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Xerox Corporation
Attn: Product Education (N1-12)
701 S. Aviation Blvd.
El Segundo, California 90245

Purpose The External Communication Services booklet describes all that you need to know to set up and maintain your External Communication Service. This booklet explains all the service commands and shows how these commands are used to perform service-related tasks. In addition, the booklet lists messages that can be generated while running this service and tells you what to do when a message is displayed.

Intended audience This publication is intended for System Administrators who are responsible for starting up and keeping the External Communication Service running efficiently.

Before you read this booklet There is some general information about services that you need to be familiar with before you read this booklet. The information is contained in the "Services Executive" section in the *Server Operation and Maintenance* booklet, and the *Introduction to Network Administration* booklet. All of these publications can be found in the *Network Basic Services* volume.

Before you can use this service As part of the preparation for setting up the External Communication Service, you need to perform the procedures described in the *Server Software Installation* booklet. This booklet is also part of the *Network Basic Services* volume.

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1. Introduction

The External Communication Service (ECS) supports a variety of communication activities, including asynchronous terminal emulation and asynchronous dial-in. Additionally, the External Communication Service manages RS-232C ports, both on the 8000 server and on the Xerox 873 Communication Interface Unit. The following communication activities are made possible by the External Communication Service.

Note: The ports on an 8000 server are available through one of two port options: a single port board or a multiport board. The ports on either board can be configured for a variety of emulation capabilities, with some limitations. The multiport option supports only the 3270 SNA emulation. The single port option supports not only 3270 SNA protocol, but asynchronous and 3270 BSC emulations, as well. Any reference exclusive to either the single port option or multiport option will be noted in the text or menu. The single port option is referred to as the 8000 port. The Communication Interface Unit ports are referred to as CIU ports.

- Asynchronous terminal emulation using the 8000 port, or CIU ports.

- Asynchronous dial-in, when users dial in through the 8000 port, or CIU ports.

  - Interaction with the Interactive Terminal Service.

  - Use of a remote server executive.

- IBM 3270 BSC terminal emulation, using the 8000 port.

- IBM 3270 SNA terminal emulation, using the 8000 port, multiport option, or CIU ports. (See the "Configuring ports for 3270 IBM SNA terminal emulation" section for certain restrictions.)

- Internetwork Routing Service through the CIU ports.

Before you can add any of these communication activities to your network, you must initialize and validate the ECS through the Clearinghouse Service. Then you can make the various port configurations to the ECS, and assign the IBM 3270 host information. The following chapters describe in detail the procedures necessary for configuring your External Communication Service

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This section lists the commands specific to the External Communication Service. The commands are listed in alphabetical order, followed by a brief explanation. The use of these commands is described more fully in chapters 3-7.

Add Communication Interface Unit
Available to the enabled user when the External Communication Service is stopped. Registers Communication Interface Units with the External Communication Service.

Add IBM 3270 Host
Available to the enabled user when IBM 3270 emulation is stopped. Registers IBM 3270 hosts with the External Communication Service.

Assign IBM 3270 Host
Available to the enabled user when IBM 3270 emulation is stopped. Controls which host to access on a switched RS-232C port, from which multiple hosts can be accessed.

Add RS232C Port
Available to the enabled user when the External Communication Service is stopped. Registers RS-232C ports with the External Communication Service.

Change Communication Interface Unit
Available to the enabled user when the External Communication Service is stopped. Changes existing information about a Communication Interface Unit.

Change IBM 3270 Host
Available to the enabled user when IBM 3270 emulation is stopped. Changes existing information about an IBM 3270 host.

Change RS232C Port
Available to the enabled user when the External Communication Service is stopped. Changes existing information about RS-232C ports.

Delete Communication Interface Unit
Available to the enabled user when the External Communication Service is stopped. Allows you to remove existing information about a Communication Interface Unit.

Delete IBM 3270 Host
Available to the enabled user when IBM 3270 emulation is stopped. Allows you to remove existing information about an IBM 3270 host.

Delete RS232C Port
Available to the enabled user when the External Communication Service is stopped. Allows you to remove existing information about an RS-232C port.

Describe RS232C Port
Available to the logged on user when the External Communication Service is started or stopped. Allows you to list current information about a single RS-232C port that is used for asynchronous terminal emulation, asynchronous dial-in, or IBM 3270 emulation.

Expunge Service   Available to the enabled user at the third interrupt point. This command is used to permanently remove a service and its associated files, logs, or databases from a server. This command also removes all server profile entries associated with the service, and de-registers the service from the Clearinghouse Service. Refer to the "Removing the External Communication Service from a server" section for the procedure.

List Communication Interface Unit   Available to the logged on user when the External Communication Service is started or stopped. Displays a list of registered Communication Interface Units.

List IBM 3270 Hosts   Available to the logged on user when the External Communication Service is started or stopped. Displays a list of registered IBM 3270 hosts.

List RS232C Ports   Available to the logged on user when the External Communication Service is started or stopped. Allows you to view the configuration of all the RS-232C ports.

List Siemens 9750 Hosts   Available to the logged on user when the External Communication Service is started or stopped. Displays a list of registered IBM Siemens 9750 hosts.

Rename Service   Available to the enabled user any time after the External Communication Service has been installed. The External Communication Service can be started or stopped. Permits you to change the name of the External Communication Service.

Show RS232C Port Statistics   Available to the logged on user when the External Communication Service is started or stopped. Displays the performance, loading, and error information being collected concerning each port.

Start   Available to the enabled user when the External Communication Service is stopped. Starts the External Communication Service.

Start IBM 3270 Emulation   Available to the enabled user when IBM 3270 emulation is stopped and the External Communication Service is started. Controls the availability of the 3270 emulation feature separately from other External Communication Service functions.

Stop   Available to the enabled user when the External Communication Service is started. Stops the External Communication Service.

Stop IBM 3270 Emulation   Available to the enabled user when IBM 3270 emulation and the External Communication Service are started. Controls the availability of the 3270 emulation feature separately from other External Communication Service functions.

Verify Clearinghouse Entries   Available to the enabled user when the External Communication Service is started or stopped. Updates the entries in the Clearinghouse database.

Before any External Communication Service configuration data can be retained on the server's rigid disk, you must initialize the External Communication Service. You can then configure the ports for different communication activity, depending on the type of ports installed.

The following procedures are described in this section and must be performed first in order to set up the External Communication Service and assign port configurations:

- Initializing the External Communication Service

- Adding a Communication Interface Unit, if necessary

- Verifying Clearinghouse entries

Initializing the External Communication Service

The initialization procedure described below is based on the assumption that the External Communication Service has been installed and run by the **Run Service** or **Proceed** commands. The installation procedures are explained in the *Server Software Installation* booklet.

The first time the External Communication Service runs, you are prompted for the name and description of the service. This includes entering a description for the service and validating it through the Clearinghouse. After you have named, described and verified the service, the ECS is initialized. Use SSI Form 1, Directory of Services on a Specific Server, to respond to the prompts.

Procedure

```
ECS: Normal Startup? (Y/N): YRETURN
Attempting to determine the name of this External Communication Service.
    Service name and description unknown.
    Enter service name: OurECSRETURN
    Enter service description: ECS to add CIU ports for IRSRETURN
    Confirm? (Y/N): YRETURN
    Validating Clearinghouse entry for OurECS:OurDomain:OurOrg
    A new Clearinghouse entry was created.
    Done.
ECS: Warning - No RS232C port assigned to this External Communication
Service.
ECS: Warning - No active RS232C port assigned to this External Communication
Service.
ECS: Data pertaining to this External Communication Service has changed. Verify
Clearinghouse Entries command will be run now.
Attempting to determine the name of this External Communication Service.
    Validating Clearinghouse entry for: OurECS:OurDomain:OurOrg
    Done.
Clearinghouse entry verification complete.
ECS: External Communication Service is started.
External Communication Service run.

!
```

1. Type the name for the External Communication Service from SSI Form 1 and press <RETURN>. (Use a fully qualified name if there is no Clearinghouse Service.)

2. Type the description for the External Communication Service and press <RETURN>. At this point the software attempts to register the ECS in the appropriate Clearinghouse domain.

3. If you have CIU ports to configure, continue with the procedure described in the "Adding a Communication Interface Unit, if necessary" section. If you have an 8000 port or a multiport option to configure, refer to the specific communication activity.

   For example, configuring an 8000 port for asynchronous communication is described in the "Configuring ports for asynchronous terminal emulation and dial-in" section. Configuring a multiport option is in the "Configuring ports for IBM 3270 SNA terminal emulation" section, and in the *Internetwork Routing Service* booklet.

Adding a Communication Interface Unit, if necessary

The Xerox 873 Communication Interface Unit (CIU) is an optional RS-232C port extender that supports up to eight additional ports. You must add the CIU to the External Communication Service before you can configure CIU ports. (Before continuing, make sure the ECS has been initialized as described in the "Initializing the External Communication Service" section.)

The procedure to add a Communication Interface Unit to your network includes entering a name and description for it. Complete ECS Form 1, Registering a Communication Interface Unit, before you perform the procedure. Respond to the prompts with the answers from your form.

Note: If you have already added the Communication Interface Unit for a different communication activity, you do not have to perform this step again.

Procedure

1. Log on and enable in the External Communication Service context. (If this is the first time the External Communication Service is run, you are already logged on and enabled. Enter **External Communication Service** at the exclamation point, and continue .)

```
> LogonRETURN
    User's Name: MWBRETURN
    Password: ****RETURN
> EnableRETURN
[External Communication ServiceRETURN
ECS!
```

2. Type **Stop** and press <RETURN>. You stop the External Communication Service to add the Communication Interface Unit.

3. Type **Y** to the "Disconnect active users?" prompt and press <RETURN>. This automatically disconnects the users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Add Communication Interface Unit** and press <RETURN>.

5. Respond to the prompts and press <RETURN> after each answer according to the information you have entered on your completed ECS Form 1.

```
ECS, External Communication Service is stopped.
ECS!Add Communication Interface UnitRETURN
    Name: JungleRETURN
    Description: Supports IRS linkRETURN
    Type of Communication Interface Unit
    1   One board
    2   Two board
    Enter choice number: 1RETURN
    Processor Number of Communication Interface Unit: 949-000-000RETURN
    Confirm this Communication Interface Unit information (Y/N): YRETURN
Done. Communication Interface Unit Jungle has been added.
    Add another Communication Interface Unit? (Y/N): NRETURN
```

6. Type **Start** and press <RETURN>.

7. Log off from the External Communication Service context.

Comment: Once you have registered an 873 Communication Interface Unit at the External Communication Service, its ports are available to the Internetwork Routing Service, or to 3270 SNA emulation. (Refer to the "Configuring ports for IBM 3270 SNA terminal emulation" section for more information.)

The CIU ports can be assigned to an IRS provided they have not been assigned to an emulation option, or to an incoming asynchronous line. For example, if your server is to support an Internetwork Routing Service and your organization wishes to use a Communication Interface Unit for one or more of the Internetwork Routing Service circuits, you should install (and initialize) the External Communication Service, register a CIU, and then configure the CIU ports by interacting with the Internetwork Routing Service. (Refer to the *Internetwork Routing Service* booklet for more information.)

Verifying Clearinghouse entries

When ports and IBM host entries are created or modified, some of the configuration information is stored in the Clearinghouse database. 6085/8010 workstation users can then initiate an emulation session with a remote host by knowing its name. Normally, this is done by the External Communication Service at the time the port and/or IBM host is created or changed.

However, if the External Communication Service reports that it cannot register information with the Clearinghouse Service, you must re-register the External Communication Service information by using the **Verify Clearinghouse Entries** command.

Procedure

1. Log on and enable in the External Communication Service context. (If this is the first time the External Communication Service is run, you are logged on and enabled. Enter **External Communication Service** at the exclamation point, and continue.)

```
> Logon RETURN
    User's Name: MWB RETURN
    Password: ****RETURN
> Enable RETURN
!External Communication Service RETURN
ECS!
```

2. Type **Verify Clearinghouse Entries** and press < RETURN >. (The only ports not verified are the asynchronous dial-in ports. Dial-in users are never known to the Clearinghouse Service, and are not shown.)

    Note: Answer **Y** if all the entries should be checked for consistency. Answer **N** to check for inconsistent entries. An inconsistent entry is one in which there was an unsuccessful attempt by the External Communication Service to register a port or host in the Clearinghouse. Checking for inconsistency also completes the entry verification process much sooner.

```
ECS!Verify Clearinghouse Entries RETURN
    Should all entries be verified? (Y/N): Y RETURN
Attempting to determine the name of this External Communication Service.
    Validating Clearinghouse Entry for OurECS:OurDomain:OurOrg.
    Done
Attempting to update entry for RS232C Port CIUPort:OurDomain:OurOrg.
    Clearinghouse update complete
    ...
    Clearinghouse entry verification complete.
```

3. Log off from the External Communication Service context.

This section provides instructions for installing the asynchronous terminal emulation and asynchronous dial-in communication activities. You should add a Communication Interface Unit, if necessary before assigning the asynchronous activities.

