# Host Definition Guide

*For host communications programmers who support Barr RJE and PC users who run it.*

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# Preface

Host programmers who support NCP, VTAM, and the RJE system can use this manual to help them configure the host computer to communicate with Barr RJE programs. PC users must enter some of the same parameters in the Barr RJE software. Host programmers and PC users must make sure these parameters match.

Barr RJE software links a PC to a mainframe via the multiple-session SNA RJE protocol. The PC running the software becomes a terminal for fast remote printing, batch file transfer, or LAN access. The PC connects to the host computer via dial-up or dedicated lines. The software supports line speeds up to 2.048 megabits per second (Mbps) and print speeds over 20,000 lines per minute (lpm).

The software emulates IBM 3777-3, System/36 with MSRJE, 8100, and 3790 workstations. It also emulates SNA PU Type 2, LU Type 1, SCS printers. Software features include operator console control, print spooling, and support for multiple printers and special forms. Additional options support PC-attached S/370 channel printers and magnetic tape transmissions.

Barr RJE software supports these IBM mainframe environments:

- JES2
- JES3
- VSE/POWER
- VS1/RES
- VM/RSCS

## RJE Host Parameters

The host programmer can easily support Barr RJE programs on the mainframe because the Barr software displays the recommended NCP, VTAM, and RJE system parameters.

To display the host parameters, run the Barr RJE installation software on a PC. (You do not need a PC communications adapter to view the host parameters.) Indicate your RJE system on the RJE Description screen and link parameters on the Communication Link screen. The Barr software lists recommended host configuration statements. (This manual also lists alternate values for the parameters.) At many sites, you will not need to modify the recommended statements.

If you cannot access the Barr RJE software, you can develop the recommended configuration statements from this manual.

## Barr RJE Software Parameters

After you determine the host configuration, you must enter the same values in the Barr RJE Description and Communication Link screens to successfully communicate with the mainframe

## Barr Systems Technical Support

If you have questions about the host configuration parameters to use with Barr RJE, contact Barr Technical Support at 800-BARR-SYS Monday through Friday between 9 a.m. and 8 p.m. Eastern time. The Technical Support staff can resolve communication problems faster if you fax them a copy of your NCP, VTAM, and RJE system parameters from the host.

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Chapter 1

# RJE Description Parameters

The Barr RJE Description screen lists RJE system parameters you must specify for the Barr RJE software and the host RJE system. The PC user must get the correct values to enter into the Barr RJE software from the host programmer.

When the PC user finishes entering information on the RJE Description screen, Barr RJE produces sample statements the host programmer needs to enter in the host RJE system parameter libraries. The parameters specified on the PC and on the host computer must match.

## 1.1 Barr RJE Software Parameters

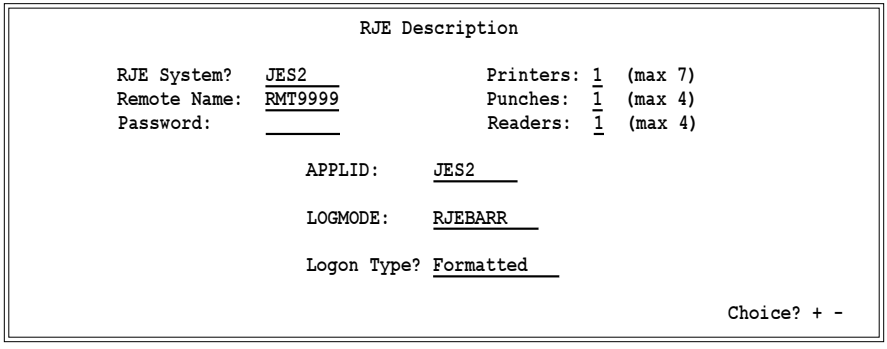
After you install the Barr RJE software on your PC, you can start the installation description process from the Barr RJE Installation Description menu. Access the menu as follows:

1. Type the following command from the DOS prompt to view the Installation Description menu:

   **barrsnar i**

2. From the Installation Description menu, select **RJE Description**.

The RJE Description screen displays the default Barr RJE parameter values.



The parameter values you enter on this screen must match parameter values on the host. The PC user must get the correct values from the host programmer.

**RJE System?**

Select your host system. You can choose **JES2**, **JES3**, **VSE/POWER**, **VS1/RES**, or **VM/RSCS**. Some of the default settings on the screen change automatically after you choose your system.

**Remote Name:**

Enter the name for your remote. The host assigns your remote a name that uniquely identifies it to the RJE system. Each RJE system has its own naming conventions (for example, a JES2 remote name begins with **RMT**).

**Password:**

Enter the password the software uses to log on to the RJE system. The password restricts use of the remote connection to authorized users. You might not need a password if you use a nonswitched (dedicated) line.

To keep a password confidential, substitute a tilde (~) for each password character. Barr RJE then requests a password when you run the program. The password will be encrypted temporarily in the program, which allows Barr RJE to restart automatically. If you use tildes, other users cannot view the password through the installation program, debug, or other tools.

**Printers:**

Specify the number of RJE printers for your remote. The remote can receive output from the host computer on one to seven print streams. The number of printers must match the number defined in the remote definition statement (RMTnnnn) on the host. Data received on printer devices contains carriage control information used for printing.

> ***JES2:*** The MVS/JES2 operating system restricts the number of printers and punches you can define to a total of seven printer and punch devices. Of the seven devices, six can be printers.

> ***VM/RSCS:*** This operating system only allows you to define one logical unit (LU), which means only one device can be active.

> ***VSE/POWER:*** The VSE/POWER print stream does not support binary print data (such as Xerox metacode) or any hexadecimal characters less than hexadecimal 40. Binary data is supported on the punch stream, but you must embed the carriage control in the print records. The punch stream is limited to 150-character records on most systems.

**Punches:**

Specify the number of RJE punches for your remote. You can select zero to four punch devices. The number of punches must match the number defined in the remote definition statement (RMTnnnn) on the host.

> ***JES2:*** The MVS/JES2 operating system restricts the number of printers and punches you can define to a total of seven printer and punch devices. Of the seven devices, six can be printers.

> ***VM/RSCS:*** This operating system only allows you to define one LU, which means only one device can be active.

> ***VSE/POWER:*** The VSE/POWER print stream does not support binary print data (such as Xerox metacode) or any hexadecimal characters less than hexadecimal 40. Binary data is supported on the punch stream, but you must embed the carriage control in the print records. The punch stream is limited to 150-character records on most systems.

**Readers:**

The software sends data files from the PC to the host on reader devices. You can specify from one to four RJE readers for your remote. The number of readers must match the number defined by the remote definition statement (RMTnnnn) on the host.

> ***VM/RSCS:*** This operating system only allows you to define one LU, which means only one device can be active.

**APPLID:**

Specify the application identification. The **APPLID** is the application name of the host RJE system as defined to VTAM (for example, **JES2**, **JES3**, **POWER**, **RTAM**, **NER1JES2**, or **BAR1JES2**). You can type over the default name if your host has a different application identification. Check with the host VTAM programmer to find the names in the APPL MAJOR NODE. The host will usually have a customized name.

> ***Note:*** An incorrect APPLID is the most common cause of a failed log on.

**LOGMODE:**

Specify the name of the **LOGMODE** entry in the logon mode table your host system uses during logon. The **LOGMODE**, also called the logon mode table entry, contains more information used during formatted or character-coded logon. You can use either an IBM default **LOGMODE** or a custom **LOGMODE**, depending on your job entry subsystem and job processing requirements.

The IBM default **LOGMODE**, **BATCH**, comes in the IBM-supplied ISTINCLM mode table. **BATCH** is usually the best choice for JES2 because JES2 normally builds a bind from the RJE definition and does not rely completely on the **LOGMODE**. **RJE3777** is a good default choice for JES3, although you might need to create a new table to set choices such as **RUSIZE**. The default logmode for VSE/POWER and VM/RSCS is **RJE3790B**, which is appropriate for most uses.

See section 1.3 for more information about using logon mode tables and defining the default **BATCH LOGMODE** or a custom **LOGMODE** compatible with Barr RJE.

**Logon Type?**

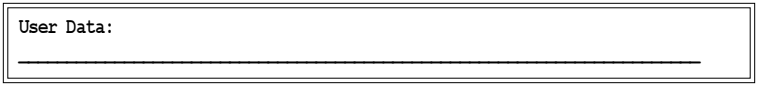
**Logon Type** specifies whether the logon message is formatted (composed by the Barr software) or character coded (composed by the user).

**Formatted**

Default. Barr software automatically composes the user data portion of the logon from the **Remote Name** and **Password** you enter. The software codes the user data plus the **LOGMODE** and **APPLID** into logon fields. The software sends this information to the host via the SNA command INITSELF.

**Formatted Override**

This type of logon allows you to manually override the user data portion of the formatted logon. When you press Enter, the software prompts you to enter user data.

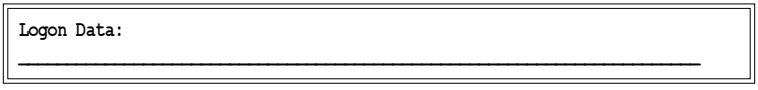



User data includes the remote name and password. The software sends this information to the host via the SNA command INITSELF. To keep the password confidential, substitute a tilde (~) for each password character. When you start the Barr software, it prompts you to enter the password.

**Character Coded**

The **Character Coded** logon, also known as the unformatted logon type, is 80 characters of manually entered logon data. Use this selection if your host requires a different logon than the one composed by the formatted logon. The information required depends on your host system's conventions. The Barr software sends the logon message as text to the host where VTAM analyzes it via the USSTAB tables.

When you press Enter, the software prompts you to enter the logon data.




The logon data can include a password. To keep data confidential, substitute a tilde (~) for each password character. When you start the Barr software, it prompts you to enter the password.

**Host Initiated**

With a host-initiated logon, Barr RJE does not send any logon data to the host. The software connects to the host, but does not automatically log on to the host RJE system. The System Service Control Point (SSCP) initiates the logon.

> ***Note:*** The Barr software displays mainframe messages on the console to help you diagnose initial logon problems. If the requested application is not available, the software displays the mainframe Network Services Procedure Error (NSPE) message in this format:
>
> **APPLID is not available (NSPE). Unattended retry in a minute.**

If the mainframe detects an incorrect parameter, such as an invalid password in the INITSELF request, the software displays this mainframe message to help you determine why the bind is not forthcoming:

```
APPLID is not available or is invalid. Unattended
retry in a minute.
```

**Account**

For the VS1/RES RJE system, the software prompts you to enter your account code.

```
ACCOUNT: _______
```

# 1.2 RJE Remote Definition

After you enter the RJE Description screen parameters and press Enter, the RJE Remote Definition and Logon Mode Table Entry screens display. The information displayed on these screens depends on the values you selected on the RJE Description screen.

This section lists host parameters by RJE system. The displayed definitions contain sample statements the host programmer needs to enter into the RJE system parameter libraries. The PC user can print these screens for the host programmer by pressing Shift Prt Sc.

The host programmer must set certain host parameters for Barr RJE to operate. An existing remote definition used for other RJE equipment might not work with Barr RJE. You will save time and effort getting your system running if you adhere to the recommended host definition.

## JES2 (XA) Remote Definition

If you select **JES2** for your RJE system on the RJE Description screen, definition screens for both MVS/JES2 (XA) and MVS/JES2 (ESA) display. This section discusses JES2 (XA) and the next section discusses MVS/JES2 (ESA).

Your JES2 Remote Definition screen reflects the selections you made on the RJE Description screen.

```
                          (These screens are for your host.)
                             JES2 Remote Definition (XA)


Source statements are in SYS1.PARMLIB(JES2PARM).
Reference: JES2 Installation and Tuning, SC23-0065, Chapter 9.

RMT9999       LUTYPE1,BUFSIZE=nnnn,CMPCT,COMP,CONSOLE,MFORM=J,           X
              NUMPR=1,NUMPU=1,NUMRD=1,SETUPHDR
RMT9999.PR1   CKPTLINE=66,CKPTPAGE=10,PRWIDTH=255,SELECT=PRINT1
RMT9999.PU1   CKPTLINE=100,CKPTPAGE=10,SELECT=PUNCH1,LRECL=80,NOSEP
RMT9999.PR1

                                                                    Any key
```

## Remote Definition Statement for JES2 (XA)

The remote definition statement describes remote features.

```
RMT9999       LUTYPE1,BUFSIZE=nnnn,CMPCT,COMP,CONSOLE,MFORM=J,           X
              NUMPR=n,NUMPU=n,NUMRD=n,SETUPHDR
```

### Barr RJE requires these parameters:

**RMTnnnn**

The name of the remote. The host assigns your remote a name that uniquely identifies it to the RJE system.

**LUTYPE1**

**LUTYPE** indicates the type of terminal. Use **LUTYPE1** for an SNA terminal.

**BUFSIZE=256|512|1024|2057|112|240|480|960**

The size of the largest request unit you will send or receive. The value for **BUFSIZE** should be nine less than the value for **MAXDATA**. For example, if **MAXDATA=1033**, set **BUFSIZE=1024**. (In the Barr software, specify **MAXDATA** under Communication Link.) For an X.25 host connection, use **112**, **240**, **480**, or **960**.

***Performance Tuning:*** To maximize performance, set BUFSIZE=1024 and MAXDATA=1033. Only use BUFSIZE=2057 for an 802.2 token ring network (TRN).

**CMPCT**

**CMPCT** enables data compaction. You must also specify the **COMPACT=n** parameter on the remote printer statement, where **n** is the number of the compaction table to use. The Barr COMPACT.JOB reference file contains an optimized JES2 compaction table the host programmer might want to use.

**COMP**

Use data compression to increase line throughput. When you enable compression, the software sends strings of blanks as a single character and strings of duplicate characters as two characters, which increases line throughput by 100 percent.

**CONSOLE**

Enable the remote operator console, which allows messages from the host to display on the PC screen.

**MFORM=J**

Omit the date-time stamp from host messages. Host messages on the Barr RJE console are easier to read without the host time stamp. Barr RJE has its own time stamp.

**NUMPR=n**

Number of RJE printers (**0 - 7**).

**NUMPU=n**

Number of RJE punches (**0 - 4**).

**NUMRD=n**

Number of RJE readers (**0 - 4**).

**SETUPHDR**

The host sends a setup record, called a PDIR, with the printer or punch files. You would normally use this record with printer applications. It contains basic descriptive information, including the date, time, form name, forms control buffer (FCB) name, and number of copies.

You must also enable **SETUPHDR** in the **PSERVIC** parameter of the logon mode table entry (see section 1.3).

You cannot use **SETUPHDR** and **FCBLOAD** together. If you specify both options in the remote definition, JES2 disables the **FCBLOAD** feature. (You specify **FCBLOAD** on the remote printer statement [RMTnnnn.PRn]). The Form Information Sources appendix in your Barr RJE manual discusses which feature to use.

### Barr RJE uses these system default values:

**DISCINTV=0**

The default disconnect interval of **0** tells the host not to terminate the RJE session if the device is idle. If you want the host to disconnect after an idle period, specify **DISCINTV** in seconds.

**LINE=nnnn**

The number (**1 - 2000**) of a logical line connected (and dedicated) to this terminal, which restricts access. You must define this line with a **LINEnnnn** statement with the **UNIT=SNA** parameter. If you do not specify a line number, JES2 allows a connection from any dial-up or other SNA connection point.

**ROUTECDE=nnnn**

Specifies how to route output for jobs submitted from this RJE station. Output automatically gets routed back to the originating RJE station if you do not specify this parameter.

## Remote Printer Statement for JES2 (XA)

Use a remote printer statement for each remote printer.

```
RMTnnnn.PRi     CKPTLINE=66,CKPTPAGE=10,PRWIDTH=255,SELECT=PRINTi
```

### Barr RJE requires these parameters:

**RMTnnnn.PRi**

The name of the remote printer, where **nnnn** is the remote number and **i** is the printer number.

**CKPTLINE=66**

The typical length of a printed page. The software uses this parameter to determine the checkpoint interval.

**CKPTPAGE=10**

The number of pages in a checkpoint interval. Use a minimum of 10 pages of 66 lines each. Because JES2 requires a response from Barr RJE at this interval, performance slows while JES2 waits for the response. Larger intervals reduce the number of waits.

> ***Performance Tuning:*** To maximize performance, set **CKPTLINE=66** and **CKPTPAGE=10** to send 10 pages of data to the remote before requesting an acknowledgment. Smaller values cause JES2 to waste time waiting for responses at each checkpoint interval.

**PRWIDTH=255**

The maximum width of the printer line. Many users set this value to **132**. If you use a Xerox laser printer or want to transfer a file with long lines, use the maximum value of **255**. This count does not include the carriage control character.

**SELECT=PRINTi**

Associates this remote printer with the Barr RJE printer **PRi**, where **i** is the number of the printer.

### Barr RJE uses this system default value:

**CCTL**

Includes control characters in the data stream, which is the system default. Barr RJE requires CCTL.

### Xerox printers require this parameter:

**PRINTDEF TRANS=NO**

For Xerox printers, the host programmer must include the Local Print Environment Definition statement, **PRINTDEFTRANS=NO**, at the beginning of the JES2 PARMLIB. **TRANS=NO** specifies that the software will only translate printable control characters to blanks. Xerox printers function properly only if the software does not translate data. The system default is **TRANS=YES**.

### Other useful parameters:

**COMPACT=nn**

Specifies the compaction table (**nn**) to use for all outbound remote printer data. The default of **0** means no compaction is performed. Compaction increases line performance by 15 percent because it represents adjacent numeric digits as a single character.

An optimized compaction table, COMPACT1, comes with the Barr reference files. The file COMPACT.JOB contains both the COMPACT1 table definition and the Job Control Language (JCL) used to insert the table in the JES2 parameter library.

**DRAIN**

The printer state will be **DRAIN** at startup. You must use an operator command such as **$ S PRi** (Start Printer) to begin processing.

**FCBLOAD**

Specifies that the FCB record will be sent at the start of the print file. The FCB, normally used with printer applications, contains the lines per form, lines per inch, and carriage control table (SVF [Set Vertical Format] and SLD [Set Line Density]). Specify **FCBLOAD** on the remote printer statement and set **Use Barr FCBLOAD** to **Yes** on the Tuning and Global Options, Printer Control screen in the Barr software.

You can only use one carriage control stop per channel. You cannot use **FCBLOAD** on the remote printer statement if you specify **SETUPHDR** on the remote definition statement (RMTnnnn). You must also specify **FCBLOAD** in the **PSERVIC** parameter of the logon mode table entry.

**NOSEP**

Specifies that JES2 will not use separator pages between jobs.

**R=Rnnnn**

Routes output from jobs submitted on this printer to a different remote.

**WS=criteria**

Specifies the output selection criteria for this remote printer. The usual output selection is based on SYSOUT class, form name, and FCB name. See the *IBM JES2 Initialization and Tuning* manual for details about

specifying work selection criteria. **WS=()** specifies that all output will be processed.

## Remote Punch Statement for JES2 (XA)

Use a remote punch statement for each remote punch.

```
RMTnnnn.PUi  CKPTLINE=100,CKPTPAGE=10,SELECT=PUNCHi,LRECL=nnn,NOSEP
```

### Barr RJE requires these parameters:

**RMTnnnn.PUi**

The name of the remote punch, where **nnnn** is the remote number and **i** is the punch number.

**CKPTLINE=100**

The typical length of a page of data. This parameter determines the checkpoint interval.

**CKPTPAGE=10**

The number of pages in a checkpoint interval, which should be a minimum of 10 pages of 100 lines each. Because JES2 requires a response from Barr RJE at this interval, performance slows while JES2 waits for the response. Larger intervals reduce the number of waits.

> ***Performance Tuning:*** To maximize performance, set **CKPTLINE=100** and **CKPTPAGE=10** to send 10 pages of data to the remote before requesting an acknowledgment. Smaller values cause JES2 to waste time waiting for responses at each checkpoint interval. If you use the BARR/TAPE option to transfer magnetic tape files on the punch, set **CKPTPAGE** to a much higher value to substantially reduce transfer time.

**SELECT=PUNCHi**

Associates this remote punch device with the Barr RJE punch **PUi**, where **i** is the number of the punch.

**LRECL=nnn**

The largest record length to send to the remote. The JES2 system default is **80**. The maximum value is **254**.

**NOSEP**
Extra separator cards at the start of file will not be received.

### Barr RJE uses this system default value:

**CCTL=YES**
Includes control characters in the data stream. Barr RJE requires CCTL.

## JES2 (ESA) Remote Definition

If you select **JES2** for your RJE system on the RJE Description screen, you must press Enter twice to display the JES2 Remote Definition (ESA) screen.

Your JES2 Remote Definition (ESA) screen reflects the selections you made on the RJE Description screen.

```
                    (These screens are for your host.)
                       JES2 Remote Definition (ESA)


Source statements are in SYS1.PARMLIB(JES2PARM).
Reference: JES2 Installation and Tuning, SC28-1038, Chapter 10.

RMT9999       DEVTYPE=LUTYPE1,BUFSIZE=nnnn,COMPACT=YES,COMPRESS=YES,       X
              CONS=YES,MFORM=J,NUMPRT=1,NUMPUN=1,NUMRDR=1,SETUP=PDIR
RMT9999.PR1   CKPTLINE=66,CKPTPAGE=10,PRWIDTH=255,SELECT=PRINT1,           X
              TRANS=NO
RMT9999.PU1   CKPTLINE=100,CKPTPAGE=10,SELECT=PUNCH1,LRECL=80,SEP=NO
RMT9999.RD1


                                                                  Any key
```

### Remote Definition Statement for JES2 (ESA)

The remote definition statement describes remote features.

```
RMT9999       DEVTYPE=LUTYPE1,BUFSIZE=nnnn,COMPACT=YES,COMPRESS=YES,       X
              CONS=YES,MFORM=J,NUMPRT=1,NUMPUN=1,NUMRDR=1,SETUP=PDIR
```

### Barr RJE requires these parameters:

**RMTnnnn**

The name of the remote. The host assigns your remote a name that uniquely identifies it to the RJE system.

**DEVTYPE=LUTYPE1**

**LUTYPE** indicates the type of terminal. Use **LUTYPE1** for an SNA terminal.

**BUFSIZE=256|512|1024|2057|112|240|480|960**

The size of the largest request unit you will send or receive. The value for **BUFSIZE** should be nine less than the value for **MAXDATA**. For example, if **MAXDATA=1033**, set **BUFSIZE=1024**. (In the Barr software, specify **MAXDATA** on the Communication Link screen.) For an X.25 host connection, use **112**, **240**, **480**, or **960**.

> ***Performance Tuning:*** To maximize performance, set **BUFSIZE=1024** and **MAXDATA=1033**. Only use **BUFSIZE=2057** for an 802. 2 token ring network.

**COMPACT=YES**

Enable data compaction. You must also specify the **COMPACT=n** parameter on the remote printer statement, where **n** is the number of the compaction table to use. The Barr COMPACT.JOB reference file contains an optimized JES2 compaction table the host programmer might want to use.

**COMPRESS=YES**

Use data compression to increase line throughput. When you enable compression, the software sends strings of blanks as a single character and strings of duplicate characters as two characters. This option increases line throughput by 100 percent.

**CONS=YES**

Enable the remote operator console, which allows messages from the host to display on the PC screen.

**MFORM=J**

Omit the date-time stamp from host messages. Host messages on the Barr RJE console are easier to read without the host time stamp. Barr RJE has its own time stamp.

**NUMPRT=n**
The number of RJE printers (**0 - 7**).

**NUMPUN=n**
The number of RJE punches (**0 - 4**).

**NUMRDR=n**
The number of RJE readers (**0 - 4**).

**SETUP=PDIR**
The host sends a setup record, called a PDIR, with the printer or punch files. You would normally use this record with printer applications. It contains basic descriptive information, including the date, time, form name, FCB name, and number of copies.

You must also enable **SETUP=PDIR** in the **PSERVIC** parameter in the logon mode table entry (see section 1.3).

You cannot use **SETUP=PDIR** and **FCBLOAD** together. (You specify **FCBLOAD** on the remote printer statement [RMTnnnn.PRn].) If you specify both options in the remote definition, JES2 disables the **FCBLOAD** feature. The Form Information Sources appendix in your Barr RJE manual discusses which feature to use.

### Barr RJE uses these system default values:

**DISCINTV=0**
The default disconnect interval of **0** tells the host to terminate the RJE session if the device is idle. If you want the host to disconnect after an idle period, specify **DISCINTV** in seconds.

**LINE=nnnn**
The number (**1** to **2000**) of a logical line connected (and dedicated) to this terminal, which restricts access. You must define this line by using a **LINEnnnn** statement with the **UNIT=SNA** parameter. If you do not specify a line number, JES2 allows a connection from any dial-up or other SNA connection point.

**ROUTECDE=nnnn**
Specifies how to route output for jobs submitted from this RJE station. Output automatically gets routed back to the originating RJE station if you do not specify this parameter.

## Remote Printer Statement for JES2 (ESA)

Use a remote printer statement for each remote printer.

```
RMTnnnn.PRi      CKPTLINE=66,CKPTPAGE=10,PRWIDTH=255,SELECT=PRINTi,  X
                 TRANS=NO
```

### Barr RJE requires these parameters:

**RMTnnnn.PRi**

The name of the remote printer, where **nnnn** is the remote number and **i** is the printer number.

**CKPTLINE=66**

The typical length of a printed page. The software uses this parameter to determine the checkpoint interval.

**CKPTPAGE=10**

The number of pages in a checkpoint interval. Use a minimum of 10 pages of 66 lines each. Because JES2 requires a response from Barr RJE at this interval, performance slows while JES2 waits for the response. Larger intervals reduce the number of waits.

> ***Performance Tuning:*** To maximize performance, set **CKPTLINE=66** and **CKPTPAGE=10** to send 10 pages of data to the remote before requesting an acknowledgment. Smaller values cause JES2 to waste time waiting for responses at each checkpoint interval.

**PRWIDTH=255**

The maximum width of the printer line. Many users set this value to **132**. If you use a Xerox laser printer or want to transfer a file with long lines, use the maximum value of **255**. This count does not include the carriage control character.

**SELECT=PRINTi**

Associates this remote printer with the Barr RJE printer **PRi**, where **i** is the printer number.

**TRANS=NO**

JES2 does not translate print output, regardless of the device type. This parameter overrides the **PRINTDEF TRANS=** parameter. Do not use translation with Barr RJE.

> ***Xerox printers:*** Specify **TRANS=NO**, which specifies that the software will only translate printable control characters to blanks. Xerox printers function properly only if the software does not translate data. The system default is **TRANS=YES**.

### Barr RJE uses this system default value:

**CCTL**

Includes control characters in the data stream, which is the system default. Barr RJE requires CCTL.

### Other useful parameters:

**COMPACT=nn**

Specifies the compaction table (**nn**) to use for outbound remote printer data. The default of **0** means no compaction is performed. Compaction increases line performance by 15 percent by representing adjacent numeric digits as a single character.

An optimized compaction table, COMPACT1, comes with the Barr reference files. The Barr COMPACT.JOB reference file contains both the COMPACT1 table definition and the JCL used to insert the table in the JES2 parameter library.

**DRAIN**

The printer state will be **DRAIN** at startup. You must use an operator command such as **$ S PRi** (Start Printer) to begin processing.

**FCBLOAD**

Specifies that the FCB record will be sent at the start of the print file. The FCB, normally used with printer applications, contains the lines per form, lines per inch, and carriage control table (SVF and SLD). Specify **FCBLOAD** on the remote printer statement and set **Use Barr FCBLOAD** to **Yes** on the Tuning and Global Options, Printer Control screen in the Barr software.

You can use only one carriage control stop per channel. You cannot use **FCBLOAD** on the remote printer statement if you specify **SETUPHDR** on the remote definition statement (RMTnnnn). You must also specify **FCBLOAD** in the **PSERVIC** parameter in the logon mode table entry.

**SEP=NO**
Specifies that JES2 will not use separator pages between jobs.

**R=Rnnnn**
Routes output from jobs submitted on this printer to a different remote.

**WS=criteria**
Specifies the output selection criteria for this remote printer. The usual output selection is based on SYSOUT class, form name, and FCB name. See the *IBM JES2 Initialization and Tuning* manual for details on specifying work selection criteria. **WS=()** specifies that all output will be processed.

## Remote Punch Statement for JES2 (ESA)

Use a remote punch statement for each remote punch.

```
RMTnnnn.PUi  CKPTLINE=100,CKPTPAGE=10,SELECT=PUNCHi,LRECL=nnn,SEP=NO
```

### Barr RJE requires these parameters:

**RMTnnnn.PUi**
The name of the remote punch, where **nnnn** is the remote number and **i** is the punch number.

**CKPTLINE=100**
The typical length of a page of data. This parameter is used to determine the checkpoint interval.

**CKPTPAGE=10**
The number of pages in a checkpoint interval, which should be a minimum of 10 pages of 100 lines each. Because JES2 requires a response from Barr RJE at this interval, performance slows while JES2 waits for the response. Larger intervals reduce the number of waits.

> ***Performance Tuning:*** To maximize performance, set **CKPTLINE=100** and **CKPTPAGE=10** to send 10 pages of data to the remote before requesting an acknowledgment. Smaller values cause JES2 to waste

> time waiting for responses at each checkpoint interval. If you use the BARR/TAPE option to transfer magnetic tape files on the punch, set **CKPTPAGE** to a much higher value to substantially reduce transfer time.

**SELECT=PUNCHi**
Associates this remote punch device with the Barr RJE punch **PUi**, where **i** is the number of the punch.

**LRECL=nnn**
The largest record length to send to the remote. The JES2 system default is **80**. The maximum value is **254**.

**SEP=NO**
Extra separator cards at the start of file will not be received.

### Barr RJE uses this system default value:

**CCTL**
Includes control characters in the data stream. Barr RJE requires CCTL.

## JES3 Remote Definition

If you select **JES3** for your RJE system on the RJE Description screen, the JES3 Remote Definition screen displays. Your screen reflects selections you made on the RJE Description screen.

```
                    (These screens are for your host.)
                         JES3 Remote Definition

Enter the following in JES3 library SYS1.PARMLIB(JES3IN00).
Reference: JES3 Installation Planning and Tuning, SC23-0041.

RJPWS,N=RMT99,PR=1,PU=1,RD=1
CONSOLE,JNAME=RMT99,TYPE=RJP,LEVEL=10,LL=80,DEST=NONE
DEVICE,DTYPE=RMTPRINT,JNAME=RMT99PR1,XLATE=NO,LDENS=YES
DEVICE,DTYPE=RMTPUNCH,JNAME=RMT99PU1,XLATE=NO,LDENS=YES
                                                                Any key
```

## RJPWS Definition Statement

The Remote Job Processing Workstation (RJPWS) statement specifies the remote name and number of sessions on each device.

```
RJPWS,N=RMT99,PR=1,PU=1,RD=1
```

**N=RMTnn**
Name of the remote. The host assigns your remote a name that uniquely identifies it to the RJE system.

**PR=n**
The number of RJE printers (**0 - 7**).

**PU=n**
The number of RJE punches (**0 - 4**).

**RD=n**
The number of RJE readers (**0 - 4**).

## CONSOLE Definition Statement

The CONSOLE definition statement describes console features.

```
CONSOLE,JNAME=RMT99,TYPE=RJP,LEVEL=10,LL=80,DEST=NONE
```

**JNAME=RMTnn**
Names the remote.

**TYPE=RJP**
Indicates the console type.

**LEVEL=nn**
Indicates the type of console commands that operators can use. The system default value is **0**, but the recommended value is **1 0**.

**LL=nn**

The maximum length of message lines displayed on the console. Lines exceeding this size will wrap. The system default value is **120**. Specify a minimum value of **80**.

**DEST=NONE**

Specifies the system message class.

## DEVICE Definition Statement

A DEVICE definition statement defines each printer and punch.

```
DEVICE,DTYPE=RMTPRINT,JNAME=RMT99PR1,XLATE=NO,LDENS=YES
```

**DTYPE=RMTxxxxx**

Indicates the device type. **RMTPRINT** specifies a remote printer. **RMTPUNCH** specifies a remote punch device.

**JNAME=RMTnnPRm**

The name of the print or punch device. **RMTnn** is the remote name. **PRm** is the name of the printer device. **PUm** is the name of the punch device.

**XLATE=NO**

Specifies whether to translate non-printable characters to blanks.

**NO** Only translate printable characters.

**YES** System default. Translate non-printable characters to blanks.

**LDENS=YES**

Indicates whether SLD information or lines per inch will be sent to the remote.

**YES** SLD will be sent to the remote with the SVF information. Required when you use **FCBLOAD**.

**NO** System default. SLD information will not be sent.

# VSE/POWER Remote Definition

If you select **VSE/POWER** for your RJE system on the RJE Description screen, the VSE/POWER Remote Definition screen displays. Your screen reflects selections you made on the RJE Description screen.

```
                    (These screens are for your host.)
                        VSE/POWER Remote Definition

Enter the POWER Generation Macros.
Reference: VSE/POWER Installation and Operations Guide SH12-5329

POWER  POWER SNA=(nn,,POWER)
name   PRMT  REMOTE=99,CONSOLE=YES,SESSLIM=5,                          X
             TYPE=LUT1,XLATE=YES
       END
                                                                     Any key
```

## POWER Macro

The POWER macro takes this form:

```
name POWER SNA=(nn,,POWER)
```

**name**

The phase name, which matches the POWER macro name.

**SNA=(nn,,POWER)**

**nn** Specifies how to initialize SNA support. The value for **nn** can be the number of concurrent workstations or the number of PRMT macros, depending on your system convention.

**,,** Indicates that a password parameter is not required.

**POWER**

The application ID for VTAM.

## PRMT Macro

The PRMT macro describes the RJE workstation.

```
name    PRMT  REMOTE=99,CONSOLE=YES,SESSLIM=5,                    X
        TYPE=LUT1,XLATE=YES
```

**name**
The macro name.

**REMOTE=nn**
The remote name.

**CONSOLE=YES**
Choose when to display console messages.

**YES** Use this option to immediately send console messages to the remote. You must define enough LUs for output and console messages to be received simultaneously.

**NO** Use this option if you defined only one LU. Console messages will be delayed until print output has stopped. If one LU receives console messages and print output simultaneously without this delay, messages and output will be interleaved.

**SESSLIM=n**
The number of LUs for simultaneous sessions. You can specify a maximum of six. **SESSLIM=5** provides enough LUs to simultaneously operate a printer, punch, reader, and console and to issue commands from the keyboard.

**TYPE=LUT1**
Indicates this is an SNA RJE workstation.

**XLATE=YES**
If print output contains the hexadecimal characters **01** to **3F**, these characters will be translated to blanks. You must specify **YES** because POWER (unlike the other host RJE systems) cannot send these characters transparently. Setting this parameter to **NO** could result in unpre-

dictable behavior, such as program aborts. **XLATE=YES** implies that the data will be limited to simple text. It will not be possible to print binary data (such as Xerox metacode) through the print stream of a POWER remote.

## VS1/RES Remote Definition

If you select **VS1/RES** for your RJE system on the RJE Description screen, the VS1/RES Remote Definition screen displays. Your screen reflects the selections you made on the RJE Description screen.

```
                        (These screens are for your host.)
                            VS1/RES Remote Definition

VS1 Terminal Description
Reference: OS/VS1 RES System Programmer's Guide, GC28-6878

       TERMINAL TERMID=1,X
                TDESCR=(3,8,5,3),PTRS=1,RDRS=1,PCHS=1,                X
                BUFXSIZ=512,CNMSGNO=5,CONPR=1,VBUF=14,SESSLIM=5,      X
                CPACTBL=NO,PLGN=0

RTAM Description for RES System Generation

       RTAM     TPREAD=6,TPPRINT=6,TPPUNCH=6,MXINTBR=856,             X
                MSGFCTR=25,RMTOBJ=SYS1.RMTOBJ,                        X
                PORTS=2,SNACOMP=YES,                                  X
                CPACT=YES,CPACTDF=NO,APPLID=RTAM

                                                                     Any key
```

### TERMINAL Macro

The TERMINAL macro identifies and describes the remote workstation.

```
     TERMINAL TERMID=1,                                               X
        TDESCR=(3,8,5,3),PTRS=1,RDRS=1,PCHS=1,                        X
        BUFXSIZ=512,CNMSGNO=5,CONPR=1,VBUF=14,SESSLIM=5,              X
        CPACTBL=NO,PLGN=0
```

**TERMID=n**

The terminal ID number for the remote (**1 - 2 0 0**).

**TDESCR=(width,type,data,features)**
Describes the terminal.

**width**
The printer width selection (**0 - 7**). For a 132-character width, select **3**.

**type**
The workstation type selection (**0 - 9**). Specify **8** for an SNA workstation.

**data**
The data format selection (**0 - 5**). Specify **5** for an SNA character string.

**features**
The workstation features selection (**0 - 3**). Specify **3** for console support and punch data transparency.

**PTRS=n**
The number of RJE printers (**0 - 7**).

**RDRS=n**
The number of RJE readers (**0 - 4**).

**PCHS=n**
The number of RJE punches (**0 - 1**).

**BUFXSIZ=512|256**
The maximum buffer size.

**CNMSGNO=n**
The number of console message buffers (**1 - 2 5 5**). The default is **5**.

**CONPR=1**
The number of the printer used to send console messages (**1 - 7**).

**VBUF=nn**
The number of buffers (**6 - 1 4**) RTAM allocates for each session or LU.

**CPACTBL=NO**

Compaction table. **N O** indicates compaction will be performed only if you supply a compaction table name in the JCL for the job.

**PLGN=0**

Permanent logon status. A value of **0** indicates that the remote workstation will not maintain a permanent logon.

