulation. An optional software feature of the external communication service allowing workstations (e.g. the 8010 professional workstation) to access host computers that connect to "teletype-compatible" terminals.

Workstation. A hardware unit devoted to the sole use of a single user at any one time, capable of local processing and/or access to the various network services available in the internetwork. Examples range from the Xerox 8010 Professional Workstation to a simple interactive terminal.

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| Add Alias (Clearinghouse) | 1/4, 2/7 |
| Add Communication Interface Unit (Clearinghouse) | 1/4, 2/12 |
| Add External Communication Service (Clearinghouse) | 1/4, 2/12 |
| Add File Drawer (File) | 2/10 |
| Add File Service (Clearinghouse) | 1/4, 2/6 |
| | |
| Add Gateway Service (Clearinghouse) | 1/4, 2/12 |
| Add Group (Clearinghouse) | 2/8 |
| Add IBM 3270 Host (Clearinghouse) | 1/4, 2/12 |
| | |
| Add Interactive Terminal Service (Clearinghouse) | 1/4, 2/12 |
| Add Internetwork Routing Service (Clearinghouse) | 1/4, 2/14 |
| Add Mail Folder (File) | 1/4, 2/9 |
| Add Mail Service (Clearinghouse) | 1/4, 2/6 |
| Add Member (Clearinghouse) | 2/8 |
| Add Print Service (Clearinghouse) | 1/4, 2/6 |
| Add RS232C Port (Clearinghouse) | 1/4, 2/12 |
| Add User (Clearinghouse) | 1/4, 2/7 |
| | |
| Add Workstation (Clearinghouse) | Not implemented |
| Allow Remote Access (External communication) | 3/AA |
| | |
| B | |
| | |
| Backup (Clearinghouse) | 3/D |
| Backup (File) | 3/A, 3/appendix B |
| | |
| C | |
| | |
| Cancel Documents (Print) | 3/F |
| Change Communication Interface Unit (Clearinghouse) | 1/4, 3/Q |
| | |
| Change External Communication Service (Clearinghouse) | 1/4, 3/Q |
| Change File Service (Clearinghouse) | 1/4, 3/Q |
| Change Gateway Service (Clearinghouse) | 1/4, 3/Q |
| Change IBM 3270 Host (Clearinghouse) | 1/4, 3/Q |
| | |
| Change Interactive Terminal Service (Clearinghouse) | 1/4, 3/Q |
| Change Internetwork Routing Service (Clearinghouse) | 1/4, 3/Q |
| Change Mail Service (Clearinghouse) | 1/4, 3/Q |
| Change Print Service (Clearinghouse) | 1/4, 3/Q |

Index of Commands

| Command Name (Name of Service That Uses It) | Booklet/Step |
|---|-----------------|
| C (Continued) | |
| Change RS232C Port (Clearinghouse) | 1/4, 3/Q |
| Change User (Clearinghouse) | 1/4, 3/R |
| Change Workstation (Clearinghouse) | Not implemented |
| Copy Container (File) | 3/P |
| D | |
| Delete Alias (Clearinghouse) | 1/4, 3/T |
| Delete Communication Interface Unit (Clearinghouse) | 1/4, 3/T |
| Delete Desktop (File) | 1/4, 3/C, 3/T |
| Delete External Communication Service (Clearinghouse) | 1/4, 3/T |
| Delete File Check Logs (All services) | 1/4, 5/1R |
| Delete File Drawer (File) | 1/4, 3/C, 3/T |
| Delete File Service (Clearinghouse) | 1/4, 3/T |
| Delete Fonts (Print) | 1/4, 3/X |
| Delete Gateway Service (Clearinghouse) | 1/4, 3/T |
| Delete IBM 3270 Host (Clearinghouse) | 1/4, 3/T |
| Delete Interactive Terminal Service (Clearinghouse) | 1/4, 3/T |
| Delete Internetwork Routing Service (Clearinghouse) | 1/4, 3/T |
| Delete Mail Folder (File) | 1/4, 3/T |
| Delete Mail Service (Clearinghouse) | 1/4, 3/T |
| Delete Member (Clearinghouse) | 1/4, 3/S |
| Delete Print Service (Clearinghouse) | 1/4, 3/T |
| Delete Remote Clearinghouse (Clearinghouse) | 1/4, 3/T |
| Delete RS232C Port (Clearinghouse) | 1/4, 3/T |
| Delete User (Clearinghouse) | 1/4, 3/T |
| Delete Workstation (Clearinghouse) | Not implemented |
| Disk Pack Care (All services) | 3/App. A |
| F | |
| Find Remote Clearinghouse (Clearinghouse) | 2/14, 3/V |
| I | |
| Inhibit Remote Access (External communication) | 3/AA |
| Install From Floppy (Print) | 2/20 |

| Command Name (Name of Service That Uses It) | Booklet/Step |
|---|-----------------|
| L | |
| List Aliases (Clearinghouse) | 1/4 |
| List Communication Interface Units (Clearinghouse) | 1/4 |
| List Desktops (File) | 3/C |
| List Documents (Print) | 1/4, 3/F |
| List External Communication Services (Clearinghouse) | 1/4 |
| List File Check Logs (All services) | 1/4, 5/1R |
| List File Drawers (File) | 1/4, 3/C |
| List File Services (Clearinghouse) | 1/4 |
| List Fonts (Print) | 1/4, 3/X |
| List Gateway Services (Clearinghouse) | 1/4 |
| List Groups (Clearinghouse) | 1/4, 3/S |
| List IBM 3270 Hosts (Clearinghouse) | 1/4 |
| List Interactive Terminal Services (Clearinghouse) | 1/4 |
| List Internetwork Routing Services (Clearinghouse) | 1/4 |
| List Mail Folders (File) | 1/4 |
| List Mail Services (Clearinghouse) | 1/4 |
| List Members | 1/4, 2/8, 3/S |
| List Ports (Interactive terminal, internetwork routing) | 1/4, 3/AA |
| List Print Services (Clearinghouse) | 1/4 |
| List Remote Clearinghouses (Clearinghouse) | 1/4 |
| List Routes (Internetwork routing) | 5/2D |
| List RS232C Ports (Clearinghouse) | 1/4 |
| List Services (All services) | 1/4 |
| List Users (Clearinghouse) | 1/4, 3/T |
| List Workstations (Clearinghouse) | Not implemented |
| Logoff (All services) | 1/2 |
| Logon (All services) | 1/2 |
| Print Test Pattern (Print) | 2/20, 2/21, 3/E |
| R | |
| Release Port (Internetwork routing) | 3/AA |
| Repeat Backup (File) | 3/M |
| Restore (Clearinghouse) | 3/R, 3/U, 3/O |
| Restore (File) | 3/N |

Index of Commands

Command Name (Name of Service That Uses It) Booklet/Step

S

| | |
|--|-----------|
| Set Backup Parameters (File) | 3/App. B |
| Set Buffer Size | 2/12 |
| Set Paper Handling (Print) | 3/W |
| Set Registration (Print) | 3/Z |
| Show Activity (File) | 3/C |
| Shutdown Engine (Print) | 3/Y |
| | |
| Show Backup Index (File) | 3/O |
| Show File Check Logs (All services) | 3/O, 5/1R |
| Show Network Statistics (All services) | 5/1H |
| Show Space (All services) | 3/C |
| | |
| Show Status (Print) | 2/21 |
| Show System Error Log (All services) | 5/1C |
| Start (All services) | 3/I |
| Start Diagnostic (Print) | 5/4B |
| | |
| Start Printing (Print) | 3/F |
| Start Queuing (Print) | 3/F |
| Stop (All services) | 3/I |
| Stop Printing (Print) | 3/F |
| | |
| Stop Queuing (Print) | 3/F |
| Stop Services (All services) | 3/I |

T

| | |
|---------------------|------------------|
| Test (All services) | 5/1M, 5/1N, 5/1O |
|---------------------|------------------|

U

| | |
|---------------------------------|------|
| Use Port (Internetwork routing) | 3/AA |
|---------------------------------|------|

W

| | |
|-----------------------|-----|
| Wakeup Engine (Print) | 3/Y |
|-----------------------|-----|

APPENDIX A

RECOVERY PROCEDURES

This appendix contains recovery procedures for the following equipment on your network:

- 8010 workstations
- The servers running all services

Use this appendix if you see a series of flashing numbers on the maintenance panel of the processor of an 8010 workstation or a server. If you see just one number in the maintenance panel, use Appendix B.

RECOVERY PROCEDURES FOR 8010 WORKSTATIONS

Use the procedure outlined below to solve problems at 8010 workstations. Note that the information you gain in step 2 determines which action you should choose in step 3. The recovery action is different for different types of errors.

Step 1: Make note of the events leading up to the problem.

Write down any messages appearing at the workstation display, the name of the document in use, or the type of desktop activity in progress at the time of the problem. Also write down any details that may help identify the problem and its solution.

Step 2: Make note of maintenance panel codes and determine the type of error.

- A disk label check is indicated by a maintenance panel code of **7514**.
- An unrecoverable disk error is indicated by a maintenance panel code of **7516**. The second and third numbers cycled after 7516 indicate the disk page location of the error:

Combine the last two digits of the second number that flashes in the maintenance panel with the last three digits of the third number. For example, 0023 and 0456 indicate a location of 23456. Use the table below to determine which area of the disk contains the error:

| Workstation | First Cylinder | System Area | User Area |
|------------------|----------------|-------------|-----------|
| 10-megabyte disk | 00000-00127 | 00128-05128 | 05129 + |
| 29-megabyte disk | 00000-00223 | 00224-05224 | 05225 + |
| 40-megabyte disk | 00000-00127 | 00128-05128 | 05129 + |

Recovery Procedures

Step 3: Choose a course of action, based on your findings in step 2.