The External Communication Service is capable of supporting emulation sessions in which the workstation emulates a VT-100 or standard asynchronous-type terminal so users can interact with a remote host computer. You configure the External Communication Service that it can use either an 8000 port, or 873 Communication Interface Unit to communicate with a remote device through a modem, or a hardwire connection. The remote device can be anything that communicates with VT-100 or standard ASCII terminals using ASCII asynchronous protocols.

The External Communication Service also supports asynchronous dial-in calls from personal computers running ASCII communication programs, or from VT-100 or standard TTY-type terminals. Members of your organization who need to use the Interactive Terminal Service to send and receive mail messages, or to store and retrieve files to and from network File Services, call in through one of the External Communication Service's dial-in ports using the XModem (Ward Christianson) protocol. The External Communication Service greets these callers and allows them to select a particular Interactive Terminal Service with which they can interact. Optionally, you can configure External Communication Service dial-in ports so they automatically connect callers to the local Interactive Terminal Service.

The External Communication Service supports remote system administration when System Administrators call in from remote, non-networked personal computers, VT100s, or standard asynchronous-type terminals. If your organization elects to allow remote system administration via dial-in connections, configure your External Communication Service to greet callers. When the External Communication Service greets the callers, it allows them to choose between Interactive Terminal Service, and Services Executive functions.

If the caller selects Services Executive, he or she can specify which server the External Communication Service is to connect with. The dial-up System Administrator is required to log on at the selected server before he or she is allowed to perform System Administrator activities. Once the connection to the server has been made by the External Communication Service, the remote user can interact with the server as he or she would at the actual server terminal.

Configuring ports for asynchronous terminal emulation and dial-in

You can configure 8000 ports, or CIU ports on a server for asynchronous terminal emulation and/or asynchronous dial-in. The procedures for configuring these ports are based on the assumption that the server has the software option enabled for "Asynchronous Communication Protocol." (Refer to the *Server Software Installation* booklet in the *Network Basic Services* volume for information on configuring the server.)

Use Procedure A to configure the 8000 port for asynchronous terminal emulation. Use Procedure B to configure Communication Interface Unit ports for asynchronous terminal emulation and dial-in. Make sure you have added your CIU to the External Communication Service before continuing. (Refer to the "Adding a Communication Interface Unit, if necessary" section.)

Complete ECS Form 2, Registering an Asynchronous/8000 port, or ECS Form 3, Registering an Asynchronous/873 port. (These forms include configuring ports for the Interactive Terminal Service.)

Procedure A - Registering an asynchronous/8000 port

1. Log on and enable in the External Communication Service context. (If this is the first time the External Communication Service is run, you are already logged on and enabled. Type **External Communication Service** at the exclamation point, and continue.)

```
> Logon RETURN
    User's Name: MWB RETURN
    Password: **** RETURN
> Enable RETURN
! External Communication Service RETURN
ECS!
```

2. Type **Stop** and press < RETURN >. You stop the External Communication Service in order to configure ports.

3. Type **Y** to the "Disconnect active users?" prompt and press < RETURN >. This automatically disconnects the users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Add RS232C Port** and press < RETURN >.

Note: The system does not recognize the **Add RS232C Port** command if software options have not been enabled on the server.

5. Respond to the prompts, pressing < RETURN > after each answer according to the information you have entered on your completed ECS Form 2.

```
ECS!StopRETURN
    Disconnect active users? (Y/N): YRETURN
ECS!
ECS: External Communication Service is stopped.
    Add RS232C PortRETURN
    Enter RS232C port name: Port3RETURN
    Port is connected to
    1   A Xerox 873 Communication Interface Unit
    2   A Xerox 8000 Processor
    Enter choice number: 2RETURN
    Enter local port number (0...63) 2RETURN
        (The above prompt appears only if the multiport option is installed.)
    Type of use for which this port is intended
    1   Asynchronous Terminal Emulation
    2   Asynchronous Dial-In
    3   Asynchronous Terminal Emulation and Dial-In
    4   IBM 3270 SNA Emulation
    Enter choice number: 3RETURN
    Should dial-in users be automatically connected to the
    local ITS? (Y/N): NRETURN
    Description: TTY emulation and dial-in on 8000 portRETURN
    Select number of data bits in each character
    1   five
    2   six
    3   seven
    4   eight
    Enter choice number: 3RETURN
Continued on next page
```

Note: The question "Should dial-in users be automatically connected to the local ITS?" refers to the "Greeter". Typing **N** means a user is asked if he or she would like to use the Interactive Terminal Service (including an ITS on another server), or enable System Administrator functions from the remote terminal. Typing **Y** means incoming calls to this port are used for the local Interactive Terminal Service only. System Administrators who wish to disallow remote system administration for security reasons should type **Y**.

```
Select number of stop bits in each character
1   one
2   two
Enter choice number: 2RETURN
Select parity
1   even
2   odd
3   none
Enter choice number: 3RETURN
Does equipment have autodialer hardware? (Y/N): YRETURN
Does equipment support XOn/XOff flow control? (Y/N): YRETURN
Enter OCTAL value for XOn character: 21RETURN
Enter OCTAL value for XOff character: 23RETURN
The equipment connected to this port is
1   full duplex
2   half duplex
Enter choice number: 1RETURN
```

Note: If **Y** is the response to having autodialer hardware, the type of autodialer is not requested because only RS-366 dialers are approved for use on the local port(s).

```
Select line speed
1   75 bps
2   110 bps
3   134.5 bps
4   150 bps
5   300 bps
6   600 bps
7   1200 bps
8   2400 bps
9   3600 bps
10  4800 bps
11  7200 bps
12  9600 bps
13  19200 bps
Enter choice number: 7RETURN
Is access control desired? (Y/N): NRETURN
Confirm this RS232C Port information? (Y/N): YRETURN
Clearinghouse update complete
Done. RS232C port Port3 has been added.
Add another RS232C port? (Y/N): NRETURN
```

6. If you are configuring more than one port, type **Y** to the "Add another RS232C port?" prompt and subsequent prompts, using your completed form for each port. The External Communication Service repeats all prompts for each port.

7. Type **Start** and press <RETURN>.

8. Log off from the External Communication Service context.

Procedure B - Registering an asynchronous/873 port

1. Log on and enable in the External Communication Service context. (If this is the first time the External Communication Service is run, you are already logged on and enabled. Enter **External Communication Service** at the exclamation point, and continue.)

```
> Logon RETURN
    User's Name: MWB RETURN
    Password: **** RETURN
> Enable RETURN
!External Communication Service RETURN
ECS!
```

2. Type **Stop** and press <RETURN>. You stop the External Communication Service to configure ports.

3. Type **Y** to the "Disconnect active users?" prompt and press <RETURN>. This automatically disconnects the users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Add RS232C Port** and press <RETURN>.

Note: The system does not recognize the **Add RS232C Port** command if software options have not been enabled on the server.

5. Respond to the prompts, pressing <RETURN> after each answer according to the information you have entered on your completed ECS Form 3.

```
ECS!Stop RETURN
    Disconnect active users? (Y/N): Y RETURN
ECS!
ECS: External Communication Service is stopped.
    Add RS232C Port RETURN
    Enter RS232C port name: SharedPort RETURN
    Port is Connected to
    1  A Xerox 873 Communication Interface Unit
    2  A Xerox 8000 Processor
    Enter choice number: 1 RETURN

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```

```
Select 873 Communication Interface unit that controls the port
1   CIU659
2   CIU699
Enter choice number: 2RETURN
Select port number
1   A1
2   A2
3   A3
4   A4
Enter choice number: 4RETURN
Type of use for which port is intended
1   Asynchronous Terminal Emulation
2   Asynchronous Dial-In
3   Asynchronous Terminal Emulation and Dial-In
4   IBM 3270 SNA Emulation
Enter choice number: 3RETURN
Should dial-in users be automatically connected
to the local ITS? (Y/N): NRETURN
Description: CIU port shared between emulation and GreeterRETURN
Should this port behave as a
1   modem (DCE)
2   terminal (DTE)
Enter choice number: 2RETURN


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```

Note: The question "Should dial-in users be automatically connected to the local ITS?" refers to the "Greeter." Typing **N** means a user is asked if he or she would like to use the Interactive Terminal Service (including an ITS on another server), or have System Administrator functions from the remote terminal. (The user must press RETURN within five seconds after dialing or auto-dialing the local ITS, even if the Greeter's sign-on message does not display.)

Typing **Y** means incoming calls to this port are used for the local Interactive Terminal Service only. The user must press RETURN 30 seconds after dialing or auto-dialing the local ITS, or the connection is dropped. If you wish to disallow remote system administration for security reasons, type **Y**.

```
Select number of data bits in each character
1   five
2   six
3   seven
4   eight
Enter choice number: 4RETURN
Select number of stop bits in each character
1   one
2   two
Enter choice number: 2RETURN
Select parity
1   even
2   odd
3   none
Enter choice number: 3RETURN
Does equipment have autodialer hardware?(Y/N): YRETURN
Autodialer type is
1   Racal-Vadic
2   Ven-tel
Enter choice number: 2RETURN
Does equipment support XOn/XOff flow control?(Y/N): NRETURN
```

Comment: If a bad parity character is received, the character is discarded by the Communication Interface Unit. The workstation or ITS users receive no indication, except that the character is absent from the text.

Note: There are differences in equipment between the two available autodialers. Contact your Xerox representative for more information.

```
Select line speed
1    75 bps
2    110 bps
3    134.5 bps
4    150 bps
5    300 bps
6    600 bps
7    1200 bps
8    2400 bps
9    3600 bps
10   4800 bps
11   7200 bps
12   9600 bps
Enter choice number: 7RETURN
Is access control desired? (Y/N): YRETURN
Enter the name of the group allowed access to this port: AdminRETURN
Access group is Admin:OurDomain:OurOrg
Confirm this RS232C Port information? (Y/N): YRETURN
Clearinghouse update complete
Done. RS232C port SharedPort has been added.
Add another RS232C port? (Y/N): NRETURN
```

Note: Access control allows specific groups of people to use asynchronous emulation. If you type **Y** and enter a group name, be sure it is a valid group name. The External Communication Service does not validate the name with the Clearinghouse Service. If you type **N**, anyone on your internetwork will have access to this asynchronous emulation port.

6. If you are configuring more than one port, type **Y** to the "Add another RS232C port?" prompt and subsequent prompts, using your completed form for each port. The External Communication Service repeats all prompts for each port.

7. Type **Start** and press < RETURN >. (The Communication Interface Unit reboots automatically when the ECS is started. The system displays a boot message and the number assigned to the CIU board. Two numbers are displayed in sequence if the CIU is a two-board unit. The system then displays a message upon completion, allowing you to continue.)

8. Log off from the External Communication Service context.

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This section provides instructions for installing the IBM 3270 BSC terminal emulation, including configuring the 8000 port, and adding and assigning the default IBM 3270 BSC host.

After you have configured the 8000 port for the 3270 BSC emulation, there are additional steps you must complete before the synchronous communication activity becomes part of your network. These include determining controller information, and adding and assigning an IBM 3270 BSC host. These steps are described more fully in the following sections:

• Obtaining IBM 3270 BSC controller address information

• Adding and assigning an IBM 3270 Host for BSC

Note: Only the 8000 port (available through the single port option) can emulate the IBM 3270 BSC protocol. It is recommended that a server running ECS to support 3270 BSC emulation should not run other services. If assigning additional services or additional External Communication functions to a different server is not possible, the services and/or ECS functions should be of a low demand nature.

When the External Communication Service is used to communicate with IBM and IBM equivalent hardware, it emulates the IBM 3276-12 Cluster Controller. In standard IBM configurations, a cluster controller connects up to eight IBM 3278 terminals. The cluster controller is hardwired to an IBM host computer.

In the Xerox 8000 Network System, an External Communication Service is configured to support up to eight concurrent 3270 emulation sessions. Eight sessions may be established on the same workstation, or on different workstations. Unlike the real cluster controller, however, the External Communication Service is not hardwired to the workstations that are to emulate IBM 3278 terminals. Rather, any workstation with IBM 3270 emulation capability can be a client of any External Communication Service on the internetwork.

There are two types of IBM 3270 protocols that External Communication Service options can support: IBM 3270 BSC and IBM 3270 SNA.