## RTAM Macro

The RTAM macro describes RTAM characteristics.

```
RTAM  TPREAD=6,TPRINT=6,TPPUNCH=6,MXINTBR=856,                X
      MSGFCTR=25,RMTOBJ=SYS1.RMTOBJ,                          X
      PORTS=2,SNACOMP=YES,                                    X
      CPACT=YES,CPACTDF=NO,APPLID=RTAM
```

**TPREAD=6**

The total number of readers that can be simultaneously active when the maximum number of workstations are logged in.

**TPRINT=6**

The total number of printers that can be simultaneously active when the maximum number of workstations are logged in.

**TPPUNCH=6**

The total number of punches that can be simultaneously active when the maximum number of workstations are logged in.

**MXINTBR=856**

The maximum size for an interface buffer pool.

**MSGFCTR=25**

The factor by which the number of remote message buffers can be dynamically increased. The number **2 5** represents a factor of 2.5.

**RMTOBJ=SYS1.RMTOBJ**

The dataset used to temporarily store object code during RTAM generation.

**PORTS=2**
The maximum number of SNA workstations that can be logged on simultaneously.

**SNACOMP=YES**
Enables data compression to be selected at logon via the VTAM bind.

**CPACT=YES**
Enables data compaction.

**CPACTDF=NO**
Compaction table. **NO** indicates that compaction will be performed only if you supply a compaction table name in the JCL for the job.

**APPLID=RTAM**
The application ID.

## VM/RSCS Remote Definition

If you select **VM/RSCS** for your RJE system on the RJE Description screen, the VM/RSCS Remote Definition screen displays. Your screen reflects selections you made on the RJE Description screen.

```
                        (These screens are for your host.)
                            VM/RSCS Remote Definition

Source statements found in RSCS configuration file.
Reference:  VM/RSCS Planning and Installation, SH24-5057.
            VM/RSCS Operation and Use, SH24-5058.

LINK LINKID SNARJE * * * * PRIORITY 5 luname RJEBARR2 ASTART RETRY
START LINKID
                                                                  Any key
```

> ***Note:*** You can specify up to **256** for **BUFSIZE** and only one LU is supported. RSCS versions 2.3 and 3.1 do not support vertical channel selects through the SNA RJE link driver. As a result, channel stops 2 through 12 will not be supported.

## LINK Statement

Parameters in the LINK statement are positional. An asterisk (**`*`**) indicates that an optional parameter was omitted.

```
LINK LINKID SNARJE * * * * PRIORITY 5 luname RJEBARR2 ASTART RETRY
```

**`LINKID`**
Specifies the unique name for the remote link.

**`SNARJE`**
Indicates the link type is SNA RJE.

**`PRIORITY`**
Indicates the method for queuing files. **`PRIORITY`**, the default, means files will be queued by their assigned priority and size within a given priority. The smallest files in a given priority group will be queued first.

**`5`** The dispatching priority used to prioritize tasks for the link driver relative to tasks for other links. Valid values are **`1`** to **`9`**, where **`1`** is the highest and **`9`** is the lowest priority.

**`luname`**
The name for the LU. The LU name usually matches the link ID name. VM/RSCS supports only one LU.

**`RJEBARR2`**
The logmode for this LU.

**`ASTART`**
Auto start. Indicates that the link between host and remote automatically starts when you place a file in the queue.

**`RETRY`**
After certain types of errors, the link will try to restart.

### START Statement

The START statement starts the link between the host and remote.

**START linkid**
Specify the link ID for the remote.

## 1.3 Logon Mode Table Entries

To access the Logon Mode Table Entry screen, press Enter from the Remote Definition screen. This section describes the logon mode table. See the relevant subsection for your RJE system.

### LU Logon

When an LU goes through the logon process to initiate a session between an application program on the host and a remote terminal, VTAM searches the logon mode table for the **LOGMODE** entry that defines the protocols and parameters to use during the session. VTAM then binds the session and application by sending the logon mode table entry to both the host application and the remote terminal. The message sent to the remote terminal is the bind request. The remote returns a positive response to the bind if it is acceptable or a negative response if it rejects the bind.

The bind data can be verified in the Barr software at logon. See the Communications Diagnostics chapter in your Barr RJE manual for more information about bind data.

### Typical Table Entry

The following example shows a typical RJE logon mode table entry for Barr RJE.

```
RJEBARR MODEENT LOGMODE=RJEBARR,                                    X
               FMPROF=X'03',                                        X
               TSPROF=X'03',                                        X
               PRIPROT=X'A3',                                       X
               SECPROT=X'A3',                                       X
               COMPROT=X'7080',                                     X
               SSNDPAC=7,                                           X
               RUSIZES=X'8686',                                     X
               PSERVIC=X'01102000F900C00000010040'
```

### Alternate Values

Several logon mode parameters can have other values. The following table lists possible values for each field and describes each value.

```
RJEBARR MODEENT LOGMODE=RJEBARR,    Logon Mode name
        FMPROF=X'03'                Function management profile
        TSPROF=X'03'                Transmission management profile
        PRIPROT=X'A3                Compression on receive
                 A1                 No compression on receive
                 B3                 Compression on receive
                                    No compression on receive
        SECPROT=X'A3                Compression on send
                 A1                 No compression on send
                 B3                 Compression on send
                 B1                 No compression on send
        COMPROT=X'7080'             Common LU protocols
        RUSIZES=X'8585'             Send and Receive request unit size: 256
                 8686               Send and receive request unit size: 512
                 8787               Send and receive request unit size: 1024
                 8888               Send and receive request unit size: 2048
                 F3F3               Send and receive request unit size: 120
                 F4F4               Send and receive request unit size: 240
                 F5F5               Send and receive request unit size: 480
                 F6F6               Send and receive request unit size: 960
        SSNDPAC=7         Pacing for readers and commands.
        PSERVIC=X'01106000F900C00000010040'
                      60            Compaction and SETUPHDR (PDIR)
                      40            Compacted data can be received
                      20            SETUPHDR (PDIR) can be received
                          F9        FCBLOAD (SVF and SLD)
                          F1        FCBLOAD (no SLD)
                          91        No FCBLOAD (no SVF or SLD)
                              C0    Document and card files
                              E0    Document, card, exchange files*
                              80    Document (print) files
                              40    Card (reader, punch) files
                              20    Exchange files*

* Exchange media is not supported by the Barr software.
```

## JES2 Logon Mode Table Entry

This section describes the default **BATCH** and the recommended **RJEBARR** logon mode table entries for JES2.

## Default BATCH Table Entry

The IBM-supplied mode table ISTINCLM includes the **BATCH** logon mode table entry.

```
IBM3770  MODEENT LOGMODE=BATCH,
              FMPROF=X'03',
              TSPROF=X'03',
              PRIPROT=X'A3',
              SECPROT=X'A3',
              COMPROT=X'7080'
```

Although this table entry is compatible with Barr RJE, many applications require you to modify it. The host programmer should make a new table entry by copying **BATCH** and changing it to match the **RJEBARR** logon mode table entry.

## Recommended RJEBARR Table Entry

The recommended JES2 **RJEBARR** logon mode table entry displays after the Remote Definition screens.

```
                    (These screens are for your host.)
                         Logon Mode Table Entry


Reference: VTAM Customization, LY30-5614
Source statements are in SYS1.VTAMLST.

RJEBARR   MODEENT LOGMODE=RJEBARR,                                  X
               FMPROF=X'03',                                        X
               TSPROF=X'03                                          X
               PRIPROT=X'A3                                         X
               SECPROT=X'A3                                         X
               COMPROT=X'7080',                                     X
               SSNDPAC=7,                                           X
               RUSIZES=X'8686',                                     X
               PSERVIC=X'01102000F900C00000010040'
                                                                 Any key
```

The MODEENT macro defines protocols used in the LU along with printer and punch device capabilities.

**RJEBARR**

Name of the logon mode table entry to use with multiple-session RJE (usually the same as the value for **LOGMODE**). Use **RJEBARR** to readily associate the entry with the Barr RJE software.

**LOGMODE=RJEBARR**

The formatted or character-coded logon uses the specified **LOGMODE** entry. Although some applications use the IBM-supplied **BATCH** logon mode table entry, you should use the **RJEBARR** entry for optimum performance and for applications that use printer forms.

**FMPROF=X'03'**

Function management profile.

**TSPROF=X'03'**

Transmission management profile.

**PRIPROT=X'A3'**

Primary LU protocol. Indicates whether to use compression when you receive data. The value **A3** enables receive compression. Other values are listed under Alternate Values at the beginning of this section.

**SECPROT=X'A3'**

Secondary LU protocol. Indicates whether to use compression when the software sends data. The value **A3** enables send compression. Other values are listed under Alternate Values at the beginning of this section.

**COMPROT=X'7080'**

Represents the common LU protocols for this logon mode.

**SSNDPAC=7**

Pacing used by readers and commands. Do not use **0** because it results in no flow control, which can cause communication problems.

**RUSIZES=X'8686'**

Specifies the send and receive request unit size, which is the size of the buffer used for sending and receiving data. The value **8686** indicates a buffer size of **512**. Other values are listed under Alternate Values at the beginning of this section.

> ***Performance Tuning:*** To maximize performance, set **RUSIZES** to **8 7 8 7** (which indicates a buffer size of **1 0 2 4**) unless you have conventional memory problems.

**PSERVIC=X'01102000F900C00000010040'**

Presentation services profile. The **PSERVIC** parameter contains 12 bytes of information represented as pairs of hexadecimal digits. Bytes 3, 5, and 7 are most significant for the Barr software. Other values are listed under Alternate Values at the beginning of this section. Recommended values are discussed below.

When the software logs on to the host, you can check the bind data to verify that you set the **PSERVIC** parameter correctly. The Communications Diagnostics chapter in your Barr RJE manual provides more information about displaying the bind data.

**Byte 3:**

Specify whether to enable **SETUPHDR** (PDIR). You must set this value to **2 0** or **6 0** to use **SETUPHDR** (PDIR) with the Barr software. When the software logs on to the host, verify that this value is set correctly by checking byte 16 of the bind data. You must also specify **SETUPHDR** (PDIR) on the JES2 Remote Definition statement (RMTnnnn).

> ***Note:*** You cannot use **SETUPHDR** (PDIR) and **FCBLOAD** together. If you specify both options in the **PSERVIC** parameter, the RJE definition determines which to use.

**Byte 5:**

Specify whether to enable **FCBLOAD**. You must set this value to **F 9** to use **FCBLOAD** with the Barr software because the software requires both SVF and SLD information. When the software logs on to the host, verify that this value is set correctly by checking byte 18 of the bind data. You must also specify **FCBLOAD** on the JES2 remote printer statement (RMTnnnn.PRn).

> ***Note:*** You cannot use **SETUPHDR** (PDIR) and **FCBLOAD** together. If you specify both options in the **PSERVIC** parameter, the RJE definition determines which to use.

**Byte 7:**

Specify the media supported. Valid values are **C 0**, **8 0**, or **4 0**. Barr software does not support exchange media. When the software logs on to the host, verify that this value is set correctly by checking byte 20 of the bind data.

# JES3 Logon Mode Table Entry

This section describes the default **BATCH** and recommended **RJEBARR** logon mode table entries for JES3.

## Default BATCH Table Entry

The **BATCH** logon mode table entry comes in the IBM-supplied mode table ISTINCLM.

```
IBM3770 MODEENT LOGMODE=BATCH,
             FMPROF=X'03',
             TSPROF=X'03',
             PRIPROT=X'A3',
             SECPROT=X'A3',
             COMPROT=X'7080'
```

Although this table is compatible with Barr RJE, many applications require you to modify this table entry. The host programmer should make a new table entry by copying **BATCH** and changing it to match the **RJEBARR** logon mode table entry.

## Recommended RJEBARR Table Entry

The recommended JES3 **RJEBARR** logon mode table entry displays after the Remote Definition screens.

```
                      (These screens are for your host.)
                           Logon Mode Table Entry

Reference: VTAM Customization, LY30-5614
Source statements are in SYS1.VTAMLST(ISTINCLM).

RJEBARR  MODEENT LOGMODE=RJEBARR,                                    X
               FMPROF=X'03',                                         X
               TSPROF=X'03',                                         X
               PRIPROT=X'A3',                                        X
               SECPROT=X'A3',                                        X
               COMPROT=X'7080',                                      X
               SSNDPAC=7,                                            X
               RUSIZES=X'8686',                                      X
               PSERVIC=X'01102000F900C00000010040'
                                                                Any key
```

The MODEENT macro defines protocols used in the LU along with printer and punch device capabilities.

**RJEBARR**

Name of the logon mode table entry to use with multiple-session RJE (usually the same as the value for **LOGMODE**). Use **RJEBARR** to readily associate the entry with the Barr RJE software.

**LOGMODE=RJEBARR**

The formatted or character-coded logon uses the specified **LOGMODE** entry. Although some applications use the IBM-supplied **BATCH** logon mode table entry, use the **RJEBARR** entry for optimum performance and for applications that use printer forms.

**FMPROF=X'03'**

Function management profile.

**TSPROF=X'03'**

Transmission management profile.

**PRIPROT=X'A3'**

Primary LU protocol. Indicates whether to use compression when the software receives data. The value **A3** enables receive compression. Other values are listed under Alternate Values at the beginning of this section.

**SECPROT=X'A3'**

Secondary LU protocol. Indicates whether to use compression when the software sends data. The value **A3** enables send compression. Other values are listed under Alternate Values at the beginning of this section.

**COMPROT=X'7080'**

Represents the common LU protocols for this logon mode.

**RUSIZES=X'8686'**

Specifies the send and receive request unit size, which is the size of the buffer used for sending and receiving data. The value **8686** indicates a buffer size of **512**. Other values are listed under Alternate Values at the beginning of this section.

> ***Performance Tuning:*** To maximize performance, set **RUSIZES** to **8787** (which indicates a buffer size of **1024**) unless you have conventional memory problems.

**SSNDPAC=7**

Pacing used by readers and commands. Do not use a value of **0** because it results in no flow control, which can cause communication problems.

**PSERVIC=X'01102000F900C00000010040'**

Presentation services profile. The **PSERVIC** parameter contains 12 bytes of information represented as pairs of hexadecimal digits. Bytes 3, 5, and 7 are most significant for the Barr software. Other values are listed under Alternate Values at the beginning of this section. Recommended values are discussed below.

When the software logs on to the host, you can check the bind data to verify that the **PSERVIC** parameters are set correctly. The Communications Diagnostics chapter in your Barr RJE manual provides more information about displaying the bind data.

**Byte 3:**

Specify whether to enable **SETUPHDR** (PDIR). You must set this value to **20** or **60** to use **SETUPHDR** (PDIR) with the Barr software. When the software logs on to the host, verify that this value is set correctly by checking byte 16 of the bind data.

**Byte 5:**

Specify whether to enable **FCBLOAD**. You must set this value to **F9** to use **FCBLOAD** with the Barr software because the software requires both SVF and SLD information. When the software logs on to the host, verify that this value is set correctly by checking byte 18 of the bind data.

**Byte 7:**

Specify the media supported. Valid values are **C0**, **80**, or **40**. Barr software does not support exchange media. When the software logs on to the host, verify that this value is set correctly by checking byte 20 of the bind data.

# VSE/POWER, VS1/RES, and VM/RSCS Logon Mode Table Entry

This section describes the default **RJE3790B** logon mode table entry for VSE/POWER, VS1/RES, and VM/RSCS, which is recommended for VSE/POWER, VS1/RES, and VM/RSCS. Creating a modified table entry causes problems with these systems.

## Default RJE3790B Table Entry

The IBM-supplied mode table ISTINCLM includes the **RJE3790B** logon mode table entry.

```
RJE3790B MODEENT LOGMODE=RJE3790B,
             FMPROF=X'03',
             TSPROF=X'03',
             PRIPROT=X'A3',
             SECPROT=X'A1',
             COMPROT=X'7080'
             RUSIZES=X'8585',
             PSERVIC=X'011020009100800000010040'
```

Although this table is compatible with Barr RJE, some applications might require you to modify this table entry.

The MODEENT macro defines protocols used in the LU along with printer and punch device capabilities.

**RJE3790B**
Name of the logon mode table entry (usually the same as the value for **LOGMODE**).

**LOGMODE=RJE3790B**
The IBM-supplied, formatted or character-coded logon that uses the specified **LOGMODE** entry.

**FMPROF=X'03'**
Function management profile.

**TSPROF=X'03'**
Transmission management profile.

**PRIPROT=X'A3'**

Primary LU protocol. Indicates whether to use compression when the software receives data. The value **A 3** enables receive compression. Other values are discussed under Alternate Values at the beginning of this section.

> ***VSE/POWER:*** For VSE/POWER, inbound compression is not supported and will be ignored if you select it. Use A1 or B1 for VSE/POWER.

**SECPROT=X'A1'**

Secondary LU protocol. Indicates whether to use compression when the software sends data. The value **A 1** disables send compression. Other values are listed under Alternate Values at the beginning of this section.

**COMPROT=X'7080'**

Represents the common LU protocols for this logon mode.

**RUSIZES=X'8585'**

Specifies the send and receive request unit size (the size of the buffer used for sending and receiving data). The value **8 5 8 5** indicates a buffer size of 256. For VSE/POWER and VM/RSCS, 256 is the largest buffer size supported. For VS1/RES, the buffer size can be 256 or 512. Other values are listed under Alternate Values at the beginning of this section.

**PSERVIC=X'01102000F100800000010040'**

Presentation services profile. The **P S E R V I C** parameter contains 12 bytes of information represented as pairs of hexadecimal digits. Bytes 3, 5, and 7 are most significant for the Barr software. Other values are listed under Alternate Values at the beginning of this section. Recommended values are discussed below.

When the software logs on to the host, you can check the bind data to verify that the **P S E R V I C** parameters are set correctly. The Communications Diagnostics chapter in your Barr RJE manual provides more information about displaying the bind data.

**Byte 3:**

Specify whether to enable **SETUPHDR** (PDIR). You must set this value to **20** or **60** to use **SETUPHDR** (PDIR) with the Barr software. When the software logs on to the host, verify that this value is set correctly by checking byte 16 of the bind data.

> ***VSE/POWER:*** The VSE/POWER operating system does not support multiple copies with the SNA PDIR record. To print multiple copies, use the print spool feature and set the number of copies on the Print Spool screen. If you specify multiple copies in the JCL, the Barr software displays the following error message when it receives the file:
>
> **PDIR extra copies ignored. Remove PDIR bit from BIND data.**

**Byte 5:**

Specify whether to enable **FCBLOAD**. When the software logs on to the host, verify that this value is set correctly by checking byte 18 of the bind data. Set it to **91** to disable **FCBLOAD**.

> ***VSE/POWER, VS1/RES, and VM/RSCS:*** Do not use **FCBLOAD** with VSE/POWER, VS1/RES, or VM/RSCS because these operating systems do not support SVF, SLD, or HVF. Leave byte 5 set to **91** to disable **FCBLOAD**.

**Byte 7:**

Specify the media supported. Valid values are **80**, **40**, or **C0**. Barr software does not support exchange media. When the software logs on to the host, verify that this value is set correctly by checking byte 20 of the bind data.

*Notes:*

Chapter 2

# Communication Link Parameters

The Communication Link menu allows you to specify the Barr RJE communication protocol and physical attachment between the host system and remote PC. This section discusses the VTAM and NCP parameters you must specify for the communication link. VTAM is the mainframe program for the SNA communication protocol. NCP is the program that resides in the mainframe communications controllers.

Follow these steps to complete the communication link process:

1. When you purchased Barr RJE, you specified the link connection supported by your host computer. Select this link connection on the Barr RJE Communication Link menu. From the Installation Description screen, select Communication Link.

   The Communication Link screen displays.

```
                          Communication Link


SDLC                      SDLC Switched (Dial) Line
                          SDLC Nonswitched (Dedicated) Line

X.25                      X.25 Switched Virtual Circuit
                          X.25 Permanent Virtual Circuit

802.2                     3725 & 3745 Controllers
                          Local 3174 (Channel Attached)
                          Remote 3174 (SDLC Attached)

Coax                      3174 or 3274

SNA/SAA                   MS SNA Server/NetWare for SAA

LAN                       NETBIOS
                          Novell IPX
                          802.2 LLC
                          TCP/IP

Async                     ADLC


                                                  Selection ↑↓→←
```

The left column lists the type of connection (for example, SDLC). The right column lists the link connection. You specified the connection type supported by your host computer when you purchased the software. Your Barr RJE software disk label lists this connection type.

2. Ask the host programmer what NCP and VTAM parameters to enter on the specific link connection screen. These parameters must match the host definition parameters.
3. After you enter the NCP and VTAM parameters, NCP Definition and Physical Unit Definition screens appear. Print these screens so the host programmer can add the appropriate statements to the host NCP and VTAM parameter libraries.

# 2.1 Host Connections

The four types of host connections (SDLC, X.25, 802.2, and Coax) each have one or more link selections. Software parameters for each connection are described in separate sections in this chapter.

## SDLC

The SDLC connection uses Synchronous Data Link Control (SDLC) to define how to send and receive frames of data.

## X.25

The X.25 standard allows you to communicate through public data networks. Public telephone companies, private network utility companies, and government phone systems such as the FTS2000 or DDN provide these networks. The X.25 network, sometimes called an X.25 Packet Switched Data Network (PSDN), implements virtual circuits between pairs of terminal points. Packets of data are transmitted across the virtual circuits.

The X.25 standard includes these features:

- You are charged by the number of packets sent and received. You can have a high throughput for short periods of time and only pay for the amount of data transferred.

- You can easily establish a new communication link.
- The X.25 standard provides reliable international data communication. Each packet inserted into the X.25 network is guaranteed to reach its destination without error.
- The X.25 standard is defined by the International Telegraph and Telephone Consultative Committee (CCITT). As shown in Figure 2-1, the X.25 network is usually shown as a cloud, which illustrates that you only need to consider the interface to the cloud to connect terminals to it.

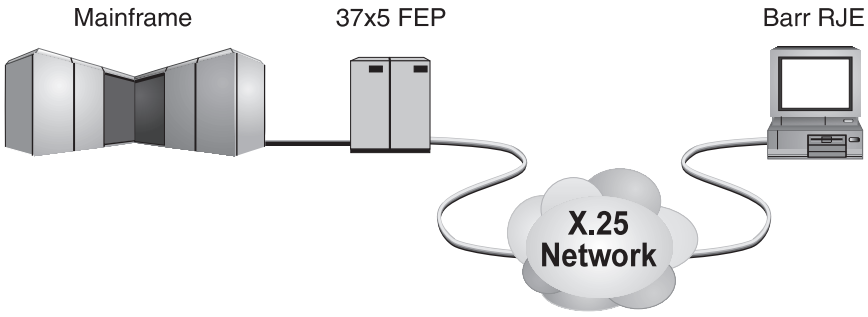



**Figure 2-1.** PCs running Barr software connect to the X.25 network with an X.25 interface.

The original X.25 networks transported asynchronous terminal data across large networks. As illustrated in Figure 2-2, asynchronous modems or V.24/RS232 lines were connected to Packet Assembler/Disassemblers (PADs). The PADs assembled the asynchronous data into X.25 packets and sent them into the X.25 network. The receiving PAD, often integrated in a large information provider host, disassembled the X.25 packets back into asynchronous data.

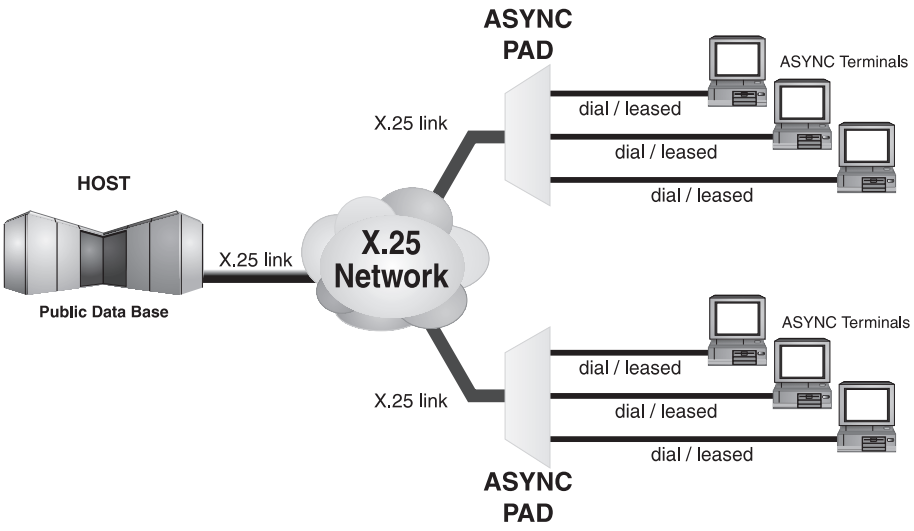



**Figure 2-2.** Asynchronous terminals connected to the X.25 network with PADs.

## Virtual Circuits

The X.25 virtual circuits can be either Switched Virtual Circuits (SVCs) or Permanent Virtual Circuits (PVCs). The terms switched and permanent refer to the way in which you establish virtual circuits.

### Switched Virtual Circuit

SVCs are not fixed to any particular physical connection points. After the terminal connects to the X.25 network, the SVC terminal points are established. You can make SVCs through dedicated or dial lines.

### Permanent Virtual Circuit

PVCs are fixed to a pair of physical terminal points (V.24/RS232 or X.21 connection points). When the PVC device connects to the X.25 network, it also establishes the PVC. This circuit provides network security because the connection is locked to two fixed locations.

## SNA on X.25 Networks (QLLC)

You can send and receive SNA data over an X.25 network. The standard protocol used for transporting SNA over X.25 is referred to as Qualified Logical Link Control (QLLC). You make the host connection to the X.25 network by using the 3725 or 3745 controller with the NCP Packet Switching Interface (NPSI) software installed. The Barr software connects to the X.25 network with a V.24/RS232, V.35, RS530, or X.21 adapter and cable. Barr software eliminates the need for an X.25/QLLC PAD at the remote location.

## X.25 Installation Parameters

Parameters to set up and operate an X.25 connection using Barr X.25/QLLC are given in terms of those required to set up NPSI on the host front end. These parameters govern the connection between the PC and the X.25 network, not between the PC and host directly. The actual NPSI parameters used to program the NCP in the host front end pertain to the host's own connection to the X.25 network. Though the parameters in the Barr software are usually the same as the parameters at the host, they could be different. Your network provider should be able to supply the parameters necessary to connect to the network.

After you enter the Communication Link parameters in the Barr software, Barr RJE produces sample statements for the host programmer to enter into the VTAM and NCP parameter libraries.

# 802.2

The 802.2 is a 4- or 16-megabit-per-second (Mbps) local area network (LAN) architecture that connects PCs, minicomputers, mainframes, and other peripherals. The LAN file server and applications such as Barr RJE use the 802.2 network. Connections to the 802.2 network are made as follows:

- The PC connects with a token ring adapter and Barr RJE software.
- The 3725 and 3745 communications processors connect with a Token Ring Interface Coupler (TIC).
- The 3174 establishment controllers connect with token ring adapters.

Barr Systems 802.2 LLC support uses IBM's LAN Support Program. This program originally used two drivers, DXMA0MOD.SYS and DXMC0MOD.SYS, which you added to the CONFIG.SYS file on each PC. This program supported any token ring card that used the Tropic chipset for network communications, including 3Com, Intel, and Olicom.

Now the typical LAN support is through the Network Device Interface Specification (NDIS) interface, which replaces DXMC0MOD.SYS with DXME0MOD.SYS. Any token ring or Ethernet card with an NDIS driver can support the 802.2 LLC protocol. To install the NDIS interface, use the DXMAID install program supplied with the LAN Support Program. You also need a board-specific driver, which is usually included on the board's driver disk.

The IBM LAN Support Program is not in the public domain and must be purchased from IBM. In some cases, vendors now support running their own version of LAN support. For instance, Madge supplies the SMART interface with their token ring boards. See your vendor for information about the necessary drivers.

## Coax

The Barr COAX adapter lets Barr software attach to a 3174 or 3274 controller. The software supports both DFT and 3299 modes. In DFT mode, you can use the coax interface with BARR/RJE or RJE+3270 software, thus providing a maximum of five logical units (LUs). In 3299 mode, you can use BARR/RJE with up to 13 LUs and RJE+3270 with up to 17 LUs.

## SNA/SAA

This link allows a Barr workstation to connect to a Microsoft SNA Server gateway or a Novell NetWare for SAA gateway. If you purchased the Microsoft SNA Server link, see section 2.10. If you purchased the Novell NetWare for SAA link, see section 2.11.

# 2.2 Gateway Workstation Connections

The gateway workstation connections (X.25, LAN, and Async) each have one or more link selections.

When you use BARR GATEWAY, the workstation PC connects to the gateway and the gateway provides the host connection. Workstations can connect to the gateway through a LAN or modem. Supported LAN connections include NetBIOS, Novell IPX, 802.2, and TCP/IP. Both the gateway and workstation PCs require a LAN adapter to connect to the network. Modem connections include ADLC, X.25, and ADLC over X.25.

These connection types are briefly described below. The software parameters for each workstation connection are explained in a separate section. The ADLC over X.25 connection is discussed under ADLC. The software parameters for the X.25 host connection and the X.25 gateway workstation connection are the same and are discussed in the same section.

## X.25

The gateway PC and workstation PC use a Barr adapter to connect to the X.25 network.

## LAN

With the LAN gateway workstation connection, you can select NetBIOS, Novell IPX, 802.2, or TCP/IP link selections.

### NetBIOS

IBM's Network Basic Input/Output System (NetBIOS) has become an industry standard you can use with most LAN adapters, including Ethernet, Arcnet, and token ring.

### Novell IPX

Novell Internetwork Packet Exchange (IPX) comes with the Novell LAN. Novell has implemented IPX for virtually all LAN adapters, including Ethernet, Arcnet, and token ring.

### 802.2 LLC

The IBM Token Ring LAN Support program provides an interface to IBM token ring networks. You can use this interface with most token ring adapters.

### TCP/IP

The Transmission Control Protocol/Internet Protocol (TCP/IP) provides access on large company networks and the Internet via an Ethernet adapter. You must also use the PC/TCP kernel from FTP Software.

## Async (ADLC)

The async workstation connection offers dial-up mainframe access at up to 38,400 bits per second (bps). The RJE software supports two types of asynchronous data link (ADLC) connections. With the standard async connection, the workstation and gateway PCs communicate through asynchronous modems. The async over X.25 connection requires an asynchronous modem for the workstation to connect to an async X.3 PAD and a synchronous modem for the gateway to connect to the X.25 network.

# 2.3 SDLC Switched (Dial) Line

On SDLC dial lines, host modems automatically answer remote user phone calls as shown in Figure 2-3.

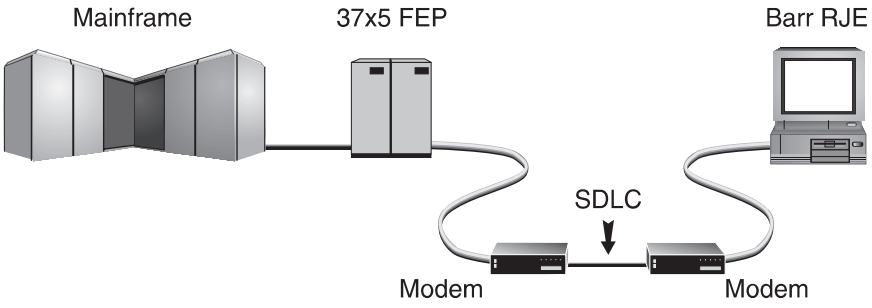



**Figure 2-3.** SDLC dial lines use modems to answer remote phone calls.

The modems use the public phone system at speeds from 1,200 to 56,000 bps.

## Barr RJE Software Parameters

➤ To enter software parameters, select **SDLC Switched (Dial) Line** from the Communication Link menu.

The following screen displays:

```
                          SDLC Switched (Dial) Line


NCP Parameters

       LINE Macro
            NRZI=YES


VTAM Parameters

       PU Macro
            IDBLK=03D
            IDNUM=12345
            DATMODE=FULL
            MAXDATA=0521
            MAXOUT=7

                                                          Choice? + -
```

The SDLC Switched (Dial) Line screen lists parameters needed by the Barr RJE program and by VTAM and NCP on the mainframe. Get these parameter values from the host programmer. After you enter the Communication Link parameters in the software, Barr RJE produces samples of the statements the host programmer needs to enter in the host VTAM and NCP parameter libraries.

This section describes the parameters to specify in the Barr software. The values for these parameters must match the values specified in the host definition.

## NCP Parameters

Use the LINE macro to specify the NCP parameters.

### LINE Macro

**NRZI=YES|NO**

Non Return to Zero Inverted (NRZI) was a way to code binary data over an RS232 interface. Check if your host system uses NRZI coding.

**YES** Default. Use NRZI coding. Use this option if frequent SDLC aborts occur.

**NO** Do not use NRZI coding.

## VTAM Parameters

The SNA RJE workstation corresponds to a VTAM physical unit (PU) with 2 to 20 LUs. You must use the PU macro and LU macro to specify VTAM parameters.

### PU Macro

**IDBLK=bbb**
**IDNUM=nnnnn**

VTAM uses these parameters on a dial-up line to identify the remote's PU definition. The host sends an Exchange ID request (**Xid**) as the first message to a dial-up remote. The remote responds with an Exchange ID response (**Xidr**) that contains the **IDNUM** and **IDBLK** parameters.

VTAM searches for the PU identified by **IDNUM** and **IDBLK**. It then uses this PU for the rest of the communications session.

**DATMODE=FULL|HALF**

Specify whether the PU data mode is full duplex or half duplex.

**FULL** Default. The system sends and receives data simultaneously resulting in twice the throughput. The V.32 modem standard supports full duplex on dial-up lines. Some modems do not support full-duplex communications.

If you specify **DATMODE=FULL** in the Barr software, the host programmer must also specify it at the host. If the PC and host settings do not match, the software might have communication problems such as timeouts or lowered performance when it sends data to the host.

For the RS232 and V.35 adapters, you must use two DMA channels for **DATMODE=FULL**. It also affects the choices for the **DMA request** setting in the Barr software (see the Interrupt Request chapter in your Barr RJE manual). For the T1-SYNC adapter, you only need one DMA channel.

**HALF** In half-duplex mode, the communications line is in either a send or receive mode so less than half the capacity of the line is available for use.

> ***Performance Tuning:*** Specify **DATMODE=FULL** in both the Barr software and the VTAM PU definition. You can achieve maximum Barr RJE performance with full-duplex mode. Full duplex enables you to send and receive data simultaneously, often doubling throughput. You can even improve one-way throughput because you can receive acknowledgments while you send data. See Appendix A for more information about performance tuning.

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** typically apply to X.25.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data. Send 1024 bytes by setting **MAXDATA=1033** in the Barr software and in the VTAM PU definition. This step reduces the amount of control information and total number of frames sent. When **MAXDATA=1033**, increase the amount of memory used for buffers. Under Tuning and Global Options, Trace and Memory Options in Barr RJE, set **Memory allocated for buffers** to **150000**. See Appendix A for more information about performance tuning.
>
> **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

**MAXOUT=n**

You can send up to **n** frames via the SDLC protocol without pausing for a response. SDLC usually uses modulo 8 sequence numbers so **MAXOUT=7** is optimal.

Barr RJE also supports SDLC modulo 128 sequence numbers, which allows up to 127 SDLC frames to be sent before receiving a response. Modulo 8 allows up to 7 SDLC frames. Modulo 128 works in half or full duplex. **MAXOUT** greater than 7 selects the modulo 128 SDLC frame counts. The host definition must also include **MODULO=128** in the NCP LINE macro. **MAXOUT** values for the host and Barr RJE should match.

With modulo 128, set the **PACING** and **VPACING** parameters in the VTAM **PU** macro one greater than **MAXOUT** or the line will not operate optimally. For a further discussion of **MAXOUT**, see Satellite Links and MAXOUT at the end of section 2.4.

## RJE Host Parameters

After you complete the SDLC parameters and press Enter, the host definition parameter screens display. Your screens reflect the selections you made for **SDLC Switched (Dial) Line**.

The host definition screens provide the host programmer with sample statements to enter in the host NCP and VTAM parameter libraries. Print these screens for the host programmer using Shift Prt Sc.

If you have RJE+3270 software, see RJE+3270 Host Parameters later in this section.

> ***Note:*** You must specify certain host parameters to operate BARR/RJE. A remote definition used for other RJE equipment might not work for BARR/RJE. You can save time and effort getting your system running if you use the recommended host definition.

### NCP Definition for Switched Line

➤ From the SDLC Switched (Dial) Line screen, press Enter to display the following screen:

```
                      (These screens are for your host.)
                       NCP Definition for Switched Line

Reference: VTAM Installation and Resource Definition, SC23-0111
           NCP Resource Definition Guide, SC30-3447
           NCP Resource Definition Reference, SC30-3448
Source statements are in SYS1.VTAMLST(NCP).

group      GROUP DIAL=YES,LNCTL=SDLC
linename   LINE  ADDRESS=(aaa,FULL),DUPLEX=FULL,                      X
                 NRZI=YES,RETRIES=(8,2,20),SPEED=nnnnnn,TRANSFR=16
puname     PU    MAXLU=5
                                                                    Any key
```

This section describes the NCP parameters on this screen and other useful parameters. The parameters are divided into two groups: parameters that BARR/RJE requires and parameters that use system defaults.