- If you have a disk label check error, perform the following, in order, until the workstation is operational:
 - Install software (Booklet 2, step 16).
 - Run a file check (Booklet 5, action 1Q).
 - Run the diagnostic floppy disk (Booklet 5, action 1F). If you find a problem, take appropriate action as described in action 1F. Otherwise, boot the system (Booklet 5, action 1D). If the problem is not cured, call the Customer Support Center.
- If you have an unrecoverable disk error in the system area, perform the following, in order, until the workstation is operational:
 - Install software (Booklet 2, step 16).
 - Run the diagnostic floppy disk (Booklet 5, action 1F). If you find a problem, take appropriate action as described in action 1F. Otherwise, boot the system (Booklet 5, action 1D). If the problem is not cured, call the Customer Support Center.
- If you have an unrecoverable disk error in the user area, perform the following, in order, until the workstation is operational:
 - Run file check (Booklet 5, action 1Q).
 - Run the diagnostic floppy disk (Booklet 5, action 1F). If you find a problem, take appropriate action as described in action 1F. Otherwise, boot the system (Booklet 5, action 1D). If the problem is not cured, call the Customer Support Center.
- If you have an unrecoverable disk error in the first cylinder, call the Customer Support Center.
- For all other conditions:
 - Run the diagnostic floppy disk (Booklet 5, action 1F). If you find a problem, take appropriate action as described in action 1F. Otherwise, boot the system (Booklet 5, action 1D). If the problem is not cured, call the Customer Support Center.

RECOVERY PROCEDURE FOR ALL SERVICES

Use the following procedure to solve problems at servers running any other service except the print service. Note that the information you gain in step 2 determines which action you should choose in step 3. The recovery action is different for different types of errors.

Step 1: Make note of the events leading up to the problem.

Write down any codes appearing in the maintenance panel, the services running on the server, how full the server is, and any details that may help identify the problem and its solution.

Step 2: Display the error analysis log, and determine the type of error.

Try to display the error analysis log with the Show System Error Log command (Booklet 5, action 1C). If that is not possible, reload the error analysis software (Booklet 5, action 1B), or use the error analysis option on the first services floppy disk (Booklet 2, step 2).

Record all information exactly as it appears on the screen. In particular, note whether there are disk label check or unrecoverable disk errors.

If there is an unrecoverable disk error, note its page number. Using the table below, identify the area where the page is located:

| Server | First Cylinder | Backstop Area | System Area | User Area |
|---------------|----------------|---------------|-------------|-----------|
| 10 megabyte | 00000-00127 | 00128-04628 | 04629-10629 | 10630 + |
| 29 megabytes | 00000-00223 | 00224-04724 | 04725-10725 | 10726 + |
| 40 megabytes | 00000-00127 | 00128-04628 | 04629-10629 | 10630 + |
| 80 megabytes | 00000-00149 | 00150-04650 | 04651-15651 | 15652 + |
| 300 megabytes | 00000-00569 | 00570-05070 | 05071-30071 | 30072 + |

Recovery Procedures

Step 3: Choose a course of action, based on your findings in step 2.

- If you have a disk label check error, perform the following, in order, until the server is operational:
 - Install software (Booklet 2, step 2; additionally, see Appendix A of Booklet 2 for an 80- or 300-megabyte disk).
 - Run file check (Booklet 5, action 1Q). This procedure may take several hours on large disks.
 - Run the diagnostic floppy disk (Booklet 5, action 1F). If you find a problem, take appropriate action as described in action 1F. Otherwise, boot the system (Booklet 5, action 1D). If the problem is not cured, call the Customer Support Center.
- If you have an unrecoverable disk error in the backstop or system area, perform the following, in order, until the server is operational:
 - Install software (Booklet 2, step 2; additionally, see Appendix A of Booklet 2 for an 80- or 300-megabyte disk).
 - Run the diagnostic floppy disk (Booklet 5, action 1F). If you find a problem, take appropriate action as described in action 1F. Otherwise, boot the system (Booklet 5, action 1D). If the problem is not cured, call the Customer Support Center.
- If you have an unrecoverable disk error in the user area, perform the following, in order, until the server is operational:
 - Run a file check (Booklet 5, action 1Q). This procedure may take several hours on large disks.
 - Run the diagnostic floppy disk (Booklet 5, action 1F). If you find a problem, take appropriate action as described in action 1F. Otherwise, boot the system (Booklet 5, action 1D). If the problem is not cured, call the Customer Support Center.
- If you have an unrecoverable disk error in the first cylinder area, try installing software first, if this does not work, call the Customer Support Center.
- For all other conditions:
 - Run the diagnostic floppy disk (Booklet 5, action 1F). If you find a problem, take appropriate action as described in action 1F. Otherwise, boot the system (Booklet 5, action 1D). If the problem is not cured, call the Customer Support Center.

APPENDIX B

MAINTENANCE PANEL CODES

Maintenance Panel Codes

You use the maintenance panel codes in the following listing if just one number appears steadily on the maintenance panel of any 8010 workstation or server. If you see a series of flashing numbers, refer to the procedures in Appendix A instead.

You use this listing as follows:

- Look up the code being displayed on the maintenance panel in the **MPCode** column. The numbers you can see are listed sequentially, from 0000 to 9950.
- Note the number opposite the maintenance panel code in the **Recovery Key** column. Then go to appendix C. Look up the recovery key number in the listing in Appendix C to determine what your recovery action should be.

Maintenance Panel Codes

When you see a code other than 8000 on an 8010, write it down. Then look up the number in the following listing of maintenance panel codes. Note the recovery key number next to the code and determine the action to take by matching the recovery key number with the recovery key explanation in Appendix C.

MPCode: 0000 Recovery Key: 2 or 3
depending on the operation

MPCode: 0001 Recovery Key: 2
MPCode: 0002 Recovery Key: 2
MPCode: 0003 Recovery Key: 2
MPCode: 0004 Recovery Key: 2
MPCode: 0005 Recovery Key: 2
MPCode: 0006 Recovery Key: 2
MPCode: 0007 Recovery Key: 2
MPCode: 0008 Recovery Key: 2
MPCode: 0009 Recovery Key: 2
MPCode: 0010 Recovery Key: 2
MPCode: 0060 Recovery Key: 4
MPCode: 0061 Recovery Key: 4
MPCode: 0062 Recovery Key: 4
MPCode: 0065 Recovery Key: 4
MPCode: 0066 Recovery Key: 4
MPCode: 0067 Recovery Key: 4
MPCode: 0068 Recovery Key: 4
MPCode: 0069 Recovery Key: 4
MPCode: 0070 Recovery Key: 4
MPCode: 0071 Recovery Key: 4
MPCode: 0072 Recovery Key: 4
MPCode: 0073 Recovery Key: 4
MPCode: 0074 Recovery Key: 4
MPCode: 0075 Recovery Key: 4
MPCode: 0076 Recovery Key: 1
MPCode: 0077 Recovery Key: 1
MPCode: 0081 Recovery Key: 4
MPCode: 0082 Recovery Key: 4
MPCode: 0083 Recovery Key: 1
MPCode: 0087 Recovery Key: 1
MPCode: 0089 Recovery Key: 3
MPCode: 0090 Recovery Key: 3
MPCode: 0091 Recovery Key: 3
MPCode: 0092 Recovery Key: 3
MPCode: 0099 Recovery Key: 1
MPCode: 0100 Recovery Key: 1
MPCode: 0111 Recovery Key: 4
MPCode: 0112 Recovery Key: 4
MPCode: 0113 Recovery Key: 4

MPCode: 0114 Recovery Key: 3
MPCode: 0115 Recovery Key: 3
MPCode: 0116 Recovery Key: 1
MPCode: 0117 Recovery Key: 3
MPCode: 0118 Recovery Key: 3
MPCode: 0120 Recovery Key: 4
MPCode: 0121 Recovery Key: 4
MPCode: 0122 Recovery Key: 4
MPCode: 0123 Recovery Key: 8
MPCode: 0124 Recovery Key: 4
MPCode: 0125 Recovery Key: 4
MPCode: 0135 Recovery Key: 1
MPCode: 0136 Recovery Key: 1
MPCode: 0137 Recovery Key: 1
MPCode: 0138 Recovery Key: 1
MPCode: 0139 Recovery Key: 1
MPCode: 0140 Recovery Key: 1
MPCode: 0141 Recovery Key: 1
MPCode: 0142 Recovery Key: 1
MPCode: 0149 Recovery Key: 1
MPCode: 0150 Recovery Key: 1
MPCode: 0151 Recovery Key: 4
MPCode: 0154 Recovery Key: 3
MPCode: 0155 Recovery Key: 3
MPCode: 0167 Recovery Key: 3
MPCode: 0168 Recovery Key: 3
MPCode: 0169 Recovery Key: 3
MPCode: 0170 Recovery Key: 4
MPCode: 0171 Recovery Key: 4
MPCode: 0172 Recovery Key: 4
MPCode: 0173 Recovery Key: 8
MPCode: 0174 Recovery Key: 4
MPCode: 0175 Recovery Key: 4
MPCode: 0176 Recovery Key: 4
MPCode: 0177 Recovery Key: 4
MPCode: 0178 Recovery Key: 4
MPCode: 0179 Recovery Key: 4
MPCode: 0190 Recovery Key: 1
MPCode: 0191 Recovery Key: 1
MPCode: 0192 Recovery Key: 1
MPCode: 0193 Recovery Key: 1
MPCode: 0194 Recovery Key: 1
MPCode: 0199 Recovery Key: 1
MPCode: 0200 Recovery Key: 1
MPCode: 0201 Recovery Key: 4
MPCode: 0202 Recovery Key: 4
MPCode: 0203 Recovery Key: 4
MPCode: 0204 Recovery Key: 3
MPCode: 0205 Recovery Key: 3