Configuring the local 8000 port for IBM 3270 BSC terminal emulation

In IBM 3270 BSC emulation, an IBM host computer is connected via a dedicated, leased line to an 8000 port on a server running the External Communication Service. The External Communication Service communicates with the IBM host using standard IBM 3270 BSC protocol (the 6085/8010 workstations use Xerox Network System standard protocol). The External Communication Service transforms the IBM BSC protocol into the Xerox Network Systems standard protocol and vice versa, while leaving the job of IBM 3278-2 emulation up to the 6085/8010 workstation emulation software. The port used for IBM 3270 BSC can only be the 8000 port available through the single port option.

Complete ECS Form 4, Registering an IBM 3270 BSC/8000 port, and use it to respond to the prompts. Be sure you have initialized the External Communication Service before configuring your IBM 3270 BSC port.

Note: The following procedure is based on the assumption that the server has software options enabled for "3270 BSC Communication Protocol." Refer to the *Server Software Installation* booklet in the *Network Basic Services* volume for information on configuring the server.

Procedure

1. Log on and enable in the External Communication Service context. (If this is the first time the External Communication Service is run, you are already logged on and enabled. Enter **External Communication Service** at the exclamation point, and continue.)

```
> Logon RETURN
    User's Name: MWB RETURN
    Password: **** RETURN
> Enable RETURN
!External Communication Service RETURN
ECS!
```

2. Type **Stop** and press < RETURN >. You stop the External Communication Service to configure the 8000 port for 3270 BSC emulation.

3. Type **Y** to the "Disconnect active users?" prompt and press < RETURN >. This automatically disconnects the users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Add RS232C Port** and press < RETURN >.

Note: The system does not recognize the **Add RS232C Port** command if software options are not enabled on the server.

5. Respond to the prompts, pressing <RETURN> after each answer according to the information you have entered on your completed ECS Form 4.

```
ECS!StopRETURN
    Disconnect active users? (Y/N): YRETURN
ECS!
ECS: External Communication Service is stopped.
ECS!Add RS232C PortRETURN
    Enter RS232C port name: Port1RETURN
    Port is connected to
    1    A Xerox 873 Communication Interface Unit
    2    A Xerox 8000 Processor
    Enter choice number: 2RETURN
    Type of use for which port is intended
    1    Asynchronous Terminal Emulation
    2    Asynchronous Dial-In
    3    Asynchronous Terminal Emulation and Dial-In
    4    IBM 3270 SNA Emulation
    5    IBM 3270 BSC Emulation
    Enter choice number: 5RETURN
    Description: local port supporting 3270 BSC to hostRETURN
    The equipment connected to this port is
    1    full duplex
    2    half duplex
    Enter choice number: 1RETURN

Continued on next page.
```

Note: If the software options were set only for IBM 3270 BSC emulation, you do not see all of the prompts in the example (such as the asynchronous options, or IBM 3270 SNA emulation). If you have not configured a Xerox 873 Communication Interface Unit, the "Port is connected to" prompt does not appear.

```
Select line speed
1   300 bps
2   600 bps
3   1200 bps
4   2400 bps
5   3600 bps
6   4800 bps
7   7200 bps
8   9600 bps
Enter choice number: 8RETURN
Confirm this RS232C Port Information? (Y/N): YRETURN
Clearinghouse update complete.
Done. RS232C port Port1 has been added.
Add another RS232C Port? (Y/N): NRETURN
```

6. Type **N** to the "Add another RS232C Port?" prompt and press <RETURN>.

7. Type **Start** and press <RETURN>.

8. Next, controller address information must be obtained before the IBM 3770 host for BSC can be added to the network. If you already have the controller address information, go to the "Adding and assigning an IBM 3270 host for BSC" section. If not, log off from the ECS and proceed to the next section, "Obtaining IBM 3270 BSC controller address information", to register information on the controller address.

Obtaining IBM 3270 BSC controller address information

Before you can add an IBM 3270 host to the External Communication Service, you must have information pertaining to the controller address. Your computer site determines the address information, which must be a number between 0 and 31.

If your computer site provides you with an address in another format, use the table below to determine the appropriate number between 0 and 31 for binary synchronous communications. (The table is referenced from Figure 6-1, page 6-11, *IBM 3270 Information Display System Component Description*, Document GA27-2749-9, 10th edition, August, 1979.)

After the controller address is known, go to the "Adding and assigning an IBM 3270 host for BSC" section.

Comment: Multi-drop lines must be configured on the local port as half-duplex.

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

Table 1: Controller Address to Character Mapping

Adding and assigning an IBM 3270 host for BSC

After you have configured the 8000 port for 3270 BSC emulation and have determined the controller address (see the "Configuring the local 8000 port for IBM 3270 BSC terminal emulation", and "Obtaining IBM 3270 BSC controller address information" sections), you can add the IBM 3270 BSC host to the network. The **Add IBM 3270 Host** command enables you to define parameters that describe an IBM 3270 host for access through the network.

Complete ECS Form 5, Registering an IBM 3270 host for BSC, and use it to respond to the prompts to configure IBM 3270 BSC emulation.

Note: The following procedure is based on the assumption that the server has software options enabled for "3270 SDLC/SNA Communication Protocol." Refer to the *Server Software Installation* booklet in the *Network Basic Services* volume for information on configuring the server.

Procedure

1. Log on and enable in the External Communication Service context. (If this is the first time the External Communication Service is run, you are already logged on and enabled. Enter **External Communication Service** at the exclamation point, and continue.)

```
> Logon RETURN
    User's Name: MWB RETURN
    Password: **** RETURN
> Enable RETURN
! External Communication Service RETURN
ECS!
```

2. Type **Stop IBM 3270 Emulation** and press < RETURN >. You stop the External Communication Service in order to add the IBM 3270 BSC host.

3. Type **Y** to the "Disconnect active users?" prompt and press < RETURN >. This automatically disconnects the IBM 3270 users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Add IBM 3270 Host** and press < RETURN >.

Note: The system does not recognize the **Add IBM 3270 Host** command if software options are not enabled on the server.

5. Respond to the prompts, pressing <RETURN> after each answer according to the information you have entered on your completed ECS Form 5.

```
ECS! Stop IBM 3270 Emulation
    Diconnect active users? (Y/N): YRETURN
ECS!
ECS: IBM 3270 Emulation is stopped
Add IBM 3270 HostRETURN
    Name: EngineeringRETURN
    Description: IBM Host entry for 3270 BSC useRETURN
    Choose the RS232C port name through which the Host is accessed
    1   Port1
    Enter choice number: 1RETURN
    Enter the Emulated 3276 Controller's address (0-31): 1RETURN
    Size of buffers to IBM 3270 Host (60...512):
```

Note: Access control allows specific groups of people to use IBM 3270 BSC emulation. If you type **Y** and enter a group name, be sure it is a valid group name. The External Communication Service does not validate the name with the Clearinghouse Service. If you type **N**, anyone on your internetwork will have access to IBM 3270 BSC emulation.

```
Enter the number of ports on the emulated 3276 Controller (1-8): 8 RETURN
Is access control desired? (Y/N): YRETURN
Is the access control the same for all ports? (Y/N): NRETURN
Enter the name of the group allowed access to port 0: MarketingRETURN
Enter the name of the group allowed access to port 1: MarketingRETURN
Enter the name of the group allowed access to port 2: Research:R&D RETURN
Enter the name of the group allowed access to port 3:RETURN
Enter the name of the group allowed access to port 4:RETURN
Enter the name of the group allowed access to port 5:RETURN
Enter the name of the group allowed access to port 6:RETURN
Enter the name of the group allowed access to port 7:RETURN


Continued on next page
```

```
Language supported by this Emulated 3276 Controller is
1   Austrian
...
9   English (US)
...
26  Swedish (Alternate)
Enter choice number: 9RETURN
Is all the Emulated 3276 Controller information correct? (Y/N): YRETURN
Add another Emulated 3276 Controller to this IBM 3270 Host?
(Y/N): NRETURN
Confirm this IBM 3270 Host information? (Y/N): YRETURN
Clearinghouse update complete
Done. Engineering (IBM 3270 Host) added.
Add another IBM 3270 Host? (Y/N): NRETURN
```

Comment: The language supported by the controller refers to a variant of the EBCDIC code, and must match an equivalent setting in the 3270 host. Always select "English (US)" unless told differently by your computer site.

6. If you are configuring more than one IBM 3270 host, type **Y** to the "Add another IBM 3270 Host?" prompt and subsequent prompts, using your completed ECS Form 5 for each host. The External Communication Service repeats all prompts for each host.

After you have added the IBM 3270 host to the ECS, you must assign the host to the 8000 port. Even though the host is on a non-switched, dedicated line to the port, the host must still be assigned to it through the External Communication Service. The **Assign IBM 3270 Host** command displays a menu of possible IBM 3270 hosts for a given port. You should assign one as the host through which a connection is made from a particular server.

7. Type **Assign IBM 3270 Host** and press < RETURN >.

8. Respond to the prompts, pressing < RETURN > after each answer.

```
ECS!Assign IBM HostRETURN
    Which physical port is used to access the host
    1   Port
    2   Backup Port
    Enter choice number: 1RETURN
    Possible IBM 3270 Hosts are
    1   LosAngelesHost
    2   DenverHost
    Enter Choice Number: 1RETURN
    Done.
```

9. Type **Start IBM 3270 Emulation** and press < RETURN >.

10. Log off from the External Communication Service context.

This section describes procedures for installing the IBM 3270 SNA terminal emulation. It includes information on configuring ports, and adding and assigning the default IBM 3270 SNA host. You must add a Communication Interface Unit, if necessary, before installing SNA terminal emulation.

After you have configured the ports for 3270 SNA emulation, there are additional steps to complete before the synchronous communication activity becomes part of your network. These steps include determining controller information, and adding and assigning IBM 3270 host information. These steps are described more fully in the sections:

● Obtaining IBM 3270 SNA controller address information

● Adding and assigning an IBM 3270 host for SNA

When the External Communication Service is used to communicate with IBM and IBM equivalent hardware, it emulates the IBM 3276-12 Cluster Controller. In standard IBM configurations, a cluster controller connects up to eight IBM 3278 terminals. The cluster controller is hardwired to an IBM host computer.

In the Xerox 8000 Network System, an External Communication Service is configured to support up to eight 3270 emulation sessions. Eight sessions may be established on the same workstation or on different workstations. Unlike the real cluster controller, however, the External Communication Service is not hardwired to the workstations that emulate IBM 3278 terminals. Rather, any workstation with IBM 3270 emulation capability can be a client of any External Communication Service on the internetwork.

There are two types of IBM 3270 protocols that External Communication Service options can support: IBM 3270 BSC and IBM 3270 SNA.

Configuring ports for IBM 3270 SNA terminal emulation

In IBM 3270 SNA emulation, an IBM host computer is connected to a port controlled by an External Communication Service. The External Communication Service communicates with the IBM host using standard IBM 3270 SNA protocol (the 6085/8010 workstations use Xerox Network System standard protocol). The External Communication Service transforms the IBM SNA protocol into the Xerox Network Systems standard protocol and vice versa, while leaving the job of IBM 3278-2 emulation up to the 6085/8010 workstations emulation software.

The ports used for IBM 3270 SNA can be an 8000 port, a port on the multiport option, or a CIU port. If the connection to the host computer is through an 873 CIU port, then only a dedicated leased line can be used. If the IBM 3270 SNA is configured on a Multiport Option list, then two different hosts can be supported.

Use Procedure A to add an 8000 port, or a port on the multiport option. Use Procedure B to add a CIU port. Be sure you have initialized the External Communication Service before you configure your ports, and that you have registered the Communication Interface Unit with the External Communication Service if you are using a CIU port.

Note: The following procedures are based on the assumption that the server has software options enabled for "3270 SDLC/SNA Communication Protocol." Refer to the *Server Software Installation* booklet in the *Network Basic Services* volume for information on configuring the server.

Procedure A - Configuring an 8000 port or multiport option

Before registering an IBM 3270 SNA/8000 port or a port on the multiport option, complete ECS Form 6, Registering an IBM 3270 SNA/8000 Port, and use it to respond to the prompts.

1. Log on and enable in the External Communication Service context. (If this is the first time the External Communication Service is run, you are already logged on and enabled. Enter **External Communication Service** at the exclamation point, and continue.)

```
> LogonRETURN
    User's Name: MWBRETURN
    Password: ****RETURN
> EnableRETURN
!External Communication ServiceRETURN
ECS!
```

2. Type **Stop** and press <RETURN>. You stop the External Communication Service in order to configure the port(s) for 3270 SNA emulation.

3. Type **Y** to the "Disconnect active users?" prompt and press <RETURN>. This automatically disconnects the users

currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Add RS232C Port** and press < RETURN >.

Note: The system does not recognize the **Add RS232C Port** command if software options are not enabled on the server.

5. Respond to the prompts, pressing < RETURN > after each answer according to the information you have entered on your completed ECS Form 6.