## GROUP Macro

The GROUP macro instruction gives common parameter settings for all LINE macros in the group.

```
group   GROUP DIAL=YES,LNCTL=SDLC
```

### BARR/RJE requires these parameters :

**group**
Optional macro label.

**DIAL=**
Indicates this is a dial-up line.

**LNCTL=**
Indicates the line control is SDLC.

## LINE Macro

The LINE macro defines the line at the host and is necessary for SDLC connections.

```
linename   LINE  ADDRESS=(aaa,FULL),DUPLEX=FULL,                        X
                 NRZI=YES,RETRIES=(8,2,20),SPEED=nnnnnn,TRANSFR=16
```

**BARR/RJE requires these parameters:**

**linename**
The VTAM name of the communications line.

**ADDRESS=**
Line interface address.

**(aaa,FULL)**
Indicates the line interface address, **a a a**, when you specify **DATMODE=FULL**.

**aaa** Indicates the line interface address, **a a a**, when you specify **DATMODE=HALF**.

**DUPLEX=FULL**
The line and modem can send and receive data simultaneously.

**NRZI=YES|NO**
NRZI was a way to code binary data over an RS232 interface. Check if your host uses NRZI coding.

**YES** Use NRZI coding. Use this option if frequent SDLC aborts occur.

**NO** Do not use NRZI coding.

**RETRIES=(m,t,n)**
The number of attempts the system should make to recover from communications errors.

**m** Maximum retransmissions of a frame while waiting for a normal response. The recommended value is **8**.

**t** Time in seconds paused after **m** retransmissions have failed. The recommended value is **2**.

**n** Number of times the above error recovery sequence is repeated. The recommended value is **2 0**.

**SPEED=nnnnnn**

Required. Because the modem provides the bits-per-second clock, this parameter does not affect BARR/RJE functioning, but the IBM Network Performance Monitor uses this value to calculate statistics.

**TRANSFR=16**

The number of NCP buffers. This value corresponds to the maximum amount of data (the data transfer limit) that NCP will receive from the line during a single data transfer operation.

### BARR/RJE uses these system default values:

**CHECK=NODCD**

The Data Carrier Detect (DCD) line from the modem will not be monitored.

**CLOCKNG=EXT**

External clocking indicates that the modem's clock will control the transmission rate.

## PU Macro

The PU macro names and describes a PU. At logon, the PU macro in the NCP definition is replaced with the PU macro from VTAM.

```
puname     PU    MAXLU=n
```

### BARR/RJE requires these parameters:

**puname**

The PU's name conforms to the naming convention at your site. The VTAM operator uses the name to vary the unit active or inactive and to query the unit's status.

**MAXLU=n**

The maximum number of LUs used with this line. Use this formula to calculate the number of LUs needed:

```
number of LUs = total printers + total punches
+ total readers + 2
```

Specify the two extra LUs for sending commands from the keyboard and receiving console messages.

## Physical Unit Definition for SDLC Switched Line

➤ From the NCP Definition for Switched Line screen, press Enter to display the following screen:

```
                        (These screens are for your host.)
                             Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname   PU    ADDR=C1,DATMODE=FULL,                                    X
               IDBLK=03D,                                              X
               IDNUM=12345,                                            X
               MAXDATA=0521,MAXOUT=7,                                  X
               PACING=7,PASSLIM=7,VPACING=7
luname02 LU    LOCADDR=2,BATCH=YES  **  RJE  LU
luname03 LU    LOCADDR=3,BATCH=YES  **  RJE  LU
luname04 LU    LOCADDR=4,BATCH=YES  **  RJE  LU
luname05 LU    LOCADDR=5,BATCH=YES  **  RJE  LU
luname06 LU    LOCADDR=6,BATCH=YES  **  RJE  LU
                                                                  Any key
```

This section describes the VTAM parameters on this screen and other parameters you might find useful. The parameters are divided into three groups:

- Parameters that BARR/RJE requires
- Parameters that use system defaults
- Other useful parameters

### PU Macro

The PU macro names and describes a physical unit.

```
puname   PU     ADDR=C1,DATMODE=FULL,                                  X
                IDBLK=bbb,                                             X
                IDNUM=nnnnn,                                           X
                MAXDATA=nnnn,MAXOUT=7,                                 X
                PACING=7,PASSLIM=7,VPACING=7
```

**BARR/RJE requires these parameters:**

**puname**

The PU's name conforms to the naming convention at your site. The VTAM operator uses the name to vary the unit active or inactive and to query the unit's status.

**ADDR=C1**

The 8-bit address used by SDLC. This address, the first byte of every frame, separates messages sent to different PUs on the same line.

**DATMODE=FULL|HALF**

Specify whether the PU data mode is full duplex or half duplex.

**FULL** Default. The system sends and receives data simultaneously resulting in twice the throughput. The V.32 modem standard supports full duplex on dial-up lines. Some modems do not support full-duplex communications.

If you specify **DATMODE=FULL** in the Barr software, the host programmer must also specify it at the host. If the PC and host settings do not match, the software might have communication problems such as timeouts or lowered performance when it sends data to the host.

**HALF** In half duplex, the communications line is in either a send or receive mode so less than half the capacity of the line is available for use.

> ***Performance Tuning:*** Specify **DATMODE=FULL** in both the Barr software and the VTAM PU definition. You can achieve maximum BARR/RJE performance with full-duplex mode. Full duplex enables you to send and receive data simultaneously, often doubling throughput. You can even improve one-way throughput because you can receive acknowledgments while you send data. See Appendix A for more information about performance tuning.

**IDBLK=bbb**
**IDNUM=nnnnn**

Use these parameters on a dial-up line to identify the remote's PU definition. The host sends an **Xid** as the first message to a dial-up remote. The remote responds with an **Xidr** that contains the **IDBLK** and

**IDNUM** parameters. VTAM searches for the PU identified by **IDBLK** and **IDNUM**. It then uses this PU for the rest of the communications session.

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** typically apply to X.25.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data. Send 1024 bytes by setting **MAXDATA=1033** in the Barr software and the VTAM PU definition. This step reduces the amount of control information and total number of frames sent. When **MAXDATA=1033**, increase the amount of memory used for buffers. Under Tuning and Global Options, Trace and Memory Options in BARR/RJE, set **Memory allocated for buffers** to **150000**. See Appendix A for more information about performance tuning.
>
> **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

**MAXOUT=7**

Specifies that up to 7 frames of information will be sent before pausing for a response. The maximum **MAXOUT** value of **7** results in the highest throughput.

BARR/RJE also supports SDLC modulo 128 sequence numbers, which allows up to 127 SDLC frames to be sent before receiving a response. Modulo 8 allows up to 7 SDLC frames. Modulo 128 works in half or full duplex. **MAXOUT** greater than **7** selects the modulo 128 SDLC frame counts. The host definition must also include **MODULO=128** in the NCP LINE macro. **MAXOUT** values for the host and BARR/RJE should match. With modulo 128, set the **PACING** and **VPACING** parameters of the VTAM PU macro one greater than **MAXOUT** or the line will not operate optimally. See Satellite Links and MAXOUT at the end of section 2.4 for more information about **MAXOUT**.

**PACING=7**

Determines how much data gets sent to BARR/RJE before the system needs a pacing response to send more data. Pacing is a flow-control mechanism that prevents the host from sending data faster than BARR/RJE can print or otherwise handle it. Values smaller than **7** often lower performance. This parameter overrides the SRCVPAC value in the **LOGMODE**

**PASSLIM=7**

The maximum number of information frames sent to the PU at one time. This parameter is usually set to the same value as **MAXOUT**.

**VPACING=7**

Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM. Values less than **7** lower efficiency.

> ***Performance Tuning:*** Setting parameters to larger values can improve BARR/RJE performance. With **PACING=8** and **VPACING=8** in the VTAM PU definition, the host can send eight data frames before it requires a pacing response. On a half-duplex line, the host sends 7 frames at a time. When you specify **PACING=8**, the pacing response could be returned in time for 7 more frames of data to be sent. The PU definition should include **MAXOUT=7**. See Appendix A for more information about performance tuning.

### BARR/RJE uses these system default values:

**DISCNT=(NO)**

Do not disconnect the PU until BARR/RJE requests it.

**ISTATUS=ACTIVE**

The PU will be activated automatically.

**PUTYPE=2**

BARR/RJE uses the Physical Unit Type 2 protocol.

### Other useful parameters:

**DLOGMOD=nnnnnnnn**

Specify the logon mode table entry to use by default.

**MODETAB=nnnnnnnn**

Specify the mode table containing the logmode entries. ISTINCLM is the default IBM-supplied mode table usually present with VTAM.

**SSCPFM=USSSCS**

Indicates that BARR/RJE's **Logon Type** is character coded. The system default is **SSCPFM=FSS** for a formatted logon.

## LU Macro

The LU macro instructions define logical units allocated to the RJE devices.

```
luname_i LU    LOCADDR=i,BATCH=YES            **  RJE LU
```

You need to define one LU for each RJE session (printers, punches, and readers) plus two additional LUs (one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 2**

Each LU requires a separate **LU** macro instruction. The number of RJE sessions that can be active simultaneously equals the number of LUs you define.

### BARR/RJE requires these parameters:

**luname_i**

The LU name conforms to the naming convention at your site. BARR/RJE does not use this name.

**LOCADDR=i**

The local addresses must be unique. The maximum value for **i** is **20** when you use Barr software. (Whether you can use all 20 LUs depends on your RJE system. MVS/JES2 supports a maximum of 13 LUs with BARR/RJE and 17 LUs with RJE+3270. MVS/JES3 supports a maximum of 17 LUs with BARR/RJE and 20 LUs with RJE+3270.)

**BATCH=YES**

Indicates the processing priority. Batch applications such as RJE require low priority while interactive applications such as 3270 terminal sessions usually have higher priority.

For VTAM Version 4, Release 3 or later, replace this parameter with the Class of Service (**COS**) parameter in the **LOGMODE** for the host application.

## RJE+3270 Host Parameters

If you have RJE+3270 software, the host definition screens differ only slightly from the RJE screens. Parameters that differ for RJE+3270 are described below. The previous RJE Host Parameters section explains the remaining RJE parameters.

The host definition screens provide the host programmer with sample statements to enter in the host NCP and VTAM parameter libraries. Print these screens for the host programmer using Shift Prt Sc.

> ***Note:*** You must specify certain host parameters to operate RJE+3270. A remote definition used for other RJE equipment might not work for RJE+3270. You can save time and effort getting your system running if you use the recom mended host definition.

### NCP Definition for SDLC Switched Line

```
                    (These screens are for your host.)
                     NCP Definition for Switched Line

Reference: VTAM Installation and Resource Definition, SC23-0111
           NCP Resource Definition Guide, SC30-3447
           NCP Resource Definition Reference, SC30-3448
Source statements are in SYS1.VTAMLST(NCP).

group    GROUP DIAL=YES,LNCTL=SDLC
linename LINE  ADDRESS=(aaa,FULL),DUPLEX=FULL,                          X
               NRZI=YES,RETRIES=(8,2,20),SPEED=nnnnnn,TRANSFR=16
puname   PU    MAXLU=9



                                                                 Any key
```

The MAXLU parameter might have a larger value for RJE+3270.

### PU Macro

```
puname   PU    MAXLU=9
```

**MAXLU=n**

The maximum number of LUs to use with this line. This value should include the number of 3270 and RJE sessions. Use this formula to calculate the number of LUs needed:

**number of LUs = total printers + total punches + total readers + 3270 sessions + 2**

Specify the two extra LUs for sending commands from the keyboard and receiving console messages.

## Physical Unit Definition for SDLC Switched Line

```
                        (These screens are for your host.)
                             Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname  PU       ADDR=C1,DATMODE=FULL,                                  X
                 IDBLK=03D,                                             X
                 IDNUM=12345,                                           X
                 MAXDATA=0521,MAXOUT=7,                                 X
                 PACING=7,PASSLIM=7,VPACING=7                           X
luname02 LU      LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
luname03 LU      LOCADDR=3,DLOGMOD=D4C32782       **  3270 LU
luname04 LU      LOCADDR=4,DLOGMOD=D4C32782       **  3270 LU
luname05 LU      LOCADDR=5,DLOGMOD=D4C32782       **  3270 LU
luname06 LU      LOCADDR=6,BATCH=YES              **  RJE  LU
luname07 LU      LOCADDR=7,BATCH=YES              **  RJE  LU
luname08 LU      LOCADDR=8,BATCH=YES              **  RJE  LU
luname09 LU      LOCADDR=9,BATCH=YES              **  RJE  LU
luname10 LU      LOCADDR=10,BATCH=YES             **  RJE  LU

                                                                 Any key
```

You might need to define more LU macros for RJE+3270. The 3270 LU macros will include a **DLOGMOD** parameter.

## LU Macro

```
luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
```

You need to define one LU for each 3270 session and each RJE session (including an LU for receiving messages to the operator console and one for sending commands from the keyboard).

**DLOGMOD=nnnnnnnn**

For 3270 session LUs, specify the default logon mode table entry to use. Logmodes control the type of 3270 session (interactive or printer) and the screen size. Your RJE+3270 manual lists several IBM default logon mode tables.

## LU Numbering

The mainframe computer convention was to begin defining LUs with LOCADDR=2 because LOCADDR=1 was reserved for other functions. With Barr software, you can begin defining RJE LUs with LOCADDR=1. For 3270 LUs, the first LU you define must be at LOCADDR=2.

Barr RJE+3270 software users must first define the 3270 session LUs and then the RJE LUs. If you use the LU at LOCADDR=1 for RJE, define the 3270 LUs next and the remaining RJE LUs last. For example:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

# 2.4 SDLC Nonswitched (Dedicated) Line

Dedicated point-to-point lines operate at speeds from 4,800 to 2,048,000 bps. You can lease dedicated lines from a phone company or install them in a single building or business. You would use either a modem or DSU/CSU (see Figure 2-4), depending on whether the dedicated line is analog or digital.

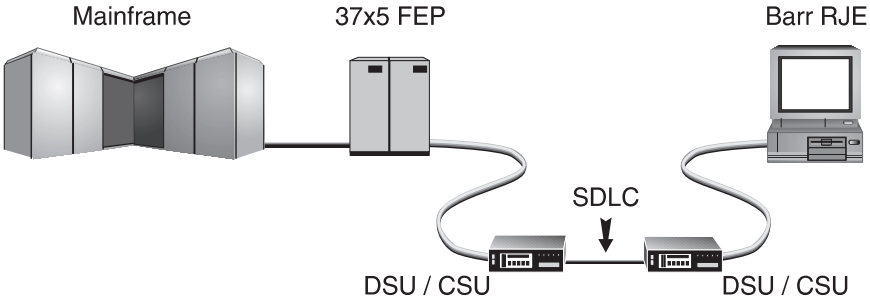


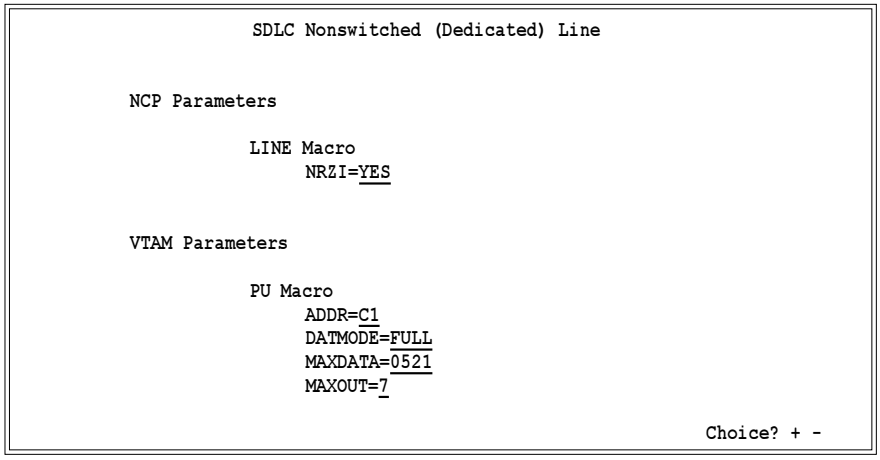

**Figure 2-4.** SDLC dedicated lines use modems or DSU/CSUs to answer remote phone calls.

The SDLC Nonswitched (Dedicated) Line screen lists parameters needed by the Barr RJE program and by VTAM and NCP on the mainframe. Get these parameter values from the host programmer. After the PC user enters the Communication Link parameters in the Barr software, Barr RJE produces samples of the statements the host programmer needs to enter in the VTAM and NCP parameter libraries. See Appendix A for more information about performance tuning.

## Barr RJE Software Parameters

➤ From the Communication Link menu, select **SDLC Nonswitched (Dedicated) Line**.

The following screen displays:




The SDLC Nonswitched (Dedicated) Line screen lists parameters needed by the Barr RJE program and by VTAM and NCP on the mainframe. Get these parameter values from the host programmer. After you enter the Communication Link parameters in the software, Barr RJE produces samples of the statements the host programmer needs to enter in the host VTAM and NCP parameter libraries.

This section describes the NCP and VTAM parameters to specify in the Barr software. The values for these parameters must match the values specified in the host definition.

## NCP Parameters

Specify the NCP parameters with the LINE macro.

### LINE Macro

**NRZI=YES|NO**

NRZI was a way to code binary data over an RS232 interface. Check if your host uses NRZI coding.

**YES** Default. Use NRZI coding. Use this option if frequent SDLC aborts occur.

**NO** Do not use NRZI coding.

## VTAM Parameters

The SNA RJE workstation corresponds to a VTAM PU with 2 to 20 LUs. Specify VTAM parameters with the PU and LU macros.

### PU Macro

**ADDR=aa**

The 8-bit address used by SDLC. This address, the first byte of every frame, separates messages sent to different PUs on the same line.

**DATMODE=FULL|HALF**

Specify whether the PU data mode is full or half duplex.

**FULL** Default. The system sends and receives data simultaneously resulting in twice the throughput. Some modems do not support full-duplex communication.

If you specify **DATMODE=FULL** in the Barr software, the host programmer must also specify it at the host. If the PC and host settings do not match, the software might have communication problems such as timeouts or lowered performance when it sends data to the host.

For the RS232, RS232M, V.35, and V.35M adapters, setting **DATMODE=FULL** requires two DMA channels. It also affects the choices for the **DMA request** setting in the Barr software (see the Interrupt Request chapter in your Barr RJE manual). For the T1-SYNC adapter, you only need one DMA channel.

**HALF** In half duplex, the communications line is in either a send or receive mode so less than half the capacity of the line is available for use.

> ***Performance Tuning:*** Specify **DATMODE=FULL** in both the Barr software and the VTAM PU definition. You can achieve maximum Barr RJE performance with full-duplex mode. Full duplex enables you to send and receive data simultaneously, often doubling throughput. You can even improve one-way throughput because you can receive acknowledgments while you send data. See Appendix A for more information about performance tuning.

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** typically apply to X.25.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data. Send 1024 bytes by setting **MAXDATA=1033** in the Barr software and the VTAM PU definition. This step reduces the amount of control information and total number of frames sent. When **MAXDATA=1033**, increase the amount of memory used for buffers. Under Tuning and Global Options, Trace and Memory Options in Barr RJE, set **Memory allocated for buffers** to **150000**. See Appendix A for more information about performance tuning.
>
> **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

**MAXOUT=n**

You can send up to **n** frames by using the SDLC protocol without pausing for a response. SDLC usually uses modulo 8 sequence numbers. **MAXOUT=7** is optimal.

Barr RJE also supports SDLC modulo 128 sequence numbers, which allows you to send up to 127 SDLC frames before you receive a response. Modulo 8 allows up to 7 SDLC frames. Modulo 128 works in half or full duplex. **MAXOUT** greater than **7** selects the modulo 128 SDLC frame counts. The host definition must also include **MODULO=128** in the NCP LINE macro. **MAXOUT** values for the host and Barr RJE should match.

With modulo 128, set the **PACING** and **VPACING** parameters of the NCP **PU** macro one greater than **MAXOUT** or the line will not operate optimally. For more information about **MAXOUT**, see Satellite Links and MAXOUT at the end of section 2.4.

## RJE Host Parameters

After you complete the SDLC parameters and press Enter, the host definition parameter screen displays. Your screen reflects the selections you made for **SDLC Nonswitched (Dedicated) Line**.

The host definition screen provides the host programmer with sample statements to enter in the host NCP parameter libraries. Print the screen via Shift Prt Sc for the host programmer.

If you have RJE+3270 software, see RJE+3270 Host Parameters later in this section.

> ***Note:*** You must specify certain host parameters to operate BARR/RJE. A remote definition used for other RJE equipment might not work for BARR/RJE. You can save time and effort getting your system running if you use the recommended host definition.

## NCP Definition for SDLC Nonswitched Line

➤ From the SDLC Nonswitched Dedicated Line screen, press Enter to display the following screen.

```
                        (These screens are for your host.)
                       NCP Definition for Nonswitched Line


Reference:  VTAM Installation and Resource Definition, SC23-0111
            NCP Resource Definition Guide, SC30-3447
            NCP Resource Definition Reference, SC30-3448
Source statements are in SYS1.VTAMLST(NCP).

group    GROUP DIAL=NO,LNCTL=SDLC
linename LINE  ADDRESS=(aaa,FULL),DUPLEX=FULL,                        X
               NRZI=YES,RETRIES=(8,2,20),SPEED=nnnnnn,TRANSFR=16
service  SERVICE ORDER=(puname)
puname   PU    ADDR=C1,DATMODE=FULL,                                  X
               MAXDATA=0521,MAXOUT=7,                                 X
               PACING=7,PASSLIM=7,VPACING=7
luname02 LU    LOCADDR=2,BATCH=YES               **  RJE  LU
luname03 LU    LOCADDR=3,BATCH=YES               **  RJE  LU
luname04 LU    LOCADDR=4,BATCH=YES               **  RJE  LU
luname05 LU    LOCADDR=5,BATCH=YES               **  RJE  LU
luname06 LU    LOCADDR=6,BATCH=YES               **  RJE  LU

                                                                  Any key
```

This section describes the NCP parameters on this screen and some additional parameters you might find useful. The parameters are divided into three groups:

- Parameters that BARR/RJE requires
- Parameters that use system defaults
- Other useful parameters

## GROUP Macro

The GROUP macro instruction gives common parameter settings for all LINE macros in the group.

```
group    GROUP DIAL=NO,LNCTL=SDLC
```

### BARR/RJE requires these parameters:

**group**
Optional macro label.

**DIAL=NO**
Indicates this is a dedicated line.

**LNCTL=SDLC**
Indicates the line control is SDLC.

## LINE Macro

The LINE macro defines the line at the host and is necessary for SDLC connections.

```
linename   LINE  ADDRESS=(aaa,FULL),DUPLEX=FULL,                          X
                 NRZI=YES,RETRIES=(8,2,20),SPEED=nnnnnn,TRANSFR=16
```

### BARR/RJE requires these parameters:

**linename**
The VTAM name of the communications line.

**ADDRESS=(aaa,FULL)**
Indicates the line interface address, **a a a**, when you specify **DATMODE=FULL** in the Barr software and the VTAM PU definition.

> ***Performance Tuning:*** When you set **ADDRESS** to **FULL** and there is only one address on the line (this is not a multidrop line), VTAM automatically keeps RTS high at all times. This setting also helps improve performance, especially on high-speed lines. See Appendix A for more information.

**DUPLEX=FULL**
The line and modem can send and receive data simultaneously.

**NRZI=YES|NO**
NRZI was a way to code binary data over an RS232 interface. Check if your host uses NRZI coding.

**YES** Use NRZI coding. Use this option if frequent SDLC aborts occur.

**NO** Do not use NRZI coding.

**RETRIES=(m,t,n)**
The number of attempts the system should make to recover from communications errors.

**m** Maximum retransmissions of a frame while waiting for a normal response. The recommended value is **8**.

**t** Time in seconds paused after **m** retransmissions have failed. The recommended value is **2**.

**n** Number of times the above error recovery sequence is repeated. The recommended value is **2 0**.

**SPEED=nnnnnn**
Required. Because the modem provides the bits-per-second clock, this parameter has no effect on BARR/RJE functioning. The IBM Network Performance Monitor uses this value to calculate statistics.

**TRANSFR=16**
The number of NCP buffers. This value corresponds to the maximum amount of data (the data transfer limit) that NCP will receive from the line during a single data transfer operation.

### BARR/RJE uses these system default values:

**CHECK=NODCD**
The DCD line from the modem will not be monitored.

**CLOCKNG=EXT**

External clocking indicates that the modem's clock controls the transmission rate.

## SERVICE Macro

The SERVICE macro controls the order in which the PUs get serviced on a dedicated line.

```
service   SERVICE ORDER=(puname)
```

**service**

The name of the SERVICE macro is arbitrary. You can have multiple **SERVICE** statements with the same name.

**ORDER=(puname)**

The operands in the **ORDER** list give the order in which the PUs will be polled on a multipoint line. You can preferentially service one of the PUs on a multipoint line by listing it more than once in the **ORDER** list.

## PU Macro

The PU macro names and describes a PU. You can operate several PUs on the same line (multipoint). Each unit requires a separate PU macro instruction.

```
puname   PU    ADDR=aa,DATMODE=FULL,                                X
               MAXDATA=nnnn,MAXOUT=n,                               X
               PACING=n,PASSLIM=n,VPACING=n
```

### BARR/RJE requires these parameters:

**puname**

The PU's name conforms to the naming convention at your site. The VTAM operator uses the name to vary the unit active or inactive and to query the unit's status.

**ADDR=aa**

The 8-bit address used by SDLC. This address, the first byte of every frame, separates messages sent to different PUs on the same line.

**DATMODE=FULL|HALF**

Specify whether the PU data mode is full or half duplex.

**FULL** Default. The system sends and receives data simultaneously resulting in twice the throughput. The V.32 modem standard supports full duplex on dial-up lines. Some modems do not support full-duplex communications.

If you specify **DATMODE=FULL** in the Barr software, the host programmer must also specify it at the host. If the PC and host settings do not match, the software might have communication problems such as timeouts or lowered performance when it sends data to the host.

**HALF** In half duplex, the communications line is either in a send or receive mode so less than half the capacity of the line is available for use.

> ***Performance Tuning:*** Specify **DATMODE=FULL** in both the Barr software and the VTAM PU definition. You can achieve maximum Barr RJE performance with full-duplex mode. Full duplex enables you to send and receive data simultaneously, often doubling throughput. You can even improve one-way throughput because you can receive acknowledgments while you send data. See Appendix A for more information about performance tuning.

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** typically apply to X.25.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data. Send 1024 bytes by setting **MAXDATA=1033** in the Barr software and the VTAM PU definition. This step reduces the amount of control information and total number of frames sent. When **MAXDATA=1033**, increase the amount of memory used for buffers. Under Tuning and Global Options, Trace and Memory Options in Barr RJE, set **Memory allocated for buffers** to **150000**. See Appendix A for more information about performance tuning.
>
> **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if

your PC has sufficient conventional memory for buffers after you load the Barr software.

**MAXOUT=n**

You can send up to **n** frames via the SDLC protocol without pausing for a response. SDLC usually uses modulo 8 sequence numbers. **MAXOUT=7** is optimal.

BARR/RJE also supports SDLC modulo 128 sequence numbers, which allows you to send up to 127 SDLC frames before you receive a response. Modulo 8 allows up to 7 SDLC frames. Modulo 128 works in half or full duplex. **MAXOUT** greater than **7** selects the modulo 128 SDLC frame counts. The host definition must also include **MODULO=128** in the NCP LINE macro. **MAXOUT** values for the host and BARR/RJE should match.

With modulo 128, set the **PACING** and **VPACING** parameters of the NCP **PU** macro one greater than **MAXOUT** or the line will not operate efficiently.

For a further discussion of **MAXOUT**, see Satellite Links and MAXOUT at the end of section 2.4.

**PACING=n**

Determines how much data to send to BARR/RJE before a pacing response is needed to send more data. Pacing is a flow-control mechanism that prevents the host from sending data faster than BARR/RJE can print or otherwise handle it. Values smaller than the **MAXOUT** parameter often lower performance.

**PASSLIM=n**

The maximum number of information frames sent to the PU at one time, which is usually set to the same value as **MAXOUT**.

**VPACING=n**

Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM. **VPACING** is usually set to the same value as **MAXOUT**.

***Performance Tuning:*** Setting parameters to larger values can improve BARR/RJE performance. With **PACING=8** and **VPACING=8** in the VTAM PU definition, the host can send 8 data frames before it requires a pacing response. On a half-duplex line, the host sends 7 frames at a time. When you use **PACING=8**, the pacing response could be returned in

time for you to send 7 more frames of data. The PU definition should include **MAXOUT=7**. See Appendix A for more information about performance tuning.

### BARR/RJE uses these system default values:

**DISCNT=(NO)**
Do not disconnect the PU until BARR/RJE requests it.

**ISTATUS=ACTIVE**
The PU will be activated automatically.

**PUTYPE=2**
BARR/RJE uses the PU Type 2 protocol.

### Other useful parameters:

**DLOGMOD=nnnnnnnn**
Specify the logon mode table entry to use by default.

**MODETAB=nnnnnnnn**
Specify the mode table containing the logmode entries. ISTINCLM is the default IBM-supplied mode table usually present with VTAM.

**SSCPFM=USSSCS**
Indicates that BARR/RJE's **Logon Type** is character coded. The system default is **SSCPFM=FSS** for a formatted logon.

## LU Macro

The LU macro instruction defines LUs allocated to the RJE devices.

```
luname i LU    LOCADDR=i,BATCH=YES            **  RJE LU
```

You need to define one LU for each RJE session (printers, punches, and readers) and two more LUs (one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 2**

Each LU requires a separate **LU** macro instruction. The number of RJE sessions that can simultaneously be active equals the number of LUs you define.

**BARR/RJE requires these parameters:**

**luname_i**
The luname conforms to the naming convention at your site. BARR/RJE does not use this name.

**LOCADDR=i**
The local addresses must be unique. The maximum value for **i** is **20** when you use Barr software. (Whether you can use all 20 LUs depends on your RJE system. MVS/JES2 supports a maximum of 13 LUs with BARR/RJE and 17 LUs with RJE+3270. MVS/JES3 supports a maximum of 17 LUs with BARR/RJE and 20 LUs with RJE+3270.)

**BATCH=YES**
Indicates the processing priority. Batch applications such as RJE require low priority while interactive applications such as 3270 usually have higher priority.

For VTAM Version 4, Release 3 or later, this parameter is replaced by the Class of Service (**COS**) parameter in the **LOGMODE** for the host application.

## RJE+3270 Host Parameters

If you have RJE+3270 software, the host definition screen differs only slightly from the RJE screen. This section describes parameters that are different for RJE+3270. The previous RJE Host Parameters section explains the remaining RJE parameters.

The host definition screen provides the host programmer with sample statements to enter in the host NCP parameter libraries. Print the screen via Shift Prt Sc for the host programmer.

> ***Note:*** You must specify certain host parameters to operate RJE+3270. A remote definition used for other RJE equipment might not work for RJE+3270. You can save time and effort getting your system running if you use the recommended host definition.

## NCP Definition for SDLC Nonswitched Line

➤ From the SDLC Nonswitched Dedicated Lines screen, press Enter to display the following screen.

```
                    (These screens are for your host.)
                   NCP Definition for Nonswitched Line

Reference: VTAM Installation and Resource Definition, SC23-0111
        NCP Resource Definition Guide, SC30-3447
        NCP Resource Definition Reference, SC30-3448
Source statements are in SYS1.VTAMLST(NCP).

group   GROUPDIAL=NO,LNCTL=SDLC
linename LINE ADDRESS=(aaa,FULL),DUPLEX=FULL,                        X
            NRZI=YES,RETRIES=(8,2,20),SPEED=nnnnnn,TRANSFR=16
service SERVICE ORDER=(puname)
puname PU    ADDR=C1,DATMODE=FULL,                                   X
             MAXDATA=0521,MAXOUT=7,                                  X
             PACING=7,PASSLIM=7,VPACING=7
luname02 LU  LOCADDR=2,DLOGMOD=D4C32782          **   3270 LU
luname03 LU  LOCADDR=3,DLOGMOD=D4C32782          **   3270 LU
luname04 LU  LOCADDR=4,DLOGMOD=D4C32782          **   3270 LU
luname05 LU  LOCADDR=5,DLOGMOD=D4C32782          **   3270 LU
luname06 LU  LOCADDR=6,BATCH=YES                 **   RJE  LU
luname07 LU  LOCADDR=7,BATCH=YES                 **   RJE  LU
luname08 LU  LOCADDR=8,BATCH=YES                 **   RJE  LU
luname09 LU  LOCADDR=9,BATCH=YES                 **   RJE  LU
luname10 LU  LOCADDR=10,BATCH=YES                **   RJE  LU

                                                                Any key
```

You might need to define more LU macros for RJE+3270. The 3270 LU macro includes a **DLOGMOD** parameter.

### LU Macro

The LU macro instruction defines LUs allocated to the RJE devices.

```
luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
```

You need to define one LU for each 3270 session and each RJE session and two more LUs (one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 3270 sessions + 2**

**DLOGMOD=nnnnnnnn**

For 3270 session LUs, specify the default logon mode table entry to use. Logmodes control the type of 3270 session (interactive or printer) and the screen size. Your Barr RJE+3270 manual lists several IBM default logon mode tables.

### LU Numbering

The mainframe convention was to begin defining LUs with LOCADDR=2 because LOCADDR=1 was reserved for other functions. With Barr software, you can begin defining RJE LUs with LOCADDR=1. For 3270 LUs, the first LU you define must be at LOCADDR=2.

Barr RJE+3270 software users must first define the 3270 session LUs and then define the RJE LUs. If you use the LU at LOCADDR=1 for RJE, define the 3270 LUs next and the remaining RJE LUs last. For example:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

## Satellite Links and MAXOUT

You would normally only use modulo 128 for satellite links. Satellite links (see Figure 2-5) introduce an average one-way delay of 0.4 seconds or a round-trip delay of 0.8 seconds (IBM *Tuning and Problem Analysis for NCP SDLC Devices*, GG24-1629-1, pp. 43-44). These numbers include 0.1 seconds of total delay in various ground equipment.

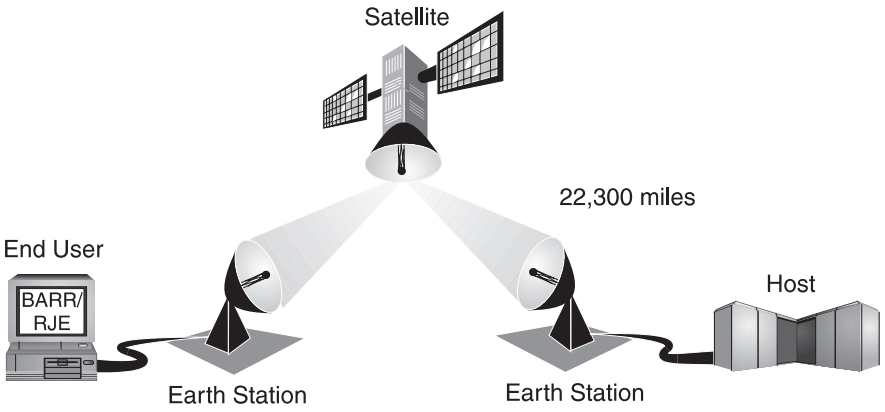



**Figure 2-5.** Delays occur with satellite links.

## Delays with Half Duplex

When a station finishes sending and enters receive mode on a half-duplex link, the response from the other station will not begin for at least 0.8 seconds. This wasted time is called line-turnaround delay.

Consider a 56 kilobit, modulo 8 link that uses 521-byte SNA frames. You can only send 7 frames at one time and it takes about 0.5 seconds for them to be transmitted. Then there is a 0.8-second turnaround delay. The line is therefore idle 60 percent of the time. Using modulo 128 and increasing **MAXOUT** to 20 reduces the proportion of idle time to about 35 percent. Because line turnaround delays are so large, satellite links should be full duplex whenever possible.

## Delays with Full Duplex

Although a full-duplex link has no line turnaround, using the link at full efficiency requires that the host must acknowledge frame number **n** before it sends frame number **n + MAXOUT**. For a 56 kilobit, modulo 8 link using 521-byte SNA frames in full duplex, the 7 frames will be sent in 0.5 seconds. It takes 0.8 seconds for the response to the first one to return, so sometimes the sender must wait. Using modulo 128 and increasing **MAXOUT** to 14 allows responses to be received with 0.2 seconds to spare. Both features become even more important as data rates increase.

## Choosing MAXOUT for Half Duplex

A larger **MAXOUT** for a half-duplex satellite link reduces the proportion of time lost to turnaround delay, but it can never eliminate the delay entirely.

A large **MAXOUT** increases the number of frames that the host must resend to recover from an error. The average number of frames the host resends per error is half the value of **MAXOUT**. The overhead for line turnaround must be balanced against the overhead for error recovery. Finally, a large **MAXOUT** increases the memory requirements for Barr RJE and the host communications controller.

> ***Note:*** If you are attached to a satellite link with a Hughes Personal Earth Station, you cannot use modulo 128 or full-duplex SDLC because of the Earth Station design. Set **MAXOUT** and **PASSLIM** to **7**. Set **PACING** and **VPACING** as if this were a modulo 128 full-duplex link. See Choosing MAXOUT for Full Duplex below.

## Choosing MAXOUT for Full Duplex

The value for **MAXOUT** is a tradeoff between link efficiency, error recovery overhead, and memory requirements. For a full-duplex satellite link, set **MAXOUT** slightly larger than the smallest value that allows frames to be acknowledged before **MAXOUT** is reached. While not exact, this formula is a guide:

```
MAXOUT = ((0.8sec*bps/8) /(MAXDATA+6)) + 5
```

where

| | |
|---|---|
| **0.8 sec** | round-trip satellite delay |
| **bps** | speed of the line in bits per second |
| **8** | number of bits in a byte |
| **MAXDATA** | average size of link frames (often given by MAXDATA on the **PU** macro) |
| **6** | size of the SDLC header and trailer |
| **5** | safety factor |

If **MAXOUT** is too small, the sender must wait for acknowledgments and thus reduce the efficiency of the line. If **MAXOUT** is too large, error recovery is

unaffected but the memory required by Barr RJE and the host communications controller increases. Set **PACING** and **VPACING** to the same value as **MAXOUT**.