Maintenance Panel Codes

| | | | |
|--------------|-----------------|--------------|-----------------|
| MPCode: 0206 | Recovery Key: 4 | MPCode: 0310 | Recovery Key: 5 |
| MPCode: 0207 | Recovery Key: 4 | MPCode: 0311 | Recovery Key: 5 |
| MPCode: 0208 | Recovery Key: 4 | MPCode: 0312 | Recovery Key: 5 |
| MPCode: 0217 | Recovery Key: 3 | MPCode: 0313 | Recovery Key: 5 |
| MPCode: 0218 | Recovery Key: 3 | MPCode: 0314 | Recovery Key: 5 |
| MPCode: 0219 | Recovery Key: 3 | MPCode: 0315 | Recovery Key: 5 |
| MPCode: 0220 | Recovery Key: 4 | MPCode: 0316 | Recovery Key: 5 |
| MPCode: 0221 | Recovery Key: 4 | MPCode: 0317 | Recovery Key: 5 |
| MPCode: 0222 | Recovery Key: 4 | MPCode: 0318 | Recovery Key: 5 |
| MPCode: 0223 | Recovery Key: 8 | MPCode: 0319 | Recovery Key: 5 |
| MPCode: 0224 | Recovery Key: 4 | MPCode: 0320 | Recovery Key: 5 |
| MPCode: 0225 | Recovery Key: 4 | MPCode: 0321 | Recovery Key: 5 |
| MPCode: 0226 | Recovery Key: 4 | MPCode: 0322 | Recovery Key: 5 |
| MPCode: 0227 | Recovery Key: 4 | MPCode: 0323 | Recovery Key: 5 |
| MPCode: 0228 | Recovery Key: 4 | MPCode: 0324 | Recovery Key: 5 |
| MPCode: 0229 | Recovery Key: 4 | MPCode: 0325 | Recovery Key: 5 |
| MPCode: 0240 | Recovery Key: 1 | MPCode: 0326 | Recovery Key: 5 |
| MPCode: 0241 | Recovery Key: 1 | MPCode: 0327 | Recovery Key: 5 |
| MPCode: 0242 | Recovery Key: 1 | MPCode: 0380 | Recovery Key: 5 |
| MPCode: 0243 | Recovery Key: 1 | MPCode: 0381 | Recovery Key: 5 |
| MPCode: 0244 | Recovery Key: 1 | MPCode: 0382 | Recovery Key: 5 |
| MPCode: 0249 | Recovery Key: 1 | MPCode: 0383 | Recovery Key: 5 |
| MPCode: 0250 | Recovery Key: 1 | MPCode: 0399 | Recovery Key: 5 |
| MPCode: 0251 | Recovery Key: 4 | MPCode: 0400 | Recovery Key: 5 |
| MPCode: 0252 | Recovery Key: 4 | MPCode: 0401 | Recovery Key: 5 |
| MPCode: 0253 | Recovery Key: 4 | MPCode: 0402 | Recovery Key: 5 |
| MPCode: 0260 | Recovery Key: 1 | MPCode: 0403 | Recovery Key: 5 |
| MPCode: 0270 | Recovery Key: 4 | MPCode: 0404 | Recovery Key: 5 |
| MPCode: 0271 | Recovery Key: 4 | MPCode: 0405 | Recovery Key: 5 |
| MPCode: 0272 | Recovery Key: 4 | MPCode: 0406 | Recovery Key: 5 |
| MPCode: 0273 | Recovery Key: 8 | MPCode: 0407 | Recovery Key: 5 |
| MPCode: 0274 | Recovery Key: 4 | MPCode: 0408 | Recovery Key: 5 |
| MPCode: 0275 | Recovery Key: 4 | MPCode: 0409 | Recovery Key: 5 |
| MPCode: 0276 | Recovery Key: 4 | MPCode: 0410 | Recovery Key: 5 |
| MPCode: 0277 | Recovery Key: 4 | MPCode: 0411 | Recovery Key: 5 |
| MPCode: 0278 | Recovery Key: 4 | MPCode: 0412 | Recovery Key: 5 |
| MPCode: 0279 | Recovery Key: 4 | MPCode: 0413 | Recovery Key: 5 |
| MPCode: 0285 | Recovery Key: 1 | MPCode: 0414 | Recovery Key: 5 |
| MPCode: 0286 | Recovery Key: 1 | MPCode: 0415 | Recovery Key: 5 |
| MPCode: 0287 | Recovery Key: 1 | MPCode: 0416 | Recovery Key: 5 |
| MPCode: 0301 | Recovery Key: 5 | MPCode: 0417 | Recovery Key: 5 |
| MPCode: 0302 | Recovery Key: 5 | MPCode: 0418 | Recovery Key: 5 |
| MPCode: 0303 | Recovery Key: 5 | MPCode: 0419 | Recovery Key: 5 |
| MPCode: 0304 | Recovery Key: 5 | MPCode: 0420 | Recovery Key: 5 |
| MPCode: 0305 | Recovery Key: 5 | MPCode: 0421 | Recovery Key: 5 |
| MPCode: 0306 | Recovery Key: 5 | MPCode: 0422 | Recovery Key: 5 |
| MPCode: 0307 | Recovery Key: 5 | MPCode: 0423 | Recovery Key: 5 |
| MPCode: 0308 | Recovery Key: 5 | MPCode: 0424 | Recovery Key: 5 |
| MPCode: 0309 | Recovery Key: 5 | MPCode: 0425 | Recovery Key: 5 |

Maintenance Panel Codes

| | | | |
|--------------|-----------------|--------------|-----------------|
| MPCode: 0426 | Recovery Key: 5 | MPCode: 0614 | Recovery Key: 5 |
| MPCode: 0427 | Recovery Key: 5 | MPCode: 0615 | Recovery Key: 5 |
| MPCode: 0428 | Recovery Key: 5 | MPCode: 0616 | Recovery Key: 5 |
| MPCode: 0429 | Recovery Key: 5 | MPCode: 0617 | Recovery Key: 5 |
| MPCode: 0430 | Recovery Key: 5 | MPCode: 0618 | Recovery Key: 5 |
| MPCode: 0431 | Recovery Key: 5 | MPCode: 0619 | Recovery Key: 5 |
| MPCode: 0432 | Recovery Key: 5 | MPCode: 0620 | Recovery Key: 5 |
| MPCode: 0499 | Recovery Key: 5 | MPCode: 0621 | Recovery Key: 5 |
| MPCode: 0500 | Recovery Key: 1 | MPCode: 0622 | Recovery Key: 5 |
| MPCode: 0501 | Recovery Key: 1 | MPCode: 0623 | Recovery Key: 5 |
| MPCode: 0502 | Recovery Key: 1 | MPCode: 0624 | Recovery Key: 5 |
| MPCode: 0505 | Recovery Key: 3 | MPCode: 0625 | Recovery Key: 5 |
| MPCode: 0506 | Recovery Key: 3 | MPCode: 0626 | Recovery Key: 5 |
| MPCode: 0507 | Recovery Key: 3 | MPCode: 0627 | Recovery Key: 5 |
| MPCode: 0508 | Recovery Key: 3 | MPCode: 0628 | Recovery Key: 5 |
| MPCode: 0509 | Recovery Key: 1 | MPCode: 0629 | Recovery Key: 5 |
| MPCode: 0510 | Recovery Key: 3 | MPCode: 0630 | Recovery Key: 5 |
| MPCode: 0511 | Recovery Key: 3 | MPCode: 0631 | Recovery Key: 5 |
| MPCode: 0512 | Recovery Key: 1 | MPCode: 0632 | Recovery Key: 5 |
| MPCode: 0513 | Recovery Key: 1 | MPCode: 0633 | Recovery Key: 5 |
| MPCode: 0514 | Recovery Key: 1 | MPCode: 0634 | Recovery Key: 5 |
| MPCode: 0520 | Recovery Key: 1 | MPCode: 0635 | Recovery Key: 5 |
| MPCode: 0565 | Recovery Key: 1 | MPCode: 0636 | Recovery Key: 5 |
| MPCode: 0570 | Recovery Key: 3 | MPCode: 0637 | Recovery Key: 5 |
| MPCode: 0571 | Recovery Key: 3 | MPCode: 0638 | Recovery Key: 5 |
| MPCode: 0572 | Recovery Key: 3 | MPCode: 0639 | Recovery Key: 5 |
| MPCode: 0576 | Recovery Key: 3 | MPCode: 0640 | Recovery Key: 5 |
| MPCode: 0580 | Recovery Key: 3 | MPCode: 0641 | Recovery Key: 5 |
| MPCode: 0581 | Recovery Key: 3 | MPCode: 0642 | Recovery Key: 5 |
| MPCode: 0582 | Recovery Key: 3 | MPCode: 0643 | Recovery Key: 5 |
| MPCode: 0583 | Recovery Key: 4 | MPCode: 0644 | Recovery Key: 5 |
| MPCode: 0584 | Recovery Key: 4 | MPCode: 0645 | Recovery Key: 5 |
| MPCode: 0585 | Recovery Key: 4 | MPCode: 0699 | Recovery Key: 5 |
| MPCode: 0586 | Recovery Key: 4 | MPCode: 0700 | Recovery Key: 5 |
| MPCode: 0587 | Recovery Key: 4 | MPCode: 0701 | Recovery Key: 5 |
| MPCode: 0600 | Recovery Key: 5 | MPCode: 0702 | Recovery Key: 5 |
| MPCode: 0601 | Recovery Key: 5 | MPCode: 0703 | Recovery Key: 5 |
| MPCode: 0602 | Recovery Key: 5 | MPCode: 0704 | Recovery Key: 5 |
| MPCode: 0603 | Recovery Key: 5 | MPCode: 0705 | Recovery Key: 5 |
| MPCode: 0604 | Recovery Key: 5 | MPCode: 0706 | Recovery Key: 5 |
| MPCode: 0605 | Recovery Key: 5 | MPCode: 0707 | Recovery Key: 5 |
| MPCode: 0606 | Recovery Key: 5 | MPCode: 0708 | Recovery Key: 5 |
| MPCode: 0607 | Recovery Key: 5 | MPCode: 0709 | Recovery Key: 5 |
| MPCode: 0608 | Recovery Key: 5 | MPCode: 0710 | Recovery Key: 5 |
| MPCode: 0609 | Recovery Key: 5 | MPCode: 0711 | Recovery Key: 5 |
| MPCode: 0610 | Recovery Key: 5 | MPCode: 0712 | Recovery Key: 5 |
| MPCode: 0611 | Recovery Key: 5 | MPCode: 0713 | Recovery Key: 5 |
| MPCode: 0612 | Recovery Key: 5 | MPCode: 0714 | Recovery Key: 5 |
| MPCode: 0613 | Recovery Key: 5 | MPCode: 0715 | Recovery Key: 5 |