Note: If you have not configured a Xerox 873 Communication Interface Unit, the "Port is connected to" prompt does not appear.

```
ECS!StopRETURN
     Disconnect active users? (Y/N): YRETURN
ECS!
ECS: External Communication Service is stopped.
Add RS232C PortRETURN
     Enter RS232C port name: Jupiter-LocalportRETURN
     Port is connected to
     1   A Xerox 873 Communication Interface Unit
     2   A Xerox 8000 Processor
     Enter choice number: 2RETURN
     Enter local port numbers (0...63): 2RETURN
          (The above prompt appears only if the multiport option is
          installed.)
     Type of use for which port is intended
     1   Asynchronous Terminal Emulation
     2   Asynchronous Dial-In
     3   Asynchronous Terminal Emulation and Dial-In
     4   IBM 3270 SNA Emulation
     5   IBM 3270 BSC Emulation
          (Item number 5 appears only if the single port option is
          installed.)
     Enter choice number: 4RETURN
     Description: local port supporting 3270 SNA to hostRETURN
     Does this equipment have autodial hardware? (Y/N): Y RETURN
     The equipment connected to this port encodes data using
     1   nrz
     2   nrzi
     Enter choice number: 1RETURN
          (The above prompt appears only if the multiport option is
          installed.)
     The equipment connected to this port is
     1   full duplex
     2   half duplex
     Enter choice number: 2RETURN

Continued on next page
```

Note: The encoding scheme available through the multiport option includes the standard bitsynchronous scheme (NRZI) used by IBM communication devices, as indicated by the

prompt, "The equipment connected to this port encodes data using."

```
Select line speed
1   300 bps
2   600 bps
3   1200 bps
4   2400 bps
5   3600 bps
6   4800 bps
7   7200 bps
8   9600 bps
9   19200 bps
10  28800 bps
11  38400 bps
12  48000 bps
13  56000 bps
     (Items 9-13 appear only if the multiport option is installed.)
Enter choice number: 6RETURN
Confirm this RS232C Port information? (Y/N): YRETURN
Clearinghouse update complete.
Done. RS232C port Jupiter-Localport has been added.
Add another RS232C Port? (Y/N): NRETURN
```

6. If you are configuring more than one port, type **Y** to the "Add another RS232C Port?" prompt and subsequent prompts, using your completed ECS Form 6 for each port. The External Communication Service repeats all prompts for each port.

7. Type **Start** and press < RETURN >.

8. Next, you must obtain controller address information before you can add the IBM 3770 host for SNA to the network. If you already have the controller address information, go to the section titled "Adding and assigning an IBM 3270 host for SNA." If not, log off from the ECS and proceed to the "Obtaining IBM 3270 SNA controller address information" section to register information on the controller address.

Procedure B - Configuring CIU ports

Before registering an IBM 3270 SNA/873 port, complete ECS Form 7, Registering an IBM 3270 SNA/873 port, and use it to respond to the prompts.

1. Log on and enable in the External Communication Service context. (If this is the first time the External Communication Service is run, you are already logged on and enabled. Enter **External Communication Service** at the exclamation point, and continue.)

```
>Logon RETURN
    User's Name: MWB RETURN
    Password: **** RETURN
>Enable RETURN
!External Communication Service RETURN
ECS!
```

2. Type **Stop** and press <RETURN>.

3. Type **Y** to the "Disconnect active users?" prompt and press <RETURN>. This automatically disconnects the users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Add RS232C Port** and press <RETURN>.

Note: The system does not recognize the **Add RS232C Port** command if software options are not enabled on the server.

5. Respond to the prompts, pressing <RETURN> after each answer according to the information you have entered on your completed ECS Form 7.

```
ECS!Stop RETURN
    Disconnect active users? (Y/N) Y RETURN
ECS!
ECS: External Communication Service is stopped.
ECS!Add RS232C Port RETURN
    Enter RS232C port name: CIUport RETURN
    Port is connected to
    1  A Xerox 873 Communication Interface Unit
    2  A Xerox 8000 Processor
    Enter choice number: 1 RETURN

Continued on next page
```

```
Select 873 Communication Interface unit that controls the port
1   CIU659
2   CIU699
Enter choice number: 2RETURN
Select port number
1   A1
2   A2
3   A3
4   A4
Enter choice number: 1RETURN
Type of use for which port is intended
1   Asynchronous Terminal Emulation
2   Asynchronous Dial-In
3   Asynchronous Terminal Emulation and Dial-In
4   IBM 3270 SNA Emulation
Enter choice number: 4RETURN
Description: CIU port supporting dedicated line to SNA hostRETURN
Select line speed
1   300 bps
2   600 bps
3   1200 bps
4   2400 bps
5   3600 bps
6   4800 bps
7   7200 bps
8   9600 bps
Enter choice number: 6RETURN
Confirm this RS232C Port Information? (Y/N): YRETURN
Clearinghouse update complete
Done. RS232C port CIUport added.
Add another RS232C Port? (Y/N): NRETURN
```

Comment: Half duplex is currently not supported for IBM 3270 SNA protocol on the Communication Interface Unit, so the duplexity prompt is not shown.

6. If you are configuring more than one port, type **Y** to the "Add another RS232C Port?" prompt and subsequent prompts, using your completed ECS Form 7 for each port. The External Communication Service repeats all prompts for each port.

7. Type **Start** and press < RETURN >.

8. Next, you must obtain controller address information before you can add the IBM 3770 host for SNA to the network. If you already have the controller address information, go to the section titled "Adding and assigning an IBM 3270 host for SNA." If not, log off from the ECS and proceed to the "Obtaining IBM 3270 SNA controller address information" section to register information on the controller address.

Obtaining IBM 3270 SNA controller address information

When you add an IBM 3270 host computer to the External Communication Service, you are prompted for the controller address. Your computer site tells you the address information. When using IBM 3270 SNA communication protocol, the address must be a number between 1 and 255. This address is sometimes referred to as the "SDLC station address."

If your computer site tells you the address is "10," be sure you know if this address is 10 decimal or 10 hexadecimal (which is 16 decimal). If the computer site provides you with a hexadecimal address (a number between 1 and FE), you must convert it to decimal. To convert from hexadecimal to decimal, multiply the value of the first digit by 16, then add the value of the second digit. The hexadecimal A has the value of 10, B has the value of 11, C has the value of 12, and so on. For example, "AF" equals 10 x 16 + 15, which is 160 + 15, or 175 decimal.

Here is the information you need to know:

• Controller/SDLC station address (PU macro ADDR parameter)

• Buffer size (typically 265, but must be between 60 and 512; PU macro MAXDATA parameter)

• Number of devices defined

• If switched (dial-up), the 5 hexadecimal characters are the XID (PU macro IDNUM parameter)

After the controller address is known, go to the "Adding and assigning and IBM 3270 host for SNA" section.

Comments:

1. If you are using a CIU port, or an 8000 local port be sure your computer site specifies NRZI = NO on the line macro representing the link to the 3270 controller.

2. Make sure the logon mode table entries and the BIND parameters used by any application program being accessed do not exceed a maximum outbound RU size of 4096.

3. Be sure the port is defined as half duplex if it is a multi-drop line. Multi-drop lines can only be used on the 8000 port, since CIU ports for IBM 3270 SNA can only be full duplex.

Adding and assigning an IBM 3270 host for SNA

After you have configured the ports for 3270 SNA emulation and you have determined the controller address (see the "Configuring ports for IBM 3270 SNA terminal emulation" and "Obtaining IBM 3270 SNA controller address information" sections), you can add the IBM 3270 SNA host to the network. The **Add IBM 3270 Host** command enables you to define parameters that describe an IBM 3270 host for access through the network.

Complete ECS Form 8, Registering an IBM 3270 host for SNA, and use it to respond to the prompts to configure IBM 3270 SNA emulation.

Note: The following procedures are based on the assumption that the server has software options enabled for "3270 SDLC/SNA Communication Protocol." Refer to the *Server Software Installation* booklet in the *Basic Network Services* volume for information on configuring the server.

Procedure

1. Log on and enable in the External Communication Service context. (If this is the first time the External Communication Service is run, you are already logged on and enabled. Enter **External Communication Service** at the exclamation point, and continue.)

```
> Logon RETURN
    User's Name: MWB RETURN
    Password: **** RETURN
> Enable RETURN
!External Communication Service RETURN
ECS!
```

2. Type **Stop IBM 3270 Emulation** and press <RETURN>. You stop the External Communication Service in order to add the IBM 3270 SNA host.

3. Type **Y** to the "Disconnect active users?" prompt and press <RETURN>. This automatically disconnects the users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Add IBM 3270 Host** and press <RETURN>.

Note: The system does not recognize the **Add IBM 3270 Host** command if software options are not enabled on the server.

5. Respond to the prompts, pressing < RETURN > after each answer according to the information you have entered on your completed ECS Form 8.

```
ECS!Add IBM 3270 HostRETURN
   Name: DevelopmentRETURN
   Description: First Floor, Rm 202RETURN
   Choose the RS232C port name through which the Host is accessed
   1  CIUport
   2  Jupiter-Localport
   Enter choice number: 2RETURN
   Is this a dial-up line? (Y/N): YRETURN
   Enter the phone number to be dialed: 5551212RETURN
   Enter Emulated 3276 Controller XID: 054FDRETURN
   Enter the Emulated 3276 Controller's address (1-255): 193RETURN
   Enter the size of buffers to IBM 3270 Host (60-512): 265RETURN
   Enter the number of ports on the emulated 3276 Controller (1-8): 4RETURN
```

Comment: The language supported by the controller refers to a variant of the EBCDIC code, and must match an equivalent setting in the 3270 host. Always select "English (US)" unless told differently by your computer site.

```
Is access control desired? (Y/N): NRETURN
Language support by this Emulated 3276 Controller is
1  Austrian
...
9  English (US)
...
26 Swedish (Alternate)
Enter choice number: 9RETURN
Is all the Emulated 3276 Controller information correct? (Y/N): YRETURN
Add another Emulated 3276 Controller to this IBM 3270 Host? (Y/N): N RETURN
Confirm this IBM 3270 Host information? (Y/N): YRETURN
Clearinghouse update complete
Done. Development (IBM 3270 Host) added.
Add another IBM 3270 Host? (Y/N): NRETURN
```

Note: If you answer **Y** to "Add another Emulated 3276 Controller to this IBM 3270 Host," you are prompted for information on the second controller. It is registered with the same name and description.

6. If you are configuring more than one IBM 3270 host, type **Y** to the "Add another IBM 3270 Host?" prompt and subsequent prompts, using your completed ECS Form 5 for each host. The External Communication Service repeats all prompts for each host.

After you have added the IBM 3270 host to the ECS, you can now assign the host to a port. Since the IBM 3270 SNA communication protocol supports switched connections, you can use a single RS-232C port to communicate with several different hosts. The **Assign IBM 3270 Host** command displays a menu of possible IBM 3270 hosts for a given port. Select one as the host for which connection attempts will be made.

With a non-switched, dedicated line, you can define only a single IBM 3270 host for each RS-232C port. The host must be assigned to the port through the External Communication Service.

7. Type **Assign IBM 3270 Host** and press < RETURN >.

8. Type the number corresponding to the physical port to be used to access the host and press < RETURN >.

9. Type the number corresponding to the possible IBM 3270 host and press < RETURN >.

```
Assign IBM HostRETURN
  Which physical port is used to access the host
  1  SNA Port
  2  Backup Port
  Enter choice number: 1RETURN
  Possible IBM 3270 Hosts are
  1  NewYorkHost
  2  FloridaHost
  Enter Choice Number: 1RETURN
  Done
```

10. Type **Start IBM 3270 Emulation** and press < RETURN >.

11. Log off from the External Communication Service context.

Use the instructions in this section to perform specific tasks that are needed to keep the External Communication Service running. The tasks are done on an as-needed basis, using commands specific to the External Communication Service and to the operating system. For commands specific to the External Communication Service, you must be logged on and enabled in the ECS context.

These procedures are in this section:

* Changing Communication Interface Unit/port/host configurations

* Deleting Communication Interface Unit/port/host configurations

* Switching to a different IBM 3270 host

* Describing RS-232C ports

* Showing RS-232C port statistics

* Helping emulation users

* Renaming the External Communication Service

* Removing the External Communication Service from a server

Changing Communication Interface Unit/port/host configurations

Once you have configured ports and hosts for communication activity, you may need to change this information with the External Communication Service. This includes information about the location, name and description of the port or host, as well as the use of the ports.

Note: You should instruct 8010/6085 workstation users to delete old icons and retrieve a new TTY, VT100, or 3270 icon after changes have been made to the port or host configurations. (See the "Helping emulation users" section, and *VP Series Reference Library* for more information.)

Use Procedure A to change a Communication Interface Unit configuration. Use Procedure B to change the 8000 port or multiport option configurations, and Procedure C to change a host configuration. Remember to revise the appropriate form to reflect the new changes. Forms are located in Appendix A of this booklet.