### Problem Determination

You can tell whether you are operating in modulo 8 or 128 mode by watching the Barr Communication Scope. At the beginning of logon, the host sends **Snrm** for a modulo 8 link and **Snre** for a modulo 128 link. If you do not change the host definition to specify modulo 128, **Snrm** is displayed and only 7 frames at a time can be sent in either direction.

If the host definition is correct, but you do not increase **MAXOUT** in the software, **Snre** is displayed, data will flow correctly from the host to Barr RJE, but Barr RJE will only send 7 frames at a time to the host.

A large **MAXOUT** increases the amount of memory Barr RJE uses for buffers. Symptoms of low memory include a magenta (normal) **Q** or green (reverse video) **Rnr** on the Communication Scope or this message on the Barr RJE console:

```
More memory needed for buffers
```

You can also monitor the number of free buffers interactively from the Communications Statistics screen. Always keep at least 25 buffers free. Increase Barr RJE buffer memory from the Tuning and Global Options, Trace and Memory Options screen. A good start is an increase of **MAXOUT * 1024**.

## 2.5 X.25 Switched Virtual Circuit

An X.25 virtual circuit is a logical connection between two Data Terminal Equipment (DTE) devices attached through an X.25 PSDN.

You establish an X.25 SVC with the X.25 Call procedure. After you make a physical connection and the Data Link and Packet layers are initialized, a DTE can place one or more calls to remote DTEs. The Barr DTE configured for switched virtual circuit access will automatically place a call to the remote host DTE after the network link is established.

An X.25 SVC can be either a communications link to the host or to a BARR GATEWAY. If it is used as a gateway-to-workstation communications link,

the user name from the Call Setup Parameters will be the workstation user name.

See X.25 in section 2.1 for an overview of X.25.

## Barr RJE Software Parameters

➤ From the Communication Link menu, select **X.25 Switched Virtual Circuit**.

The following screen displays:

```
                        X.25 Switched Virtual Circuit


      X.25 NPSI Parameters

               X25VCCPT Macro
                        MAXPKTL=0128
                        VWINDOW=2

               Additional X.25 NPSI parameters? No

                                                              Choice? + -
```

This section describes the parameters to specify in the Barr software.

### X.25 NPSI Parameters

The following parameters are defined for the NPSI.

#### X25VCCPT Macro

The X25VCCPT macro instruction describes the connection parameters for one or more virtual circuits.

**MAXPKTL=128|256|512|1024**

This parameter specifies (in bytes) the default maximum length of the user data field. You should find out this value when you subscribe to the network. This value must match the network subscription so the Barr software can communicate with the X.25 network via the DCE device. If these values do not match, the Barr Call could be rejected and cause timeouts on the SNA session. The default is usually 128, but you can increase this value when you subscribe to the network.

The user data field does not include X.25 frame or packet header information. All SNA transmission header (TH), request/response header (RH), and request/response unit (RU) information is sent in the user data field. If this field is not large enough to send a complete SNA segment, the segment is broken up and sent in multiple X.25 packets with the M-bit procedure. See X.25 Performance Tuning at the end of this section for more information.

**VWINDOW=2|3|4|5|6|7|1**

This parameter specifies the default packet window size. The packet window size is the maximum number of unacknowledged data packets for a given direction of transmission. You should find out this value when you subscribe to the network. This value must match the network subscription so the Barr software can communicate with the X.25 network via the DCE device. If these values do not match, the Barr Call could be rejected and cause timeouts on the SNA session. The default is usually 2, but you can increase this value when you subscribe to the network. See X.25 Performance Tuning
at the end of this section for more information.

**Additional X.25 NPSI parameters? No|Yes**

Choose whether to modify additional X.25 NPSI parameters.

**No** Default. Use the default values for the additional parameters. The Additional X.25 NPSI Parameters screen will not display.

**Yes** View or modify the additional parameters. The Additional X.25 NPSI Parameters screen displays. These parameters normally do not need to be modified. Change them only if your network consultant tells you to do so. Setting flow control negotiation can help when you try to negotiate with the X.25 network. You must also set **Any other facilities needed** (see Call Setup Parameters later in this section) and **Flow control negotiation subscribed** (see Optional User Facilities later in this section) to **Yes** to turn on flow control.

## Additional X.25 NPSI Parameters

The following screen displays only if you set **Additional X.25 NPSI parameters** to **Yes** on the X.25 Switched Virtual Circuit screen.

```
                        X.25 Switched Virtual Circuit

      Additional X.25 NPSI Parameters

              X25MCH Macro
                   FRMLGTH=1027
                   MWINDOW=7
                   TPTIMER= 3
                   NPRETRY=10
                   STATION=DTE
                   LCGDEF= 0
                                                          Choice? + -
```

## X25MCH Macro

The X25MCH macro instruction describes a physical circuit.

**FRMLGTH=1027|131|259|515**

This parameter specifies (in bytes) the largest supported frame size on the X.25 link. Leave this value at **1027**. NPSI states that this parameter corresponds to the X.25 N1 parameter and is equal to the packet user data length plus the three-byte packet header. In fact, the X.25 N1 field (which is specified in bits) includes four additional bytes: the two-byte frame header and two-byte frame check sequence. **FRMLGTH** should always be greater than the packet size (**MAXPKTL**). The three-byte difference between **FRMLGTH** and **MAXDATA** allows for X.25 packet information. **MAXDATA** matches the host.

**MWINDOW=7|1|2|3|4|5|6**

This parameter specifies the frame level window size. You should find out this value when you subscribe to the network. In practice, this value is usually **7**. Do not change this value unless specifically told to do so.

**TPTIMER=nn**

This parameter specifies the value of the X.25 T1 timer in seconds. This is the amount of time the program waits for an acknowledgment to an information frame or polled command. If this time limit is exceeded, it usually indicates a low-level communications error or *line hit*. The program tries to recover errors by retransmitting the unacknowledged frame or interrogating the link partner's state. The default value is **3**.

**NPRETRY=nn**

This parameter specifies the value of the X.25 N2 retry counter. It is the number of retransmissions the host will attempt because the **TPTIMER** (T1 timer) expired. After **nn** retransmissions, the host assumes the link is down. The default value is **10**.

**STATION=DTE|DCE**

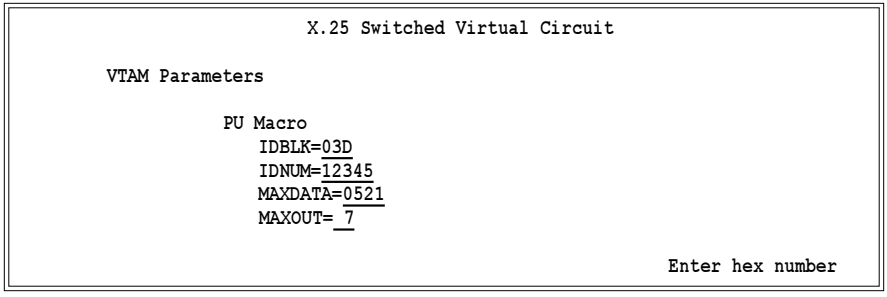
This parameter identifies the X.25 link role to be played by the Barr X.25/QLLC interface. Normally this would be left at the default value of **DTE**. If a PC needs to be configured to communicate directly with an X.25 DTE, this field should be coded as **DCE** (Data Circuit-Terminating Equipment).

**LCGDEF=n**

This parameter identifies the X.25 Logical Channel Group to use to make the connection. Possible values are **0** to **15**. This value must match the configuration of the network to which the Barr PC will connect. The default value is **0**.

## VTAM Parameters

The SNA RJE workstation corresponds to a VTAM PU with 2 to 20 LUs. Specify VTAM parameters with the PU and LU macros. You only specify the **PU** macro parameters in the software.




### PU Macro

The PU macro names and describes a PU.

**IDBLK=bbb IDNUM=nnnnnn**

Parameters used on a switched virtual circuit to identify the remote's PU definition. The host sends an Exchange ID request (**Xid**) as the first message to a switched remote. The remote responds with an Exchange ID response (**Xidr**) that contains the **IDBLK** and **IDNUM** parameters. VTAM searches for the PU identified by **IDBLK** and **IDNUM**. The host then uses this PU for the rest of the communications session.

**MAXDATA=265|521|1033|2057|121|249|489|969**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes for header information plus the data length. The default value is **521**. X.25 Performance Tuning at the end of the section discusses how to tune this parameter for maximum performance.

**MAXOUT=7**

The host sends up to seven frames of information before it pauses for a response. The maximum **MAXOUT** value of **7** results in the highest throughput.

## Call Setup Parameters

```
                    X.25 Switched Virtual Circuit

        Call setup parameters

           Host address:          _______________
           Local address:         _______________

           User name:             _______________

           Use reverse charging?        No

           Any other facilities needed? No

                                                  Enter character
```

**Host address: nnnnnnnnnnnnn**

This is the X.121 address of the remote host DTE. This address is required to set up a connection (virtual circuit) to the remote host.

**Local address: nnnnnnnnnnnnnn**

This is the X.121 address of the Barr X.25/QLLC DTE. Usually this field is optional and does not need to be entered.

**User name:**

This field is for an X.25 workstation connection to the BARR GATEWAY. If you specify a user name, it is included in the X.25 Call User Data. The BARR GATEWAY uses it to look for a matching name in the list of user definitions. This user name also is displayed on the gateway Link Status screen.

**Use reverse charging? No|Yes**

Reverse charging is an X.25 facility used to request that the remote DTE accept the network charges for this call. This refers to X.25 usage charges, not telephone charges.

**No** Default. Do not request reverse charging.

**Yes** Request that the remote DTE (host) pay the network charges.

**Any other facilities needed? No|Yes**

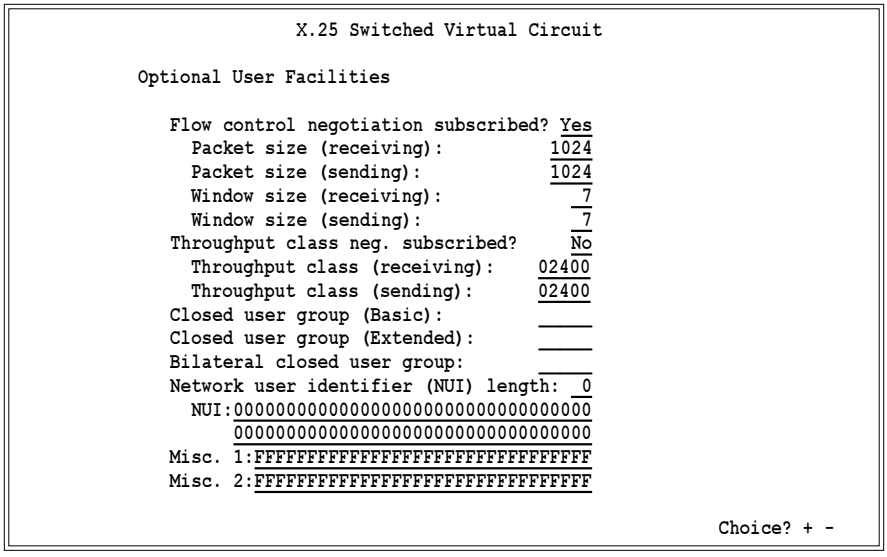
Choose whether to use optional facilities.

**No** Default. Use the default values for the Optional User Facilities. The Optional User Facilities screen will not display.

**Yes** View or modify the optional facilities. The Optional User Facilities screen displays. Set this to **Yes** to turn on flow control. You must also set **Additional X.25 NPSI parameters** (see X.25 NPSI Parameters earlier in this section) and **Flow control negotiation subscribed** (see Optional User Facilities below) to **Yes** to turn on flow control.

## Optional User Facilities

Optional user facilities are parameters you can place in the X.25 call setup packet to modify the virtual circuit's default behavior. This screen displays only if you set **Any other facilities needed** to **Yes**.




**Flow control negotiation subscribed? Yes|No**

Use this facility to request packet and window sizes different from the default sizes (see the X25VCCPT Macro section above). The packet and window sizes actually used in the connection will be *between* (including) the values you request here and the defaults you specify in the **X25VCCPT** macro. Setting this to **Yes** can help you when you try to negotiate with the X.25 network. You must also set **Additional X.25 NPSI parameters** (see X.25 NPSI Parameters earlier in this section) and **Any other facilities needed** (see Call Setup Parameters earlier in this section) to **Yes** to turn on flow control.

**Packet size (receiving): 1024|128|256|512**

This parameter specifies the requested largest user-data field in packets Barr receives.

**Packet size (sending): 1024|128|256|512**

This parameter specifies the requested largest user-data field in packets Barr sends.

**Window size (receiving): 7|1|2|3|4|5|6**

This parameter specifies the requested packet window size for data packets Barr receives.

**Window size (sending): 7|1|2|3|4|5|6**

This parameter specifies the requested packet window size for data packets Barr sends.

**Throughput class negotiation subscribed? No|Yes**

Use this facility to request a change in the virtual circuit's default throughput class. The throughput class value is related to charging. Your network provider can give you more information about this facility.

**Throughput class(receiving): 2400|4800|9600|19200|48000|64000|75|150|300|600|1200**

This parameter specifies the requested throughput class from the remote DTE to the Barr X.25/QLLC DTE.

**Throughput class(sending): 2400|4800|9600|19200|48000|64000|75|150|300|600|1200**

This parameter specifies the requested throughput class from the Barr X.25/QLLC DTE to the remote DTE.

**Closed user group (Basic): nn**

If you subscribe to the basic closed user-group facility, you can put the group index here.

**Closed user group (Extended): nnnn**

If you subscribe to the extended closed user-group facility, you can put the group index here.

**Bilateral closed user group: nnnn**

If you subscribe to the bilateral closed user-group facility, you can put the group index here.

**Network user identification (NUI) length: nn**

The default value is **0**. If non-zero, this field specifies the length in bytes of the NUI facility below. Use this facility to provide the network with user identification for billing, security, and network management and to invoke subscribed facilities. Your network provider can give you more information.

**NUI: bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb**

This parameter specifies the NUI to use when you place the virtual call. This is a hexadecimal field and only as many bytes as you specify in the NUI length parameter are actually used. The default value is **0**.

**Misc.1:** bbbbbbbbbbbbbbbbbbbbbbbbbbbbbb

You can use this field to specify additional facilities. When you include this field in the call setup packet, only that portion up to, but not including, the first **F F** byte is copied. When you code this field, be careful to correctly code the X.25 facility bytes. The default value is all **F**s, which means the field will not be used.

**Misc2:** bbbbbbbbbbbbbbbbbbbbbbbbbbbbbb

See **Misc.1**.

## RJE Host Parameters

After you complete the X.25 parameters and press Enter, the host definition parameters screens display. (The host definition does not apply to the X.25 gateway-to-workstation link.) Your screens reflect the selections you made for **X.25 Switched Virtual Circuit**.

The host definition screens provide the host programmer with sample statements to enter in the host parameter libraries. Print these screens for the host programmer using Shift Prt Sc.

If you have RJE+3270 software, see RJE+3270 Host Parameters later in this section.

The NCP X25VCCPT, X25MCH, and X25VC macros pertain to the connection between the host and the X.25 network. The host programmer should check with the host network provider to determine these values because they depend on the settings used by your network.

> ***Note:*** The Barr software requires the statements in the VTAM PU macro and LU macros. Some parameter values depend on your host. An existing remote definition used for other RJE equipment might not work for BARR/RJE. You can save time and effort getting your system running if you use the recommended remote definition.

### NCP Definition for X.25 Switched Virtual Circuit

➤ From the X.25 Switched Virtual Circuit screens, press Enter to display the following screen:

```
                    (These screens are for your host.)
               X.25 NCP Definition for Switched Virtual Circuit

Reference: X.25 NCP Packet Switching Interface for the IBM 3725 and 3720,
             Installation and Operation, SC30-3201

       X25VCCPT INDEX=index,MAXPKTL=0128,VWINDOW=2
mchname X25MCH ADDRESS=aaa,FRMLGTH=1027,LCGDEF=0(nn),MWINDOW=7,       X
               LLCLIST=(...,LLC3,...),NPRETRY=10,PKTMODL=8,          X
               LCN0=NOTUSED,SPNQLLC=NO,STATION=DTE,TPTIMER=3
vcname  X25VC  LCN=(nlow,nhigh),TYPE=SWITCHED,OUFINDX=index,         X
               VCCINDX=index,MAXLU=5
                                                                     Any key
```

The X.25 parameters displayed on this screen pertain to the host's connection to the X.25 network.

## X25VCCPT Macro

The X25VCCPT macro instruction describes the connection parameters for one or more virtual circuits.

```
X25VCCPT INDEX=index,MAXPKTL=0128,VWINDOW=2
```

**INDEX=nn**

Indicates which entry (**n n**) in the Virtual Circuit Connection parameter table the X25VCCPT macro will initialize.

**MAXPKTL=128|256|512|1024**

This parameter specifies (in bytes) the default maximum length of the user data field. This is a network parameter you should be told when you subscribe to the network. The user data field does not include X.25 frame or packet header information. All SNA transmission header (TH), request/response header (RH), and request/response unit (RU) information is sent in the user data field. If this field is not large enough to send a complete SNA segment, the segment is broken up and sent in multiple X.25 packets with the M-bit procedure. See X.25 Performance Tuning at the end of this section.

**VWINDOW=2|3|4|5|6|7|1**

This parameter specifies the default packet window size. This is a network parameter you should be told when you subscribe to the network. The packet window size is the maximum number of unac-

knowledged data packets for a given direction of transmission. See X.25 Performance Tuning at the end of this section.

## X25MCH Macro

The X25MCH macro instruction describes a physical circuit.

```
mchname X25MCH ADDRESS=aaa,FRMLGTH=1027,LCGDEF=0(nn),MWINDOW=7,      X
               LLCLIST=(...,LLC3,...),NPRETRY=10,PKTMODL=8,          X
               LCN0=NOTUSED,SPNQLLC=NO,STATION=DTE,TPTIMER=3
```

**mchname**
Optional macro label.

**ADDRESS=aaa**
Specifies the line interface address for full duplex.

**FRMLGTH=1027|131|259|515**
This parameter specifies (in bytes) the largest supported frame size on the X.25 link. NPSI states that this parameter corresponds to the X.25 N1 parameter and is equal to the packet user data length plus the three-byte packet header. In fact, the X.25 N1 field (specified in bits) includes four additional bytes: the two-byte frame header and two-byte frame check sequence.

**LCGDEF=0(nn)**
Defines the Logical Channel Group.

**0** This parameter identifies the X.25 Logical Channel Group used to make the connection. Possible values are **0** to **15**. This value must match the configuration of the network to which the host will connect. The default value is **0**.

**nn** Specifies the highest Logical Channel number for the group.

**MWINDOW=7|1|2|3|4|5|6**
This parameter specifies the frame-level window size. This is a network parameter you should be told when you subscribe to the network. In practice this value is usually **7**. Do not change this value unless specifically told to do so.

**LLCLIST=(...,LLC3,...)**

The type of virtual circuit. Use **LLC3** is for SNA/QLLC. You can list more than one type.

**NPRETRY=nn**

This parameter specifies the value of the X.25 N2 retry counter. It is the number of retransmissions the host attempts when the **TPTIMER** (T1 timer) expires. After **nn** retransmissions, the host assumes the link is down. The default value is **10**.

**PKTMODL=8**

The modulo value (modulo 8) for the packet protocol.

**LCN0=NOTUSED**

Indicates that a Logical Channel Number (LCN) of 0 will not be used for the virtual circuit. Packets with an LCN of 0 will be sent to the physical circuit.

**SPNQLLC=NO**

Ensures that standard QLLC addressing will be used.

**STATION=DTE|DCE**

This parameter identifies the X.25 link role to be played by the host X.25/QLLC interface.

**TPTIMER=nn**

This parameter specifies the value of the X.25 T1 timer in seconds. This is the amount of time the program will wait for an acknowledgment to an information frame or polled command. If this time limit is exceeded, it usually indicates a low-level communications error or *line hit*. The program tries to recover errors by retransmitting the unacknowledged frame or interrogating the link partner's state. The default value is **3**.

## X25VC Macro

The X25VC macro instruction describes the range and type of virtual circuits associated with the physical circuit.

```
vcname   X25VC LCN=(nlow,nhigh),TYPE=SWITCHED,OUFINDX=index,              X
               VCCINDX=index,MAXLU=5
```

**vcname**
Optional macro name.

**LCN=(nlow,nhigh)**
The sequential logical channel numbers for the virtual circuits. You can choose from the range of **0** to **255**, where **nlow** is the first LCN and **nhigh** is the last one.

**TYPE=SWITCHED**
Designates the virtual circuit type as switched.

**OUFINDX=nn**
This parameter is required, but is used only for host-initiated calls. It specifies which entry in the Optional User Facility table will be used to assemble a Call Request Packet.

**VCCINDX=nn**
For the virtual circuits in the specified range, this parameter specifies the entry (**0** to **19**) in the Virtual Circuit Connection parameter table that describes the default packet length and window size.

**MAXLU=nn**
The maximum number of LUs to use with this line. Use this formula to calculate the number of LUs needed:

**number of LUs = total printers + total punches + total readers + 2**

The two extra LUs are for sending commands from the keyboard and receiving messages to the console.

## Physical Unit Definition for X.25 Switched Virtual Circuit

➤ From the X.25 NCP Definition for Switched Virtual Circuit screen, press Enter to display the following screen.

```
                      (These screens are for your host.)
                         Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111
           X.25 NCP Packet Switching Interface for the IBM 3725 and 3720,
                Installation and Operation, SC30-3201

puname   PU   ADDR=01,                                                  X
              IDBLK=03D,                                               X
              IDNUM=12345,                                             X
              MAXDATA=0521,MAXOUT=7,                                   X
              PACING=7,PASSLIM=7,VPACING=7
luname02 LU   LOCADDR=2,BATCH=YES              **  RJE  LU
luname03 LU   LOCADDR=3,BATCH=YES              **  RJE  LU
luname04 LU   LOCADDR=4,BATCH=YES              **  RJE  LU
luname05 LU   LOCADDR=5,BATCH=YES              **  RJE  LU
luname06 LU   LOCADDR=6,BATCH=YES              **  RJE  LU

                                                                 Any key
```

This section describes the VTAM parameters on this screen and some additional parameters you might find useful. The parameters are divided into three groups:

- Parameters that BARR/RJE requires
- Parameters that use system defaults
- Other useful parameters

## PU Macro

The PU macro names and describes a physical unit.

```
puname   PU  ADDR=01,                                          X
             IDBLK=bbb,                                       X
             IDNUM=nnnnn,                                     X
             MAXDATA=nnnn,MAXOUT=7,                           X
             PACING=7,PASSLIM=7,VPACING=7
```

**BARR/RJE requires these parameters:**

**puname**
The PU's name conforms to the naming convention at your site. The VTAM operator uses the name to vary the unit active or inactive and to query the unit's status.

**ADDR=01**
This parameter is required, although it is not used for X.25 SVC.

**IDBLK=bbb**
**IDNUM=nnnnn**
These parameters are used on a switched virtual circuit to identify the remote's PU definition. The host sends an Exchange ID request (**Xid**) as the first message to a switched remote. The remote responds with an Exchange ID response (**Xidr**) that contains the **IDBLK** and **IDNUM** parameters. VTAM searches for the PU identified by **IDBLK** and **IDNUM**. It then uses this PU for the rest of the communications session.

**MAXDATA=265|521|1033|2057|121|249|489|969**
The maximum amount of data you can send on the PU in one frame. This count includes nine bytes for header information plus the data length.

**MAXOUT=7**
Specifies that the host will send up to seven frames of information before it pauses for a response. The maximum **MAXOUT** value of **7** results in the highest throughput.

**PACING=7**
Determines how much data to send to BARR/RJE before it needs a pacing response to send more data. Pacing is a flow-control mechanism that prevents the host from sending data faster than BARR/RJE can print or otherwise handle it. Values smaller than **7** often lower performance. This parameter overrides the **SRCVPAC** value of the **LOGMODE**.

**PASSLIM=7**
The maximum number of information frames sent to the PU at one time. This is usually set to the same value as **MAXOUT**.

**VPACING=7**

Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM. Values less than 7 lower efficiency.

> ***Performance Tuning:*** Setting parameters to larger values can improve BARR/RJE performance. With **PACING=8** and **VPACING=8** in the VTAM PU definition, 8 data frames can be sent by the host before it requires a pacing response. On a half-duplex line, the host sends 7 frames at a time. When you use **PACING=8**, the pacing response could be returned in time for 7 more frames of data to be sent. The PU definition should include **MAXOUT=7**. See Appendix A for more information about performance tuning.

### BARR/RJE uses these system default values:

**DISCNT=(NO)**

Do not disconnect the PU until BARR/RJE requests it.

**ISTATUS=ACTIVE**

The PU will be activated automatically.

**PUTYPE=2**

BARR/RJE uses the PU Type 2 protocol.

### Other useful parameters:

**DLOGMOD=nnnnnnnn**

Specify the logon mode table entry to use by default.

**MODETAB=nnnnnnnn**

Specify the mode table containing the logmode entries. ISTINCLM is the default IBM-supplied mode table usually present with VTAM.

**SSCPFM=USSSCS**

Indicates that BARR/RJE's **Logon Type** is character coded. The system default is **SSCPFM=FSS** for a formatted logon.

## LU Macro

The LU macro instructions define logical units allocated to the RJE devices.

```
luname_i LU    LOCADDR=i, BATCH=YES            **  RJE LU
```

You need to define one LU for each RJE session (printers, punches, and readers) plus two additional LUs (one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 2**

Each LU requires a separate LU macro instruction. The number of RJE sessions that can be active simultaneously equals the number of LUs you define.

### BARR/RJE requires these parameters:

**luname_i**

The LU name conforms to the naming convention at your site. BARR/RJE does not use this name.

**LOCADDR=i**

The local addresses must be unique. The maximum value for **i** is **20** when you use Barr software. (Whether you can use all 20 LUs depends on your RJE system. MVS/JES2 supports a maximum of 13 LUs with BARR/RJE and 17 LUs with RJE+3270. MVS/JES3 supports a maximum of 17 LUs with BARR/RJE and 20 LUs with RJE+3270.)

**BATCH=YES**

Indicates the processing priority. Batch applications such as RJE require low priority while interactive applications such as 3270 usually have higher priority.

For VTAM Version 4, Release 3 or later, this parameter is replaced by the Class of Service (**COS**) parameter in the **LOGMODE** for the host application.

# RJE+3270 Host Parameters

If you have RJE+3270 software, the host definition screens differ only slightly from the RJE host definition screens. This section describes parameters that are different for RJE+3270. The previous RJE Host Parameters section explains other RJE parameters.

The host definition screens provide the host programmer with sample statements to enter in the host parameter libraries. Print these screens for the host programmer using Shift Prt Sc.

The NCP X25VCCPT, X25MCH, and X25VC macros pertain to the connection between the host and the X.25 network. The host programmer should check with the host network provider to determine these values because they depend on the settings your network uses.

> ***Note:*** The Barr software requires the statements in the VTAM PU and LU macros although some parameter values depend on your host. An existing remote definition used for other RJE and 3270 equipment might not work for RJE+3270. You can save time and effort getting your system running if you use the recommended remote definition.

## NCP Definition for X.25 Switched Virtual Circuit

➤ From the X.25 Switched Virtual Circuit screens, press Enter to display the following screen.

```
                    (These screens are for your host.)
              X.25 NCP Definition for Switched Virtual Circuit

 Reference: X.25 NCP Packet Switching Interface for the IBM 3725 and 3720,
               Installation and Operation, SC30-3201

        X25VCCPT INDEX=index,MAXPKTL=0128,VWINDOW=2
mchname X25MCH ADDRESS=aaa,FRMLGTH=1027,LCGDEF=0(nn),MWINDOW=7,       X
              LLCLIST=(...,LLC3,...),NPRETRY=10,PKTMODL=8,            X
              LCN0=NOTUSED,SPNQLLC=NO,STATION=DTE,TPTIMER=3
vcname  X25VC LCN=(nlow,nhigh),TYPE=SWITCHED,OUFINDX=index,           X
              VCCINDX=index,MAXLU=9

                                                                  Any key
```

The **MAXLU** parameter might have a larger value for RJE+3270.

### X25VC Macro

```
vcname   X25VC LCN=(nlow,nhigh),TYPE=SWITCHED,OUFINDX=index,          X
               VCCINDX=index,MAXLU=9
```

**MAXLU=n**

The maximum number of LUs to use with this line. This value should include the number of 3270 and RJE sessions. Use this formula to calculate the number of LUs needed:

**number of LUs = total printers + total punches + total readers + 3270 sessions + 2**

The two extra LUs are for sending commands from the keyboard and receiving console messages.

## Physical Unit Definition for X.25 Switched Virtual Circuit

➤ From the X.25 NCP Definition for Switched Virtual Circuit screen, press Enter to display the following screen:

```
                    (These screens are for your host.)
                         Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111
           X.25 NCP Packet Switching Interface for the IBM 3725 and 3720,
                Installation and Operation, SC30-3201

puname   PU  ADDR=01,                                                  X
             IDBLK=03D,                                                X
             IDNUM=12345,                                              X
             MAXDATA=0521,MAXOUT=7,                                    X
             PACING=7,PASSLIM=7,VPACING=7
luname02 LU  LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
luname03 LU  LOCADDR=3,DLOGMOD=D4C32782       **  3270 LU
luname04 LU  LOCADDR=4,DLOGMOD=D4C32782       **  3270 LU
luname05 LU  LOCADDR=5,DLOGMOD=D4C32782       **  3270 LU
luname06 LU  LOCADDR=6,BATCH=YES              **  RJE  LU
luname07 LU  LOCADDR=7,BATCH=YES              **  RJE  LU
luname08 LU  LOCADDR=8,BATCH=YES              **  RJE  LU
luname09 LU  LOCADDR=9,BATCH=YES              **  RJE  LU
luname10 LU  LOCADDR=10,BATCH=YES             **  RJE  LU
                                                                Any key
```

For RJE+3270, you might need to define more LU macros. The 3270 LU macros will include a **DLOGMOD** parameter.

### LU Macro

```
luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
```

You need to define one LU for each 3270 session and each RJE session (including an LU for receiving messages to the operator console and one for sending commands to the host).

**DLOGMOD=nnnnnnnn**

For 3270 session LUs, specify the default logon mode table entry to use. Logmodes control the type of 3270 session (interactive or printer) and the screen size. Your Barr RJE+3270 manual lists several IBM default logon mode tables.

### LU Numbering

The mainframe convention was to begin defining LUs with LOCADDR=2 because LOCADDR=1 was reserved for other functions. With Barr software, you can begin defining RJE LUs with LOCADDR=1. For 3270 LUs, the first LU you define must be at LOCADDR=2.

Users with the RJE+3270 software must first define the 3270 session LUs and then define the RJE LUs. If you use the LU at LOCADDR=1 for RJE, define the 3270 LUs next and the RJE LUs last. For example:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

## X.25 Performance Tuning

You can tune the X.25 communication link to maximize data throughput and minimize costs by sending the complete SNA segment (**MAXDATA**) in a single data packet. You would need an X.25 user data field at least as large

as **MAXDATA**. With X.25, you define a maximum default user data field for each direction of data flow at the DTE/DCE interface. The Barr X.25/QLLC configuration screen identifies this parameter as **MAXPKTL** in the X25VCCPT macro (NPSI terminology). Ask your network provider for the X.25 network parameters.

The default packet window size is another important flow-control parameter. The packet window size gives the maximum number of outstanding unconfirmed data packets for a given direction on a virtual circuit. The Barr X.25/QLLC configuration screen identifies this parameter as **VWINDOW** in the X25VCCPT macro. The default value is **2**, which is usually adequate for slow-speed links (less than 9600 bps). For higher-speed links or when you use small packet sizes, you might want to increase this value. For SVCs, you can often negotiate this value on a per-call basis. By default, Barr X.25/QLLC will try to negotiate to the maximum supported packet window size.

## 2.6 X.25 Permanent Virtual Circuit

All PVCs are implicitly established when you make a physical connection to the network and initialize the Data Link and Packet layers. No X.25 Call or Clear packets are used.

An X.25 PVC can be a communication link to the host or to BARR GATEWAY. If you use it as a gateway-to-workstation communication link, the user's Permanent Virtual Circuit number (**PVCnn**) on the network will be the workstation user name.

See X.25 in section 2.1 for an overview of X.25.

### Barr RJE Software Parameters

➤ From the Communication Link menu, select **X.25 Permanent Virtual Circuit**.

The following screen displays:

```
                        X.25 Permanent Virtual Circuit


    X.25 NPSI Parameters

               X25PU Macro
                   MAXDATA=0521

               X25VCCPT Macro
                   MAXPKTL=0128
                   VWINDOW=2

               Additional X.25 NPSI parameters? No
                                                              Choice? + -
```

This section describes the parameters to specify in the Barr software.

## X.25 NPSI Parameters

You can define the following parameters for the NCP Packet Switching Interface (NPSI).

### X25PU Macro

The X25PU macro corresponds to the VTAM PU macro. The SNA RJE workstation corresponds to a PU in VTAM. The PU consists of 2 to 20 LUs. Specify the VTAM parameters with the PU and LU macros.

**MAXDATA=265|521|1033|2057|121|249|489|969**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes for header information plus the data length. The default value is **5 2 1**. X.25 Performance Tuning at the end of this section discusses how to tune this parameter for maximum performance.

### X25VCCPT Macro

The X25VCCPT macro instruction describes the connection parameters for one or more virtual circuits.

**MAXPKTL=128|256|512|1024**

This parameter specifies (in bytes) the default maximum length of the user data field. You should find out this value when you subscribe to

the network. This value must match the network subscription so the Barr software can communicate with the X.25 network via the DCE device. If these values do not match, the Barr Call could be rejected and cause timeouts on the SNA session. The default is usually 128, but you can increase this value when you subscribe to the network.

The user data field does not include X.25 frame or packet header information. All SNA transmission header (TH), request/response header (RH), and request/response unit (RU) information is sent in the user data field. If this field is not large enough to send a complete SNA segment, the segment is broken up and sent in multiple X.25 packets with the M-bit procedure. See X.25 Performance Tuning at the end of this section for more information.

**VWINDOW=2|3|4|5|6|7|1**

This parameter specifies the default packet window size. The packet window size is the maximum number of unacknowledged data packets for a given direction of transmission. You should find out this value when you subscribe to the network. This value must match the network subscription so the Barr software can communicate with the X.25 network via the DCE device. If these values do not match, the Barr Call could be rejected and cause timeouts on the SNA session. The default is usually 2, but you can increase this value when you subscribe to the network. See X.25 Performance Tuning
at the end of this section for more information.

**Additional X.25 NPSI parameters? No|Yes**

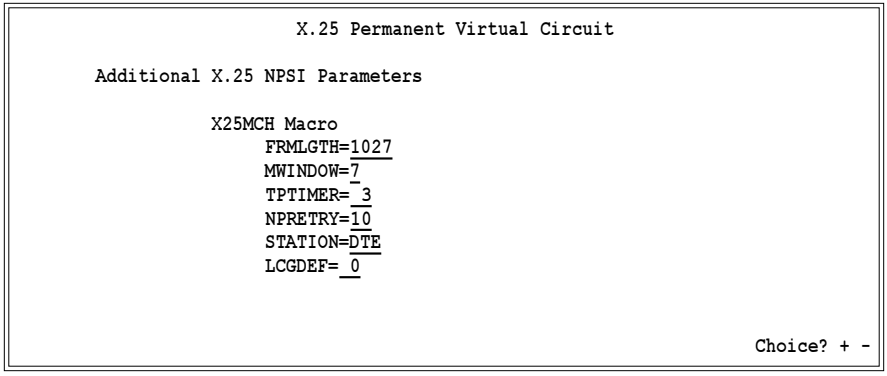
Choose whether to modify additional X.25 NPSI parameters.

**No** Default. Use the default values for the additional parameters. The Additional X.25 NPSI parameters screen will not display.

**Yes** View or modify the additional parameters. The Additional X.25 NPSI parameters screen displays. Normally you do not need to modify these parameters. Change them only if your network consultant tells you to do so.

## Additional X.25 NPSI Parameters

This screen displays only if you set **Additional X.25 NPSI parameters** to **Yes** on the X.25 Permanent Virtual Circuit screen.




## X25MCH Macro

The X25MCH macro instruction describes a physical circuit.

**FRMLGTH=1027|131|259|515**

This parameter specifies (in bytes) the largest supported frame size on the X.25 link. Leave this value at **1027**. NPSI states that this parameter corresponds to the X.25 N1 parameter and is equal to the packet user data length plus the three-byte packet header. In fact, the X.25 N1 field (which is specified in bits) includes four additional bytes: the two-byte frame header and two-byte frame check sequence. **FRMLGTH** should always be greater than the packet size (**MAXPKTL**). The three-byte difference between **FRMLGTH** and **MAXDATA** allows for X.25 packet information. **MAXDATA** matches the host.

**MWINDOW=7|1|2|3|4|5|6**

This parameter specifies the frame-level window size. You should find out this value when you subscribe to the network. In practice this value is usually **7**. Do not change this value unless specifically told to do so.

**TPTIMER=nn**

This parameter specifies the value of the X.25 T1 timer in seconds. This is the amount of time the program waits for an acknowledgment to an information frame or polled command. If this time limit is exceeded, it usually indicates a low-level communications error or *line hit*. The program tries to recover errors by retransmitting the unacknowledged frame or interrogating the link partner's state. The default value is **3**.