Maintenance Panel Codes

| | | | |
|--------------|-----------------|--------------|------------------|
| MPCode: 0716 | Recovery Key: 5 | MPCode: 0903 | Recovery Key: 3 |
| MPCode: 0717 | Recovery Key: 5 | MPCode: 0904 | Recovery Key: 3 |
| MPCode: 0718 | Recovery Key: 5 | MPCode: 0905 | Recovery Key: 5 |
| MPCode: 0719 | Recovery Key: 5 | MPCode: 0906 | Recovery Key: 5 |
| MPCode: 0720 | Recovery Key: 5 | MPCode: 0909 | Recovery Key: 3 |
| MPCode: 0721 | Recovery Key: 5 | MPCode: 0910 | Recovery Key: 1 |
| MPCode: 0722 | Recovery Key: 5 | MPCode: 0911 | Recovery Key: 3 |
| MPCode: 0723 | Recovery Key: 5 | MPCode: 0912 | Recovery Key: 3 |
| MPCode: 0724 | Recovery Key: 5 | MPCode: 0913 | Recovery Key: 3 |
| MPCode: 0725 | Recovery Key: 5 | MPCode: 0914 | Recovery Key: 5 |
| MPCode: 0726 | Recovery Key: 5 | MPCode: 0915 | Recovery Key: 3 |
| MPCode: 0727 | Recovery Key: 5 | MPCode: 0916 | Recovery Key: 5 |
| MPCode: 0728 | Recovery Key: 5 | MPCode: 0919 | Recovery Key: 3 |
| MPCode: 0729 | Recovery Key: 5 | MPCode: 0920 | Recovery Key: 1 |
| MPCode: 0730 | Recovery Key: 5 | MPCode: 0921 | Recovery Key: 14 |
| MPCode: 0731 | Recovery Key: 5 | MPCode: 0922 | Recovery Key: 3 |
| MPCode: 0732 | Recovery Key: 5 | MPCode: 0923 | Recovery Key: 3 |
| MPCode: 0733 | Recovery Key: 5 | MPCode: 0924 | Recovery Key: 3 |
| MPCode: 0734 | Recovery Key: 5 | MPCode: 0925 | Recovery Key: 3 |
| MPCode: 0735 | Recovery Key: 5 | MPCode: 0930 | Recovery Key: 1 |
| MPCode: 0736 | Recovery Key: 5 | MPCode: 0931 | Recovery Key: 5 |
| MPCode: 0737 | Recovery Key: 5 | MPCode: 0932 | Recovery Key: 14 |
| MPCode: 0738 | Recovery Key: 5 | MPCode: 0933 | Recovery Key: 5 |
| MPCode: 0739 | Recovery Key: 5 | MPCode: 0934 | Recovery Key: 5 |
| MPCode: 0740 | Recovery Key: 5 | MPCode: 0935 | Recovery Key: 5 |
| MPCode: 0741 | Recovery Key: 5 | MPCode: 0936 | Recovery Key: 1 |
| MPCode: 0799 | Recovery Key: 5 | MPCode: 0937 | Recovery Key: 15 |
| MPCode: 0800 | Recovery Key: 5 | MPCode: 0938 | Recovery Key: 5 |
| MPCode: 0801 | Recovery Key: 5 | MPCode: 0939 | Recovery Key: 1 |
| MPCode: 0802 | Recovery Key: 5 | MPCode: 0940 | Recovery Key: 1 |
| MPCode: 0803 | Recovery Key: 5 | MPCode: 0947 | Recovery Key: 1 |
| MPCode: 0804 | Recovery Key: 5 | MPCode: 0948 | Recovery Key: 11 |
| MPCode: 0805 | Recovery Key: 5 | MPCode: 0950 | Recovery Key: 1 |
| MPCode: 0806 | Recovery Key: 5 | MPCode: 0960 | Recovery Key: 1 |
| MPCode: 0807 | Recovery Key: 5 | MPCode: 0965 | Recovery Key: 3 |
| MPCode: 0808 | Recovery Key: 5 | MPCode: 0970 | Recovery Key: 1 |
| MPCode: 0809 | Recovery Key: 5 | MPCode: 0975 | Recovery Key: 1 |
| MPCode: 0810 | Recovery Key: 5 | MPCode: 0980 | Recovery Key: 1 |
| MPCode: 0811 | Recovery Key: 5 | MPCode: 0981 | Recovery Key: 4 |
| MPCode: 0812 | Recovery Key: 5 | MPCode: 0990 | Recovery Key: 1 |
| MPCode: 0813 | Recovery Key: 5 | MPCode: 1000 | Recovery Key: 1 |
| MPCode: 0814 | Recovery Key: 5 | MPCode: 1010 | Recovery Key: 1 |
| MPCode: 0815 | Recovery Key: 5 | MPCode: 1011 | Recovery Key: 3 |
| MPCode: 0816 | Recovery Key: 5 | MPCode: 1012 | Recovery Key: 3 |
| MPCode: 0817 | Recovery Key: 5 | MPCode: 1013 | Recovery Key: 3 |
| MPCode: 0899 | Recovery Key: 5 | MPCode: 1014 | Recovery Key: 3 |
| MPCode: 0900 | Recovery Key: 1 | MPCode: 1015 | Recovery Key: 3 |
| MPCode: 0901 | Recovery Key: 3 | MPCode: 1016 | Recovery Key: 3 |
| MPCode: 0902 | Recovery Key: 3 | MPCode: 1017 | Recovery Key: 3 |