Procedure A - Changing a Communication Interface Unit configuration

1. Log on and enable in the External Communication Service context.

2. Type **Stop** and press < RETURN >.

3. Type **Y** to the "Disconnect active users?" prompt and press < RETURN >. This automatically disconnects the users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Change Communication Interface Unit** and press < RETURN >.

5. Type in the new data in response to the prompts and press < RETURN >.

6. Type **Start** and press < RETURN >. At this point, the CIU automatically reboots and displays a message when complete.

7. Log off from the External Communication Service context.

Procedure B - Changing the 8000 port and multiport configurations

1. Log on and enable in the External Communication Service context.

2. Type **Stop** and press < RETURN >.

3. Type **Y** to the "Disconnect active users?" prompt and press < RETURN >. This automatically disconnects the users currently on the External Communication Service. (If you

enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Change RS232C Port** and press < RETURN >.

5. Type in the new data in response to the prompts and press < RETURN >.

6. Type **Start** and press < RETURN >.

7. Log off from the External Communication Service context.

Procedure C - Changing a host configuration

1. Log on and enable in the External Communication Service context.

2. Type **Stop IBM 3270 Emulation** and press < RETURN >.

3. Type **Y** to the "Disconnect active users?" prompt and press < RETURN >. This automatically disconnects the IBM 3270 users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Change IBM 3270 Host** and press < RETURN >.

5. Type in the new data in response to the prompts and press < RETURN >.

6. Type **Start IBM 3270 Emulation** and press < RETURN >.

7. Log off from the External Communication Service context.

Deleting Communication Interface Unit/port/host configurations

At some time, you may need to delete stored port and host configuration information from the External Communication Service.

Note: You should instruct users on 8010/6085 workstations to delete existing TTY, VT100, or 3270 icons after deletions have been made to the port or host configurations. (See the "Helping emulation users" section, and *VP Series Reference Library* for more information.)

Use Procedure A to delete RS-232C port (including CIU ports) configurations. Use Procedure B to delete a Communication Interface Unit, and Procedure C to delete a host configuration. Remember to revise the appropriate form to reflect the new changes.

Procedure A - Deleting RS-232C port configurations

1. Log on and enable in the External Communication Service context.

2. Type **Stop** and press <RETURN>.

3. Type **Y** to the "Disconnect active users?" prompt and press <RETURN>. This automatically disconnects the users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Delete RS232C Port** and press <RETURN>.

5. Respond to the prompts and press <RETURN>.

6. Type **Start** and press <RETURN>.

7. Log off from the External Communication Service context.

Procedure B - Deleting a Communication Interface Unit configuration.

Note: You must delete all RS-232C ports assigned to a Communication Interface Unit before you can delete the CIU from the External Communication Service.

1. Log on and enable in the External Communication Service context.

2. Type **Stop** and press <RETURN>.

3. Type **Y** to the "Disconnect active users?" prompt and press <RETURN>. This automatically disconnects the users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the ECS.)

4. Type **Delete Communication Interface Unit** and press <RETURN>.

5. Respond to the prompts and press <RETURN>.

6. Type **Start** and press <RETURN>.

7. Log off from the External Communication Service context.

Procedure C - Deleting a host configuration

1. Log on and enable in the External Communication Service context.

2. Type **Stop IBM 3270 Emulation** and press <RETURN>.

3. Type **Y** to the "Disconnect active users?" prompt and press <RETURN>. This automatically disconnects the IBM 3270 users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping the 3270 emulation.)

4. Type **Delete IBM 3270 Host** and press <RETURN>.

5. Respond to the prompts and press <RETURN>.

6. Type **Start IBM 3270 Emulation** and press <RETURN>.

7. Log off from the External Communication Service context.

Switching to a different IBM 3270 host

If you already have ports and hosts configured and you wish to switch to a different host, follow the procedure below.

Note: You should instruct 8010/6085 workstations users to delete old icons and retrieve a new TTY, VT100, or 3270 icon after changes have been made to the port or host configurations. (See the "Helping emulation users" section, and *VP Series Reference Library* for more information.)

Procedure

1. Log on and enable in the External Communication Service context.

2. Type **Stop IBM 3270 Emulation** and press < RETURN >.

3. Type **Y** to the "Disconnect active users?" prompt and press < RETURN >. This automatically disconnects the IBM 3270 users currently on the External Communication Service. (If you enter **N**, the system waits until each user is logged off before stopping IBM 3270 emulation.)

4. Type **Assign IBM 3270 Host** and press < RETURN >.

5. Type the number corresponding to the RS-232C port name through which the host is accessed and press < RETURN >.

6. Type the number corresponding to the new IBM 3270 host and press < RETURN >.

7. Type **Start IBM 3270 Emulation** and press < RETURN >.

```
ECS!Stop IBM 3270 EmulationRETURN
     Disconnect active users? (Y/N): YRETURN
ECS!
ECS: IBM 3270 Emulation is stopped.
ECS!Assign IBM 3270 HostRETURN
     Choose the RS232C port name through which the host is accessed
     1  SNA port
     2  Backup port
     Enter choice number: 1RETURN
     Possible IBM 3270 Hosts are
     1   NewYorkHost
     2   FloridaHost
     Enter choice number: 1RETURN
     Done
ECS!Start IBM 3270 EmulationRETURN
```

8. Log off from the External Communication Service context.

Describing RS-232C ports

The **Describe RS232C Port** command allows you to list current information (such as line speed, port duplexity, or access control) about a single RS-232C port used for asynchronous terminal emulation, asynchronous dial-in, or IBM 3270 emulation.

Procedure

1. Log on and enable in the External Communication Service context.

2. Type **Describe RS232C Port** and press < RETURN >.

3. Type the number corresponding to the port you wish to list current configuration information about and press < RETURN >.

4. Log off from the External Communication Service context.

Here is a sample RS-232C description showing asynchronous dial-in.

```
ECS>Describe RS232C PortRETURN
        Which port:
        1   ITS/TTY emulation port
        2   TTY emulation port
        Enter choice number: 1RETURN
Name: ITS/TTY emulation port, Line Number: 0
Line speed: 300 bps,    Local Port: 0.
Description: ITS's second 300 bps port.  Call 225-1234
Port duplex: full duplex, Synchronous capability: asynchronous.
Port use: Asynchronous Dial-In.
Preemption:  Forbidden
Dial-in users will be given a choice of connections
Data bits/character: eight.   Stop bits: one, Parity: none
Autodialer: RS366
Access control: TeamLeaders:OurDomain:OurOrg
Flow control: none.
```

Here is a sample RS-232C description showing asynchronous terminal emulation.

```
ECS > Describe RS232C PortRETURN
        Which port:
        1    ITS/TTY emulation port
        2    TTY emulation port
        Enter choice number: 2RETURN
Name: TTY emulation port, Line Number: 64
Line speed: 1200 bps, CIU Port: A1
Description: TTY 1200 bps for time sharing
Port duplex: full duplex, Synchronous capability: asynchronous.
Port use: Asynchronous terminal emulation.
Data bits/character: seven, Stop bits: one, Parity: even.
Autodialer: Racal-Vadic.
Port type: terminal (DTE).
Flow control: XOn/XOff, XOn: 21, XOff: 23.
```

Here is a sample RS-232C description showing asynchronous terminal emulation and asynchronous dial-in.

```
ECS > Describe RS232C PortRETURN
        Which port:
        1    ITS/TTY emulation port
        2    TTY emulation port
        3    Asynchronous dial-in and dial-out
        Enter choice number: 3RETURN
Name: ITS/TTY emulation port, Line Number: 0
Line speed: 300 bps,    Local Port: 0.
Description: ITS's second 300 bps port.  Call 225-1234
Port duplex: full duplex, Synchronous capability: asynchronous.
Port use: Asynchronous Dial-In.
Preemption:  Allowed
Dial-in users will be given a choice of connections
Data bits/character: eight.   Stop bits: one, Parity: none.
Autodialer: RS366
Access control: TeamLeaders:OurDomain:OurOrg
Port type: terminal (DTE)
Flow control: none.
```

Here is a sample RS-232C description showing IBM 3270 BSC.

```
ECS > Describe RS232C PortRETURN
        Which port:
        1   CIU SNA port
        2   Local BSC port
        Enter choice number: 2RETURN
Name: Local BSC port, Line Number: 0
Line speed: 4800 bps, Local Port: 0
Description: BSC link to IBM Host in San Francisco
Port duplex: full duplex, Synchronous capability: byte synchronous.
Port use: IBM 3270 BSC Emulation.
Default Host Name: San Francisco.
Default Host Description: Regional HQ Office Host.
Controller Address: 1,  Number of Ports on Controller: 8
Language: English (US), RS232C port: Local BSC port
Link Type: BSC,     Buffer Size: 265.
Access control:
        for port 0:  Managers:Western Region:OurOrg.
        for port 1:  ::.
        for port 2:  ::.
        for port 3:  Managers:Eastern Region:OurOrg.
        for port 4:  ::.
        for port 5:  Sales:Eastern Region:OurOrg.
        for port 6:  ::.
        for port 7:  ::.
```

Here is a sample RS-232C description showing IBM 3270 SNA.

```
ECS > Describe RS232C PortRETURN
        Which port:
        1   Local SNA port
        2   TTY emulation port
        Enter choice number: 1RETURN
Name: Local SNA port,      Line Number: 0
Line speed: 4800 bps, Local Port: 0.
Description: SNA link to New York IBM Host.  Call 214-678-8221
Port duplex: half duplex, Synchronous capability: bit synchronous.
Port use: IBM 3270 SNA Emulation.
Autodialer: none.
Encoding:  nrzi
    (The above prompt appears only if the multiport option is installed.)
Default Host Name: New York City.
Phone Number: 2146788221
Default Host Description: Central Office Host.
Controller Address: 1,  Number of Ports on Controller: 3
Language: English (US), RS232C port: Local SNA port
Link Type: SNA,     XID: OEB54,     Buffer Size: 265.
Access control:
        for port 0:  ::.
        for port 1:  ::.
        for port 2:  ::.
```

Here is a sample 873 Communication Interface Unit RS-232C description showing IBM 3270 SNA.

```
ECS> Describe RS232C PortRETURN
        Which port:
        1   CIU SNA port
        2   TTY emulation port
        Enter choice number: 1RETURN
Name: CIU SNA port,   Line Number: 66
Line speed: 4800 bps,  CIU Port: A3.
Description: Dedicated link to Chicago IBM Host
Port duplex: full duplex, Synchronous capability: bit synchronous.
Port use: IBM 3270 SNA Emulation.
Autodialer: none.
Default Host Name: none.
```

Showing RS-232C port statistics

To display the statistics of a port, use the **Show RS232C Port Statistics** command. For example, if you want to know what users are using particular ports, you can show port statistics and display the performance, loading, and error information concerning a particular port.

If the port is used for asynchronous communication (asynchronous terminal emulation or asynchronous dial-in), this information is displayed:

* *Port* - The name of the port.

* *Current State* - The state of the port. A port may be idle, listening, or in use.

   "Idle" means that the port is not currently being used by any user and the port is not monitoring the phone line for incoming calls. This is the normal "available for use by clients" state of ports that only support asynchronous terminal emulation.

   "Listening" means the port is idle, but is also monitoring the phone line for incoming calls. This is the "available for use by clients" state for ports that are shared between asynchronous terminal emulation and dial-in users or for ports that only support dial-in users. Ports that are shared between emulation and dial-in users may also be in the "idle" state for short periods of time (less than 10 minutes). If they persist in the idle state for a longer period, investigate for possible hardware or software problems.

   "In use" means that the port is being used by a client for either asynchronous terminal emulation or dial-in.

* *User* - The current user of the port. If the user is unknown to ECS, the user field will be empty. This parameter is only shown if the port is in use. (Dial-in users are never known to ECS and are shown.)

* *Session Length* - The number of minutes since the current session started. This parameter is only displayed if the port is in use.

* *Speed* - The current line speed for the port. This parameter is only displayed if the port is in use.

* *Format* - The current settings of the RS-232C parameters that affect the asynchronous character format. This includes the number of bits per character, the number of stop bits, and any parity sent or checked. This parameter is only displayed if the port is in use.

* *Total Characters Sent* - The number of characters that have been sent from the RS-232C port in the current user session. This parameter is only displayed if the port is in use.

* *Total Characters Received* - The number of characters that have been received on the RS-232C port in the current

user session. This parameter is only displayed if the port is in use.

- *Parity Errors* - The number and percentage of characters that have been received with parity errors on the RS-232C port in the current user session. This parameter is only displayed if the port is in use.

- *Since Boot* - Statistics following this entry refer to cumulative totals since the machine was last booted.

- *Total Time* - Number of minutes since the External Communication Service was last booted.