**NPRETRY=nn**

This parameter specifies the value of the X.25 N2 retry counter. It is the number of retransmissions the host will attempt because the **TPTIMER** (T1 timer) expired. After **nn** retransmissions, the host assumes the link is down. The default value is **10**.

**STATION=DTE|DCE**

This parameter identifies the X.25 link role for the Barr X.25/QLLC interface. Normally you would leave this at the default value of **DTE**. If a PC needs to be configured to communicate directly with an X.25 DTE, this field should be coded as **DCE** (Data Circuit-Terminating Equipment).

**LCGDEF=n**

This parameter identifies the X.25 Logical Channel Group that will be used to make the connection. Possible values are **0** to **15**. This value must match the configuration of the network to which the Barr PC will connect. The default value is **0**.

## RJE Host Parameters

After you complete the X.25 parameters and press Enter, the host definition parameter screens display. (The host definition does not apply to the X.25 gateway-to-workstation link.) Your screens reflect the selections you made for **X.25 Permanent Virtual Circuit**.

The host definition screens provide the host programmer with sample statements to enter in the host parameter libraries. Print the screen via Shift Prt Sc for the host programmer.

If you have the RJE+3270 software, see RJE+3270 Host Parameters later in this section.

The NCP X25VCCPT, X25MCH, and X25LINE macros pertain to the connection between the host and the X.25 network. The host programmer should check with the host network provider to determine these values because they depend on the settings used by the host network.

> ***Note:*** The Barr software requires the NCP X25PU macro and X25LU macros. Some parameter values depend on your host. Existing remote definition statements used for other RJE equipment might not work for BARR/RJE. You can save time and effort getting your system running if you use the recommended statements.

## NCP Definition for X.25 Permanent Virtual Circuit

➤ From the X.25 Permanent Virtual Circuit screens, press Enter to display the following screen:

```
                    (These screens are for your host.)
               X.25 NCP Definition for Permanent Virtual Circuit

 Reference: X.25 NCP Packet Switching Interface for the IBM 3725 and 3720,
               Installation and Operation, SC30-3201

         X25VCCPT INDEX=index,MAXPKTL=0128,VWINDOW=2
mchname  X25MCH ADDRESS=aaa,FRMLGTH=1027,LCGDEF=0(nn),MWINDOW=7,      X
              LLCLIST=(...,LLC3,...),NPRETRY=10,PKTMODL=8,           X
              LCN0=NOTUSED,SPNQLLC=NO,STATION=DTE,TPTIMER=3
linename X25LINE LCN=lcn,TYPE=PERMANENT,LLC=LLC3,                     X
               VCCINDX=index,DSTNODE=BNN
puname   X25PU ADDR=01,MAXDATA=0521,MAXOUT=7,                        X
              PACING=7,PASSLIM=7,VPACING=7,PUDR=NO
luname02 X25LU LOCADDR=2,BATCH=YES              **  RJE  LU
luname03 X25LU LOCADDR=3,BATCH=YES              **  RJE  LU
luname04 X25LU LOCADDR=4,BATCH=YES              **  RJE  LU
luname05 X25LU LOCADDR=5,BATCH=YES              **  RJE  LU
luname06 X25LU LOCADDR=6,BATCH=YES              **  RJE  LU

                                                                Any key
```

The NCP X25VCCPT, X25MCH, and X25VC macros pertain to the host's connection to the X.25 network. The Barr software requires the X25PU and X25LU macros. This section describes the parameters on this screen.

### X25VCCPT Macro

The X25VCCPT macro instruction describes the connection parameters for one or more virtual circuits.

```
X25VCCPT INDEX=index,MAXPKTL=0128,VWINDOW=2
```

**INDEX=nn**

Indicates which entry (nn) in the Virtual Circuit Connection parameter table the X25VCCPT macro will initialize.

**MAXPKTL=128|256|512|1024**

This parameter specifies (in bytes) the default maximum length of the user data field. This is a network parameter you should be told when you subscribe to the network. The user data field does not include X.25

frame or packet header information. All SNA transmission header (TH), request/response header (RH), and request/response unit (RU) information is sent in the user data field. If this field is not large enough to send a complete SNA segment, the segment is broken up and sent in multiple X.25 packets via the M-bit procedure. See X.25 Performance Tuning at the end of this section.

**VWINDOW=2|3|4|5|6|7|1**

This parameter specifies the default packet window size. This is a network parameter you should be told when you subscribe to the network. The packet window size is the maximum number of unacknowledged data packets for a given direction of transmission. See X.25 Performance Tuning at the end of this section.

## X25MCH Macro

The X25MCH macro instruction describes a physical circuit.

```
mchname X25MCH ADDRESS=aaa,FRMLGTH=1027,LCGDEF=0(nn),MWINDOW=7,      X
               LLCLIST=(...,LLC3,...),NPRETRY=10,PKTMODL=8,          X
               LCN0=NOTUSED,SPNQLLC=NO,STATION=DTE,TPTIMER=3
```

**mchname**

Optional macro label.

**ADDRESS=aaa**

Specifies the line interface address for full duplex.

**FRMLGTH=1027|131|259|515**

This parameter specifies (in bytes) the largest supported frame size on the X.25 link. NPSI states that this parameter corresponds to the X.25 N1 parameter and is equal to the packet user data length plus the three-byte packet header. In fact, the X.25 N1 field (which is specified in bits) includes four additional bytes: the two-byte frame header and two-byte frame check sequence.

**LCGDEF=0(nn)**

Logical Channel Group.

**0** This parameter identifies the X.25 Logical Channel Group used to make the connection. Possible values are **0** to **15**. This value

must match the configuration of the network to which the host will connect. The default value is **0**.

**nn** Specifies the highest Logical Channel number for the group.

**MWINDOW=7|1|2|3|4|5|6**

This parameter specifies the frame-level window size. This is a network parameter you should be told when you subscribe to the network. In practice this value is usually **7**. Do not change this value unless specifically told to do so.

**LLCLIST=(...,LLC3,...)**

The type of virtual circuit. **LLC3** applies to SNA/QLLC. You can list more than one type.

**NPRETRY=nn**

This parameter specifies the value of the X.25 N2 retry counter. It is the number of retransmissions the host will attempt because the **TPTIMER** (T1 timer) expires. After **nn** retransmissions, the host assumes the link is down. The default value is **10**.

**PKTMODL=8**

The modulo value (modulo 8) for the packet protocol.

**LCN0=NOTUSED**

Indicates that a Logical Channel Number (LCN) of **0** will not be used for the virtual circuit. Packets with an LCN of **0** will be sent to the physical circuit.

**SPNQLLC=NO**

Ensures that standard QLLC addressing will be used.

**STATION=DTE|DCE**

This parameter identifies the X.25 link role the host X.25/QLLC interface plays.

**TPTIMER=nn**

This parameter specifies the value of the X.25 T1 timer in seconds. This is the amount of time the program waits for an acknowledgment

to an information frame or polled command. If this time limit is exceeded, it usually indicates a low-level communications error or *line hit*. The program tries to recover errors by retransmitting the unacknowledged frame or interrogating the link partner's state. The default value is **3**.

## X25LINE Macro

The X25LINE macro describes the virtual circuit associated with the physical circuit.

```
linename X25LINE LCN=lcn,TYPE=PERMANENT,LLC=LLC3,                X
                VCCINDX=index,DSTNODE=BNN
```

**linename**
The name of the communications line.

**LCN=nn**
The logical channel number of the virtual circuit.

**TYPE=PERMANENT**
Designates the virtual circuit type as permanent.

**LLC=LLC3**
The type of virtual circuit. Use **LLC3** for SNA/QLLC.

**VCCINDX=nn**
For the virtual circuits in the specified range, this parameter specifies the entry (**0** to **19**) in the Virtual Circuit Connection parameter table that describes the default packet length and window size.

**DSTNODE=BNN**
The type of destination node. Use **BNN** for a terminal.

## X25PU Macro

The X25PU macro names and describes a PU. You can operate several PUs on the same line (multipoint). Each unit requires a separate PU macro instruction.

```
puname X25PU ADDR=01,MAXDATA=0521,MAXOUT=7,                          X
             PACING=7,PASSLIM=7,VPACING=7,PUDR=NO
```

The parameters are divided into three groups:

- Parameters that BARR/RJE requires
- Parameters that use system defaults
- Other useful parameters

### BARR/RJE requires these parameters:

**puname**

The PU's name conforms to the naming convention at your site. The VTAM operator uses the name to vary the unit active or inactive and to query the unit's status.

**ADDR=aa**

This parameter is required, although it is not used for X.25 PVC.

**MAXDATA=265|521|1033|2057|121|249|489|969**

The maximum amount of data the host can send on the PU in one frame. This count includes nine bytes for header information plus the data length.

**MAXOUT=n**

Specifies that the SDLC protocol can send up to **n** frames without pausing for a response. The maximum **MAXOUT** value of **7** results in the highest throughput.

**PACING=n**

Determines how much data the host sends to BARR/RJE before it needs a pacing response to send more data. Pacing is a flow-control mechanism that prevents the host from sending data faster than BARR/RJE can print or otherwise handle it. Values smaller than the **MAXOUT** parameter often lower performance. This overrides the **SRCVPAC** value of the logmode.

**PASSLIM=n**

The maximum number of information frames sent to the PU at one time. This is usually set to the same value as **MAXOUT**.

**VPACING=n**

Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM. You would usually set this to the same value as **MAXOUT**.

> ***Performance Tuning:*** Setting parameters to larger values can improve BARR/RJE performance. With **PACING=8** and **VPACING=8** in the VTAM PU definition, the host can send 8 data frames before it requires a pacing response. On a half-duplex line, the host sends 7 frames at a time. When you use **PACING=8**, the pacing response could be returned in time for you to send 7 more frames of data. The PU definition should include **MAXOUT=7**. See Appendix A for more information about performance tuning.

**PUDR=NO**

Specifies that the PU cannot be deleted from the network via Dynamic Reconfiguration.

### BARR/RJE uses these system default values:

**DISCNT=(NO)**

Do not disconnect the PU until BARR/RJE requests it.

**ISTATUS=ACTIVE**

The PU will be activated automatically.

**PUTYPE=2**

BARR/RJE uses the PU Type 2 protocol.

### Other useful parameters:

**DLOGMOD=nnnnnnnn**

Specify the logon mode table entry to use by default.

**MODETAB=nnnnnnnn**

Specify the mode table containing the logmode entries. ISTINCLM is the default IBM-supplied mode table usually present with VTAM.

**SSCPFM=USSSCS**

Indicates that BARR/RJE's **Logon Type** is character coded. The system default is **SSCPFM=FSS** for a formatted logon.

## X25LU Macro

The X25LU macro instructions define logical units allocated to the RJE devices.

```
luname_i X25LU    LOCADDR=i,BATCH=YES            **  RJE LU
```

You need to define one LU for each RJE session (printers, punches, and readers) plus two additional LUs (one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 2**

Each LU requires a separate LU macro instruction. The number of RJE sessions that can be simultaneously active equals the number of LUs you define.

### BARR/RJE requires these parameters:

**luname_i**

The luname conforms to the naming convention at your site. BARR/RJE does not use this name.

**LOCADDR=i**

The local addresses must be unique. The maximum value for **i** is **20** when you use Barr software. (Whether you can use all 20 LUs depends on your RJE system. MVS/JES2 supports a maximum of 13 LUs with BARR/RJE and 17 LUs with RJE+3270. MVS/JES3 supports a maximum of 17 LUs with BARR/RJE and 20 LUs with RJE+3270.)

**BATCH=YES**

Indicates the processing priority. Batch applications such as RJE require low priority while interactive applications such as 3270 usually have higher priority.

For VTAM Version 4, Release 3 or later, replace this parameter with the Class of Service (**COS**) parameter in the **LOGMODE** for the host application.

## RJE+3270 Host Parameters

If you have RJE+3270 software, the host definition screen differs only slightly from the RJE screen. This section discusses parameters that are different for RJE+3270. The previous RJE Host Parameters section explains the other RJE parameters.

The host definition screens provide the host programmer with sample statements to enter in the host parameter libraries. Print the screen via Shift Prt Sc for the host programmer.

The NCP X25VCCPT, X25MCH, and X25VC macros pertain to the connection between the host and the X.25 network. The host programmer should check with the host network provider to determine these values because they depend on the settings your network uses.

> ***Note:*** The Barr software requires NCP X25PU and X25LU macros, although some parameter values depend on your host. Existing remote statements used for other RJE and 3270 equipment might not work for RJE+3270. You can save time and effort getting your system running if you use the recommended statements.

### NCP Definition for X.25 Permanent Virtual Circuit

➤ From the X.25 Permanent Virtual Circuit screens, press Enter to display the following screen:

```
                    (These screens are for your host.)
              X.25 NCP Definition for Permanent Virtual Circuit

 Reference: X.25 NCP Packet Switching Interface for the IBM 3725 and 3720,
              Installation and Operation, SC30-3201

       X25VCCPT INDEX=index,MAXPKTL=0128,VWINDOW=2
mchname X25MCH ADDRESS=aaa,FRMLGTH=1027,LCGDEF=0(nn),MWINDOW=7,        X
               LLCLIST=(...,LLC3,...),NPRETRY=10,PKTMODL=8,            X
               LCN0=NOTUSED,SPNQLLC=NO,STATION=DTE,TPTIMER=3
linename X25LINE LCN=lcn,TYPE=PERMANENT,LLC=LLC3,                       X
               VCCINDX=index,DSTNODE=BNN
puname   X25PU ADDR=01,MAXDATA=0521,MAXOUT=7,                          X
               PACING=7,PASSLIM=7,VPACING=7,PUDR=NO
luname02 X25LU LOCADDR=2,DLOGMOD=D4C32782       ** 3270 LU
luname03 X25LU LOCADDR=3,DLOGMOD=D4C32782       ** 3270 LU
luname04 X25LU LOCADDR=4,DLOGMOD=D4C32782       ** 3270 LU
luname05 X25LU LOCADDR=5,DLOGMOD=D4C32782       ** 3270 LU
luname06 X25LU LOCADDR=6,BATCH=YES              ** RJE  LU
luname07 X25LU LOCADDR=7,BATCH=YES              ** RJE  LU
luname08 X25LU LOCADDR=8,BATCH=YES              ** RJE  LU
luname09 X25LU LOCADDR=9,BATCH=YES              ** RJE  LU
luname10 X25LU LOCADDR=10,BATCH=YES             ** RJE  LU

                                                                Any key
```

For RJE+3270, you might need to define more LU macros. The 3270 LU macro will have a DLOGMOD parameter.

## X25LU Macro

```
luname02 X25LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
```

You need to define one LU for each 3270 session and each RJE session (including an LU for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 3270 sessions + 2**

**DLOGMOD=nnnnnnnn**

For 3270 session LUs, specify the default logon mode table entry to use. Logmodes control the type of 3270 session (interactive or printer) and the screen size. Your Barr RJE+3270 manual lists several IBM default logon mode tables.

### LU Numbering

The mainframe convention was to begin defining LUs with LOCADDR=2 because LOCADDR=1 was reserved for other functions. With Barr software, you can begin defining RJE LUs with LOCADDR=1. For 3270 LUs, the first LU you define must be at LOCADDR=2.

RJE+3270 software users must first define the 3270 session LUs then define the RJE LUs. If you use the LU at LOCADDR=1 for RJE, define the 3270 LUs next and the remaining RJE LUs last. For example:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

## X.25 Performance Tuning

You can tune the X.25 communication link to maximize data throughput and minimize costs by sending the complete SNA segment (**MAXDATA**) in a single data packet. You would need an X.25 user data field at least as large as **MAXDATA**. With X.25, you define a maximum default user data field for each direction of data flow at the DTE/DCE interface. The Barr X.25/QLLC configuration screen identifies this parameter as **MAXPKTL** in the X25VCCPT macro (NPSI terminology). Ask your network provider for the X.25 network parameters.

The default user data field is usually 128 or 256 bytes. If the network supports larger values, you can use the Flow Control Negotiation facility to try to negotiate a larger maximum on a per-call basis. The Barr X.25/QLLC configuration for SVCs assumes you want to operate with the largest possible user data field and by default tries to negotiate to this value.

The default packet window size is another important flow-control parameter. The packet window size gives the maximum number of outstanding unconfirmed data packets for a given direction on a virtual circuit. The Barr X.25/QLLC configuration screen identifies this parameter as **VWINDOW**

in the X25VCCPT macro. The default value is **2**, which is usually adequate for slow-speed links (less than 9600 bps). For higher-speed links or when you use small packet sizes, you might want to increase this value. For SVCs you can often negotiate this value on a per-call basis. By default, Barr X.25/QLLC will try to negotiate to the maximum supported packet window size.

## 2.7 802.2 Connection with 3725 and 3745 Controllers

As shown in Figure 2-6, the 3725 and 3745 front-end processors (FEPs) attach to an 802.2 network through a TIC.

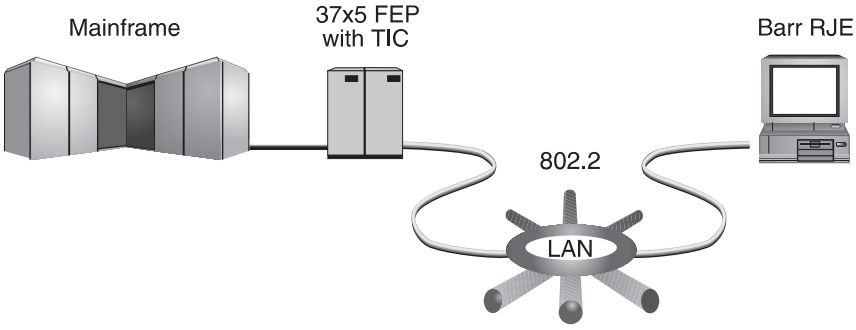
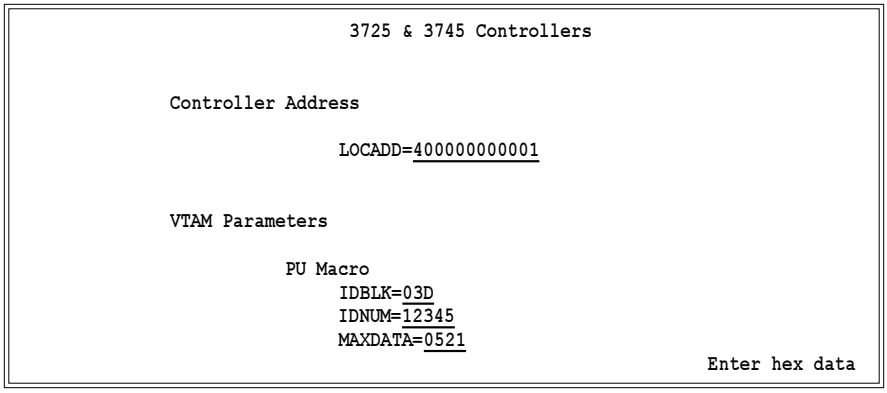



**Figure 2-6.** FEPs attach to an 802.2 network through TICs.

The 3725 & 3745 Controllers screen lists parameters needed by the Barr RJE program and by VTAM and NCP on the host. Your host communications programmer can provide these parameter values. After you enter the Communication Link parameters in the Barr RJE software, Barr RJE produces sample statements the host programmer must enter in the VTAM and NCP parameter libraries.

# Barr RJE Software Parameters

➤ From the Communication Link screen, select **3725 & 3745 Controllers** to display the following screen:




This section discusses the parameters you need to specify in the Barr software. The values for these parameters must match the values specified in the host definition.

## Controller Address

Each physical connection to the 802.2 network, including the host TIC or the PC token ring network adapters, has a unique address.

**LOCADD=4000abbbbbbb**

Specify the address of the host TIC where **a** is a digit from **0** to **7** and **b** is a hexadecimal digit from **0** to **F**.

The IBM LAN Support drivers (or compatible drivers that provide 802.2 LLC protocol) control the PC's token ring address. The Barr software has no control over this address. If you need to change the PC's token ring address, see the manual that comes with the LAN Support drivers.

After the IBM LAN Support drivers are loaded properly, the Barr software automatically detects the PC's token ring address by reading it from the drivers. That address displays on the screen with a message like the following:

**Using Token Ring Address 123456789ABC**

If the message address is not all zeros, you properly loaded the drivers and the Barr software can access the LLC protocol.

## VTAM Parameters

The SNA RJE workstation corresponds to a VTAM PU with 2 to 20 LUs. You specify VTAM parameters with the PU macro.

### PU Macro

**IDBLK=bbb**
**IDNUM=nnnnn**

The host uses these parameters on a switched line to identify the remote's PU definition.

The host sends an Exchange ID request (**Xid**) as the first message to a dial-up remote. The remote responds with an Exchange ID response (**Xidr**) that contains the IDBLK and IDNUM parameters. VTAM searches for the PU identified by IDBLK and IDNUM and uses this PU for the rest of the communications session.

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** typically apply to X.25.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data and thus reduce the amount of control information and total number of frames sent. Send 1024 bytes by setting **MAXDATA=1033** in the Barr software and VTAM PU definition. When **MAXDATA=1033**, increase the amount of memory used for buffers. On the Tuning and Global Options, Trace and Memory Options screen, set **Memory allocated for buffers** to **150000**. See Appendix A for more information about performance tuning.
>
> **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

# RJE Host Parameters

After you enter the 802.2 software parameters and press Enter, host definition parameter screens display. These screens reflect the selections you made on the 3725 & 3745 Controllers screen.

The host definition screens provide the host programmer with sample statements to enter in the NCP and VTAM parameter libraries. Print these screens for the host programmer with Shift Prt Sc.

If you have Barr RJE+3270 software, see RJE+3270 Host Parameters later in this section.

> ***Note:*** BARR/RJE requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for BARR/RJE. You can save time and effort getting your system running if you use the recommended host definitions.

## NCP Definition for 3725 and 3745 Controllers

➤ From the 3725 & 3745 Controllers screen, press Enter to display the following screen:

```
                    (These screens are for your host.)
                NCP Definition for 3725 & 3745 Controllers


Reference:  VTAM Installation and Resource Definition, SC23-0111
            NCP Resource Definition Guide, SC30-3447
            NCP Resource Definition Reference, SC30-3448
Source statements are in SYS1.VTAMLST(NCP).

group    GROUP ECLTYPE=PHYSICAL
linename LINE  ADDRESS=(aaaa,FULL),LOCADD=400000000001,                X
               PORTADD=pp,RCVBUFC=4095
group    GROUP ECLTYPE=LOGICAL,AUTOGEN=100,                            X
               CALL=INOUT,PHYPORT=pp
puname   PU    MAXLU=5
                                                                  Any key
```

This section describes the NCP parameters on this screen and other parameters you might need. BARR/RJE requires all these parameters.

## GROUP Macro for Physical Group

The GROUP macro instruction for the physical group includes common parameter settings for all LINE macros in the group.

```
group    GROUP ECLTYPE=PHYSICAL
```

### BARR/RJE requires these parameters:

**group**
Optional macro label.

**ECLTYPE=PHYSICAL**
This **GROUP** macro defines a physical connection to the 802.2.

## LINE Macro

The LINE macro defines the line at the host.

```
linename LINE  ADDRESS=(aaaa,FULL),LOCADD=4000abbbbbbb,                X
               PORTADD=pp,RCVBUFC=4095
```

### BARR/RJE requires these parameters:

**linename**
The VTAM name of the communications line.

**ADDRESS=(aaaa,FULL)**
Specifies the logical address of the TIC in the NCP where **aaaa** is the address.

**LOCADD=4000abbbbbbb**
The locally administered address for the TIC where **a** is a digit from **0** to **7** and **b** is a hexadecimal digit from **0** to **F**.

**PORTADD=pp**
The port number **pp** that associates a physical line with a logical line. The number must be the same as the **PHYPORT** parameter on the logical line.

**RCVBUFC=4095**

This parameter sets the maximum amount of data the host can receive from the 802.2 link.

## GROUP Macro for Logical Group

The GROUP macro for the logical group defines a logical connection to the 802.2 network.

```
group  GROUP ECLTYPE=LOGICAL,AUTOGEN=100,                              X
             CALL=INOUT,PHYPORT=pp
```

### BARR/RJE requires these parameters:

**group**

Optional macro label.

**ECLTYPE=LOGICAL**

This GROUP macro defines a logical connection to the 802.2.

**AUTOGEN=100**

The number of lines and groups supported by NCP.

**CALL=INOUT**

Both VTAM and BARR/RJE can initiate the connection.

**PHYPORT=pp**

The port number **p p** that associates a physical line with a logical line. The number must be the same as the **P O R T A D D** parameter on the physical line.

## PU Macro

The PU macro names and describes a physical unit. The PU macro in the NCP Definition is replaced at logon with the PU macro from VTAM.

```
puname     PU    MAXLU=n
```

**BARR/RJE requires these parameters:**

**puname**
The PU's name conforms to the naming convention at your site. The VTAM operator uses the name to vary the unit active or inactive and to query the unit's status.

**MAXLU=n**
The maximum number of LUs to use with this line. Use this formula to calculate the number of LUs needed:

**number of LUs = total printers + total punches + total readers + 2**

The two extra LUs allow you to send commands from the keyboard and receive messages to the console.

## Physical Unit Definition for 3725 and 3745 Controllers

➤ From the NCP Definition for 3725 and 3745 Controllers screen, press Enter to display the following screen:

```
                    (These screens are for your host.)
                        Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname   PU   ADDR=01,                                                  X
              IDBLK=03D,                                               X
              IDNUM=12345,                                             X
              MAXDATA=0521,                                            X
              PACING=7,PASSLIM=7,VPACING=7
luname02 LU   LOCADDR=2,BATCH=YES              **  RJE  LU
luname03 LU   LOCADDR=3,BATCH=YES              **  RJE  LU
luname04 LU   LOCADDR=4,BATCH=YES              **  RJE  LU
luname05 LU   LOCADDR=5,BATCH=YES              **  RJE  LU
luname06 LU   LOCADDR=6,BATCH=YES              **  RJE  LU

                                                                  Any key
```

This section describes the VTAM parameters on this screen and additional parameters you might need to specify. The parameters are divided into three groups:

- Parameters that BARR/RJE requires
- Parameters that use system defaults
- Other useful parameters

## PU Macro

The PU macro names and describes a physical unit.

```
puname   PU    ADDR=01,                                          X
               IDBLK=bbb,                                        X
               IDNUM=nnnnn,                                      X
               MAXDATA=nnnn                                      X
               PACING=7,PASSLIM=7,VPACING=7
```

### BARR/RJE requires these parameters:

**puname**
The PU's name conforms to the naming convention at your site. The VTAM operator uses the name to vary the unit active or inactive and to query the unit's status.

**ADDR=01**
Required.

**IDBLK=bbb**
**IDNUM=nnnnn**
Parameters used on an 802.2 network to identify the remote's PU definition. The host sends an Exchange ID request (**Xid**) as the first message to a dial-up remote. The remote responds with an Exchange ID response (**Xidr**) that contains the **IDBLK** and **IDNUM** parameters. VTAM searches for the PU identified by **IDBLK** and **IDNUM** and uses this PU for the rest of the communications session.

**MAXDATA=265|521|1033|2057**
The maximum amount of data you can send on the PU in one frame. This count includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** typically apply to X.25.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data and thus reduce the amount of control information and total number of frames sent. Send 1024 bytes by setting

**MAXDATA=1033** in the Barr software and VTAM PU definition. When **MAXDATA=1033**, increase the amount of memory used for buffers. On the Tuning and Global Options, Trace and Memory Options screen, set **Memory allocated for buffers** to **150000**. See Appendix A for more information about performance tuning.

**MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

**PACING=7**

Determines how much data the host sends to BARR/RJE before it needs a pacing response to send more data. Pacing is a flow-control mechanism that prevents the host from sending data faster than BARR/RJE can print or otherwise handle it. Values smaller than **7** often lower performance.

**PASSLIM=7**

The maximum number of information frames sent to the PU at one time.

**VPACING=7**

Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM. Values less than **7** lower efficiency.

***Performance tuning:*** Setting parameters to larger values can improve BARR/RJE performance. With **PACING=8** and **VPACING=8** in the VTAM PU definition, the host can send 8 data frames before it requires a pacing response. On a half-duplex line, it sends 7 frames at a time. When you use **PACING=8**, the pacing response could be returned in time to send 7 more frames of data. See Appendix A for more information about performance tuning.

### BARR/RJE uses these system default values:

**DISCNT=(NO,F)**

Does not disconnect the PU until BARR/RJE requests it.

**ISTATUS=ACTIVE**

Activates the PU automatically.

**PUTYPE=2**
BARR/RJE uses the Physical Unit Type 2 protocol.

### Other useful parameters:

**DLOGMOD=nnnnnnnn**
Names the logon mode table entry to use by default.

**MODETAB=nnnnnnnn**
Specifies the mode table containing the logmode entries. ISTINCLM is the default IBM-supplied mode table usually present with VTAM.

**SSCPFM=USSSCS**
Indicates that BARR/RJE's **Logon Type** is character coded.

## LU Macro

The LU macro instructions define LUs allocated to the RJE devices.

```
luname_i LU    LOCADDR=i,BATCH=YES              **  RJE  LU
```

You need to define one LU for each RJE session (printers, punches, and readers) plus two additional LUs (one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 2**

Each LU requires a separate LU macro instruction. The number of RJE sessions that can be simultaneously active equals the number of LUs you define.

### BARR/RJE requires these parameters:

**luname_i**
The LU name conforms to the naming convention at your site. BARR/RJE does not use this name.

**LOCADDR=i**
The local addresses must be unique. The maximum value for **i** is **20** when you use Barr software.

> ***Note:*** Whether you can use all 20 LUs depends on your RJE system. MVS/JES2 supports a maximum of 13 LUs with BARR/RJE and 17 LUs with RJE+3270. MVS/JES3 supports a maximum of 17 LUs with BARR/RJE and 20 LUs with RJE+3270.

**BATCH=YES**

Indicates the processing priority. Batch applications such as RJE require low priority while interactive applications such as 3270 usually have higher priority.

For VTAM Version 4, Release 3 or later, this parameter gets replaced by the Class of Service (**COS**) parameter in the **LOGMODE** for the host application.

## RJE+3270 Host Parameters

If you have Barr RJE+3270 software, the host definition screens look like the samples below. The screens differ slightly from the RJE host definition screens. This section only describes parameters that are different for RJE+3270.

The host definition screens provide the host programmer with sample statements to enter in the NCP and VTAM parameter libraries. Print these screens for the host programmer with Shift Prt Sc.

> ***Note:*** RJE+3270 requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for RJE+3270. You can save time and effort getting your system running if you use the recommended host definition.

### NCP Definition for 3725 and 3745 Controllers

➤ From the 3725 & 3745 Controllers screen, press Enter to display the following screen:

```
                        (These screens are for your host.)
                    NCP Definition for 3725 & 3745 Controllers

Reference: VTAM Installation and Resource Definition, SC23-0111
           NCP Resource Definition Guide, SC30-3447
           NCP Resource Definition Reference, SC30-3448
Source statements are in SYS1.VTAMLST(NCP).

group    GROUP ECLTYPE=PHYSICAL
linename LINE  ADDRESS=(aaaa,FULL),LOCADD=400000000001,                X
               PORTADD=pp,RCVBUFC=4095
group    GROUP ECLTYPE=LOGICAL,AUTOGEN=100,                            X
               CALL=INOUT,PHYPORT=pp
puname   PU    MAXLU=9



                                                                  Any key
```

The **MAXLU** parameter might have a larger value for RJE+3270.

### PU Macro

```
 puname   PU    MAXLU=9
```

**MAXLU=n**

The maximum number of LUs to use with this line. This value should include the number of 3270 sessions. Use this formula to calculate the number of LUs needed:

**number of LUs = total printers + total punches + total readers + 3270 sessions + 2**

The two extra LUs are for sending commands from the keyboard and receiving console messages.

## Physical Unit Definition for 3725 and 3745 Controllers

➤ From the NCP Definition for 3725 and 3745 Controllers screen, press Enter to display the following screen:

```
                      (These screens are for your host.)
                          Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname   PU    ADDR=01,                                                  X
               IDBLK=03D,                                                X
               IDNUM=12345,                                              X
               MAXDATA=0521,                                             X
               PACING=7,PASSLIM=7,VPACING=7
luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
luname03 LU    LOCADDR=3,DLOGMOD=D4C32782       **  3270 LU
luname04 LU    LOCADDR=4,DLOGMOD=D4C32782       **  3270 LU
luname05 LU    LOCADDR=5,DLOGMOD=D4C32782       **  3270 LU
luname06 LU    LOCADDR=6,BATCH=YES              **  RJE  LU
luname07 LU    LOCADDR=7,BATCH=YES              **  RJE  LU
luname08 LU    LOCADDR=8,BATCH=YES              **  RJE  LU
luname09 LU    LOCADDR=9,BATCH=YES              **  RJE  LU
luname10 LU    LOCADDR=10,BATCH=YES             **  RJE  LU
                                                                  Any key
```

For RJE+3270, you might need to define more LU macros. The 3270 LU macros include a **DLOGMOD** parameter.

## LU Macro

```
 luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
```

You need to define one LU for each 3270 session and each RJE session (including one LU for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches**
**+ total readers + 3270 sessions + 2**

**DLOGMOD=nnnnnnnn**

For 3270 session LUs, specify the default logon mode table entry to use. Logmodes control the type of 3270 session (interactive or printer) and the screen size. The Barr *3270 for RJE* manual lists several IBM default logon mode tables.

### LU Numbering

The mainframe convention was to begin defining LUs with **LOCADDR=2** because **LOCADDR=1** was reserved for other functions. With Barr software, you can begin defining RJE LUs with **LOCADDR=1**. For 3270 LUs, the first LU you define must be at **LOCADDR=2**.

Barr RJE+3270 software users must first define the 3270 session LUs and then the RJE LUs. If you use the LU at **LOCADDR=1** for RJE, define the 3270 LUs next and other RJE LUs last. For example, define LUs in this order:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

## 2.8 802.2 Connection with Local 3174

As shown in Figure 2-7, the IBM 3174 Establishment Controller, a departmental communications controller, attaches to an 802.2 network with a token ring adapter. The 3174, sometimes called a cluster controller for 3270 coax-attached terminals, channel attaches to the host.

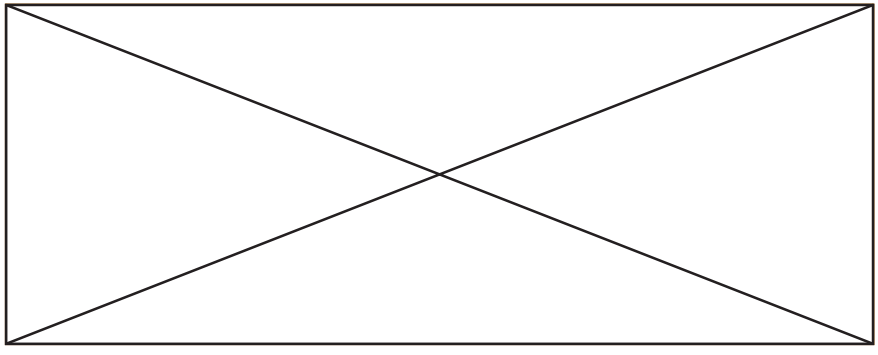
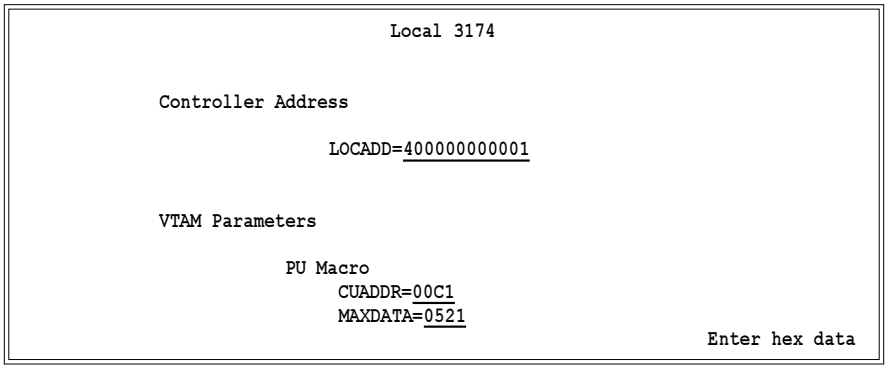


**Figure 2-7.** A 3174 connects to an 802.2 network via a token ring adapter.

The Local 3174 screen below lists parameters required by the BARR/RJE software and VTAM and NCP on the host. Your host communications programmer can provide values for these parameters. After you enter the Communication Link parameters in the software, Barr RJE produces sample statements for the host programmer to enter in the VTAM and NCP parameter libraries.

## Barr RJE Software Parameters

➤ From the Communication Link screen, select **Local 3174** to display the following screen:




This section describes the parameters you must specify in the Barr software. The value for **CUADDR** must match the value specified in the host definition. The values for **LOCADD** and **MAXDATA** must match the values specified in the Local 3174 Controller configuration.

### Controller Address

Because each physical connection to the 802.2 network must have a unique address, the 802.2 network adapter for the host and the one in the PC are assigned different addresses. You specify the host adapter address in the Barr software and in the 3174 configuration. You must get the PC adapter address from the adapter.

**LOCADD=4000abbbbbbb**

Specify the address of the 3174 802.2 adapter in the 3174 controller, where **a** is a digit from **0** to **7** and **b** is a hexadecimal digit from **0** to **F**. (This address is different from the PC's 802.2 address.) You can get the **LOCADD** value from **Question 900** in the 3174 Controller configuration.

## VTAM Parameters

The SNA RJE workstation corresponds to a VTAM PU with 2 to 20 LUs. Specify VTAM parameters with the PU and LU macros.

### PU Macro

**CUADDR=ccc**

Channel Unit Address, **ccc**, is the channel and unit address of the 3174 on the S/370 I/O channel.