Maintenance Panel Codes

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| MPCode: 1018 | Recovery Key: 3 | MPCode: 1262 | Recovery Key: 3 |
| MPCode: 1030 | Recovery Key: 1 | MPCode: 1265 | Recovery Key: 1 |
| MPCode: 1031 | Recovery Key: 3 | MPCode: 1266 | Recovery Key: 3 |
| MPCode: 1040 | Recovery Key: 1 | MPCode: 1270 | Recovery Key: 1 |
| MPCode: 1041 | Recovery Key: 3 | MPCode: 1271 | Recovery Key: 3 |
| MPCode: 1042 | Recovery Key: 3 | MPCode: 1280 | Recovery Key: 1 |
| MPCode: 1070 | Recovery Key: 1 | MPCode: 1281 | Recovery Key: 3 |
| MPCode: 1071 | Recovery Key: 3 | MPCode: 1290 | Recovery Key: 1 |
| MPCode: 1072 | Recovery Key: 3 | MPCode: 1292 | Recovery Key: 3 |
| MPCode: 1080 | Recovery Key: 1 | MPCode: 1295 | Recovery Key: 1 |
| MPCode: 1081 | Recovery Key: 3 | MPCode: 1297 | Recovery Key: 1 |
| MPCode: 1090 | Recovery Key: 1 | MPCode: 1299 | Recovery Key: 1 |
| MPCode: 1091 | Recovery Key: 3 | MPCode: 1300 | Recovery Key: 1 |
| MPCode: 1100 | Recovery Key: 1 | MPCode: 1310 | Recovery Key: 1 |
| MPCode: 1102 | Recovery Key: 3 | MPCode: 1311 | Recovery Key: 3 |
| MPCode: 1110 | Recovery Key: 1 | MPCode: 1312 | Recovery Key: 3 |
| MPCode: 1113 | Recovery Key: 3 | MPCode: 1313 | Recovery Key: 3 |
| MPCode: 1120 | Recovery Key: 1 | MPCode: 1314 | Recovery Key: 3 |
| MPCode: 1121 | Recovery Key: 11 | MPCode: 1315 | Recovery Key: 3 |
| MPCode: 1140 | Recovery Key: 1 | MPCode: 1316 | Recovery Key: 3 |
| MPCode: 1141 | Recovery Key: 3 | MPCode: 1317 | Recovery Key: 3 |
| MPCode: 1142 | Recovery Key: 3 | MPCode: 1318 | Recovery Key: 3 |
| MPCode: 1143 | Recovery Key: 3 | MPCode: 1330 | Recovery Key: 1 |
| MPCode: 1150 | Recovery Key: 1 | MPCode: 1331 | Recovery Key: 3 |
| MPCode: 1151 | Recovery Key: 3 | MPCode: 1340 | Recovery Key: 1 |
| MPCode: 1191 | Recovery Key: 5 | MPCode: 1341 | Recovery Key: 3 |
| MPCode: 1192 | Recovery Key: 3 | MPCode: 1342 | Recovery Key: 3 |
| MPCode: 1193 | Recovery Key: 3 | MPCode: 1370 | Recovery Key: 1 |
| MPCode: 1196 | Recovery Key: 3 | MPCode: 1371 | Recovery Key: 3 |
| MPCode: 1197 | Recovery Key: 3 | MPCode: 1372 | Recovery Key: 3 |
| MPCode: 1198 | Recovery Key: 3 | MPCode: 1380 | Recovery Key: 1 |
| MPCode: 1199 | Recovery Key: 1 | MPCode: 1381 | Recovery Key: 3 |
| MPCode: 1200 | Recovery Key: 1 | MPCode: 1390 | Recovery Key: 1 |
| MPCode: 1210 | Recovery Key: 1 | MPCode: 1391 | Recovery Key: 3 |
| MPCode: 1211 | Recovery Key: 3 | MPCode: 1400 | Recovery Key: 1 |
| MPCode: 1212 | Recovery Key: 3 | MPCode: 1402 | Recovery Key: 3 |
| MPCode: 1213 | Recovery Key: 3 | MPCode: 1410 | Recovery Key: 1 |
| MPCode: 1214 | Recovery Key: 3 | MPCode: 1413 | Recovery Key: 3 |
| MPCode: 1215 | Recovery Key: 3 | MPCode: 1420 | Recovery Key: 1 |
| MPCode: 1216 | Recovery Key: 3 | MPCode: 1421 | Recovery Key: 11 |
| MPCode: 1217 | Recovery Key: 3 | MPCode: 1440 | Recovery Key: 1 |
| MPCode: 1218 | Recovery Key: 3 | MPCode: 1441 | Recovery Key: 3 |
| MPCode: 1230 | Recovery Key: 1 | MPCode: 1442 | Recovery Key: 3 |
| MPCode: 1231 | Recovery Key: 3 | MPCode: 1443 | Recovery Key: 3 |
| MPCode: 1240 | Recovery Key: 1 | MPCode: 1450 | Recovery Key: 1 |
| MPCode: 1241 | Recovery Key: 3 | MPCode: 1451 | Recovery Key: 3 |
| MPCode: 1242 | Recovery Key: 3 | MPCode: 1491 | Recovery Key: 5 |
| MPCode: 1260 | Recovery Key: 1 | MPCode: 1492 | Recovery Key: 3 |
| MPCode: 1261 | Recovery Key: 3 | MPCode: 1493 | Recovery Key: 3 |

Maintenance Panel Codes

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| MPCode: 1496 | Recovery Key: 3 | MPCode: 1680 | Recovery Key: 1 |
| MPCode: 1497 | Recovery Key: 3 | MPCode: 1681 | Recovery Key: 3 |
| MPCode: 1498 | Recovery Key: 3 | MPCode: 1690 | Recovery Key: 1 |
| MPCode: 1499 | Recovery Key: 1 | MPCode: 1691 | Recovery Key: 3 |
| MPCode: 1510 | Recovery Key: 1 | MPCode: 1700 | Recovery Key: 1 |
| MPCode: 1511 | Recovery Key: 3 | MPCode: 1702 | Recovery Key: 3 |
| MPCode: 1512 | Recovery Key: 3 | MPCode: 1710 | Recovery Key: 1 |
| MPCode: 1514 | Recovery Key: 3 | MPCode: 1713 | Recovery Key: 3 |
| MPCode: 1515 | Recovery Key: 3 | MPCode: 1720 | Recovery Key: 1 |
| MPCode: 1516 | Recovery Key: 3 | MPCode: 1721 | Recovery Key: 11 |
| MPCode: 1517 | Recovery Key: 3 | MPCode: 1740 | Recovery Key: 1 |
| MPCode: 1518 | Recovery Key: 3 | MPCode: 1741 | Recovery Key: 3 |
| MPCode: 1530 | Recovery Key: 1 | MPCode: 1742 | Recovery Key: 3 |
| MPCode: 1531 | Recovery Key: 3 | MPCode: 1743 | Recovery Key: 3 |
| MPCode: 1540 | Recovery Key: 1 | MPCode: 1750 | Recovery Key: 1 |
| MPCode: 1541 | Recovery Key: 3 | MPCode: 1751 | Recovery Key: 3 |
| MPCode: 1542 | Recovery Key: 3 | MPCode: 1791 | Recovery Key: 5 |
| MPCode: 1560 | Recovery Key: 1 | MPCode: 1792 | Recovery Key: 3 |
| MPCode: 1561 | Recovery Key: 3 | MPCode: 1793 | Recovery Key: 3 |
| MPCode: 1562 | Recovery Key: 3 | MPCode: 1799 | Recovery Key: 1 |
| MPCode: 1565 | Recovery Key: 1 | MPCode: 1800 | Recovery Key: 1 |
| MPCode: 1566 | Recovery Key: 3 | MPCode: 1810 | Recovery Key: 1 |
| MPCode: 1570 | Recovery Key: 1 | MPCode: 1811 | Recovery Key: 3 |
| MPCode: 1571 | Recovery Key: 3 | MPCode: 1812 | Recovery Key: 3 |
| MPCode: 1580 | Recovery Key: 1 | MPCode: 1813 | Recovery Key: 3 |
| MPCode: 1581 | Recovery Key: 3 | MPCode: 1814 | Recovery Key: 3 |
| MPCode: 1590 | Recovery Key: 1 | MPCode: 1815 | Recovery Key: 3 |
| MPCode: 1592 | Recovery Key: 3 | MPCode: 1816 | Recovery Key: 3 |
| MPCode: 1595 | Recovery Key: 1 | MPCode: 1817 | Recovery Key: 3 |
| MPCode: 1597 | Recovery Key: 11 | MPCode: 1818 | Recovery Key: 3 |
| MPCode: 1599 | Recovery Key: 1 | MPCode: 1830 | Recovery Key: 1 |
| MPCode: 1600 | Recovery Key: 1 | MPCode: 1831 | Recovery Key: 3 |
| MPCode: 1610 | Recovery Key: 1 | MPCode: 1840 | Recovery Key: 1 |
| MPCode: 1611 | Recovery Key: 3 | MPCode: 1841 | Recovery Key: 3 |
| MPCode: 1612 | Recovery Key: 3 | MPCode: 1842 | Recovery Key: 3 |
| MPCode: 1613 | Recovery Key: 3 | MPCode: 1860 | Recovery Key: 1 |
| MPCode: 1614 | Recovery Key: 3 | MPCode: 1861 | Recovery Key: 3 |
| MPCode: 1615 | Recovery Key: 3 | MPCode: 1862 | Recovery Key: 3 |
| MPCode: 1616 | Recovery Key: 3 | MPCode: 1865 | Recovery Key: 1 |
| MPCode: 1617 | Recovery Key: 3 | MPCode: 1866 | Recovery Key: 3 |
| MPCode: 1618 | Recovery Key: 3 | MPCode: 1870 | Recovery Key: 1 |
| MPCode: 1630 | Recovery Key: 1 | MPCode: 1871 | Recovery Key: 3 |
| MPCode: 1631 | Recovery Key: 3 | MPCode: 1880 | Recovery Key: 1 |
| MPCode: 1640 | Recovery Key: 1 | MPCode: 1881 | Recovery Key: 3 |
| MPCode: 1641 | Recovery Key: 3 | MPCode: 1890 | Recovery Key: 1 |
| MPCode: 1642 | Recovery Key: 3 | MPCode: 1892 | Recovery Key: 3 |
| MPCode: 1670 | Recovery Key: 1 | MPCode: 1895 | Recovery Key: 1 |
| MPCode: 1671 | Recovery Key: 3 | MPCode: 1897 | Recovery Key: 11 |
| MPCode: 1672 | Recovery Key: 3 | MPCode: 1899 | Recovery Key: 1 |