- *Number of Connections* - The number of user sessions since the last boot.

- *Percent Utilized* - The percentage of time that the port was in use since the last boot.

- *Connect Time* - The statistics following this field relate to the amount of time the port was in use.

- *Total* - The total time in minutes that the port was in use since the last boot.

- *Minimum* - The time in minutes for the shortest user session since the last boot.

- *Maximum* - The time in minutes for the longest user session since the last boot.

- *Total Characters Sent* - The number of characters that have been sent from the RS-232C port since the last boot.

- *Total Characters Received* - The number of characters that have been received on the RS-232C port since the last boot.

- *Parity Errors* - The number and percentage of characters that have been received with parity errors on the RS-232C port since the last boot.

If the port is used for communication to an IBM host, either for IBM 3270 BSC terminal emulation or IBM 3270 SNA terminal emulation, this information is displayed:

- *Current Number of Users* - Number from 0 to 8. This is the count of the number of individuals currently using this 3270 emulation facility.

- *Controller* - Total elapsed time and percent of utilization. This gives the total elapsed time since the 3270 controller emulation was enabled and the utilization averaged over all eight terminal emulations.

- *Device n* - Device type (such as a display or printer), total session time, and percent of utilization, with n a value from 0 to 7. For each terminal emulation, this gives the total time it was in use and the number of busy rejects. If the device is currently in use, a second line indicates this and identifies if possible, the user of the terminal emulation. If

the emulation session was established from an older version of 8010 STAR or Xerox 860 software, the string "no user" is displayed. Entries for a particular device are only displayed after a user has accessed that device. Otherwise, the unused terminal emulations from boot time are omitted.

- *Controller Errors* - Number and percentage of transmission errors. These error statistics can help identify problems with the communication medium.

Procedure

1. Log on and enable in the External Communication Service context.

2. Type **Show RS232C Port Statistics** and press < RETURN >.

3. Type the number corresponding to the port for which you want statistics and press < RETURN >.

4. Log off from the External Communication Service context.

Here is a sample of an asynchronous dial-in port's statistics.

```
ECS!Show RS232C Port Statistics RETURN
          Which port:
          1   ITS/TTY emulation port
          2   Another ITS/TTY emulation port
          3   All ports
          Enter choice number:  1RETURN
Name: ITS/TTY emulation port,  Description:  An ITS/TTY emulation port
Current state: listening.
No session statistics available.
Since boot: Total time: 755 minutes.  Number of connections: 10.  Percent
utilized: 6%
          Connect time:  Total: 45 minutes.  Minimum: 1 minute.  Maximum: 6
minutes.
          Total characters sent: 518.  Total characters received: 4164.
          Parity errors: 0.  Percentage of characters with parity error: 0 %.
```

Here is a sample of an asychronous terminal emulation port's statistics.

```
ECS!Show RS232C Port StatisticsRETURN
        Which port:
        1   ITS/TTY emulation port
        2   TTY emulation port
        3   All ports
        Enter choice number:  2RETURN
Name: TTY emulation port, Description: TTY emulation port.
Current state: In use.
User: Bennett:OurDomain:OurOrg. Session length: 47 minutes.
Line speed: 1200 baud. Data bits/character: 8, Stop bits: 1, Parity: none.
Total characters sent: 456. Total characters received: 3459.
Parity errors: 0. Percentage of characters with parity error: 0 %.
Since boot: Total time: 755 minutes. # of connections: 15. % utilized: 30%
    Connect time:  Total: 226 minutes.  Minimum: 1 minute. Maximum: 50 min.
    Total characters sent: 5182. Total characters received: 41640.
    Parity errors: 0.  Percentage of characters with parity error: 0 %.
```

Here is a sample of an IBM 3270 BSC port's statistics.

```
ECS!Show RS232C Port StatisticsRETURN
        Which port:
        1   ITS/TTY emulation port
        2   TTY emulation port
        3   IBM 3270 BSC port
        4   All ports
        Enter choice number:  3RETURN
Name: IBM 3270 BSC port, Description: Link to Host in Rochester, NY.
Controller:  Total time: 2029 minutes. Current # of users: 0. % utilized: 0%
    Errors: 0. Percent transmission errors: 0%.
```

Here is a sample of an IBM 3270 SNA dedicated port's statistics.

```
ECS!Show RS232C Port StatisticsRETURN
        Which port:
        1   ITS/TTY emulation port
        2   TTY emulation port
        3   IBM 3270 Dedicated port
        4   All ports
        Enter choice number:  3RETURN
Name: IBM 3270 Dedicated port,  Description: Room 101.
Controller:  Total time: 8 minutes. Current # of users: 2. % utilized: 50%
    Errors: 0. Percent transmission errors: 0%.
Device 0: Display.  User: Heffner:Coast:OurOrg. Current state: active
    Total session time: 4 minutes.  Number of busy rejects: 2
Device 2:

...
Device 7: Display.  User: Jensen:Personnel:OurOrg. Current state: active
    Total session time: 1 minute.  Number of busy rejects: 0
Done
```

Here is a sample of an IBM 3270 SNA dial-up port's statistics.

```
ECS!Show RS232C Port StatisticsRETURN
        Which port:
        1    ITS/TTY emulation port
        2    TTY emulation port
        3    SNA Dial-Up port
        4    All ports
        Enter choice number:  3RETURN
Name: SNA Dial-Up port,   Description: Port for SNA Dial-Up
Controller:  Total time: 2286 minutes.  Current # of users: 0, % utilized: 0%
    Errors: 0, Percent transmission errors: 0%.
```

Helping emulation users

If an emulation user asks you why he or she cannot copy a particular emulation icon, the cause may be inconsistent information stored in the Clearinghouse database. Use the **Verify Clearinghouse Entries** command to update information at the Clearinghouse database. (Refer to the *VP Series Reference Library* for more information.)

Procedure

1. Log on and enable in the External Communication Service context.

2. Type **Verify Clearinghouse Entries** and press < RETURN >.

3. Type **Y** if all entries should be checked for consistency. (The **N** option is provided as a time-saver, since it may take several minutes to validate all Clearinghouse entries on an External Communication Service with many ports.) If you are in doubt, type **Y**.

```
ECS!Verify Clearinghouse EntriesRETURN
   Should all entries be verified? (Y/N): YRETURN
   Attempting to determine the name of this External Communication Service.
      Validating Clearinghouse entry for: NewECS:OurDomain:OurOrg
      Done
   Attempting to update RS232C port LocalPort:OurDomain:OurOrg
      Clearinghouse update complete
      ...

   Clearinghouse entry verification complete.
```

4. Log off from the External Communication Service context.

Renaming the External Communication Service

You can change the name of the External Communication Service to reflect any service location changes within your organization. The name of the External Communication Service was originally given when the service was first run and initialized (see the "Initializing the External Communication Service" section). The name can be changed by using the **Rename Service** command.

You must be an enabled System, Administrator to perform this task, and the service must be started.

Procedure

1. Log on and enable in the External Communication Service context.

2. Type **Rename Service** and press < RETURN >.

3. Type the new External Communication Service name and press < RETURN >.

4. Type the new description and press < RETURN >.

5. Type **Y** to confirm the new information and press < RETURN >.

```
ECS!Rename Service^RETURN
    Deleting Clearinghouse entry for: OurECS:OurDomain:OurOrg
    Done
    Attempting to determine the name of this External Communication Service.
        Service name and description unknown.
            Enter Service Name: NewECS^RETURN
            Enter service description: ECS with a new name^RETURN
        Confirm? (Y/N): Y^RETURN
        Validating Clearinghouse entry for: NewECS:OurDomain:OurOrg
        A new Clearinghouse entry was created.
        Done
    Data pertaining to this External Communication Service has changed.  Verify
    Clearinghouse Entries command will be run now.
    Attempting to determine the name of this External Communication Service
        Validating Clearinghouse entry for: NewECS:OurDomain:OurOrg
        Done
    Attempting to update RS232C port LocalPort:NewDomain:OurOrg
        Clearinghouse update complete
        ...

    Clearinghouse entry verification complete.
```

6. Log off from the External Communication Service context.

Removing the External Communication Service from a server

If you need to permanently remove the External Communication Service from a server, use the **Expunge Service** command. This command returns server resources (such as disk space) acquired by the External Communication Service. For example, your External Communication Service may currently be sharing a server's resources with another service. If you acquire a new server to support only the External Communication Service, you would expunge the External Communication Service from its current server. The expunge process automatically deletes port and host configurations.

You must be an enabled Network Administrator to perform this task, and all services running on the server must be stopped.

Procedure

1. Type **Stop Service** and press < RETURN >.

2. Type the number corresponding to the External Communication Service and press < RETURN >.

3. Type **Y** to the "Stop immediately?" prompt and press < RETURN >.

4. Boot the server from 0001 by pressing both the Alt B and B Reset buttons, release B Reset while still pressing the Alt B button. Wait for the maintenance panel to cycle to 0001, and then release the Alt B button.

5. Type **N** to the "Normal Startup?" prompt and press < RETURN >.

6. Type the number corresponding to the "Interrupt before running services" option and press < RETURN >.

Note: If the only Clearinghouse Service for the network resides on a different server than the ECS, you must log on and enable in the Clearinghouse context. If the only Clearinghouse on the network and the ECS are on the same server, skip step 7.

7. Log on and enable in the Clearinghouse Service context.

8. Type **Expunge Service** and press < RETURN >.

9. Type the number corresponding to the External Communication Service and press < RETURN >.

10. Type **Y** to confirm the deletion and press < RETURN >.

11. Boot the server again.

12. Type **Y** to the "Normal Startup?" prompt and press < RETURN >.

This section contains an alphabetical listing of informational or error messages that may display for the External Communication Service. Each message is followed by a brief explanation or action pertinent to the message.

When you see an error or informational message that you do not understand or want additional information about, write it down. If the listing does not provide the information you are looking for, contact the Network Support Center. Also, check the *Basic Troubleshooting of Network Services* booklet in the *Network Basic Services* volume for information on diagnostics and testing.

ECS: Assigning < host name > as the default host for < port name >.

Informative message. During an **Add** or **Change IBM 3270 Host** command, the port did not have any IBM host assigned to it. The current IBM host was assigned by default.

ECS: Assuming control of path to IBM 3270 Host, < host name > using controller number < controller number > through RS232C port < port name >.

Informative message reporting additional activity in the External Communication Service.

ECS: Attempting to determine name of this External Communication Service.

Probable cause: The External Communication Service is attempting to locate its name from the configuration data stored on its local disk.

Action: If the name cannot be located, enter a name for the External Communication Service.

ECS: Attempting to update entry for IBM 3270 Host, < host name >.

Informative message. The External Communication Service is updating an IBM 3270 host or RS-232C port entry in the Clearinghouse database. This message is followed by the update results.

ECS: Attempting to update entry for RS232C port, <port name>.

Informative message. The External Communication Service is updating an IBM 3270 host or RS-232C port entry in the Clearinghouse database. This message is followed by the update results.

ECS: Bind with IBM 3270 Host <host name> through RS232C port <port name> failed.

Probable cause: A bind from the IBM host for one of its terminals contained invalid or unsupported parameters.

Action: Make sure the port is defined at the IBM 3270 host to be an IBM 3276 controller with IBM 3278 terminals. Make sure the TS profile and the FM profile are both set to 3.

ECS: Booting of Communication Interface Unit <CIU name> Board <A or B> - Done.

Informative message. The Communication Interface Unit board has been booted successfully.

ECS: Clearinghouse entry for name is illegal.

Probable cause: The name specified is already in the Clearinghouse Service but appears to be in an illegal format.

Action: Choose another name for the entry.

ECS: Clearinghouse entry verification complete.

Informative message. The entries in the Clearinghouse database have been verified to be consistent with the server profile.

ECS: Clearinghouse update complete.

Informative message. The External Communication Service has successfully updated the IBM 3270 host or RS-232C port entry in the Clearinghouse database.

ECS: Configuration Error to IBM 3270 Host <host name> through RS232C port <port name>.

Probable cause: This message indicates a difference between the configuration of the IBM 3270 host at the External Communication Service and the configuration perceived by the host. For example, the host may think there are eight ports for the controller, but the External Communication Service database specifies four. The External Communication Service will continue to support some number of users on this connection.

Action: Correct the problem entry, either at the IBM 3270 host, or at the External Communication Service. If the solution involves changing the External Communication Service entry, you must stop and restart the External Communication Service.

ECS: Connection to modem to IBM 3270 Host <host name> through RS232C port <port name> is established.

Informative message indicating that the connection to the host modem has been (re)established.

ECS: Couldn't find ECS name. ECS will not be started.

Probable cause: The External Communication Service could not find its name on its local disk, and no operator was present. The External Communication Service is not started.

Action: Start the External Communication Service. When requested, enter its name and description.