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** typically apply to X.25.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data and thus reduce the amount of control information and total number of frames sent. Send 1024 bytes by setting **MAXDATA=1033** in the Barr software and VTAM PU definition. When **MAXDATA=1033**, increase the amount of memory used for buffers. On the Tuning and Global Options, Trace and Memory Options screen, set **Memory allocated for buffers** to **150000**. See Appendix A for more information about performance tuning.
>
> **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

## RJE Host Parameters

After you enter the 802.2 software parameters and press Enter, the host definition parameter screen displays. Your screen reflects the selections you made on the Local 3174 (Channel Attached) screen.

The host definition screen provides the host programmer with sample statements to enter in the VTAM parameter libraries. Print the screen for your host programmer with Shift Prt Sc.

If you have Barr RJE+3270 software, see RJE+3270 Host Parameters later in this section.

> ***Note:*** BARR/RJE requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for BARR/RJE. You can save time and effort getting your system running if you use the recommended host definition.

## Physical Unit Definition for Local 3174

➤ From the Local 3174 screen, press Enter to display the following screen:

```
                    (These screens are for your host.)
                        Physical Unit Definition

Source statements are in SYS1.VTAMLST(NCP).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname   PU     CUADDR=00C1,                                          X
                SECNET=YES,MAXBFRU=8,                                 X
                PACING=7,VPACING=7
luname02 LU     LOCADDR=2,BATCH=YES              **  RJE  LU
luname03 LU     LOCADDR=3,BATCH=YES              **  RJE  LU
luname04 LU     LOCADDR=4,BATCH=YES              **  RJE  LU
luname05 LU     LOCADDR=5,BATCH=YES              **  RJE  LU
luname06 LU     LOCADDR=6,BATCH=YES              **  RJE  LU
                                                              Any key
```

This section describes the VTAM parameters on this screen and additional parameters you might need. The parameters are divided into three groups:

- Parameters that BARR/RJE requires
- Parameters that use system defaults
- Other useful parameters

### PU Macro

The PU macro names and describes a physical unit.

```
 puname   PU    CUADDR=ccc,                                           X
                SECNET=YES,MAXBFRU=8,                                 X
                PACING=7,VPACING=7
```

**BARR/RJE requires these parameters:**

**puname**
The PU's name conforms to the naming convention at your site. The VTAM operator uses the name to vary the unit active or inactive and to query the unit's status.

**CUADDR=ccc**
Channel Unit Address, **ccc**, is the channel and unit address of the 3174 on the S/370 I/O channel.

**SECNET=YES**
The PU is associated with a secondary network.

**MAXBFRU=8**
The number of receive buffers used by VTAM. The product of **MAXBFRU * UNITSZ** must be greater than or equal to **BUFSIZE + 9**. (**BUFSIZE** is the RJE buffer size. You specify **UNITSZ**, the buffer unit size, in the VTAM definition.) For example, in JES2 if **BUFSIZE=512**, then **MAXBFRU * UNITSZ** must be at least 521.

**PACING=7**
Determines how much data the host sends to BARR/RJE before the host needs a pacing response to send more data. Pacing is a flow-control mechanism that prevents the host from sending data faster than BARR/RJE can print or otherwise handle it. Values smaller than **7** often lower performance.

**VPACING=7**
Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM. Values less than **7** lower efficiency.

> ***Performance Tuning:*** Setting parameters to larger values can improve BARR/RJE performance. With **PACING=8** and **VPACING=8** in the VTAM PU definition, the host can send 8 data frames before it requires a pacing response. On a half-duplex line, it sends 7 frames at a time. When you use **PACING=8**, the pacing response could be returned in time to send 7 more frames of data. See Appendix A for more information about performance tuning.

**BARR/RJE uses these system default values:**

**DISCNT=(NO,F)**
Does not disconnect the PU until BARR/RJE requests it.

**ISTATUS=ACTIVE**
Activates the PU automatically.

**PUTYPE=2**
BARR/RJE uses the Physical Unit Type 2 protocol.

**Other useful parameters:**

**DLOGMOD=nnnnnnnn**
Names the logon mode table entry to use by default.

**MODETAB=nnnnnnnn**
Specifies the mode table containing the logmode entries. ISTINCLM is the default IBM-supplied mode table usually present with VTAM.

**SSCPFM=USSSCS**
Indicates that BARR/RJE's **Logon Type** is character coded. The system default is **SSCPFM=FSS** for a formatted logon.

## LU Macro

The LU macro instructions define LUs allocated to the RJE devices.

```
luname_i LU    LOCADDR=i,BATCH=YES              **  RJE LU
```

You need to define one LU for each RJE session (printers, punches, and readers) plus two additional LUs (one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 2**

Each LU requires a separate LU macro instruction. The number of RJE sessions that can be simultaneously active equals the number of LUs you define.

**BARR/RJE requires these parameters:**

**luname_i**
The LU name conforms to the naming convention at your site. BARR/RJE does not use this name.

**LOCADDR=i**
The local addresses must be unique. The maximum value for **i** is **2 0** when you use Barr software.

> ***Note:*** Whether you can use all 20 LUs depends on your RJE system. MVS/JES2 supports a maximum of 13 LUs with BARR/RJE and 17 LUs with RJE+3270. MVS/JES3 supports a maximum of 17 LUs with BARR/RJE and 20 LUs with RJE+3270.

**BATCH=YES**
Indicates the processing priority. Batch applications such as RJE require low priority while interactive applications such as 3270 usually have higher priority.

For VTAM Version 4, Release 3 or later, this parameter gets replaced by the Class of Service (**COS**) parameter in the **LOGMODE** for the host application.

## RJE+3270 Host Parameters

If you have Barr RJE+3270 software, the host definition screen looks like the sample below. It differs only slightly from the RJE host definition screen. This section only describes parameters that are different for RJE+3270.

The host definition screen provides the host programmer with sample statements to enter in the VTAM parameter libraries. Print the screen for your host programmer with Shift Prt Sc.

> ***Note:*** RJE+3270 requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for RJE+3270. You can save time and effort getting your system running if you use the recommended host definition.

## Physical Unit Definition for Local 3174

➤ From the Local 3174 screen, press Enter to display the following screen:

```
                      (These screens are for your host.)
                         Physical Unit Definition

Source statements are in SYS1.VTAMLST(NCP).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname   PU    CUADDR=0C1,                                              X
               SECNET=YES,MAXBFRU=8,                                    X
               PACING=7,VPACING=7
luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
luname03 LU    LOCADDR=3,DLOGMOD=D4C32782       **  3270 LU
luname04 LU    LOCADDR=4,DLOGMOD=D4C32782       **  3270 LU
luname05 LU    LOCADDR=5,DLOGMOD=D4C32782       **  3270 LU
luname06 LU    LOCADDR=6,BATCH=YES              **  RJE  LU
luname07 LU    LOCADDR=7,BATCH=YES              **  RJE  LU
luname08 LU    LOCADDR=8,BATCH=YES              **  RJE  LU
luname09 LU    LOCADDR=9,BATCH=YES              **  RJE  LU
luname10 LU    LOCADDR=10,BATCH=YES             **  RJE  LU
                                                                 Any key
```

For RJE+3270, you might need to define more LU macros. The 3270 LU macros include a **DLOGMOD** parameter.

### LU Macro

```
luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
```

You need to define one LU for each 3270 session and each RJE session (including one LU for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches**
**+ total readers + 3270 sessions + 2**

**DLOGMOD=nnnnnnnn**

For 3270 session LUs, specify the default logon mode table entry to use. Logmodes control the type of 3270 session (interactive or printer) and the screen size. The *3270 for RJE* manual lists several IBM default logon mode tables.

### LU Numbering

The mainframe convention was to begin defining LUs with **LOCADDR=2** because **LOCADDR=1** was reserved for other functions. With Barr software, you can begin defining RJE LUs with **LOCADDR=1**. For 3270 LUs, the first LU you define must be at **LOCADDR=2**.

Barr RJE+3270 software users must first define the 3270 session LUs and the RJE LUs. If you use the LU at **LOCADDR=1** for RJE, define the 3270 LUs next and other RJE LUs last. For example, define LUs in this order:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

## Configuring the Local 3174 Controller

You must specify several parameters at the 3174 for the Barr software to connect correctly.

1. **Question 940: Ring Address Assignment**
   Specify the PC token ring address.

2. **Question 940: T parameter**
   You must set the **T** parameter to **1** to tell the 3174 that the terminal connected to this port is defined as a PU, not a workstation. This parameter allows Barr to use its own PU definition.

3. **Question 941: F parameter**
   Set the **F** parameter according to the table below. The **F** parameter replaces the **MAXDATA** parameter in VTAM and must be set to match the value specified for **MAXDATA** on the Local 3174 screen in the Barr software.

| F | MAXDATA |
|---|---|
| 0 | 265 |
| 1 | 521 |
| 2 | 1033 |

***Note:*** If F is greater than 0 for a MAXDATA of greater than 265, these parameters might need to be adjusted:

- The host programmer might need to adjust the token ring adapter configuration on the 3174 for a send/receive frame size greater than 265.
- You might need to increase MAXBFRU.

Consult your systems programmer for proper values.

VTAM ignores **MAXDATA** for a locally attached 3174. Omit it from the VTAM definition. (Older versions of VTAM might reject a PU definition containing **MAXDATA**.) In the *VTAM Installation and Resource Guide* (SC23-0111-3), no **MAXDATA** parameter is shown for the PU on a local SNA major node. To determine whether **MAXDATA** is valid at your host, check the **VBUILD** statement type for the remote. If **TYPE=LOCAL**, then **MAXDATA** is not a valid parameter.

4. **Question 941: W parameter**
   You must set the W parameter for Maximum Out size and the number of transmits allowed before waiting for an acknowledgment. IBM recommends **W=2**.

## 2.9 802.2 Connection with Remote 3174

As shown in Figure 2-8, you can attach the IBM 3174 Establishment Controller, a departmental communications controller, to an 802.2 network with a token ring adapter.

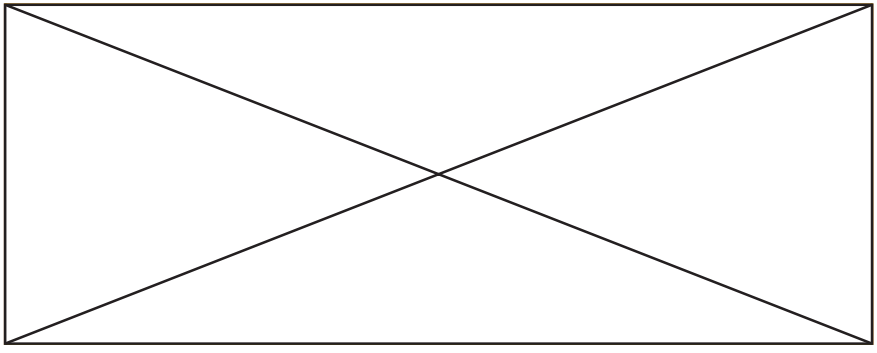


**Figure 2-8.** An 802.2 connection with a remote 3174.

The 3174 is sometimes called a cluster controller for 3270 coax-attached terminals. The Remote 3174 connects to the host 3720, 3725, or 3745 FEP with a communications line. The Remote 3174 screen below lists parameters required by the Barr RJE software and by VTAM and NCP on the host. Your host communications programmer can provide values for these parameters. After you enter the Communication Link parameters in the software, Barr RJE produces sample statements for the host programmer to enter in the VTAM and NCP parameter libraries.

## Barr RJE Software Parameters

➤ From the Communication Link screen, select **Remote 3174** and press Enter to display the following screen:

```
                              Remote 3174


        Controller Address
                      LOCADD=400000000001


        NCP Parameters
                   LINE Macro
                        NRZI=YES


        VTAM Parameters
                   PU Macro
                        ADDR=C1
                        MAXDATA=0521
                                                          Enter hex data
```

This section discusses the parameters you must specify in the Barr software. The values for **NRZI**, **ADDR**, and **MAXDATA** must match the values specified in the host definition.

### Controller Address

Each physical connection to the 802.2 network (including the host or the PC token ring network adapters) has a unique address. The 3174 configuration **Question 900** (Ring Address Assignment) defines this information.

**LOCADD=4000abbbbbbb**

Specify the 3174 token ring adapter's address in the 3174 controller, where **a** is a digit from **0** to **7** and **b** is a hexadecimal digit from **0** to **F**. (This address is different from the PC's token ring address.)

## NCP Parameters

Specify the NCP parameters with the LINE macro.

### LINE Macro

**NRZI=YES|NO**

NRZI was a way to code binary data over an RS232 interface. Check if your host still uses this convention.

**YES** Use NRZI coding.

**NO** Do not use NRZI coding.

## VTAM Parameters

The SNA RJE workstation corresponds to a VTAM PU with 2 to 20 LUs. Specify VTAM parameters with the PU and LU macros.

### PU Macro

**ADDR=aa**

The 8-bit address SDLC uses. This address, the first byte of every frame, separates messages sent to different PUs on the same line.

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** typically apply to X.25.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data and thus reduce the amount of control information and total number of frames sent. Send 1024 bytes by setting **MAXDATA=1033** in the Barr software and VTAM PU definition. When **MAXDATA=1033**, increase the amount of memory used for buffers. On the Tuning and Global Options, Trace and Memory Options screen, set **Memory allocated for buffers** to **150000**. See Appendix A for more information about performance tuning. **MAXDATA=2057** could result in greater system throughput, but it requires more memory

than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

## RJE Host Parameters

After you enter the 802.2 software parameters and press Enter, the host definition parameters screen displays. The screen reflects the selections you made on the Remote 3174 screen.

The host definition screen provides the host programmer with sample statements to enter in the NCP parameter libraries. Print the screen for your host programmer with Shift Prt Sc.

If you have Barr RJE+3270 software, see RJE+3270 Host Parameters later in this section.

> ***Note:*** BARR/RJE requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for BARR/RJE. You can save time and effort getting your system running if you use the recommended host definition.

### NCP Definition for Remote 3174

➤ From the Remote 3174 screen, press Enter to display the following screen:

```
                    (These screens are for your host.)
                      NCP Definition for Remote 3174

References:  VTAM Installation and Resource Definition, SC23-0111
             NCP Resource Definition Guide, SC30-3447
             NCP Resource Definition Reference, SC30-3448
Source statements are in SYS1.VTAMLST(NCP).

group    GROUP DIAL=NO,LNCTL=SDLC
linename LINE  ADDRESS=aaa,                                          X
               NRZI=YES,RETRIES=(8,2,20),SPEED=nnnnnn,TRANSFR=16
service  SERVICE ORDER=(puname)
puname   PU    ADDR=C1,DATMODE=HALF,                                 X
               MAXDATA=0521,                                         X
               PACING=7,PASSLIM=7,VPACING=7
luname02 LU    LOCADDR=2,BATCH=YES             **  RJE  LU
luname03 LU    LOCADDR=3,BATCH=YES             **  RJE  LU
luname04 LU    LOCADDR=4,BATCH=YES             **  RJE  LU
luname05 LU    LOCADDR=5,BATCH=YES             **  RJE  LU
luname06 LU    LOCADDR=6,BATCH=YES             **  RJE  LU
                                                          Any key
```

This section describes the NCP parameters on this screen and additional parameters you might need to specify. The parameters are divided into three groups:

- Parameters that BARR/RJE requires
- Parameters that use system defaults
- Other useful parameters

## GROUP Macro

The GROUP macro instruction includes common parameter settings for all LINE macros in the group.

```
group    GROUP DIAL=NO,LNCTL=SDLC
```

### BARR/RJE requires these parameters:

**group**
Optional macro label.

**DIAL=NO**
Specifies this is a dedicated line.

**LNCTL=SDLC**
Specifies the line control is SDLC.

## LINE Macro

The LINE macro defines the line at the host.

```
linename     LINE  ADDRESS=aaa,                                          X
             NRZI=YES,RETRIES=(8,2,20),SPEED=nnnnnn,TRANSFR=16
```

### BARR/RJE requires these parameters:

**linename**
The VTAM name of the communications line.

**ADDRESS=aaa**
Specifies the line interface address.

**NRZI=YES|NO**
NRZI was a way to code binary data over an RS232 interface. Check if your host still uses this convention.

**YES** Use NRZI coding.

**NO** Do not use NRZI coding.

**RETRIES=(m,t,n)**
The number of attempts the host will make to recover from communications errors. The general form is as follows:

**m** Maximum retransmissions of a frame while waiting for a normal response. The recommended value is **8**.

**t** Time in seconds to pause after **m** retransmissions have failed. The recommended value is **2**.

**n** Number of times to repeat the above error recovery sequence. The recommended value is **2 0**.

**SPEED=nnnnnn**
Required. The IBM Network Performance Monitor uses this value to calculate statistics. Because the modem provides the bits-per-second clock, this parameter does not affect on BARR/RJE functioning.

**TRANSFR=16**
The number of NCP buffers. This value corresponds to the maximum amount of data (the data transfer limit) the NCP will receive from the line during a single data transfer operation.

### BARR/RJE uses these system default values:

**CHECK=NODCD**
Do not monitor the Data Carrier Detect (DCD) line from the modem.

**CLOCKNG=EXT**
External clocking indicates the modem's clock controls the transmission rate.

## SERVICE Macro

The SERVICE macro controls the order in which the host services PUs on a dedicated line.

```
service  SERVICE ORDER=(puname)
```

**service**
The name of the **SERVICE** instruction is arbitrary. You can have multiple **SERVICE** statements with the same name.

**ORDER=(puname)**
The operands in the **ORDER** list give the order in which the host will poll PUs on a multipoint line. You can preferentially service one of the PUs on a multipoint line by listing it more than once in the **ORDER** list.

## PU Macro

The PU macro names and describes a PU. You can operate several PUs on the same line (multipoint). Each unit requires a separate PU macro instruction.

```
puname   PU    ADDR=aa,DATMODE=HALF,                                  X
               MAXDATA=nnnn,                                          X
               PACING=n,PASSLIM=n,VPACING=n
```

### BARR/RJE requires these parameters:

**puname**
The PU's name conforms to the naming convention at your site. The VTAM operator uses the name to vary the unit active or inactive and to query the unit's status.

**ADDR=aa**
The 8-bit address used by SDLC. This address, the first byte of every frame, separates messages sent to different PUs on the same line.

**MAXDATA=265|521|1033|2057**
The maximum amount of data the host can send on the PU in one frame. This count includes nine bytes of header information plus the

data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** typically apply to the X.25 host connection.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data. You can reduce the amount of control information and total number of frames sent. Send 1024 bytes by setting **MAXDATA=1033** in the Barr software and in the VTAM PU definition. When **MAXDATA=1033**, increase the amount of memory used for buffers. On the Tuning and Global Options, Trace and Memory Options screen, set **Memory allocated for buffers** to **150000**. See Appendix A for more information about performance tuning.
>
> **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

**PACING=n**

Determines how much data the host sends to BARR/RJE before it needs a pacing response to send more data. Pacing is a flow-control mechanism that prevents the host from sending data faster than BARR/RJE can print or otherwise handle it.

**PASSLIM=n**

Maximum number of information frames sent to the PU at one time.

**VPACING=n**

Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM.

> ***Performance Tuning:*** Setting parameters to larger values can improve BARR/RJE performance. With **PACING=8** and **VPACING=8** in the VTAM PU definition, the host can send 8 data frames before it requires a pacing response. On a half-duplex line, it sends 7 frames at a time. When you use **PACING=8**, the pacing response could be returned in time to send 7 more frames of data. See Appendix A for more information about performance tuning.

### BARR/RJE uses these system default values:

**DATMODE=HALF**

The Remote 3174 requires half-duplex data mode.

**DISCNT=(NO,F)**
Does not disconnect the PU until BARR/RJE requests it.

**ISTATUS=ACTIVE**
Activates the PU automatically.

**PUTYPE=2**
BARR/RJE uses the Physical Unit Type 2 protocol.

### Other useful parameters:

**DLOGMOD=nnnnnnnn**
Names the logon mode table entry to use by default.

**MODETAB=nnnnnnnn**
Specifies the mode table containing the logmode entries. ISTINCLM is the default IBM-supplied mode table usually present with VTAM.

**SSCPFM=USSSCS**
Indicates that BARR/RJE's **Logon Type** is character coded. The system default is **SSCPFM=FSS** for a formatted logon.

## LU Macro

The LU macro instructions define LUs allocated to the RJE devices.

```
luname_i LU    LOCADDR=i,BATCH=YES              **  RJE  LU
```

You need to define one LU for each RJE session (printers, punches, and readers) plus two additional LUs (one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 2**

Each LU requires a separate LU macro instruction. The number of RJE sessions that can be active simultaneously equals the number of LUs you define.

**BARR/RJE requires these parameters:**

**luname_i**
The **LU** name conforms to the naming convention at your site. BARR/RJE does not use this name.

**LOCADDR=i**
The local addresses must be unique. The maximum value for **i** is **20** when you use Barr software.

> ***Note:*** Whether you can use all 20 LUs depends on your RJE system. MVS/JES2 supports a maximum of 13 LUs with BARR/RJE and 17 LUs with RJE+3270. MVS/JES3 supports a maximum of 17 LUs with BARR/RJE and 20 LUs with RJE+3270.

**BATCH=YES**
Indicates the processing priority. Batch applications, such as RJE, require low priority while interactive applications, such as 3270 terminal sessions, usually have higher priority.

For VTAM Version 4, Release 3 or later, this parameter gets replaced by the Class of Service (**COS**) parameter in the **LOGMODE** for the host application.

# RJE+3270 Host Parameters

If you have Barr RJE+3270 software, the host definition screen looks like the sample below. It differs only slightly from the RJE host definition screen. This section describes parameters that are different for RJE+3270.

The host definition screen provides the host programmer with sample statements to enter in the NCP parameter libraries. Print the screen for your host programmer with Shift Prt Sc.

> ***Note:*** RJE+3270 requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for RJE+3270. You can save time and effort getting your system running if you use the recommended host definition.

## NCP Definition for Remote 3174

➤ From the Remote 3174 screen, press Enter to display the following screen:

```
                      (These screens are for your host.)
                        NCP Definition for Remote 3174

Reference: VTAM Installation and Resource Definition, SC23-0111
           NCP Resource Definition Guide, SC30-3447
           NCP Resource Definition Reference, SC30-3448
Source statements are in SYS1.VTAMLST(NCP).

group    GROUP DIAL=NO,LNCTL=SDLC
linename LINE  ADDRESS=aaa,                                              X
               NRZI=YES,RETRIES=(8,2,20),SPEED=nnnnnn,TRANSFR=16
service SERVICE ORDER=(puname)
puname   PU    ADDR=C1,DATMODE=HALF,                                     X
               MAXDATA=0521,                                             X
               PACING=7,PASSLIM=7,VPACING=7
luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
luname03 LU    LOCADDR=3,DLOGMOD=D4C32782       **  3270 LU
luname04 LU    LOCADDR=4,DLOGMOD=D4C32782       **  3270 LU
luname05 LU    LOCADDR=5,DLOGMOD=D4C32782       **  3270 LU
luname06 LU    LOCADDR=6,BATCH=YES              **  RJE  LU
luname07 LU    LOCADDR=7,BATCH=YES              **  RJE  LU
luname08 LU    LOCADDR=8,BATCH=YES              **  RJE  LU
luname09 LU    LOCADDR=9,BATCH=YES              **  RJE  LU
luname10 LU    LOCADDR=10,BATCH=YES             **  RJE  LU
                                                                  Any key
```

For RJE+3270, you might need to define more LU macros. The 3270 LU macros include a **DLOGMOD** parameter.

## LU Macro

```
 luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
```

You need to define one LU for each 3270 session and each RJE session (including one LU for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 3270 sessions + 2**

**DLOGMOD=nnnnnnnn**

For 3270 session LUs, specify the default logon mode table entry to use. Logmodes control the type of 3270 session (interactive or printer) and the screen size. The Barr *3270 for RJE* manual lists several IBM default logon mode tables.

### LU Numbering

The mainframe convention was to begin defining LUs with **LOCADDR=2** because **LOCADDR=1** was reserved for other functions. With Barr software, you can begin defining RJE LUs with **LOCADDR=1**. For 3270 LUs, the first LU you define must be at **LOCADDR=2**.

Barr RJE+3270 software users must first define the 3270 session LUs and then RJE LUs. If you use the LU at **LOCADDR=1** for RJE, define the 3270 LUs next and the other RJE LUs last. For example, define LUs in this order:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

## 2.10 Coax Connection with 3174 or 3274

As shown in Figure 2-9, the Barr COAX adapter allows Barr RJE to attach to a 3174 Establishment Controller or 3274 Cluster Controller.

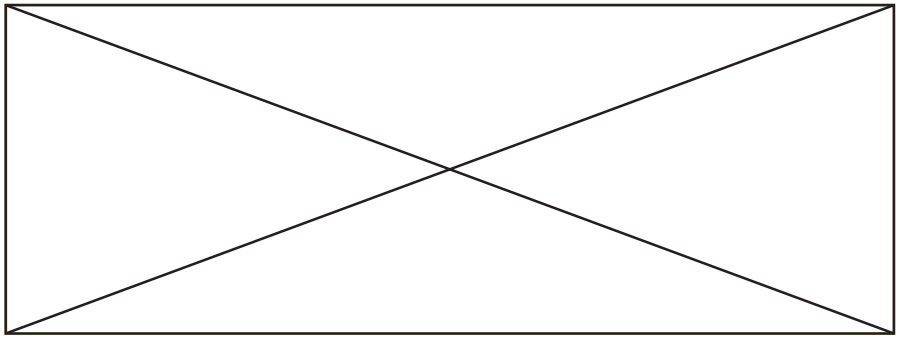


**Figure 2-9.** Barr RJE can attach to a 3174 or 3274 with Barr's COAX adapter.

The Distributed Function Terminal (DFT) interface provides Barr RJE with 5 LUs. The 3299 interface provides a multiplex data stream with 40 LUs. (BARR GATEWAY can use all 40 LUs, but under MVS/JES2, BARR/RJE can use a maximum of 13 LUs and RJE+3270 can use a minimum of 17 LUs.)

Figures 2-10 through 2-12 below show sample hardware configurations.

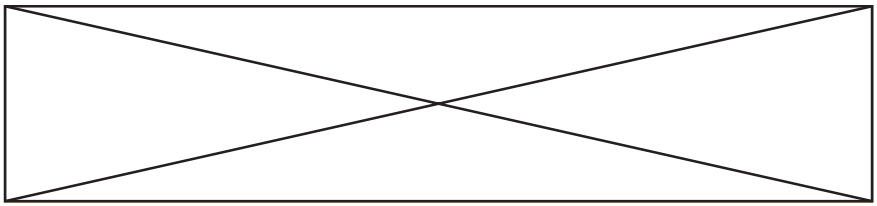


**Figure 2-10.** Coax DFT Connection (Barr DFT mode).

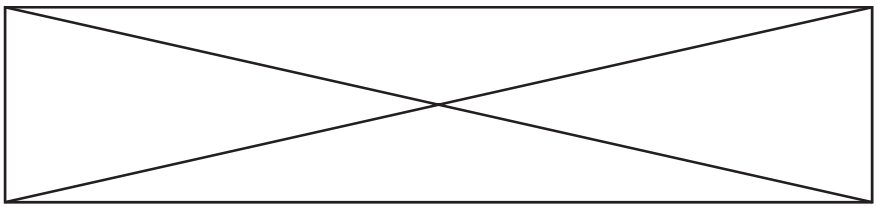


**Figure 2-11.** Standard Coax 3299 Connection (Barr DFT mode).

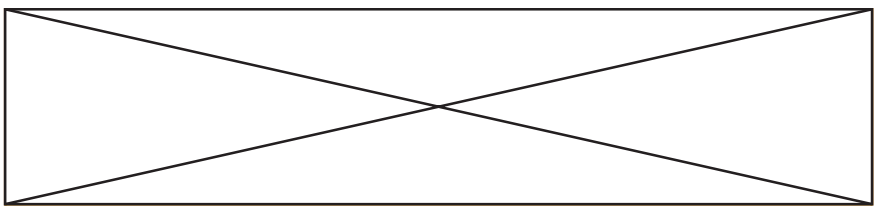
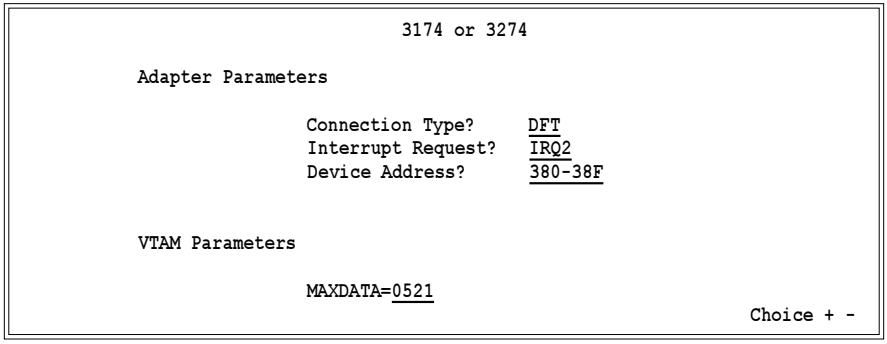


**Figure 2-12.** Coax 3299 Connection (Barr 3299 mode).

After you enter the Communication Link parameters in the software, Barr RJE produces sample statements to enter into the VTAM parameter libraries. The end of this section discusses how to configure the 3174 and 3274 controllers.

# Barr RJE Software Parameters

➤ From the Communication Link screen, select **3174 or 3274** and press Enter to display the following screen:




This section describes the parameters you need to specify in the Barr software.

## Adapter Parameters

**Connection Type? DFT|3299**
Specify the coax connection type.

**DFT** The COAX adapter operates in the single DFT terminal mode and allows a maximum of 5 LUs.

**3299** The COAX adapter operates in the 3299 multiplexer mode and allows a maximum of 40 LUs.

**Interrupt Request? IRQ2|IRQ3|IRQ4|IRQ5**
The interrupt request the COAX adapter should use. The default is **IRQ2**.

**Device Address? 380-38F|300-30F|340-34F|320-32F|360-36F|2E0-2EF|2C0-2CF|2A0-2AF**
The device address used by the COAX adapter. The default is **380-38F**. See the COAX adapter documentation for more information about the device address.

## VTAM Parameters

The SNA RJE workstation corresponds to a VTAM PU with 2 to 20 LUs. Specify VTAM parameters with the PU and LU macros.

**MAXDATA=265|521**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes for header information plus the data length. (Other values for **MAXDATA** do not apply to the coax connection.)

> ***Performance Tuning:*** You can increase throughput by sending larger frames of data and thus reduce the amount of control information and total number of frames sent. Send 512 bytes by setting **MAXDATA=521** in the Barr software. Some controllers cannot process more than 256 bytes of data per frame and thus truncate the data. If this occurs, set **MAXDATA**, **RUSIZE**, and **BUFSIZE** to 265. All data sizes are the same. See Appendix A for more information about performance tuning.

# RJE Host Parameters

After you enter the parameters on the 3174 or 3274 screen and press Enter, the host definition parameters screen displays. This screen reflects the selections you made on the 3174 or 3274 screen.

The host definition screen provides the host programmer with sample statements to enter in the VTAM parameter library. Print the screen for your host programmer with Shift Prt Sc.

If you have Barr RJE+3270 software, see RJE+3270 Host Parameters later in this section.

> ***Note:*** BARR/RJE requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for BARR/RJE. You can save time and effort getting your system running if you use the recommended host definition.

## Physical Unit Definition for 3174 or 3274

➤ From the 3174 or 3274 screen, press Enter to display the following screen:

```
                    (These screens are for your host.)
                         Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname   PU   ADDR=C1,DATMODE=HALF,                                  X
              PACING=7,PASSLIM=7,VPACING=7
luname02 LU   LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname03 LU   LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname04 LU   LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname05 LU   LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname06 LU   LOCADDR=xxx,BATCH=YES              **  RJE  LU



                                                              Any key
```

This section describes the VTAM parameters on this screen. BARR/RJE requires all these parameters.

## PU Macro

The PU macro names and describes a physical unit. The address parameter you use depends on whether the controller is local or remote to the host.

```
puname   PU    ADDR=aa,                                              X
               PACING=7,PASSLIM=7,VPACING=7
```

### BARR/RJE requires these parameters:

**ADDR=aa**

For a remote controller, the 8-bit address SDLC uses. This address is included as the first byte of every frame and distinguishes messages sent to different PUs on the same line.

**CUADDR=ccc**

For a local controller, the channel unit address of the controller on the S/370 I/O channel.

**PACING=7**

Determines how much data the host sends to BARR/RJE before it needs a pacing response to send more data. Pacing is a flow-control mechanism so the host does not send data faster than BARR/RJE can print or

otherwise handle it. Values smaller than the **MAXOUT** parameter often lower performance.

**PASSLIM=7**
The maximum number of information frames sent to the PU at one time. Usually set this to the same value as **MAXOUT**.

**VPACING=7**
Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM. You usually set this parameter to the same value as **MAXOUT**.

> ***Performance Tuning:*** Setting parameters to larger values can improve BARR/RJE performance. With **PACING=8** and **VPACING=8** in the VTAM PU definition, the host can send 8 data frames before it requires a pacing response. On a half-duplex line, it sends 7 frames at a time. When you use **PACING=8**, the pacing response could be returned in time to send 7 more frames of data. See Appendix A for more information about performance tuning.

## LU Macro

The LU macro instructions define LUs allocated to the RJE devices.

```
luname_i LU    LOCADDR=i,BATCH=YES              **  RJE  LU
```

You need to define one LU for each RJE session (printers, punches, and readers) plus two additional LUs (one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 2**

Each LU requires a separate LU macro instruction. The number of RJE sessions that can be active simultaneously equals the number of LUs you define.

### BARR/RJE requires these parameters:

**luname_i**
The LU name conforms to the naming convention at your site. BARR/RJE does not use this name.

**LOCADDR=i**

Local addresses must be unique. BARR/RJE supports a maximum of **20** LUs.

> ***Note:*** Whether you can use all 20 LUs depends on your RJE system. MVS/JES2 supports a maximum of 13 LUs with BARR/RJE and 17 LUs with RJE+3270. MVS/JES3 supports a maximum of 17 LUs with BARR/RJE and 20 LUs with RJE+3270.

**BATCH=YES**

Indicates the processing priority. Batch applications such as RJE require low priority while interactive applications such as 3270 terminal sessions usually have higher priority.

For VTAM Version 4, Release 3 or later, this parameter gets replaced by the Class of Service (**COS**) parameter in the **LOGMODE** for the host application.

## RJE+3270 Host Parameters

If you have Barr RJE+3270 software, the host definition screen looks like the sample below. It differs only slightly from the RJE host definition screen. This section only describes parameters that are different for RJE+3270.

The host definition screen provides the host programmer with sample statements to enter in the VTAM parameter library. Print the screen for the host programmer with Shift Prt Sc.

> ***Note:*** RJE+3270 requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for RJE+3270. You can save time and effort getting your system running if you use the recommended host definition.

### Physical Unit Definition for Remote 3174

➤ From the 3174 or 3274 screen, press Enter to display the following screen:

```
                        (These screens are for your host.)
                             Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname   PU    ADDR=aa,                                                    X
               PACING=7,PASSLIM=7,VPACING=7
luname02 LU    LOCADDR=xxx,DLOGMOD=D4C32782       **  3270 LU
luname03 LU    LOCADDR=xxx,DLOGMOD=D4C32782       **  3270 LU
luname04 LU    LOCADDR=xxx,DLOGMOD=D4C32782       **  3270 LU
luname05 LU    LOCADDR=xxx,DLOGMOD=D4C32782       **  3270 LU
luname06 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname07 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname08 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname09 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname10 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU



                                                                  Any key
```

For RJE+3270 you might need to define more LU macros. The 3270 LU macros include a **DLOGMOD** parameter.

## LU Macro

```
 luname02 LU    LOCADDR=2,DLOGMOD=D4C32782       **  3270 LU
```

You need to define one LU for each 3270 session and each RJE session (including one LU for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs you need:

**number of LUs = total printers + total punches + total readers + 3270 sessions + 2**

**DLOGMOD=nnnnnnnn**

For 3270 session LUs, specify the default logon mode table entry to use. Logmodes control the type of 3270 session (interactive or printer) and the screen size. The Barr *3270 for RJE* manual lists several IBM default logon mode tables.

## LU Numbering

The mainframe convention was to begin defining LUs with **LOCADDR=2** because **LOCADDR=1** was reserved for other functions. With Barr software,

you can begin defining RJE LUs with **LOCADDR=1**. For 3270 LUs, the first LU you define must be at **LOCADDR=2**.

Barr RJE+3270 software users must first define the 3270 session LUs and then define the RJE LUs. If you define the LU at **LOCADDR=1** for RJE, define the 3270 LUs next and other RJE LUs last. For example, define LUs in this order:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

## Configuring the Controller

You can easily attach the Barr adapter to a port on a 3174 Establishment Controller or 3274 Cluster Controller. You can attach the COAX adapter to either a DFT or 3299 port.

When you attach to a DFT port, the Barr software uses 5 LUs assigned to that port. When you attach to a 3299 multiplexed port, the software uses the 40 LUs assigned to the 8 multiplexed ports. BARR/RJE supports a maximum of 20 LUs.

> ***Note:*** Whether you can use all 20 depends on your RJE system. MVS/JES2 supports a maximum of 13 LUs with BARR/RJE and 17 LUs with RJE+3270. MVS/JES3 supports a maximum of 17 LUs with BARR/RJE and 20 LUs with RJE+3270.