Maintenance Panel Codes

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| MPCode: 2000 | Recovery Key: 1 | MPCode: 2061 | Recovery Key: 5 |
| MPCode: 2001 | Recovery Key: 5 | MPCode: 2062 | Recovery Key: 5 |
| MPCode: 2002 | Recovery Key: 5 | MPCode: 2063 | Recovery Key: 5 |
| MPCode: 2003 | Recovery Key: 5 | MPCode: 2064 | Recovery Key: 5 |
| MPCode: 2004 | Recovery Key: 5 | MPCode: 2065 | Recovery Key: 5 |
| MPCode: 2005 | Recovery Key: 5 | MPCode: 2066 | Recovery Key: 5 |
| MPCode: 2006 | Recovery Key: 5 | MPCode: 2067 | Recovery Key: 5 |
| MPCode: 2007 | Recovery Key: 5 | MPCode: 2068 | Recovery Key: 5 |
| MPCode: 2008 | Recovery Key: 5 | MPCode: 2071 | Recovery Key: 5 |
| MPCode: 2011 | Recovery Key: 5 | MPCode: 2072 | Recovery Key: 5 |
| MPCode: 2012 | Recovery Key: 5 | MPCode: 2073 | Recovery Key: 5 |
| MPCode: 2013 | Recovery Key: 5 | MPCode: 2074 | Recovery Key: 5 |
| MPCode: 2014 | Recovery Key: 5 | MPCode: 2075 | Recovery Key: 5 |
| MPCode: 2015 | Recovery Key: 5 | MPCode: 2076 | Recovery Key: 5 |
| MPCode: 2016 | Recovery Key: 5 | MPCode: 2077 | Recovery Key: 5 |
| MPCode: 2017 | Recovery Key: 5 | MPCode: 2078 | Recovery Key: 5 |
| MPCode: 2018 | Recovery Key: 5 | MPCode: 2080 | Recovery Key: 1 |
| MPCode: 2021 | Recovery Key: 5 | MPCode: 2081 | Recovery Key: 5 |
| MPCode: 2022 | Recovery Key: 5 | MPCode: 2082 | Recovery Key: 5 |
| MPCode: 2023 | Recovery Key: 5 | MPCode: 2083 | Recovery Key: 5 |
| MPCode: 2024 | Recovery Key: 5 | MPCode: 2090 | Recovery Key: 1 |
| MPCode: 2025 | Recovery Key: 5 | MPCode: 2101 | Recovery Key: 5 |
| MPCode: 2026 | Recovery Key: 5 | MPCode: 2102 | Recovery Key: 5 |
| MPCode: 2027 | Recovery Key: 5 | MPCode: 2103 | Recovery Key: 5 |
| MPCode: 2028 | Recovery Key: 5 | MPCode: 2104 | Recovery Key: 5 |
| MPCode: 2031 | Recovery Key: 5 | MPCode: 2105 | Recovery Key: 5 |
| MPCode: 2032 | Recovery Key: 5 | MPCode: 2106 | Recovery Key: 5 |
| MPCode: 2033 | Recovery Key: 5 | MPCode: 2107 | Recovery Key: 5 |
| MPCode: 2034 | Recovery Key: 5 | MPCode: 2108 | Recovery Key: 5 |
| MPCode: 2035 | Recovery Key: 5 | MPCode: 2111 | Recovery Key: 5 |
| MPCode: 2036 | Recovery Key: 5 | MPCode: 2112 | Recovery Key: 5 |
| MPCode: 2037 | Recovery Key: 5 | MPCode: 2113 | Recovery Key: 5 |
| MPCode: 2038 | Recovery Key: 5 | MPCode: 2114 | Recovery Key: 5 |
| MPCode: 2041 | Recovery Key: 5 | MPCode: 2115 | Recovery Key: 5 |
| MPCode: 2042 | Recovery Key: 5 | MPCode: 2116 | Recovery Key: 5 |
| MPCode: 2043 | Recovery Key: 5 | MPCode: 2117 | Recovery Key: 5 |
| MPCode: 2044 | Recovery Key: 5 | MPCode: 2118 | Recovery Key: 5 |
| MPCode: 2045 | Recovery Key: 5 | MPCode: 2121 | Recovery Key: 5 |
| MPCode: 2046 | Recovery Key: 5 | MPCode: 2122 | Recovery Key: 5 |
| MPCode: 2047 | Recovery Key: 5 | MPCode: 2123 | Recovery Key: 5 |
| MPCode: 2048 | Recovery Key: 5 | MPCode: 2124 | Recovery Key: 5 |
| MPCode: 2051 | Recovery Key: 5 | MPCode: 2125 | Recovery Key: 5 |
| MPCode: 2052 | Recovery Key: 5 | MPCode: 2126 | Recovery Key: 5 |
| MPCode: 2053 | Recovery Key: 5 | MPCode: 2127 | Recovery Key: 5 |
| MPCode: 2054 | Recovery Key: 5 | MPCode: 2128 | Recovery Key: 5 |
| MPCode: 2055 | Recovery Key: 5 | MPCode: 2131 | Recovery Key: 5 |
| MPCode: 2056 | Recovery Key: 5 | MPCode: 2132 | Recovery Key: 5 |
| MPCode: 2057 | Recovery Key: 5 | MPCode: 2133 | Recovery Key: 5 |
| MPCode: 2058 | Recovery Key: 5 | MPCode: 2134 | Recovery Key: 5 |

Maintenance Panel Codes

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| MPCode: 2135 | Recovery Key: 5 | MPCode: 2212 | Recovery Key: 1 |
| MPCode: 2136 | Recovery Key: 5 | MPCode: 2401 | Recovery Key: 5 |
| MPCode: 2137 | Recovery Key: 5 | MPCode: 2402 | Recovery Key: 5 |
| MPCode: 2138 | Recovery Key: 5 | MPCode: 2403 | Recovery Key: 5 |
| MPCode: 2141 | Recovery Key: 5 | MPCode: 2404 | Recovery Key: 5 |
| MPCode: 2142 | Recovery Key: 5 | MPCode: 2405 | Recovery Key: 5 |
| MPCode: 2143 | Recovery Key: 5 | MPCode: 2406 | Recovery Key: 5 |
| MPCode: 2144 | Recovery Key: 5 | MPCode: 2407 | Recovery Key: 5 |
| MPCode: 2145 | Recovery Key: 5 | MPCode: 2408 | Recovery Key: 5 |
| MPCode: 2146 | Recovery Key: 5 | MPCode: 2409 | Recovery Key: 5 |
| MPCode: 2147 | Recovery Key: 5 | MPCode: 2410 | Recovery Key: 5 |
| MPCode: 2148 | Recovery Key: 5 | MPCode: 2411 | Recovery Key: 5 |
| MPCode: 2151 | Recovery Key: 5 | MPCode: 2412 | Recovery Key: 5 |
| MPCode: 2152 | Recovery Key: 5 | MPCode: 2413 | Recovery Key: 5 |
| MPCode: 2153 | Recovery Key: 5 | MPCode: 2414 | Recovery Key: 5 |
| MPCode: 2154 | Recovery Key: 5 | MPCode: 2415 | Recovery Key: 5 |
| MPCode: 2155 | Recovery Key: 5 | MPCode: 2416 | Recovery Key: 5 |
| MPCode: 2156 | Recovery Key: 5 | MPCode: 2419 | Recovery Key: 5 |
| MPCode: 2157 | Recovery Key: 5 | MPCode: 2420 | Recovery Key: 5 |
| MPCode: 2158 | Recovery Key: 5 | MPCode: 2421 | Recovery Key: 5 |
| MPCode: 2161 | Recovery Key: 5 | MPCode: 2422 | Recovery Key: 5 |
| MPCode: 2162 | Recovery Key: 5 | MPCode: 2423 | Recovery Key: 5 |
| MPCode: 2163 | Recovery Key: 5 | MPCode: 2424 | Recovery Key: 5 |
| MPCode: 2164 | Recovery Key: 5 | MPCode: 2425 | Recovery Key: 5 |
| MPCode: 2165 | Recovery Key: 5 | MPCode: 2426 | Recovery Key: 5 |
| MPCode: 2166 | Recovery Key: 5 | MPCode: 2427 | Recovery Key: 5 |
| MPCode: 2167 | Recovery Key: 5 | MPCode: 2428 | Recovery Key: 5 |
| MPCode: 2168 | Recovery Key: 5 | MPCode: 2430 | Recovery Key: 5 |
| MPCode: 2171 | Recovery Key: 5 | MPCode: 2431 | Recovery Key: 5 |
| MPCode: 2172 | Recovery Key: 5 | MPCode: 2432 | Recovery Key: 5 |
| MPCode: 2173 | Recovery Key: 5 | MPCode: 2433 | Recovery Key: 5 |
| MPCode: 2174 | Recovery Key: 5 | MPCode: 2434 | Recovery Key: 5 |
| MPCode: 2175 | Recovery Key: 5 | MPCode: 2435 | Recovery Key: 5 |
| MPCode: 2176 | Recovery Key: 5 | MPCode: 2436 | Recovery Key: 5 |
| MPCode: 2177 | Recovery Key: 5 | MPCode: 2437 | Recovery Key: 5 |
| MPCode: 2178 | Recovery Key: 5 | MPCode: 2438 | Recovery Key: 5 |
| MPCode: 2190 | Recovery Key: 1 | MPCode: 2439 | Recovery Key: 5 |
| MPCode: 2200 | Recovery Key: 1 | MPCode: 2440 | Recovery Key: 5 |
| MPCode: 2201 | Recovery Key: 1 | MPCode: 2447 | Recovery Key: 5 |
| MPCode: 2202 | Recovery Key: 1 | MPCode: 2448 | Recovery Key: 5 |
| MPCode: 2203 | Recovery Key: 1 | MPCode: 2449 | Recovery Key: 5 |
| MPCode: 2204 | Recovery Key: 1 | MPCode: 2450 | Recovery Key: 5 |
| MPCode: 2205 | Recovery Key: 1 | MPCode: 2451 | Recovery Key: 5 |
| MPCode: 2206 | Recovery Key: 1 | MPCode: 2452 | Recovery Key: 5 |
| MPCode: 2207 | Recovery Key: 1 | MPCode: 2453 | Recovery Key: 5 |
| MPCode: 2208 | Recovery Key: 1 | MPCode: 2454 | Recovery Key: 5 |
| MPCode: 2209 | Recovery Key: 1 | MPCode: 2455 | Recovery Key: 5 |
| MPCode: 2210 | Recovery Key: 1 | MPCode: 2456 | Recovery Key: 5 |
| MPCode: 2211 | Recovery Key: 1 | MPCode: 2457 | Recovery Key: 5 |