ECS: Dialing failure trying to connect to IBM 3270 Host using controller number <number> through RS232C port, <port name>, dialing <phone number>.

Probable cause: This message indicates an inability to dial up the IBM 3270 host, probably due to a bad phone number in the IBM 3270 host entry.

Action: Correct the IBM 3270 host entry at the External Communication Service, then restart the External Communication Service.

ECS: Delete all RS232C ports assigned to <CIU name> before deleting Communication Interface Unit.

Probable cause: An attempt was made to delete a Communication Interface Unit before all of its RS-232C ports had been deleted.

Action: Delete all the RS-232C ports for this Communication Interface Unit, then delete the Communication Interface Unit. The **List All RS232C Ports** command may be used to locate all the RS-232C ports on the Communication Interface Unit. Remember that the Internetwork Routing Service may have Communication Interface Unit ports assigned to it. If so, "Delete Circuit" should be done from the IRS context.

ECS: Duplicate name. Try again.

Probable cause: The name specified is already in use.

Action: Choose another name and try again.

ECS: <group name> is not a valid group.

Probable cause: The access control group specified was not a valid group in the Clearinghouse database.

Action: Re-enter a valid group.

ECS: Entry could not be updated in Clearinghouse. <Service> reports <error>.

The External Communication Service was unsuccessful in updating an IBM 3270 host or RS-232C port entry in the Clearinghouse database. This message indicates whether the authentication or Clearinghouse Service reported the error and the type of error. The entry has not been written in the Clearinghouse database. Correct the problem as described below and use the **Verify Clearinghouse Entries** command to rewrite the entry. Possible errors are:

Bad protocol
The External Communication Service and the Clearinghouse Service or authentication service have incompatible software versions. Update the ECS and/or Clearinghouse Service and authentication service to compatible versions. Then rewrite the entry using the **Verify Clearinghouse Entries** command, typing N to the "Should all entries be verified?" prompt.

Database is full
The Clearinghouse database is full.

Error in booter.
There has been an internal system error in the Communication Interface Unit booter, which is a part of the External Communication Service. The Communication Interface Units that are already booted will continue to function, but you

cannot boot any additional units until you have stopped and restarted the External Communication Service.

Illegal property ID

This error should not occur. Try the **Verify Clearinghouse Entries** command, typing **N** to the "Should all entries be verified?" prompt. If the condition persists, call the Network Support Center.

Insufficient access rights

The logged on user is not authorized to write entries in the Clearinghouse database. Log on as a Network Administrator. Rewrite the entry using the **Verify Clearinghouse Entries** command, typing **N** to the "Should all entries be verified?" prompt.

Key invalid or not registered

This error should not occur. Try the **Verify Clearinghouse Entries** command, typing **N** to the "Should all entries be verified?" prompt. If the condition persists, call the Network Support Center.

Key domain unavailable or unknown

The authentication service was unable to authenticate the Network Administrator. Either the Network Administrator name has an invalid domain or organization, or all Clearinghouse Services supporting that domain are down. If the domain is invalid, log on again with an appropriate name. If the domain is valid, try rewriting the entry later when the Clearinghouse Service becomes available. Rewrite the entry using the **Verify Clearinghouse Entries** command, typing **N** to the "Should all entries be verified?" prompt.

Name invalid

The name specified for the entry is invalid. Change the name and try again.

Name has been appropriated for another use

The name specified for the entry is invalid. Change the name and try again.

Property ID not found

Try the **Verify Clearinghouse Entries** command, typing **N** to the "Should all entries be verified?" prompt. If the condition persists, call the Network Support Center.

Server default organization is invalid

The External Communication Service has an invalid organization name. Change the External Communication Service name to one with a valid organization. Then rewrite the entry using the **Verify Clearinghouse Entries** command, typing **N** to the "Should all entries be verified?" prompt.

Server default domain is invalid

The External Communication Service has an invalid domain name. Change the name to one with a valid domain. Then rewrite the entry using the **Verify Clearinghouse Entries** command, typing **N** to the "Should all entries be verified?" prompt.

Service overload

The Clearinghouse Service or authentication service is too busy at this time to process your request. Rewrite the entry later using the **Verify Clearinghouse Entries** command. Type **N** to the "Should all entries be verified?" prompt.

Service down

The Clearinghouse Service or authentication service is down. Rewrite the entry later using the **Verify Clearinghouse Entries** command. Type **N** to the "Should all entries be verified?" prompt.

Unknown error

An unexpected error was reported by the Clearinghouse Service or authentication service. Try the **Verify Clearinghouse Entries** command, typing **N** to the "Update all entries?" prompt. If this does not solve the problem, make sure that the Clearinghouse Service and authentication service are operational.

Wrong property type

This error should not occur. Try the **Verify Clearinghouse Entries** command, typing **N** to the "Should all entries be verified?" prompt. If the condition persists, call the Network Support Center.

ECS: Error in address of Communication Interface Unit, <CIU name>. Cannot compute address of Board B. Board ignored.

Probable cause: The address of the Communication Interface Unit in the External Communication Service database does not fit the pattern and range assigned to board A of Communication Interface Units. The External Communication Service cannot compute the address of any subsequent boards and will consider the Communication Interface Unit to be a single-board unit.

Action: Stop the External Communication Service, correct the Communication Interface Unit entry, and restart the External Communication Service.

ECS: Error - RS232C port <port name> set for <SNA or BSC>, but IBM 3270 Host <host name> set for <SNA or BSC>. Path will be ignored.

Probable cause: The synchronization type has been changed in the RS-232C port entry since the IBM 3270 host was added. They no longer agree.

Action: Stop IBM 3270 host emulation, correct the incorrect entry, and restart IBM 3270 host emulation.

ECS: ERROR - Invalid network number for Communication Interface Unit <name>. Entry ignored.

Probable cause: The network number for the Communication Interface Unit is not the same as the current network number.

Action: Stop the External Communication Service and correct the indicated entry by using the **Change Communication Interface Unit** command, defaulting any parameters. Then restart the External Communication Service. Note that this message only appears if the External Communication Service is moved from one network to another.

ECS: Error - on CIU file open.

Probable cause: There is an error in a boot file.

Action: Stop and restart the External Communication Service to rewrite the file. If the problem is not corrected by this action, call the Network Support Center.

ECS: Error - on CIU file read.

Probable cause: There is an error in a boot file.

Action: Stop and restart the External Communication Service to rewrite the file. If the problem is not corrected by this action, call the Network Support Center.

ECS: Error - on CIU file execute address.

Probable cause: There is an error in a boot file.

Action: Stop and restart the External Communication Service to rewrite the file. If the problem is not corrected by this action, call the Network Support Center.

ECS: Error, ignoring RS232C port, <port name>. The option, Asynchronous protocol, has not been purchased for this machine.

Probable cause: There is an error in a boot file.

Action: Stop and restart the External Communication Service to rewrite the file. If the problem is not corrected by this action, call the Network Support Center.

ECS: Error, ignoring RS232C port, <port name>. The option, <protocol type> IBM 3270 protocol, has not been purchased for this machine.

Action: Call the Software Control Center for software option setting information. Follow the standard procedure outlined in step 5 of the *Server Software Installation* booklet in the *Network Basic Services* volume. Correct the RS-232C port entry in the External Communication Service database.

ECS: ERROR - Unable to assume control of IBM 3270 Host.

Probable cause: This message is issued following the message "Assuming control...," indicating that there is a conflict in assignment of the RS-232C port required to access the IBM 3270 host. The RS-232C port is probably being used for a different purpose.

Action: Stop the IBM 3270 host emulation, correct the problem, and then restart the IBM 3270 host emulation. The **List All RS232C Ports** command can be used to show all RS-232C port usage when trying to locate port conflicts.

ECS: Error - Unable to find assigned default IBM 3270 Host <possible host name> for RS232C port <port name>. Path will be ignored.

Probable cause: An RS-232C port has been added for either SNA or BSC IBM 3270 host emulation, but no IBM 3270 host entry has been made referencing that port as the path to the IBM 3270 host.

Action: If no host name appears in this message, use the **Add IBM 3270 Host** command. If the host entry already exists, use the **Assign IBM 3270 Host** command. If a host name appears in the message, use the **Change IBM 3270 Host** command to make the "port through which host is accessed" the same as the port name to which it is currently assigned.

ECS: ERROR - Unable to find internal data file. All Communication Interface Units will be reconfigured as a precaution.

Probable cause: This message occurs whenever the External Communication Service cannot locate a portion of its server profile information. The portion missing is an External Communication Service authentication password and infor mation used to determine that the Communication Interface Unit boot files are current. Since the External Communication Service cannot be sure that the boot files are current, all Communication Interface Unit boot files are re-created (all Communication Interface Units are reconfigured). A new (random) password is also created.

Action: After the External Communication Service is started, use the **Verify Clearinghouse Entries** command to ensure that all External Communication Service entries contain the new password. There are times when the server profile file information will not be on the user volume for legitimate reasons (for example, the user volume is just being initialized).

ECS: ERROR - RS232C port, <port name> will be ignored. It is assigned to the same hardware as RS232C port, <port name>.

Probable cause: There is an inappropriate data entry currently in the server profile.

Action: If the External Communication Service performed an inappropriate action, stop the ECS, correct the indicated entry and restart the External Communication Service.

ECS: ERROR - Communication Interface Unit, <CIU name> will be ignored. It is assigned to the same hardware as Communication Interface Unit, <CIU name>.

Probable cause: There is an inappropriate data entry currently in the server profile.

Action: If the External Communication Service performed an inappropriate action, stop the ECS, correct the indicated entry and restart the External Communication Service.

ECS: IBM 3270 Host <host name> through RS232C port <name> is not polling.

Action: Determine the cause of the stopped polling, checking with IBM 3270 host personnel, and correct the problem. Several minutes elapse between the time that the host stops polling and the time that this message is issued.

ECS: Illegal phone number.

Probable cause: The phone number specified contains invalid characters.

Action: Make sure that the legal characters for phone numbers are 0-9, A-F, #, *, =, <, and >.

ECS: Illegal XID. Only hex digits allowed.

Probable cause: The exchange identifier (XID) specified is invalid.

Action: It should be five characters in length and contain only hexadecimal digits (0-9, A-F).

ECS: Insufficient resources. Please stop the ECS dependent services (IRS, GWS, ITS) and try again. ECS not started.

Action: Stop any of the above-listed services that are running on the same server. Start the External Communication Service, then restart the other services.

ECS: Invalid port number assigned to active port <port name>. Port ignored.

Probable cause: There is an inappropriate data entry currently in the server profile.

Action: If the External Communication Service performed an inappropriate action, stop the ECS, correct the indicated entry and restart the External Communication Service.

ECS: Name is registered in the Clearinghouse for another use.

Probable cause: The name specified is already in the Clearinghouse Service and is used for another purpose.

Action: Choose another name for the entry.

ECS: No IBM 3270 Hosts found.

The **Change IBM 3270 Host** command could not find any IBM 3270 hosts to change.

ECS: No RS232C port found.

Probable cause: During an **Add** or **Change IBM 3270 Host** command, no RS-232C ports could be found.

Action: The RS-232C port used as the path to the IBM 3270 host must be defined before the IBM 3270 host is defined.

ECS: No RS232C Hardware found. ECS not started.

Probable cause: The External Communication Service was assigned to control the port local to the 8000 processor for which there is no hardware.

Action: Either add the RS-232C hardware, or delete the port entry and restart the External Communication Service.

ECS: Not enough room in configuration data file to add another IBM 3270 Host.

Probable cause: During an **Add** or **Change IBM 3270 Host** command, the entry could not be added because the server profile was full.

Action: Shorten names and descriptions in existing entries using the change commands.

ECS: Polling has (re)started from IBM 3270 Host <host name> through RS232C port <port name>.

Informative message, for both BSC and SNA, indicating that polling from the host has (re)started. This message is issued as soon as polling is detected, but only if enough time has elapsed to detect that polling had been previously stopped.

ECS: Port <port name> assigned to this ECS belongs to CIU <CIU name> which is not assigned to this ECS. Port is ignored.

Probable cause: There is an inappropriate data entry currently in the server profile.

Action: If the External Communication Service performed an inappropriate action, stop the ECS, correct the indicated entry and restart the External Communication Service.

ECS: Port speed or dialer not compatible with other ports on CIU board. Add anyway? (Y/N):

Probable cause: The parameters specified for this port conflict with the parameters on another port on the same communication interface unit board.

Action: If you type **Y**, the entry is added and you should resolve the conflict before starting the External Communication Service.

ECS: Reconfiguring Communication Interface Unit <CIU name>, Board <A or B>.

Informative message during startup, indicating that some of the data concerning that Communication Interface Unit's board has changed in the server profile since the last time the External Communication Service was started. No action is required.

ECS: The IBM 3270 Host entry named <name> already exists in the server profile.