### Configuring a 3174 Controller

For most 3174 Establishment Controller models, you can designate ports 0 and 8 as 3299 multiplex ports. If you use port 0, you cannot use ports 1 through 7. The controller's *Planning Guide* can help you determine which ports are the 3299 ports on your controller.

If you need to configure the controller from scratch, use the default LU addresses assigned to the ports by the controller configuration software.

(The default configuration usually begins with LU 2.) If you add new LUs to an existing configuration, use available LU decimal addresses. The examples below show you how to add LUs to an existing configuration.

## Example 1: Adding LUs for a DFT Port

This example adds new LUs to a DFT port in an existing controller configuration. The sample screen shows the current assignment of LUs to controller ports. The example adds three LUs with the next available addresses (20, 21, and 22) to port 26-01. LU assignment is the same for all types of LUs (printer, punch, and reader).

1. Run the 3174 configuration software.
2. Respond with a 2 to **Question 116: Individual Port Assignment**. This response tells the controller you will assign the LU addresses to the ports.

The following Port Assignment screen displays:

```
                117: Port Assignment

          Host Addresses                    Host Addresses
Port #IS  1   2   3   4   5    Port #IS  1   2   3   4   5
26-00     2   3                26-01
26-02     5   7   8   9        26-03
26-04                          26-05
26-06    12  13  14  15  16    26-07
26-08    18                    26-09
26-10    19                    26-11
26-12                          26-13
```

3. Tab to the first LU on port 26-01 and enter the new LU addresses.

The completed Port Assignment screen looks like the screen below.

```
                117: Port Assignment

          Host Addresses                    Host Addresses
Port #IS  1   2   3   4   5    Port #IS  1   2   3   4   5
26-00     2   3                26-01    20  21  22
26-02     5   7   8   9        26-03
26-04                          26-05
26-06    12  13  14  15  16    26-07
26-08    18                    26-09
26-10    19                    26-11
26-12                          26-13
```

4. Installation at the controller is complete. Save your controller configuration changes.

## Example 2: Adding LUs for a 3299 Port

This example adds new LUs to a 3299 port in an existing controller configuration. You need a COAX adapter (ISA bus) to attach to a 3299 port. You can define a maximum of 40 LUs.

For most 3174 controller models, port 08 is a 3299 port. This example adds 17 LUs with addresses 40 through 56 to port 26-08 on the controller. LU assignment is the same for all types of LUs (printer, punch, and reader).

1. Execute the 3174 configuration software.
2. Respond with a 2 to **Question 116: Individual Port Assignment**. This response tells the controller you will assign the LU addresses to the ports.

The following Port Assignment screen displays:

117: Port Assignment

| Port #IS | Host Addresses 1 | 2 | 3 | 4 | 5 | Port #IS | Host Addresses 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26-00 | 2 | 3 | | | | 26-01 | | | | | |
| 26-02 | 5 | 7 | 8 | 9 | | 26-03 | | | | | |
| 26-04 | | | | | | 26-05 | | | | | |
| 26-06 | | | | | | 26-07 | | | | | |
| 26-08 | | | | | | 26-09 | | | | | |
| 26-10 | | | | | | 26-11 | | | | | |
| 26-12 | | | | | | 26-15 | | | | | |
| 26-14 | | | | | | 26-17 | | | | | |
| 26-16 | | | | | | 26-19 | | | | | |
| 26-18 | | | | | | 26-21 | | | | | |
| 26-22 | | | | | | 26-23 | | | | | |
| 26-24 | | | | | | 26-25 | | | | | |
| 26-26 | | | | | | 26-27 | | | | | |
| 26-28 | | | | | | 26-29 | | | | | |
| 26-30 | | | | | | 26-31 | | | | | |

3. Tab to the first LU on port 26-08. Enter consecutive LU addresses starting at 40 for the LUs on ports 26-08 through 26-11.

The completed Port Assignment screen looks like this:

```
                    _______ 117: Port Assignment ______

                Host Addresses                          Host Addresses
Port #IS  1   2   3   4   5    Port #IS  1   2   3   4   5
26-00___ _2_ _3_ ___ ___ ___   26-01___ ___ ___ ___ ___ ___
26-02___ _5_ _7_ _8_ _9_ ___   26-03___ ___ ___ ___ ___ ___
26-04___ ___ ___ ___ ___ ___   26-05___ ___ ___ ___ ___ ___
26-06___ ___ ___ ___ ___ ___   26-07___ ___ ___ ___ ___ ___
26-08___ 40  41  42  43  44    26-09___ 45  46  47  48  49
26-10___ 50  51  52  53  54    26-11___ 55  56  ___ ___ ___
26-12___ ___ ___ ___ ___ ___   26-15___ ___ ___ ___ ___ ___
26-14___ ___ ___ ___ ___ ___   26-17___ ___ ___ ___ ___ ___
26-16___ ___ ___ ___ ___ ___   26-19___ ___ ___ ___ ___ ___
26-18___ ___ ___ ___ ___ ___   26-21___ ___ ___ ___ ___ ___
26-22___ ___ ___ ___ ___ ___   26-23___ ___ ___ ___ ___ ___
26-24___ ___ ___ ___ ___ ___   26-25___ ___ ___ ___ ___ ___
26-26___ ___ ___ ___ ___ ___   26-27___ ___ ___ ___ ___ ___
26-28___ ___ ___ ___ ___ ___   26-29___ ___ ___ ___ ___ ___
26-30___ ___ ___ ___ ___ ___   26-31___ ___ ___ ___ ___ ___
```

4. Installation at the 3174 controller is complete. Save your configuration changes.

## Configuring a 3274 Controller

This section describes how to assign the ports for a 3274 controller. The exact steps you need to perform depend on which release of Configuration Support D you have. See your *IBM 3274 Control Unit Customizing Guide* for the procedure required at your installation.

This example is for release 64, which allows you to enter the actual port addresses. (The screens are different for releases 60 through 63 where you enter the number of addresses needed on the port and then the addresses are automatically assigned.)

This example adds new LUs to a DFT port in an existing controller configuration. The first screen shows the current LU assignment. The example adds three LUs with the next available addresses (020, 021, and 022) to port A01
on the controller. LU assignment is the same for all types of LUs (printer, punch, and reader).

1. Run the 3274 configuration software.
2. Respond with a 2 to **Question 116: User-Controlled Port Assignment. Request.**

The Port Assignment Specification Table displays.

```
 117                                                  116=1 08/41A
                                                                LT=001
C@  #IS P  S1  S2  S3  S4     C@  #IS P  S1  S2  S3  S4
A00: 1 002 ___ ___ ___ ___    A01: 1 020 021 022 ___ ___
A02: 1 003 ___ ___ ___ ___    A03: 1 ___ ___ ___ ___ ___
A04: 1 005 007 008 009 ___    A05: 1 ___ ___ ___ ___ ___
A06: 1 ___ ___ ___ ___ ___    A07: 1 ___ ___ ___ ___ ___
A08: 1 012 013 014 015 016    A09: 1 ___ ___ ___ ___ ___
A10: 1 018 ___ ___ ___ ___    A11: 1 ___ ___ ___ ___ ___
A12: 0 019 ___ ___ ___ ___    A13: 0 ___ ___ ___ ___ ___
A14: 0 ___ ___ ___ ___ ___    A15: 0 ___ ___ ___ ___ ___
A16: 1 ___ ___ ___ ___ ___    A17: 1 ___ ___ ___ ___ ___
A18: 0 ___ ___ ___ ___ ___    A19: 0 ___ ___ ___ ___ ___
A20: 0 ___ ___ ___ ___ ___    A21: 0 ___ ___ ___ ___ ___
A22: 0 ___ ___ ___ ___ ___    A23: 0 ___ ___ ___ ___ ___
A24: 1 ___ ___ ___ ___ ___    A25: 1 ___ ___ ___ ___ ___
A26: 0 ___ ___ ___ ___ ___    A27: 0 ___ ___ ___ ___ ___
A28: 0 ___ ___ ___ ___ ___    A29: 0 ___ ___ ___ ___ ___
A30: 0 ___ ___ ___ ___ ___    A31: 0 ___ ___ ___ ___ ___
                                                          906-0
```

3. Tab to the first LU location on port A01 and enter the new LU addresses in decimal format.

The completed screen looks like the screen below.

```
 117                                                  116=1 08/41A
                                                                LT=001
C@  #IS P  S1  S2  S3  S4     C@  #IS P  S1  S2  S3  S4
A00: 1 002 ___ ___ ___ ___    A01: 1 020 021 022 ___ ___
A02: 1 003 ___ ___ ___ ___    A03: 1 ___ ___ ___ ___ ___
A04: 1 005 007 008 009 ___    A05: 1 ___ ___ ___ ___ ___
A06: 1 ___ ___ ___ ___ ___    A07: 1 ___ ___ ___ ___ ___
A08: 1 012 013 014 015 016    A09: 1 ___ ___ ___ ___ ___
A10: 1 018 ___ ___ ___ ___    A11: 1 ___ ___ ___ ___ ___
A12: 0 019 ___ ___ ___ ___    A13: 0 ___ ___ ___ ___ ___
A14: 0 ___ ___ ___ ___ ___    A15: 0 ___ ___ ___ ___ ___
A16: 1 ___ ___ ___ ___ ___    A17: 1 ___ ___ ___ ___ ___
A18: 0 ___ ___ ___ ___ ___    A19: 0 ___ ___ ___ ___ ___
A20: 0 ___ ___ ___ ___ ___    A21: 0 ___ ___ ___ ___ ___
A22: 0 ___ ___ ___ ___ ___    A23: 0 ___ ___ ___ ___ ___
A24: 1 ___ ___ ___ ___ ___    A25: 1 ___ ___ ___ ___ ___
A26: 0 ___ ___ ___ ___ ___    A27: 0 ___ ___ ___ ___ ___
A28: 0 ___ ___ ___ ___ ___    A29: 0 ___ ___ ___ ___ ___
A30: 0 ___ ___ ___ ___ ___    A31: 0 ___ ___ ___ ___ ___
                                                          906-0
```

4. Verify that the assigned addresses are correct. Then change the 906 response in the lower-left corner to 1.
5. You have finished installation at the controller. Save your configuration changes.

# 2.11 SNA/SAA Server Connection with MS SNA Server

The MS SNA Server option allows you to connect a Barr workstation and a Microsoft SNA Server gateway.

## Set Up SNA Server and Install the Barr Software

Follow these steps to set up SNA Server for Barr RJE and install the Barr RJE software on your PC.

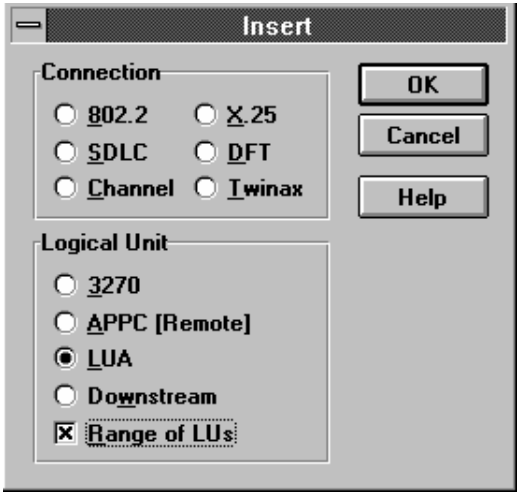
### 1. Configure LUs for Barr RJE on the SNA Server.

Before you configure the Barr software, you must configure LUs for Barr RJE on SNA Server. The LUs must be type **`LUA`**, have a base name of **`BARRLU`**, and be assigned high priority as in the following example.

Use the SNA Server Administration program to add LUs to a connection service. For more information about SNA Server Administration, see the Microsoft SNA Server *Administration Guide*.

a. From the SNA Server Admin window, click **`Add a new user, connection, or LU`** button.

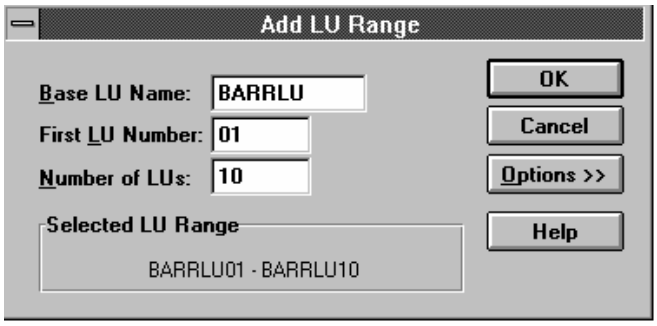
The following window appears:



b. Select a Logical Unit type of **LUA**.

c. Select the **Range of LUs** option.

The following window appears:



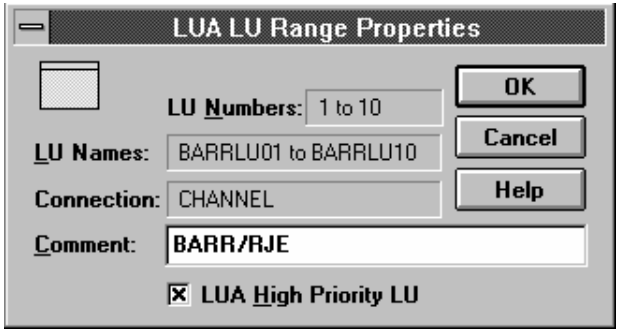

d. Enter **BARRLU** in the **Base LU Name** field. The Barr software requires this name.

e. Enter the **First LU Number** and the **Number of LUs**. The Barr software supports a maximum of 17 LUs.

BARR/RJE requires one LU for each 3270 session and for each RJE session (including one for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs:

```
number of LUs = total printers + total punches
+ total readers + 3270 sessions + 2
```

f. Click OK.



g. Select **LUA High Priority LU** at the bottom of the screen.

**2. Install a client.**

Install an SNA Server, MS DOS-based client on your workstation PC. See your Microsoft SNA Server *Installation Guide* for more information.

**3. Start the SNABASE service.**

Start the SNABASE service. For example, from a DOS prompt enter the following:

```
snabase
```

See your Microsoft SNA Server *Installation Guide* for information about starting services.

**4. Install the Barr software on your PC.**

Follow the instructions in the Software Installation chapter in your Barr RJE manual to install the Barr software on your workstation PC. You must install the Barr software in the same directory as the Microsoft client files (see step 2 above).

**5. Check the SNA.INI file.**

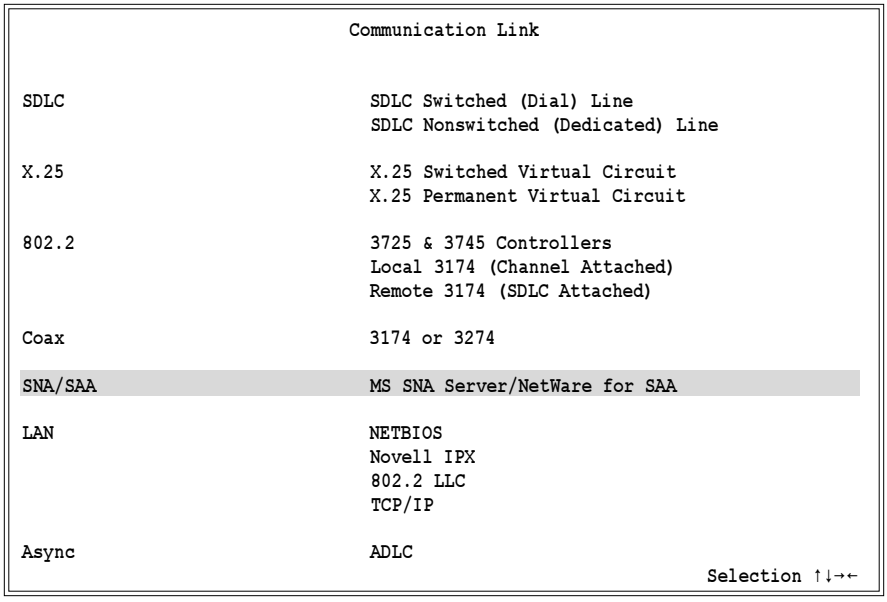
Verify that the SNA.INI file resides in the same directory as the Microsoft client and Barr software files.

**6. Install the hardware key.**

The hardware key protects the software from unauthorized use. You must install the key on a parallel port on your workstation PC. You can attach a printer cable to the other end of the key.

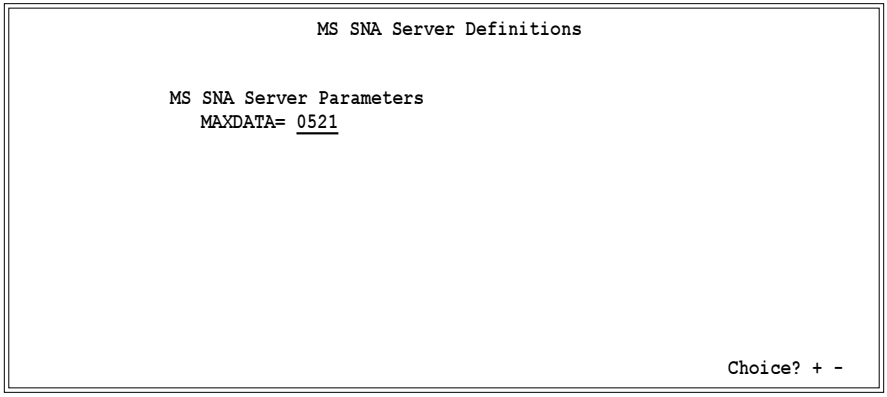
## Barr RJE Software Parameters

This section describes how to configure the Barr RJE software. You must define which communication link Barr RJE will use.




➤ From the Barr Communication Link screen, select **SNA/SAA**.

If you specified SNA Server when you purchased Barr RJE, the MS SNA Server Definitions screen displays.




## MS SNA Server Parameters

**MAXDATA=**

Maximum amount of data sent or received on the PU in one frame. This count includes nine bytes for header information plus the data length.

> ***Note:*** The **MAXDATA** field must be greater than or equal to the receive **RUSIZES** in the bind data. See the Bind Data section in Chapter 23 of your Barr RJE manual for more information.

The **MAXDATA** value defined at the workstation must match the **MAXDATA** definition for the workstation at the gateway.

## RJE Host Parameters

After you enter the software parameters and press Enter, the Physical Unit Definition screen displays the host definition parameters.

```
                    (These screens are for your host.)
                       Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname   PU    ADDR=aa,                                                  X
               PACING=7,PASSLIM=7,VPACING=7
luname02 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname03 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname04 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname05 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname06 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU


                                                                Any key
```

This screen provides the host programmer with sample statements to enter in the NCP and VTAM parameter libraries. Print this screen for the host programmer with Shift Prt Sc.

> ***Note:*** Barr RJE requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for Barr RJE. You can save time and effort getting your system running if you use the recommended host definition.

### PU Macro

The PU macro names and describes a physical unit.

```
puname   PU    ADDR=aa,                                                  X
               PACING=7,PASSLIM=7,VPACING=7
```

You do not need a separate PU macro for the workstation. You only need to add LU macros to the current PU definition. When you define the PU for the first time, use this example PU macro.

**ADDR**
Address of the PU.

**PACING**
Determines how much data the host sends to Barr RJE before it needs a pacing response to send more data. Pacing is a flow-control mechanism that prevents the host from sending data faster than Barr RJE can print or otherwise handle it. Values smaller than **7** might lower performance.

**PASSLIM**
Maximum number of information frames sent to the PU at one time.

**VPACING**
Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM. Values less than **7** lower efficiency.

## LU Macro

The LU macro names and describes a logical unit.

```
luname 02  LOCADDR=XXX,BATCH=YES              ** RJE  LU
```

You need to define one LU for each 3270 session and each RJE session (including one LU for receiving messages to the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs:

**number of LUs = total printers + total punches**
**+ total readers + 3270 sessions + 2**

**BATCH=YES**
Indicates the processing priority. Batch applications like RJE require low priority while interactive applications like 3270 usually have higher priority.

For VTAM Version 4, Release 3 or later, replace this parameter with the Class of Service (**COS**) parameter in the **LOGMODE** for the host application.

### LU Numbering

The mainframe convention was to begin defining LUs with LOCADDR=2 because LOCADDR=1 was reserved for other functions. With Barr software, you can begin defining RJE LUs with LOCADDR=1. For 3270 LUs, you must define the first LU at LOCADDR=2.

Barr RJE software users must define the 3270 session LUs and then the RJE LUs. If you use the LU at LOCADDR=1 for RJE, define the 3270 LUs next and the other RJE LUs last. For example, define LUs in this order:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

## 2.12 SNA/SAA Server Connection with NetWare for SAA

You can connect a Barr workstation to a Novell NetWare for SAA gateway with LUx protocol. This section describes how to configure the software. Before you configure the Barr software, you must configure the NetWare for SAA server and load the LUx software.

## Configure a NetWare for SAA Server Session

Before you configure the Barr software, you must configure a session for Barr RJE on the NetWare for SAA server. You can configure the Barr RJE session for LU pools only. The **LU type** must be LUx. The Barr software

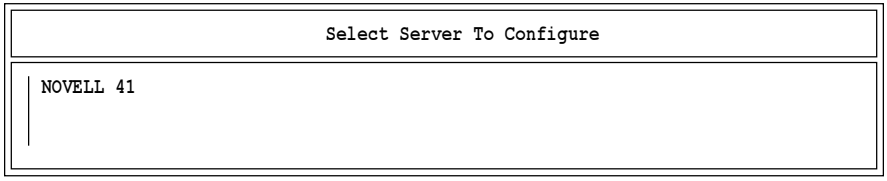
uses the LUx protocol to connect to the NetWare for SAA gateway and transfer data in a non-proprietary way. The LUx protocol also provides network transport protocol and network-type transparency. As NetWare for SAA expands its ability to communicate between workstations and the gateway, your communications ability also expands with no restrictions from or changes to the Barr software.

The following example shows you how to configure an LU pool session for Barr RJE. Use the NetWare Communication Services configuration utility (CSCON) to configure the Communication Executive. See your *NetWare for SAA Administration Guide* for more information about CSCON.

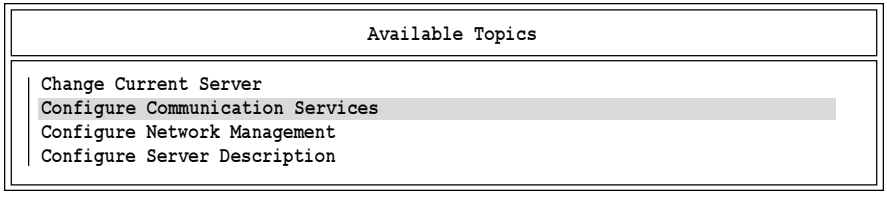
To configure the SAA Server to accept a login from Barr RJE, run CSCON from a Novell workstation attached to the SAA server. Configuration steps differ slightly, depending on which version of NetWare for SAA you have.

## Configure a New Host PU Profile

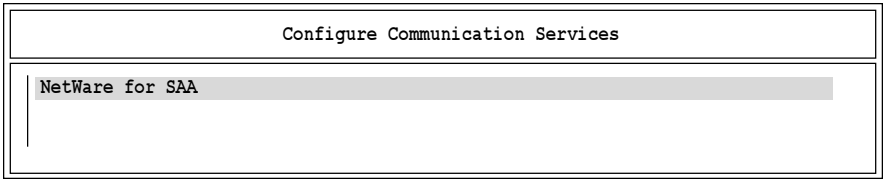
The first step to configure Version 2.0 is to create and configure a new host PU profile with CSCON.



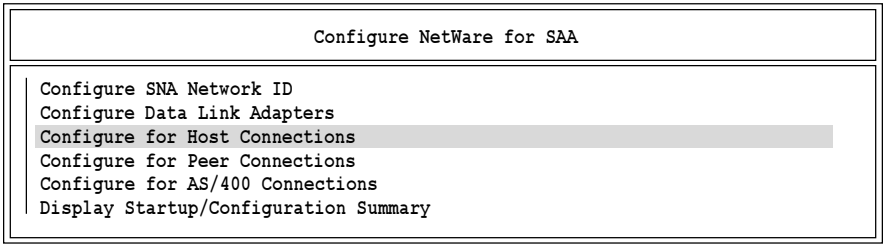

1. From the Select Server to Configure screen, select the server where you installed the Barr driver.



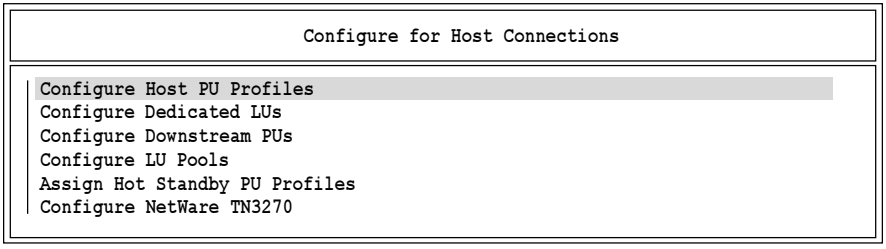

2. Select **Configure Communication Services**.




3. Select **NetWare for SAA**.

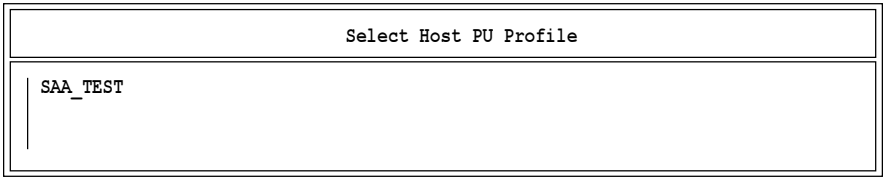



4. Select **Configure for Host Connections**.



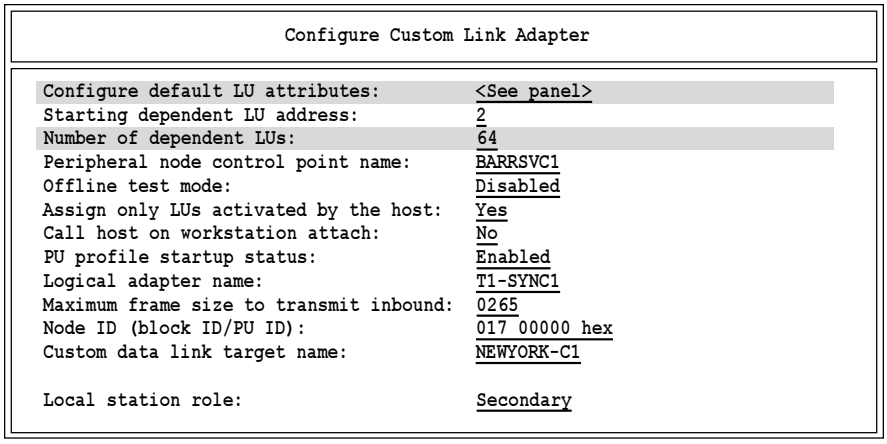

5. Select **Configure Host PU Profiles**.

A list of existing profiles displays.

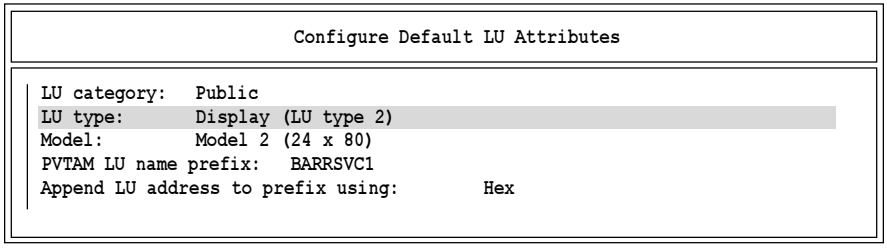



6. Press Ins to create a new profile.
7. At the **Enter new PU profile name** prompt (not shown), type **BARRSVC1**.

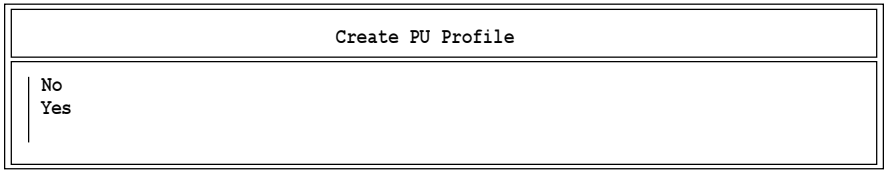
The following screen highlights the fields you need to modify.




8. Select **Configure default LU attributes**.



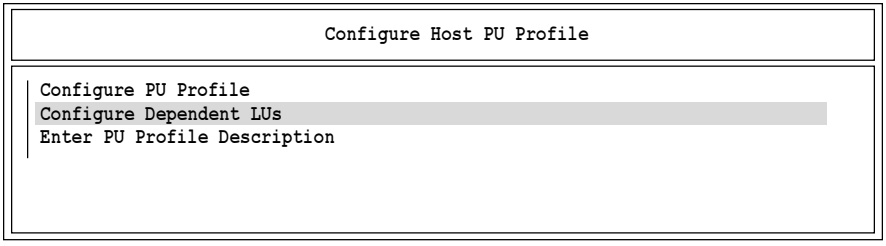

9. In the **LU type** field, select **LUx (LU type 0, 1, 2 or 3)**.
10. When you finish, press Esc.
11. Enter a number in the **Number of dependent LUs** field.
12. When you finish, press Esc.



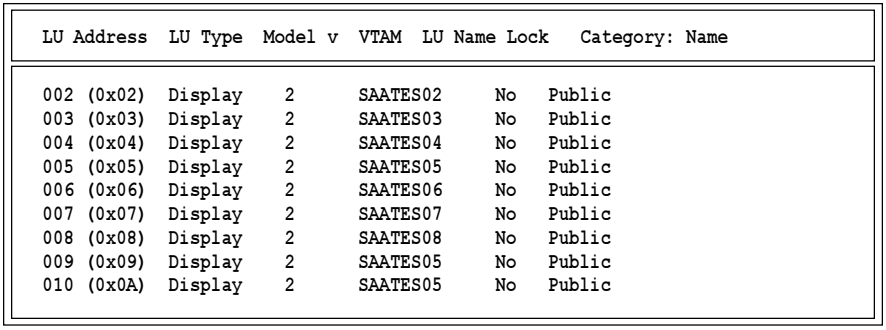

13. Select **Yes** and press Enter to create the profile.

## Configure LUs for the New Profile

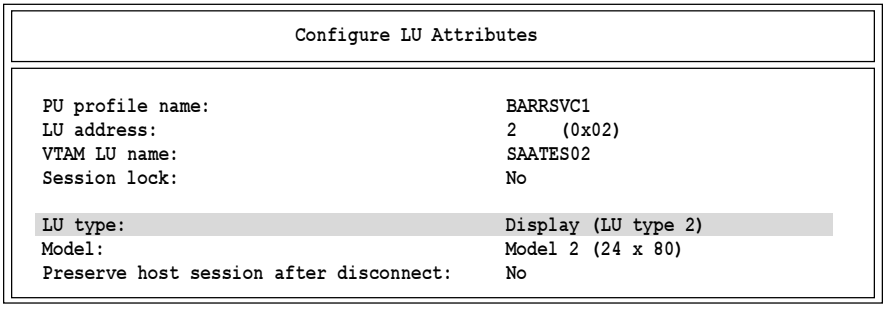
Now you can configure LUs for the new profile.




1. From the Configure Host PU Profile screen, select **Configure Dependent LUs**.




2. Select an LU to configure.

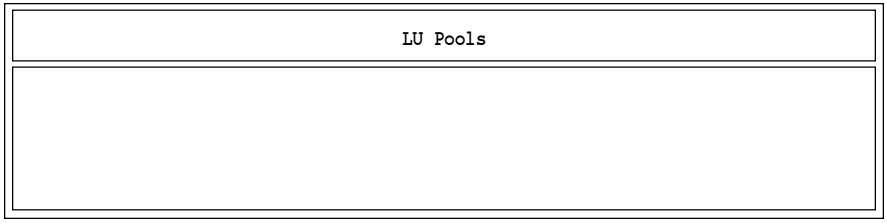



3. For **LU type**, select **LUx (LU type 0, 1, 2 or 3)**.
4. When you finish, press Esc.
5. At the **Save LU Attributes** prompt (not shown), select **Yes**.
6. When you finish configuring LUs, press Esc until you return to the Configure for Host Connections screen.

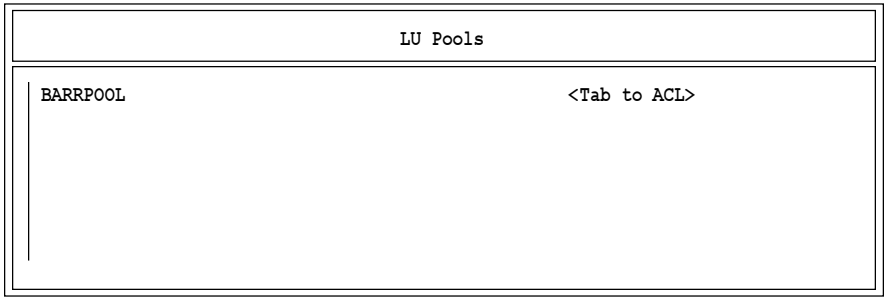
Now you are ready to configure LU pools.

## Configure LU Pools

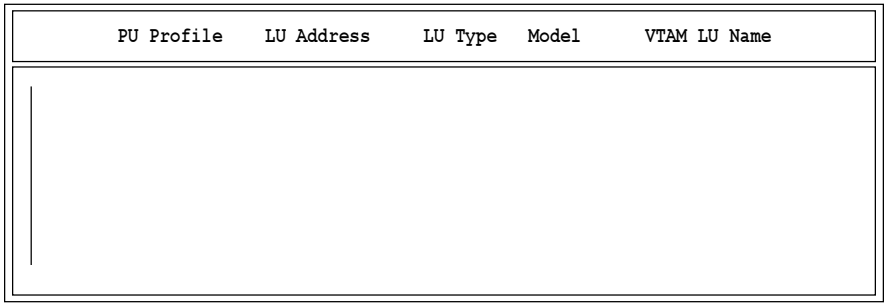
1. From the Configure for Host Connections screen, select **Configure LU Pools** and press Enter to display the LU Pools screen.



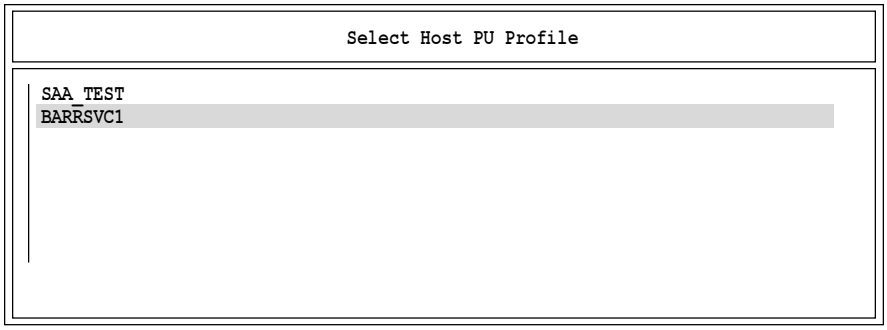

2. Press Ins.
3. At the **Enter New LU Pool Name** prompt (not shown), enter a pool name. The name you enter displays on the LU Pools screen.



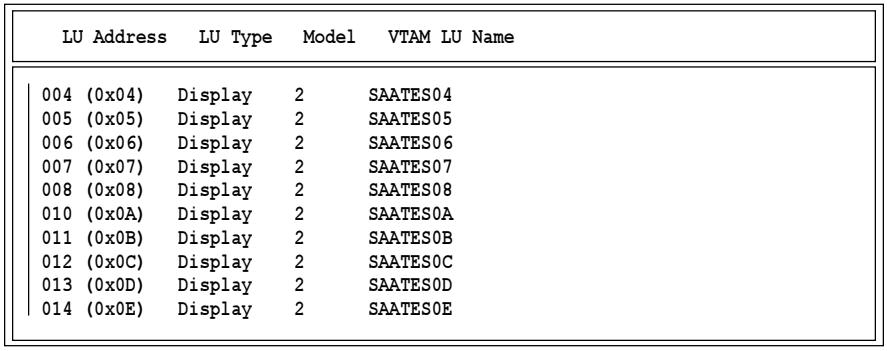

4. Select the LU pool and press Enter to view the next screen.



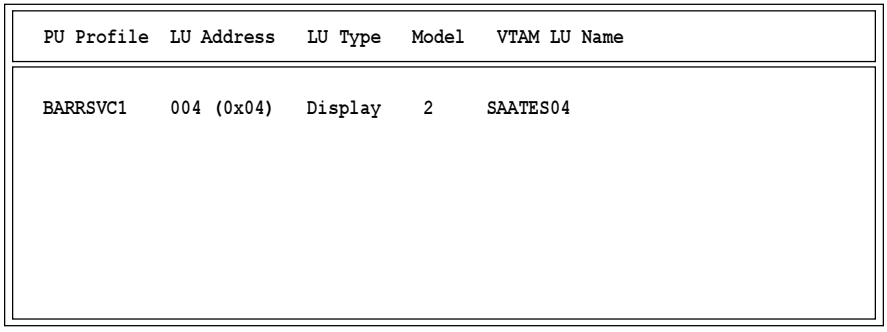

5. Press Ins.




6. Select the profile you created earlier.




7. Select LUs to assign to the pool. When you finish, press Esc.




The screen reflects the LU pool assignments. If you return to the Dependent LUs screen, the LUs you assigned to the pool should be marked **BARRPOOL**.

```
LU Address  LU Type  Model   VTAM  LU Name  Lock  Category: Name

002 (0x02)   Display    2      SAATES02     No   Pooled:  BARRPOOL
003 (0x03)   Display    2      SAATES03     No   Public
004 (0x04)   Display    2      SAATES04     No   Pooled:  BARRPOOL
005 (0x05)   Display    2      SAATES05     No   Public
006 (0x06)   Display    2      SAATES06     No   Public
007 (0x07)   Display    2      SAATES07     No   Public
008 (0x08)   Display    2      SAATES08     No   Public
009 (0x09)   Display    2      SAATES09     No   Pooled:  BARRPOOL
010 (0x0A)   Display    2      SAATES0A     No   Public
011 (0x0B)   Display    2      SAATES0B     No   Public
012 (0x0C)   Display    2      SAATES0C     No   Public
013 (0x0D)   Display    2      SAATES0D     No   Public
014 (0x0E)   Display    2      SAATES0E     No   Public
015 (0x0F)   Display    2      SAATES0F     No   Public
016 (0x10)   Display    2      SAATES10     No   Public
```

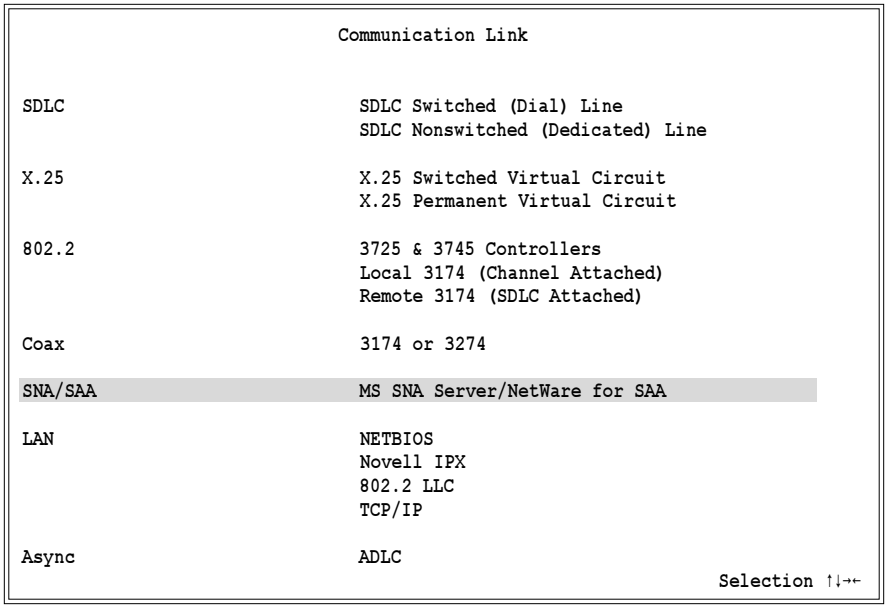
8. Press Esc until you see the prompt to exit CSCON. Select **Yes** and press Enter to exit.