Maintenance Panel Codes

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| MPCode: 2730 | Recovery Key: 5 | MPCode: 3021 | Recovery Key: 5 |
| MPCode: 2731 | Recovery Key: 5 | MPCode: 3024 | Recovery Key: 5 |
| MPCode: 2732 | Recovery Key: 5 | MPCode: 3025 | Recovery Key: 5 |
| MPCode: 2733 | Recovery Key: 5 | MPCode: 3026 | Recovery Key: 5 |
| MPCode: 2734 | Recovery Key: 5 | MPCode: 3027 | Recovery Key: 5 |
| MPCode: 2735 | Recovery Key: 5 | MPCode: 3028 | Recovery Key: 5 |
| MPCode: 2736 | Recovery Key: 5 | MPCode: 3029 | Recovery Key: 5 |
| MPCode: 2737 | Recovery Key: 5 | MPCode: 3031 | Recovery Key: 5 |
| MPCode: 2738 | Recovery Key: 5 | MPCode: 3032 | Recovery Key: 5 |
| MPCode: 2739 | Recovery Key: 5 | MPCode: 3033 | Recovery Key: 5 |
| MPCode: 2740 | Recovery Key: 5 | MPCode: 3034 | Recovery Key: 5 |
| MPCode: 2741 | Recovery Key: 5 | MPCode: 3035 | Recovery Key: 5 |
| MPCode: 2742 | Recovery Key: 5 | MPCode: 3036 | Recovery Key: 5 |
| MPCode: 2744 | Recovery Key: 5 | MPCode: 3051 | Recovery Key: 5 |
| MPCode: 2746 | Recovery Key: 5 | MPCode: 3053 | Recovery Key: 5 |
| MPCode: 2748 | Recovery Key: 5 | MPCode: 3057 | Recovery Key: 5 |
| MPCode: 2752 | Recovery Key: 5 | MPCode: 3074 | Recovery Key: 5 |
| MPCode: 2753 | Recovery Key: 5 | MPCode: 3075 | Recovery Key: 5 |
| MPCode: 2754 | Recovery Key: 5 | MPCode: 3076 | Recovery Key: 5 |
| MPCode: 2755 | Recovery Key: 5 | MPCode: 3078 | Recovery Key: 5 |
| MPCode: 2756 | Recovery Key: 5 | MPCode: 3079 | Recovery Key: 5 |
| MPCode: 2762 | Recovery Key: 5 | MPCode: 3081 | Recovery Key: 5 |
| MPCode: 2764 | Recovery Key: 5 | MPCode: 3082 | Recovery Key: 5 |
| MPCode: 2766 | Recovery Key: 5 | MPCode: 3083 | Recovery Key: 5 |
| MPCode: 2770 | Recovery Key: 5 | MPCode: 3084 | Recovery Key: 5 |
| MPCode: 2771 | Recovery Key: 5 | MPCode: 3085 | Recovery Key: 5 |
| MPCode: 2772 | Recovery Key: 5 | MPCode: 3086 | Recovery Key: 5 |
| MPCode: 2773 | Recovery Key: 5 | MPCode: 3095 | Recovery Key: 12 |
| MPCode: 2774 | Recovery Key: 5 | MPCode: 3096 | Recovery Key: 3 |
| MPCode: 2775 | Recovery Key: 5 | MPCode: 3101 | Recovery Key: 12 |
| MPCode: 2776 | Recovery Key: 5 | MPCode: 3107 | Recovery Key: 12 |
| MPCode: 2777 | Recovery Key: 5 | MPCode: 3123 | Recovery Key: 12 |
| MPCode: 2778 | Recovery Key: 5 | MPCode: 3124 | Recovery Key: 12 |
| MPCode: 2779 | Recovery Key: 5 | MPCode: 3125 | Recovery Key: 12 |
| MPCode: 2780 | Recovery Key: 5 | MPCode: 3126 | Recovery Key: 12 |
| MPCode: 2781 | Recovery Key: 5 | MPCode: 3128 | Recovery Key: 12 |
| MPCode: 2782 | Recovery Key: 5 | MPCode: 3129 | Recovery Key: 5 |
| MPCode: 2783 | Recovery Key: 5 | MPCode: 3131 | Recovery Key: 12 |
| MPCode: 2784 | Recovery Key: 5 | MPCode: 3132 | Recovery Key: 12 |
| MPCode: 2785 | Recovery Key: 5 | MPCode: 3133 | Recovery Key: 12 |
| MPCode: 2786 | Recovery Key: 5 | MPCode: 3134 | Recovery Key: 12 |
| MPCode: 2787 | Recovery Key: 5 | MPCode: 3135 | Recovery Key: 12 |
| MPCode: 2788 | Recovery Key: 5 | MPCode: 3136 | Recovery Key: 12 |
| MPCode: 2790 | Recovery Key: 5 | MPCode: 3149 | Recovery Key: 12 |
| MPCode: 2791 | Recovery Key: 5 | MPCode: 3151 | Recovery Key: 12 |
| MPCode: 3001 | Recovery Key: 5 | MPCode: 3157 | Recovery Key: 12 |
| MPCode: 3005 | Recovery Key: 5 | MPCode: 3173 | Recovery Key: 12 |
| MPCode: 3007 | Recovery Key: 5 | MPCode: 3174 | Recovery Key: 12 |
| MPCode: 3009 | Recovery Key: 5 | MPCode: 3175 | Recovery Key: 12 |

Maintenance Panel Codes

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| MPCode: 3835 | Recovery Key: 12 | MPCode: 7508 | Recovery Key: 13 |
| MPCode: 3836 | Recovery Key: 12 | MPCode: 7511 | Recovery Key: 3 |
| MPCode: 3851 | Recovery Key: 12 | MPCode: 7512 | Recovery Key: 3 |
| MPCode: 3857 | Recovery Key: 12 | MPCode: 7513 | Recovery Key: 3 |
| MPCode: 3873 | Recovery Key: 12 | MPCode: 7516 | Recovery Key: 10 |
| MPCode: 3874 | Recovery Key: 12 | MPCode: 8000 | Recovery Key: 1 |
| MPCode: 3875 | Recovery Key: 12 | MPCode: 8888 | Recovery Key: 5 |
| MPCode: 3876 | Recovery Key: 12 | MPCode: 9158 | Recovery Key: 3 |
| MPCode: 3878 | Recovery Key: 12 | MPCode: 9950 | Recovery Key: 1 |
| MPCode: 3879 | Recovery Key: 12 | | |
| MPCode: 3881 | Recovery Key: 12 | | |
| MPCode: 3882 | Recovery Key: 12 | | |
| MPCode: 3883 | Recovery Key: 12 | | |
| MPCode: 3884 | Recovery Key: 12 | | |
| MPCode: 3885 | Recovery Key: 12 | | |
| MPCode: 3886 | Recovery Key: 12 | | |
| MPCode: 4200 | Recovery Key: 1 | | |
| MPCode: 4201 | Recovery Key: 1 | | |
| MPCode: 4202 | Recovery Key: 1 | | |
| MPCode: 4203 | Recovery Key: 1 | | |
| MPCode: 4500 | Recovery Key: 1 | | |
| MPCode: 4501 | Recovery Key: 1 | | |
| MPCode: 4510 | Recovery Key: 1 | | |
| MPCode: 4520 | Recovery Key: 1 | | |
| MPCode: 4527 | Recovery Key: 1 | | |
| MPCode: 4528 | Recovery Key: 1 | | |
| MPCode: 4529 | Recovery Key: 1 | | |
| MPCode: 4540 | Recovery Key: 1 | | |
| MPCode: 4545 | Recovery Key: 5 | | |
| MPCode: 4598 | Recovery Key: 1 | | |
| MPCode: 4599 | Recovery Key: 1 | | |
| MPCode: 5550 | Recovery Key: 1 | | |
| MPCode: 5551 | Recovery Key: 1 | | |
| MPCode: 5552 | Recovery Key: 1 | | |
| MPCode: 5553 | Recovery Key: 1 | | |
| MPCode: 5554 | Recovery Key: 1 | | |
| MPCode: 5555 | Recovery Key: 1 | | |
| MPCode: 5556 | Recovery Key: 1 | | |
| MPCode: 5557 | Recovery Key: 1 | | |
| MPCode: 5558 | Recovery Key: 1 | | |
| MPCode: 7001 | Recovery Key: 9 | | |
| MPCode: 7002 | Recovery Key: 8 | | |
| MPCode: 7003 | Recovery Key: 7 | | |
| MPCode: 7004 | Recovery Key: 7 | | |
| MPCode: 7500 | Recovery Key: 1 | | |
| MPCode: 7501 | Recovery Key: 13 | | |
| MPCode: 7502 | Recovery Key: 13 | | |
| MPCode: 7503 | Recovery Key: 13 | | |
| MPCode: 7504 | Recovery Key: 5 | | |