Probable cause: The name chosen for the IBM 3270 host is already in use on this External Communication Service.

Action: Choose a different name for the IBM 3270 host, or delete the conflicting entry.

ECS: There is already an active entry assigned to this RS232C port.

Probable cause: The port has already been assigned for use, specifying that the port should be activated at start time.

Action: Change the use of the port so that autostart is not specified, or use another port.

ECS: There is already an entry assigned to this RS232C port.

Probable cause: The port is already in use by the External Communication Service.

Action: Choose another port.

ECS: Unable to configure board because line speeds of RS232C port entries not within any valid range. Board and ports will be ignored.

Probable cause: This message appears immediately following the "Reconfiguring Communication Interface Unit < CIU name >...." message.

Action: Stop the External Communication Service; correct the speeds of asynchronous ports on the indicated Communication Interface Unit board using Form 1, Registering a Communication Interface Unit. Restart the External Communication Service. The transmission speed (bps) for all asynchronous ports must be within one of the following line speed ranges:

1st speed range   110 - bps
2nd speed range   75, 300 600 - bps
3rd speed range   150, 300, 600 - bps
4th speed range   300, 600, 1200 - bps
5th speed range   600, 1200, 2400 - bps
6th speed range   1200, 2400, 4800 - bps
7th speed range   9600 - bps

ECS: Unable to configure board because unsupported dialer(s) specified for CIU. Board and ports will be ignored.

Probable cause: This message appears immediately following the "Reconfiguring Communication Interface Unit < CIU name >..." message. You may have either a Ven-Tel or a Racal-Vadic dialer on a communication interface unit board, but not both.

Action: Stop the External Communication Service, correct the problem entry, and restart the External Communication Service.

ECS: Unable to configure board because of disk error. Board and ports will be ignored.

Probable cause: This message appears immediately following the "Reconfiguring Communication Interface Unit < CIU name >...." message. There may not be enough room for the file the External Communication Service is trying to write.

Action: Type the **Show Space** command to see the remaining space. Delete an unneeded file from the user volume, then stop and restart the External Communication Service.

ECS: Unable to configure board because parity option not available on CIU. Board and ports will be ignored.

Probable cause: This message appears immediately following the "Reconfiguring Communication Interface Unit < CIU name >...." message.

Action: Stop the External Communication Service. Change the parity option for the RS-232C port to either odd, even, or none then restart the External Communication Service.

ECS: Unable to configure board because synchType option not available on CIU. Board and ports will be ignored.

Probable cause: This message appears immediately following the "Reconfiguring Communication Interface Unit <CIU name>...." message. The "synchType" is currently controlled by port use. For example, IBM 3270 BSC emulation is not supported on a Communication Interface Unit.

Action: Stop the External Communication Service, change the RS-232C port entry at the offending service, and restart the External Communication Service.

ECS: Unable to configure board because cannot allocate adequate buffers for port functions. Board and ports will be ignored.

This message appears immediately following the "Reconfiguring Communication Interface Unit <CIU name>...." message.

ECS: Unable to configure Communication Interface Unit, <CIU name> board <A or B> because unsupported dialer(s) specified for CIU. Board and ports ignored.

Probable cause: You may have either a Ven-Tel or a Racal-Vadic dialer on a communication interface unit board, but not both.

Action: Stop the External Communication Service, correct the problem entry, and restart the External Communication Service.

ECS: Unable to configure Communication Interface Unit, <CIU name> board <A or B> because synchType option not available on CIU. Board and ports ignored.

Probable cause: The "synchType" is currently controlled by port use. Only asynchronous and bit synchronous line types are supported on the communication interface unit.

Action: Stop the External Communication Service, change the RS-232C port entry at the offending service, and restart the External Communication Service.

ECS: Unable to write CIU boot file named: <file name>.

Probable cause: There may not be enough room for the External Communication Service to write a file.

Action: Type the **Show Space** command to see the remaining space. Delete an unneeded file from the user volume.

ECS: Warning - Communication error while trying to boot < CIU address >.

Probable cause: You may be experiencing hardware problems. The External Communication Service will automatically try to reboot the Communication Interface Unit.

Action: If the CIU does not reboot, call the Network Support Center.

ECS: Warning - Timeout while trying to boot < CIU address >.

Probable cause: You may be experiencing hardware problems. The External Communication Service will automatically try to reboot the Communication Interface Unit.

Action: If the CIU does not reboot, call the Network Support Center.

ECS: Warning - No Boot Files for < CIU address >.

Probable cause: The Communication Interface Unit has internal switch settings that allow it to request two different types of boot files. Currently the External Communication Service only supports one type. This message indicates improper switch settings.

Action: Call the Network Support Center.

ECS: Warning - Couldn't force boot < CIU address >.

Probable cause: This message appears after repeated unsuccessful attempts to boot the Communication Interface Unit with updated files. It also appears when you stop the External Communication Service before it has completed booting the Communication Interface Unit.

Action: 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: Warning - No RS232C port assigned to this External Communication Service.

Informative message only. No action is required. The External Communication Service is started.

ECS: Warning - No active RS232C port assigned to this External Communication Service.

Informative message only. No action is required. The External Communication Service is started.

ECS: Warning - RS232C ports, if any, assigned to board B will be ignored.

If the Communication Interface Unit is redefined from two boards to one board during a **Change RS232C Port** command, this message warns you to make sure that no ports remain defined for board B.

ECS: Warning - No active RS232C port assigned to this Communication Interface Unit, <CIU name>, Board, <A or B>.

Probable cause: Although the External Communication Service will boot the Communication Interface Unit if requested, no ports on the board will be accessible to any user.

Action: If this is not appropriate, stop the External Communication Service, correct the indicated entry and restart the External Communication Service.

ECS: Warning: <host name> is the default host for <port name>. Delete it? (Y/N).

Probable cause: The IBM 3270 host entry selected for deletion is the default host for the RS-232C port specified.

Action: If you want to delete it, type **Y.** Be sure to assign a different host for the RS-232C port.

ECS: Warning - Communication error while trying to send first block to <CIU address>.

Probable cause: You may be experiencing hardware problems. The External Communication Service will try to reboot the Communication Interface Unit.

Action: If the CIU does not reboot, call the Network Support Center.

ECS: Warning - Timeout while trying to send first block to <CIU address>.

Probable cause: You may be experiencing hardware problems. The External Communication Service will try to reboot the Communication Interface Unit.

Action: If the CIU does not reboot, call the Network Support Center.

ECS: Will not be able to boot Communication Interface Unit <CIU name> Board <A or B>, since it needs file <file name>.

Probable cause: This message follows the "Unable to write CIU..." message and informs you which Communication Interface Units are affected by the problem.

Action: These units, if already booted, will continue to function, but you will not be able to reboot them until the problem is fixed.

ECS: Will attempt to reestablish lost connection to modem to IBM 3270 Host <host name> through RS232C port <port name>.

Probable cause: If the line is a switched SNA line, this message may only indicate that the switched connection has ended.

Action: Determine the cause of the lost connection, checking with the IBM 3270 host personnel, and correct the problem if necessary. If the connection is not re-established, call the Network Support Center.

Access list	A list of users and/or groups of users who are granted access to specific services.
Analog transmission	The transmission of data in which the information content is modulated by a continuously varying signal, or tone. Ordinary voice-grade telephone lines carry analog transmission.
American Standard Code for Information Interchange	*(ASCII)* A digital code set which represents each character of the standard typewriter keyboard as a 7-bit digital code. It is used for information interchange among data processing systems, data communication systems, and associated equipment.
Asynchronous	Transmission of data in which time intervals between transmission can be unequal. Transmission is sent a character at a time and is controlled by start and stop elements at the beginning and end of each character.
Asynchronous Communication Protocol	Optional software running with the External Communication Service (ECS) that allows compatible information exchange between workstations, with emulation software, and a TTY-oriented host.
Bit synchronous	Optional software on the External Communication Service that supports information exchange between compatible workstations and a TTY-oriented Host.
Binary synchronous	*(BSC)* A data link control procedure developed by IBM. A variation of synchronous data transmission that includes specific control characters and procedures for controlling the establishment of a valid connection. Also referred to as *bisync* and *bisynchronous*.
Communication Interface Unit	*(CIU)* The 873 Communication Interface Unit is an optional RS-232C port extender that supports up to eight additional ports. The CIU attaches directly to the network, and can be configured for either asynchronous or bit synchronous communication (TTY, 3270 SNA, or IRS to IRS phone communications).
Dedicated line	A type of communication circuit, such as a leased line, that remains connected and does not have to be dialed. Often used for internetwork links and mainframe connections for 3270 emulation.
Digital transmission	Transmission of data in the form of on/off electronic pulses representing digits. Business devices generally transmit digital signals.

Emulation　　The process by which workstations behave like other types of terminals. It provides access to other host systems in a way familiar to the host system.

Facsimile　　*(FAX)* A system of communications in which a document, photograph, map, or other fixed graphic material is scanned. The information is converted into signal waves for transmission by wire or radio to a facsimile receiver at a remote point. Then the image is scanned at the transmitter, reconstructed at the receiving station, and duplicated onto paper.

Full-duplex　　A circuit or a protocol that permits transmission of a signal in two directions simultaneously.

Half-duplex　　A circuit or a protocol that permits transmission of a signal in two directions, but not at the same time.

Logoff　　The process of stopping a session on a computer system.

Logon　　The process of starting a session on a computer system.

Modem　　A device which converts digital information into an analog signal suitable for sending over analog phone lines. It also converts the analog signal from phone lines into digital information.

Modem emulator　　A device which enables local communication between devices without converting digital signals to analog signals.

Multiport option　　The multiport option extends the local port to four ports. It can be configured for bit-synchronous communications (IRS, Clusternet, 3270 SNA, External Mail Gateway, and X.25).

Network　　The physical and logical connection of system elements. A network allows information to flow between workstations and servers.

Password　　A required code in addition to a user's name or number that allows logon.

Protocol　　A formal set of conventions governing the format of data and control information exchange between two communicating devices.

RS-232C Port　　The physical interface between some network citizens and the data communication equipment (usually a modem).

Shared Interface Unit　　*(SIU)* Allows remote workstations to access the Ethernet and services by passing packets between the Ethernet and a phone line connected to the workstation. The SIU is directly attached to the Ethernet. The synchronous point-to-point protocol is used by the SIU ports. Workstations can be directly attached to the SIU's ports or can use dial-up or leased line modems. The Xerox 820-II and 16/8 computers can be attached to an SIU. Each SIU has two RS-232C ports and is not expandable.

Switched line　　A phone line connection where points of termination can be changed through dialing. It allows sharing of resources and switching from one resource to another.

Synchronous	An efficient encoding of data suitable for high speed block-oriented data transmission by using equal time elements.
Synchronous Data Link Control	(*SDLC*) An IBM communications line discipline or protocol associated with SNA.
System Administrator	A user with specific network privileges who is responsible for setting up and maintaining the services and the organization of network services.
System Network Architecture	(*SNA*) The total description of the logical structure, formats, and protocols of operation sequences for transmitting information units through the communication system. Developed by IBM for distributed processing networks. Used by SDLC.
2770, 2780, 3780 terminals	The family of IBM Remote Batch Terminals with which the Remote Batch Service communicates.
3270 Communication Protocol	Optional software running with the External Communication Service that supports compatible information exchange between workstations, with 3270 emulation software and an IBM host.
Transmission	The sending of data to one or more locations or recipients.
XModem Protocol	An asynchronous communication protocol developed to facilitate file transfers between personal computers. It has been implemented for use in a variety of personal computers as well as mainframe computers. The XModem protocol demands eight data bits, no parity, and one stop bit.
Xerox Network System	(*XNS*) A combination of hardware and software that unites specialized devices into a network where the capabilities of a variety of workstations are enhanced by distributed services.
X.25 Circuits	An international standard protocol that defines an interface between data terminal equipment and data circuit terminating equipment (DCE) for terminals operating in the packet mode on public data networks. The X.25 link between an Internetwork Routing Service and a public data network is an RS-232C leased line supplied by the network vendor. X.25 is structured to allow the multiplexing of many virtual circuits over a single physical link.

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A-1

This section includes any forms that were referenced within the document. You may want to make copies of these forms and fill them out by hand. It is important to update the forms with service or network configuration changes as they occur.

These forms are:

- Form 1. *Registering a Communication Interface Unit*

- Form 2. *Registering an Asynchronous/8000 port*

- Form 3. *Registering an Asynchronous/873 port*

- Form 4. *Registering an IBM 3270 BSC/800 port*

- Form 5. *Registering an IBM 3270 host for BSC*

- Form 6. *Registering an IBM 3270 SNA/8000 port*

- Form 7. *Registering an IBM 3270 SNA/873 port*

- Form 8. *Registering an IBM 3270 host for SNA*

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