APPENDIX C

RECOVERY KEYS

| Key | Recovery Action |
|-----|--|
| 1 | None necessary: the code indicates status only. |
| 2 | Check to see if the alternate boot button has been released if this method of booting is used. |
| 3 | Record the code, re-boot if necessary, and retry the operation. If the retrieval succeeds, treat the code as an intermittent failure. Otherwise, call the Customer Support Center. |
| 4 | Record the code and re-boot. If re-booting fails, then try re-booting from a different device. If re-booting succeeds in either case, treat the code as an intermittent failure. Otherwise, call the Customer Support Center. |
| 5 | Call the Customer Support Center |
| 6 | See Action 1-B: Load the Error Log Analysis Software (boot the backstop). If this fails reinstall the software from the floppies. |
| 7 | Reinstall the Load Error Log Analysis (backstop) software from the floppies. |
| 8 | Insure that the floppy diskette is in the drive and in a ready state. |
| 9 | Record the code and press the alternate boot button. |
| 10 | Record the code and call the Customer Support Center. Do not re-boot or retry the operation. |
| 11 | See Action 1-F: Record the code and run scavenger, then retry the operation. If the scavenger and the retrieval succeed, treat the code as an intermittent failure. Otherwise, call the Customer Support Center. |
| 12 | See Action 1-J: If the head cleaning procedure was run before this, call the Customer Support Center. If the head cleaning procedure was not done, run or attempt to run the head cleaning procedure, then call the Customer Support Center. |
| 13 | See Action 1-Q: File check code. |
| 14 | Record the code, re-boot if necessary, and retry the operation. If this fails reinstall software. |
| 15 | Doesn't know the time of day and can't get it from any other station. One of the following may be used: 1. Use master disk #1 to set time 2. Bring up a server |
| 16 | Report using the problem report form found in booklet 6. Try to find a workaround if it reoccurs. |

Overview: This appendix contains procedures that are not your responsibility but which you may be asked to perform by your system analyst or the Customer Support Center to facilitate getting your network operational in the least possible time.

When Will These Procedures Be Run: Normally, you would only be asked to run one of these diagnostic procedures if you had already run the master diagnostic floppy (Action 1F). This action runs a program called ALAG (for Automatic Load And Go diagnostics) that includes a series of tests ending with Fault Analysis, PV Scavenger, and Media Scan. At times you may be asked to repeat one of these tests or to take action based on problems detected by these tests. The Customer Support Center or your system analyst will provide you with a password and give you detailed step-by-step directions if it becomes necessary to perform any of these procedures. The material in this appendix serves as back-up to their verbal instructions.

Procedures Included: Procedures 1 and 2 enable you to detect error locations on the rigid disk of a server or workstation. Procedures 3 and 4 enable you to list the error locations detected by the Disk Exerciser and/or Media Scan and then record them so the processor will avoid them. Procedure 5 allows you to rewrite header locations on the disk so the data in these locations is again usable. Procedure 6 enables you to make backup copies of your operating system disks in case the original disks later become damaged.

Each procedure contains an overview of what it accomplishes, along with general directions for the steps you will have to perform.

Procedure 1: Disk Exerciser

Description: If it is possible that there are intermittent disk errors, the Disk Exerciser program is used. It is an exerciser program which presents its results in the form of an error log. Each pass consists of a series of reading the information from random disk locations, interspersed with nondestructive writes and reads on the diagnostic cylinder. The words "soft" and "hard" that can appear in the feedback refer to errors that are recoverable (can be fixed by the Disk Exerciser program) and nonrecoverable, respectively.

Usually Performed by: Xerox service representative or system analyst

Potential Impact: There is no potential loss of data.

How It Is Run:

1. Boot the diagnostic disk from 0005.
2. Log on with the special Xerox password.
3. Type **Disk Exerciser RETURN**. When the exerciser start, the maintenance panel code displays 1000; then it changes numbers to reflect the current pass being taken.
4. Indicate the number of passes to make (estimated run time for each pass is 1 minute and 5 seconds). See procedure 4 to add the bad pages that have been identified to the Bad Page Table. As it runs, the exerciser displays a table as it scans.
5. When the exerciser finishes, it displays the number of soft and hard errors discovered.

Additional Diagnostic Procedures

Potential Error Messages: There is one potential error message: "Writing disabled due to excessive risk." If you see this error message, relay it to the person directing the test.

Procedure 2: Media Scan

Description: If a bad page was identified when diagnostics were run, the Media Scan command may be recommended in order to see if there are more bad pages. The Media Scan command will scan the entire disk the number of times specified. In addition, you specify the retry count. Those pages with hard read errors (i.e., those that cannot be read successfully within the given retry count) are listed as they are found.

Usually Performed by: Xerox service representative or system analyst

Potential Impact: There is no potential loss of data.

How It Is Run: Generally, you would redo a media scan after running the diagnostics disk and would, therefore, already be in the diagnostics utility. If this is not the case, you will need to boot the diagnostic disk from 0005.

1. Log on with the special Xerox password, if you have not already done so.
2. Type **Bad Page Utility** RETURN.
3. Type **Media Scan** RETURN.
4. Indicate the number of passes to make. (Make a minimum of twenty passes. The estimated run time for each pass is 45 seconds.)
5. Indicate the number of retries to make. When the media scan starts, the maintenance panel code displays 1000; then it changes numbers to reflect the current pass being taken.
6. If no bad pages are found, type **Exit** RETURN (see procedure 4 to add the bad pages that have been identified to the Bad Page Table). When the media scan finishes, it displays the number of soft and hard errors discovered.
7. If bad pages are found, go to Step 1 of Procedure 4.

Procedure 3: List Bad Pages

Description: You use this command to verify that pages have been added to the Bad Page Table after completing procedure 4.

Usually Performed by: Xerox service representative or system analyst

Potential Impact: There is no potential loss of data.

How It Is Run: Generally, you will have already done the italicized steps in this procedure if you are asked to list bad pages.

1. *Boot the diagnostic disk from 0005 if it is not already booted.*
2. *Log on with the special Xerox password.*

3. Type **Bad Page Utility RETURN**.
4. Type **List Bad Pages RETURN**. The error locations will now be displayed.
7. See procedure 4 to add the bad pages that have been identified to the Bad Page Table. If there are no bad pages to be added to the Bad Page Table, type **Quit RETURN**.

Procedure 4: Add Bad Pages

Description: You add bad pages into the Bad Page Table so that the server or workstation processor will avoid these error locations on the disk.

Usually Performed by: Xerox system analyst

Potential Impact: Can destroy data.

How It Is Run: This procedure will only work if you have logged on with a password appropriate to a Xerox systems analyst.

To add the bad pages identified by the **Media Scan** command into the Bad Page Table, proceed as follows while you are still in the Bad Page Utility program:

1. Type **Exit RETURN**.
2. Answer **Y** to enter the bad pages, and enter the scan count.
3. Type **Quit RETURN**.

To add the bad pages identified by the **Disk Exerciser** command into the Bad Page Table, proceed as follows before you remove the diagnostic disk from the processor:

1. Type **Bad Page Utility RETURN**.
2. If directed to do so by the person directing the test, type the **Media Scan** command, and then indicate the number of passes and the number of retries, in order to verify that Media Scan finds the same error locations.
3. Type **Manual Entry RETURN** and enter the bad page locations indicated by the List Bad Pages command.
4. Type **Exit RETURN**.
5. Answer **Y** to enter the bad pages and enter the scan count.
6. Type **Quit RETURN**.

Procedure 5: Rewrite Broken Headers

Description: If errors found by the diagnostic disk are identified as header errors, these areas can be rewritten so they are no longer error locations.

Additional Diagnostic Procedures

Usually Performed by: Xerox system analyst

Potential Impact: Can destroy any data stored on the pages associated with this header.

How It Is Run: This procedure would normally not be completed unless you had already run the diagnostic disk and were logged on with the special Xerox password.

1. Type **Rewrite Broken Headers RETURN**.
2. Confirm requests for repairing broken headers. The previous contents of the page may be lost. Minimum run time is 50 seconds.
3. Type **Quit RETURN**.

Procedure 6: Duplicate Floppy Disk

Description: This procedure enables you to make a duplicate floppy disk of the software for the servers and workstations on your network.

Usually Performed by: Xerox service representative or system analyst

Potential Impact: There is no potential loss of data.

How It Is Run:

1. Boot the diagnostic disk from 0005.
2. Log on with the special password.
3. Type **Duplicate Floppy Disk RETURN**.
4. You will be asked if you want to have the contents of the floppy disk that you will be copying stored on either the user or the data portion of the rigid disk. Choose the user portion of the rigid disk for scratch space. You will need at least as many free disk pages as a double-sided disk. It will tell you if there is not enough space when you select the scratch area.
5. Insert the original floppy disk (source) and the blank floppy disk (destination) as directed and answer **Yes** when the proper floppy disk is inserted. It will take somewhat longer than five minutes to copy the floppy disk because of the amount of error checking involved.
7. Type **Quit RETURN** to make sure that the data written on the rigid disk is deleted.

CUSTOMER COMMENT FORM

We are interested in knowing how well the *System Administrator Handbook* met your needs as a training and reference tool. After you have used the *Handbook* for a month or two, take a few minutes to fill out this form and let us know your thoughts.

Directions: To what extent do you agree with the following statements? Write the appropriate number in the space provided.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

- ___ A. In general, when I had a question about system administration duties, I could find the answer in this book.
- ___ B. This book was written at a level appropriate to me.
- ___ C. When I had a question, it was easy to find the answer in this book.
- ___ D. The information in this book is presented in a clear, simple manner.
- ___ E. This book is organized in a way well-suited to my job.

Directions: Use the space provided to answer the following questions.

- F. Please describe your general overall impressions of this book. List both its weaknesses and its strengths.
- G. Describe any specific problems that you think should be corrected. (Attach extra sheets as needed.)

Thank you for taking the time to help us provide you better support materials.

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