## Barr RJE Software Parameters

After you install the Barr software, follow these steps to tell Barr RJE to use the SAA communication link.

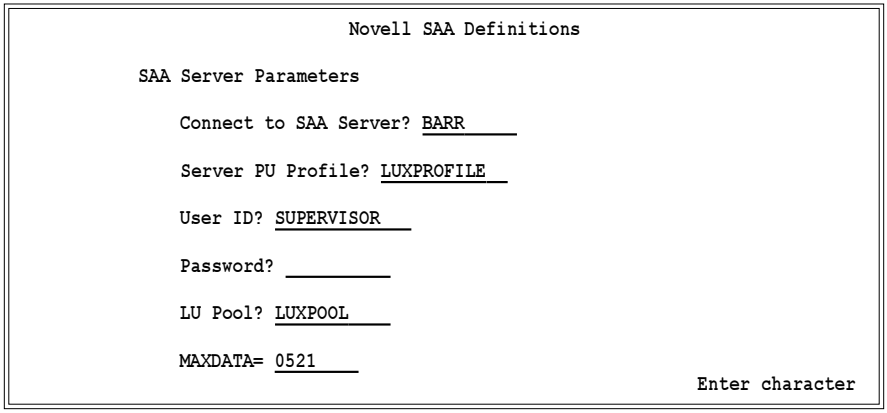
> ***Note:*** Use the default of 100,000 bytes in the **Memory allocated for buffers** field at first because this field size affects how many LUs you can load. Check buffer use with the **Communications Statistics** command and adjust the **Memory allocated for buffers** field as necessary. See the Tuning and Global Options and Communications Diagnostics chapters in your Barr RJE manual for more information.

1. From the Installation menu, choose **Communication Link** to display the Communication Link screen.




2. Select **SNA/SAA**.

The software displays a Novell SAA Definitions screen.




You must fill in each of the SAA server parameters defined below.

**Connect to SAA Server?**

Name of the Novell NetWare for SAA server to which you are connecting.

**Server PU Profile?**
Name of the PU profile set up for the Barr workstation on the NetWare for SAA server.

**User ID?**
ID used to access the NetWare for SAA server.

**Password?**
Password for the specified **User ID**.

**LU Pool?**
Name of the LU pool set up for the Barr workstation on the NetWare for SAA server.

**MAXDATA=**
Maximum amount of data sent or received on the PU in one frame. This count includes nine bytes for header information plus the data length.

> ***Note 1:*** The **MAXDATA** field must be greater than or equal to the receive **RUSIZES** in the bind data. See the Communications Diagnostics chapter in your Barr RJE manual for more information.

> ***Note 2:*** The value of **MAXDATA** defined at the workstation must match the **MAXDATA** definition for this workstation at the gateway.

## RJE Host Parameters

After you complete the software parameters and press Enter, the Physical Unit Definition screen displays the host definition parameters.

```
                    (These screens are for your host.)
                         Physical Unit Definition

Source statements are in SYS1.VTAMLST(SWITCHED).
Reference: VTAM Installation and Resource Definition, SC23-0111

puname   PU    ADDR=aa,                                                  X
               PACING=7,PASSLIM=7,VPACING=7
luname02 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname03 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname04 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname05 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
luname06 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU




                                                                 Any key
```

The host definition screen provides the host programmer with sample statements to enter in the NCP and VTAM parameter libraries. Print this screen for the host programmer with Shift Prt Sc.

> ***Note:*** BARR/RJE requires certain host parameters to operate. An existing remote definition used for other RJE equipment might not work for BARR/RJE. You can save time and effort getting your system running if you use the recommended host definition.

## PU Macro

The PU macro describes and names a physical unit.

```
puname   PU     ADDR=aa,                                                 X
                PACING=7,PASSLIM=7,VPACING=7
```

You do not need a separate PU macro for the Barr workstation. You only need to add LU macros to the current PU definition. When you define the PU macro for the first time, use the sample PU macro above with the following parameters:

**ADDR**
: Address of the PU.

**PACING**
: Determines how much data the host sends to BARR/RJE before it needs a pacing response to send more data. Pacing is a flow-control mechanism that prevents the host from sending data faster than BARR/RJE

can print or otherwise handle it. Values smaller than **7** might lower performance.

**PASSLIM**
Maximum number of information frames sent to the PU at one time.

**VPACING**
Similar to the **PACING** parameter, but **VPACING** determines pacing between the RJE system and VTAM. Values less than **7** lower efficiency.

## LU Macro

The LU macro describes and names a logical unit.

```
luname02 LU    LOCADDR=xxx,BATCH=YES              **  RJE  LU
```

You need to define one LU for each 3270 session and each RJE session (including one LU for receiving messages on the operator console and one for sending commands from the keyboard). Use this formula to calculate the number of LUs:

**number of LUs = total printers + total punches + total readers + 3270 sessions + 2**

**BATCH=YES**
Indicates the processing priority. Batch applications such as RJE require low priority while interactive applications such as 3270 usually have higher priority.

For VTAM Version 4, Release 3 or later, the Class of Service (**COS**) parameter in the **LOGMODE** for the host application replaces this parameter.

## LU Numbering

The mainframe convention was to begin defining LUs with **LOCADDR=2** because **LOCADDR=1** was reserved for other functions. With Barr software, you can begin defining RJE LUs with **LOCADDR=1**. For 3270 LUs, you must define the first LU at **LOCADDR=2**.

Barr RJE+3270 software users must define the 3270 session LUs and then the RJE LUs. If you use the LU at **`LOCADDR=1`** for RJE, you must define the 3270 LUs next and the other RJE LUs last. For example, define LUs in this order:

| LU | Application |
|---|---|
| LOCADDR=1 | RJE |
| LOCADDR=2 | 3270 |
| LOCADDR=3 | 3270 |
| LOCADDR=4 | 3270 |
| LOCADDR=5 | 3270 |
| LOCADDR=6 | RJE |
| LOCADDR=7 | RJE |
| LOCADDR=8 | RJE |
| LOCADDR=9 | RJE |

## Load the LUx Program

Follow these steps to load the LUx program, start the Barr RJE software, and resolve any protocol errors.

### 1. Log on to the server.

You must log on to the server running SAA Server before you start the Barr software.

### 2. Load the LUx program.

a. Load the LUx program (which comes with Novell NetWare for SAA) into memory.

b. From the DOS prompt, you must load the following SAA version 2.0 driver (supplied by Novell) before you run Barr RJE:

```
pbload lux
```

You can locate the driver on the SAA machine in the directory \SYSTEM\NWSAA\LUX\DOS\.

c. After the system executes one of these commands, you can check for completion by executing the following command at the DOS prompt:

```
mem/c
```

This command displays the programs loaded in memory. The LUx driver is either LOADBASE or ADBASE with a size between 85 and 95 KB. This number increases by about 15 KB per LU session you establish between the Barr PC and the SAA server. For example, with 10 LUs connected, the LOADBASE TSR in memory can be as large as 250,000 bytes. Ensure there is enough memory available for Barr's executable and the amount of memory LOADBASE will need for LU activation.

For Novell NetWare for SAA version 1.3b, resources used by the LUx driver were not released when Barr RJE exited to DOS. As a result, the size of the driver in memory increased dramatically and Barr RJE could no longer load and run. The only solution to this problem was to reboot the PC to clear memory. This problem exists to a certain extent with version 2.0, but for 2.0 you can unload the LUx driver from memory with the following command:

```
pbload /u lux
```

You can load and unload the driver automatically with a batch file. Then you can start Barr RJE again without rebooting the PC.

### 3. Start Barr RJE.

To run the Barr software, type your Barr software startup command at the DOS prompt:

```
barrsnar
```

### 4. Perform diagnostics.

Any LUx protocol errors that occur usually appear on the screen in the following format:

```
OPCODE=  VERB=  PrimRC=  SecRC=
```

Look at the PrimRC and SecRC return codes. PrimRC gives the generic problem (for example, connection failed) while SecRC gives details (for example, insufficient memory). Some of the common codes follow.

| PrimRC | SecRC | Problem |
|---|---|---|
| 2 | 81 | Session has been lost. You probably need to reboot the PC. |
| F | 32020 | Memory error. Probable TSR memory problem. Reboot the PC and try again. |
| 14 | 0FF02 | SAA Server not found. |
| | 0FF03 | PU Profile not found. |
| | 0FF04 | LU(s) not found; probably not allocated at PU Profile. |
| | 0FF05 | User ID not found. |
| | 0FF06 | Password incorrect. |
| | 0FF07 | Password missing. |
| | 0FF0D | User right (Syscon). |
| | 0FF0E | Access denied. |
| | 00003 | MAXDATA mismatch. |
| F011 | 0F001 | LUx session error. Memory problem. Usually occurs with 32020 error. |

If an unrecoverable error occurs, the Barr software automatically creates a dump file. Barr software dumps are usually taken in the NET_LUX module. Probable causes for a dump are that you did not log into the Novell server running SAA before you started the Barr software or you did not start the appropriate LUx driver.

Diagnostics are the same as for other RJE products. A Barr RJE line trace and memory dump is available for problem analysis. See the Communications Diagnostics chapter in your Barr RJE manual.

## 2.13 LAN Connection with NetBIOS

Since IBM introduced Network Basic Input/Output System (NetBIOS) software LAN interface, NetBIOS has become an industry standard you can use with almost all LAN adapters, including Ethernet, Arcnet, and token ring.

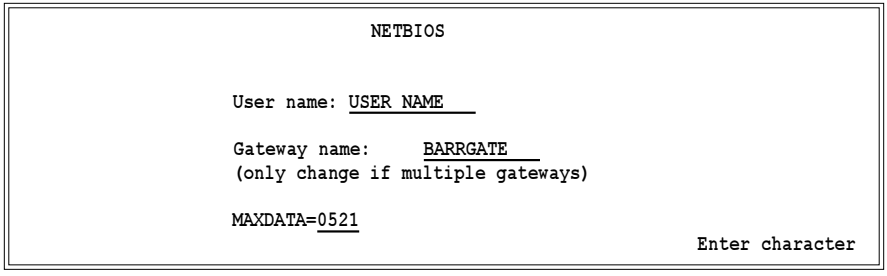
Although NetBIOS is a universal interface, the software consumes memory and takes 30 seconds to make a link connection.

This section discusses software parameters and only defines host parameters for the gateway software Communication Link, as described in the *BARR GATEWAY* user manual.

## Barr RJE Software Parameters

➤ From the Communication Link screen, select **NETBIOS** as the LAN link.

The NETBIOS screen displays.




**User name:**

The unique LAN name used to identify your workstation. You can supply this name at the DOS prompt by entering the following:

```
barrsnar #username
```

where you substitute the correct user name. Do not assign the gateway workstation name the same name the network assigned to the PC.

> ***Note:*** The user name you enter in the gateway workstation software *must be different* from the name the network assigned to the PC on Lantastic networks or other networks that assign names to network workstations. Do *not* enter the network name in the Barr workstation software's **User name** field. Choose a different name.

**Gateway name:**

The name of the gateway with which you are communicating. The default name is **BARRGATE**. If you pool multiple gateways, enter **BARRGATE0** as the gateway name.

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes for header information plus the data length. (The values **121**, **249**, **489**, and **969** do not apply to NetBIOS.)

> ***Note:*** **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

# 2.14 LAN Connection with Novell IPX

Novell IPX is an efficient protocol that comes with Novell LANs. This LAN software interface has been implemented for most LAN adapters, including Ethernet, Arcnet, and token ring.

The IPX workstation connection also allows multiple Barr products to communicate by using IPX on one PC. If you use DesqView for multi-tasking, you can run a separate Barr product in each DOS window.

This section describes software parameters and only defines host parameters for the gateway software Communication Link, as described in the *BARR GATEWAY* user manual.

## Barr RJE Software Parameters

➤ From the Communication Link screen, select **Novell IPX**.

The Novell IPX screen displays.

```
                          Novell IPX


 User name: _____________
(blank name defaults to Novell username)

 Gateway name:     BARRGATE
(only change if multiple gateways)

 Network number: 00000001

 MAXDATA=0521

                                                  Enter character
```

**User name:**

The unique LAN name used to identify your workstation. You can supply this name at the DOS prompt by entering the following:

```
barrsnar #username
```

where you substitute the correct user name. If you leave the name blank, the software uses the Novell user name.

**Gateway name:**

The name of the gateway with which you are communicating, usually **BARRGATE**. If you pool multiple gateways, enter **BARRGATE0** as the gateway name.

**Network Number:**

The network number of the gateway PC. (This number differs from the network number for the file server.) The software uses the network number in a multiple network environment to communicate with a gateway on another network. The default value is **00000001**. Use the Novell NetWare command **USERLIST/A** to obtain this information.

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes of header information plus the data length. The default value is **521**. According to Novell, you can only transmit 576 bytes over an SPX link. (The values **121**, **249**, **489**, and **969** do not apply to Novell IPX.)

> ***Note:*** **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

# 2.15 LAN Connection with 802.2 LLC

The IBM 802.2 LLC LAN Support program interfaces to IBM 802.2 LLC networks. This interface is available for most token ring adapters. The LAN Support program 1.2 also supports Ethernet adapters.

This section describes software parameters and only defines host parameters for the gateway software Communication Link, as described in the *BARR GATEWAY* user manual.

## Barr RJE Software Parameters

➤ From the Communication Link screen, select **802.2 LLC**. The 802.2 LLC screen displays.

```
                                802.2 LLC


          Gateway Address=400000000001

          (See BARR Gateway console for address.)

          MAXDATA=0521
                                                        Enter hex data
```

**Gateway Address=**

This address corresponds to the token ring address of the PC running BARR GATEWAY. Enter the address shown on the BARR GATEWAY console. You can also find out the address by running the TRN_ADDR program on the gateway PC. (TRN_ADDR comes with the BARR GATEWAY reference files.)

**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** do not apply to 802.2.)

> ***Note:*** **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

# 2.16 LAN Connection with TCP/IP

This section describes how to set up BARR/RJE or RJE+3270 workstation software with the TCP/IP link to connect to a 6200 network gateway.

Barr workstation software with the TCP/IP link can connect to the BARR GATEWAY, Computerm Corporation's ENTREX 6200 Network Gateway, or the McData LinkMaster 6200 Network Controller, as shown in Figures 2-14 and 2-15.

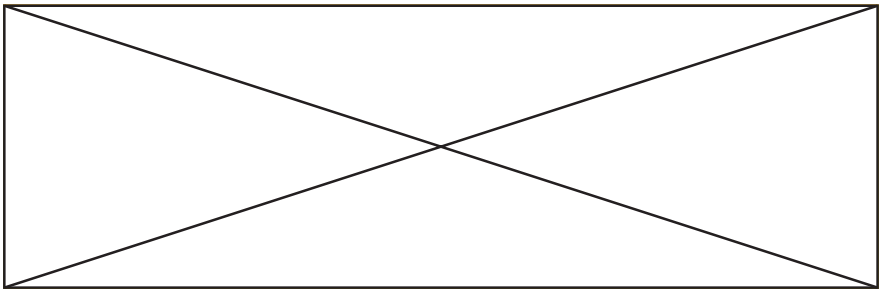


**Figure 2-14.** Barr workstation software connects to the BARR GATEWAY via the TCP/IP link.

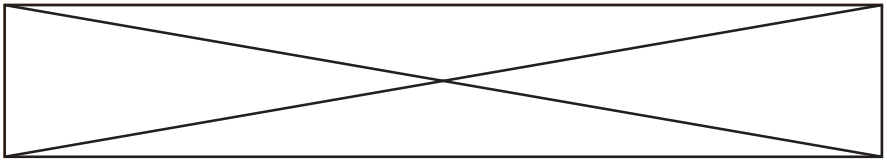


**Figure 2-15.** Barr workstation software uses the SNA/IP protocol to connect to the 6200 network gateway over the TCP/IP network.

## PC/TCP Interface

The PC/TCP kernel from FTP Software provides the PC interface to TCP/IP networks. This interface requires an Ethernet adapter. You must install PC/TCP version 3.1 or later on the workstation PC. When you connect the workstation to the BARR GATEWAY, you must also install PC/TCP on the gateway PC.

## BARR GATEWAY Host Parameters

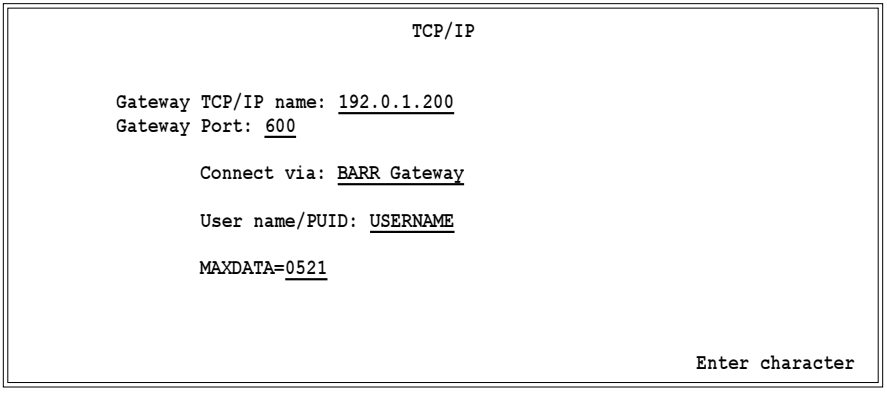
When you connect the workstation to the BARR GATEWAY, you must define host parameters for the gateway software Communication Link. (You do not need to define host parameters for the workstation link.) The *BARR GATEWAY* user manual describes host parameters.

## Barr RJE Software Parameters

You must enter several parameters in the Barr workstation software.

➤ From the Communication Link screen, select **TCP/IP**.

The TCP/IP screen displays.




**Gateway TCP/IP name:**
Enter the TCP/IP address or TCP/IP name of the gateway. You can use the TCP/IP name only if a name server is set up to map the TCP/IP name to its address.

**Gateway Port:**
Specify the TCP/IP port number of the gateway PC. The workstation uses the port number when it sends **Xids** to the gateway.

**Connect via:**
Select which device to connect to.

**BARR Gateway**
Connect to the BARR GATEWAY.

**6200 Gateway**
Connect to the 6200 gateway.

**User name/PUID:**
When you connect the workstation to the BARR GATEWAY, enter the user name for the workstation. When you connect the workstation to the 6200 gateway, enter the eight-character PU ID (a concatenation of the **IDBLK** and **IDNUM** values).

**MAXDATA: 265|521|1033|2057**
The maximum amount of data the host can send on the PU in one frame. This count includes nine bytes for header information plus the data length. (The values **121**, **249**, **489**, and **969** do not apply to TCP/IP.)

> ***Note:*** **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

# 2.17 Async Connection with ADLC

You can use asynchronous data link connections (ADLC) between a Barr RJE workstation and the BARR GATEWAY.

This section describes software parameters and only defines host parameters for the gateway software Communication Link, as described in the *BARR GATEWAY* user manual.

## Barr RJE Software Parameters

➤ From the Communication Link screen, select **ADLC**. The Asynchronous DLC screen displays.

```
                          Asynchronous DLC

      ADLC Parameters

                  Name=USERNAME
                  IDBLK=03D
                  IDNUM=12345
                  MAXDATA=0521
                                                    Enter character
```

**Name=USERNAME**

An eight-character workstation user name used for logon to the gateway. You can log on as a default user by using the default value **USERNAME**. If you must be a defined user, the value for **Name** must match the user name defined in the gateway software.

If remote callback is enabled on the gateway, the value for **Name** will be associated with a phone number the gateway uses for the return call. (You enter the phone number in the gateway software as part of the **User Definition**)

For ASYNC over X.25, you enter the user name during an interactive asynchronous terminal session. The user name is the text you enter in the X.25 Call User Data field when you place the X.25 call through the asynchronous PAD.

**IDBLK=bbb**
**IDNUM=nnnnn**

These parameters identify the remote's PU definition. The gateway sends an Exchange ID request (**Xid**) as the first message to a remote. The remote responds with an Exchange ID response (**Xidr**) that contains the **IDBLK** and **IDNUM** parameters.

The gateway searches for the user definition identified by **Name**. It then uses this user definition for the rest of the communications session.

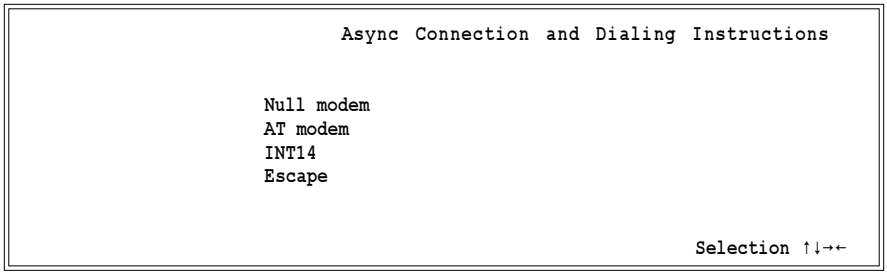
**MAXDATA=265|521|1033|2057**

The maximum amount of data you can send on the PU in one frame. This count includes nine bytes of header information plus the data length. The default value is **521**. (The values **121**, **249**, **489**, and **969** do not apply to 802.2.)

> ***Note:*** **MAXDATA=2057** could result in greater system throughput, but it requires more memory than other settings. Use this value only if your PC has sufficient conventional memory for buffers after you load the Barr software.

## Async Connection and Dialing Instructions

When you finish entering the Asynchronous DLC parameters, the following screen displays:




Select the type of workstation connection to the gateway PC from the following list:

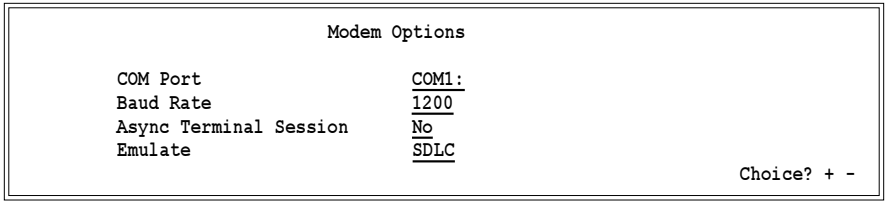
**Null modem**
A direct connection through a null modem connector.

**AT modem**
A dial connection through an asynchronous modem attached to the workstation.

**INT14**
A dial connection through a network modem using an INT14 driver.

## Null Modem

A direct physical connection will be made to the gateway PC through the Barr Null Modem connector. The maximum recommended cable distance between the workstation and the gateway PC is 50 feet. When you select this option, the following screen displays:




**COM Port**
Select which workstation PC COM port you will use to connect to the gateway. Choose from **COM1**, **COM2**, **COM3**, or **COM4**.

**Baud Rate**

Baud rate (bits per second) determines the rate at which data bits will be transmitted. The receiver and sender must transmit at the same rate. Choose from **1200**, **2400**, **9600**, **19.2K**, or **38.4K**.

**Async Terminal Session**

Specify whether you need to use an asynchronous terminal session to connect through a modem security system.

**No** Default. You do not need a terminal session.

**Yes** The software uses an asynchronous terminal session to connect through a modem security system. When you connect async over X.25, you must use a terminal session. The interactive terminal session starts when you run the software. After you establish the host connection, use the command to exit the terminal session.

**Emulate**

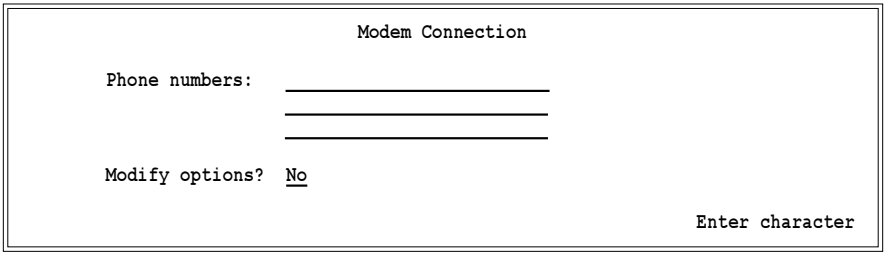
Select the type of protocol emulation.

**SDLC** Default. Use the SDLC protocol for a standard asynchronous connection.

**LAPB** When you connect async over X.25, you must use the LAPB protocol, which is similar to SDLC but reduces network traffic overhead.

## AT Modem

A dial connection to the gateway uses an internal or external asynchronous modem attached to the workstation. When you select this option, the following screen displays:



**Phone numbers:**

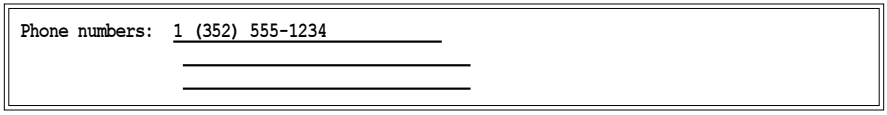
Enter the phone number for autodial connection if your modem supports autodial. The modem automatically dials the phone number and listens for a modem answerback tone. When the modem receives the answerback tone, it begins communication.

You can enter up to three phone numbers, although most situations require only one phone number. If the modem does not connect with the first number, it tries the second and third numbers.

Use these characters for phone number and dialing instructions:

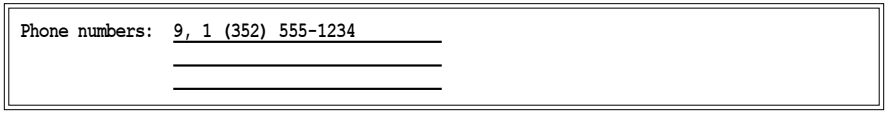
| Character | Function |
|---|---|
| 0123456789 | Dial digits. |
| # * | Touch-tone digits. |
| , | Wait 4 seconds. |
| W | Wait for dial tone. |
| T | Use touch-tone dialing (default). |
| P | Use pulse dialing. |
| ( )-space | You can use parentheses, dashes, and spaces to make the phone number readable. The software ignores these characters. |

**Example 1: Typical long distance phone number**




**Example 2: Calling long distance from a PBX**

Internal phone systems such as PBXs might require you to enter additional digits, such as a leading 9.




This sample phone number dial sequence is explained below.

| | |
|---|---|
| 9 | Dial 9 (reaches outside line). |
| , | Wait 4 seconds. |

| | |
|---|---|
| **1** | Dial 1 (long distance call). |
| **(** | Ignore. |
| **352** | Dial 352 (area code). |
| **)** | Ignore. |
| **555** | Dial 555. |
| **-** | Ignore. |
| **1234** | Dial 1234. |

**Modify options?**

Select whether to modify additional modem options.

**No** Default. Use the default modem options.

**Yes** View or change the modem options.

## Modem Options

➤ Set **Modify Options** to **Yes** on the Modem Connection screen to reach the Modem Options screen.

```
                          Modem Options

      COM Port                        COM1:
      Baud Rate                       1200
      Async Terminal Session          No
      Emulate                         SDLC
      Connection                      Autodial
      Autoanswer on ring              1
      Starting time                   __:__
      Speaker                         On
      Callback support                No
      Defender support                No
                                                        Choice? + -
```

**COM Port**

Select which workstation PC COM port to use for gateway connection. Choose **COM1**, **COM2**, **COM3**, or **COM4**.

**Baud Rate**

Baud rate (bits per second) determines the rate at which to transmit data bits. The receiver and sender must transmit at the same rate. Choose **1200**, **2400**, **9600**, **19.2K**, or **38.4K**.

**Async Terminal Session**

Specify whether you need to use an asynchronous terminal session to connect through a modem security system.

**No** Default. You do not need a terminal session.

**Yes** You will use an asynchronous terminal session to connect through a modem security system. When you connect async over X.25, you must use a terminal session. The interactive terminal session starts when you use the software. After you establish the host connection, you must use a command to exit the terminal session.

**Emulate**

Select the type of protocol emulation.

**SDLC** Default. Use the SDLC protocol for a standard asynchronous connection.

**LAPB** When you connect async over X.25, you must use the LAPB protocol, which is similar to SDLC but reduces network traffic overhead.

**Connection**

You can choose from three types of modem connections: **Autodial**, **Autoanswer**, and **Manual**. Select the connection type supported by your modem.

**Autodial**

Default. The modem automatically dials the phone number and listens for a modem answerback tone.

**Autoanswer**

The modem automatically answers incoming calls, waits 2 seconds, then sends the answerback tone for 3 seconds. The modem then begins communication.

**Manual**

Use this choice to dial the phone manually.

**Autoanswer on ring**

The modem answers the phone after a specified number of rings (**1** to **9**), usually one ring.

**Starting time**

Use this option for delayed communications startup. Normally, you do not enter a start time. If you leave this field blank, the Barr software immediately tries to make the connection when it starts up.

If you specify a time, connection begins at that time during operation. If you start Barr software within 8 hours after the specified time, the software makes an immediate connection rather than waiting for the next starting time.

When you enter a time, use the 24-hour scheme where 1 a.m. is 01:00 and 1 p.m. is 13:00. Verify that the time on your PC is correct (use the DOS time command) to ensure that the connection will be made at the specified time.

**Speaker**

Select whether to enable the modem speaker.

**On** Default. Enable the modem speaker for monitoring dial and connection activity.

**Off** Disable the modem speaker.

**Callback support**

You can configure BARR GATEWAY to only connect through callback, which means you can access the gateway only from a specific location. Your BARR GATEWAY administrator enables remote callback on the gateway Async Connections screen and enters a callback phone number for your **USERNAME** in the gateway User Definition. After you connect to BARR GATEWAY, the gateway disconnects the line and then calls the number associated with your **USERNAME**. Your workstation enters auto-answer mode and answers the return call. You can then begin your workstation sessions.

**No** Do not use callback.

**Yes** Connect only through remote callback.

**Defender support**

Select whether to enable the callback security feature.

Some host systems use sophisticated callback security systems that protect against unauthorized access. The user calls the security system,

enters an ID code, and waits for the system to call back before it establishes communication. Only users with an ID code at a predefined callback phone number can gain access.

**No** Default. Disable callback security.

**Yes** Enable callback security. Defender is a common callback security system.

If you have callback security and you select **Yes**, the following parameters display when you press Enter:

```
Call Back Security ID number 000000000
Call Back answer delay         5 sec
```

**Call Back Security ID number**
Enter your security number.

**Call Back answer delay**
Select the number of seconds between calling the telephone and sending the ID number. Choose **5**, **10**, **15**, or **25**.

Callback security works this way: Barr software dials the callback security system, waits a fixed time, and then sends the security ID number. It then hangs up the phone and assumes the Autoanswer connection mode. If the security system does not call back the Barr software, the software makes additional callback requests 5, 10, and 30 minutes after the original call.

## INT14

INT14 is a PC interface standard that uses BIOS interrupt 14h. Use this option for a dial connection to the gateway through a modem in a network modem pool. This feature requires an INT14 handler program from another vendor. INT14 handlers are included with many asynchronous communications packages such as Cross Connect from Smith Micro Software, Inc.

When you use INT14, connect to an available network modem, run the Barr software, and then release the modem after you exit the Barr software. Sample batch file statements for Cross Connect follow.

**netdev**
**netdev/open**
**barrsnar**
**netdev/close**
**netdev/disable**

When you select the **INT14** option, the Modem Connection installation screen displays.

```
                          Modem Connection

    Phone numbers:  _____________________
                    _____________________
                    _____________________

    Modify options? No

                                                    Enter character
```

**INT14** requires the same options as the **AT modem** selection. The AT modem section describes these Modem Connection screen options.

Appendix A

# Performance Tuning

## A.1 SDLC Switched and Nonswitched Lines

You can adjust several host computer and PC parameters to increase SDLC line performance. The host tuning parameters are almost always the key to maximizing performance. PC tuning parameters usually only become an issue on high-speed lines of 256 Kbps or higher.

### Host Tuning Parameters

**DATMODE**, **MAXDATA**, and **PACING** most dramatically affect SDLC line performance. These parameters have matching settings in the Barr RJE software, but the Barr software does *not* control them. The host computer has absolute control over these settings and the remote software merely follows orders. Table A-1 lists the default and recommended values for these parameters. None of the parameters are set to the ideal value by default.

**Table A-1. Recommended DATMODE, MAXDATA, and PACING Values**

| Parameter | Possible Values | Default Value | Recommended Value |
|---|---|---|---|
| DATMODE | HALF, FULL | HALF | FULL |
| MAXDATA | 265, 521, 1033 | 265 or 521 | 1033 |
| PACING | 0 to 255 | 0 | 7 |

To get a **DATMODE** of **FULL**, you must specify the following:

**ADDRESS=(aaa,FULL) ,DUPLEX=FULL**
in the NCP/VTAM LINE macro

**DATMODE=FULL**
in the NCP/VTAM PU macro

> ***Note:*** When you set the parameters above to **FULL** and there is only one address on the line (that is, it is not multidrop), VTAM automatically keeps RTS (Request-To-Send) high at all times. Setting the parameters to **FULL** also helps improve performance, especially on high-speed lines.

To get a **MAXDATA** of **1033**, you must specify the following:

**MAXDATA=1033**
in the NCP/VTAM PU macro

**BUFSIZE=1024**
in the JES2 remote definition

**RUSIZES=X'8787'**
in the Logon Mode Table Entry

> ***Note:*** The **BUFSIZE** parameter applies only to JES2. For JES3 you can drop **BUFSIZE** from the listing. The VSE/POWER and VM/RSCS host RJE systems only support **MAXDATA=265** for remote workstations. You will not be able to increase **MAXDATA** on those systems.

To set all pacing-related parameters to **7**, specify the following:

**MAXOUT=7**
in the NCP/VTAM PU macro

**PACING=7**
in the NCP/VTAM PU macro

**PASSLIM=7**
in the NCP/VTAM PU macro

**VPACING=7**
in the NCP/VTAM PU macro

**SSNDPAC=7**
in the Logon Mode Table Entry

## Match Host Parameters in the Barr Software

You can configure **DATMODE**, **MAXDATA**, and **PACING** from the Barr Communication Link menu. When you select the SDLC connection, parameters for **DATMODE**, **MAXDATA**, and **MAXOUT** display. Set **MAXOUT** to match the pacing-related parameters.

## Constant RTS

Set **Constant RTS** in the Barr software under Tuning and Global Options, Modem and Line Control to dramatically improve your SDLC link performance. Setting this option to **Yes** tells the Barr software to hold the RTS line high at all times, which causes the modem equipment to hold the CTS line high at all times and thereby eliminates the delay between RTS and CTS.

A T1 line that uses a **MAXDATA** of 265, **PACING** values of 7, and typical RTS and CTS delays of 50 milliseconds (0.05 seconds) would have a theoretical throughput rate of 138 Kbps and an efficiency of only 8.5 percent. As you increase the line speed, the RTS/CTS delays become more significant until most of your time is wasted waiting for the CTS response to your RTS.

> ***Note***: Before you set **Constant RTS**, make sure you set all the equipment on the line for full duplex and that you are not on a multidrop line.

# A.2 802.2 LLC Connections

LANs and IBM mainframes use the token ring network topology as a way for remotes to connect to the mainframe. Token rings are rated at 4 or 16 megabits per second (MBps), which represents the physical medium's ideal transmission rate. These numbers do not reflect real-world values. Actual values vary widely because of environmental factors such as the traffic on your ring and the type of token ring adapter in your PC.

You can reasonably expect between 300 Kbps and 400 Kbps on most token rings so Barr advertises this value.

On a multi-ring environment, the links between rings (usually routers over phone lines) can be significant bottlenecks. For instance, the host and remote might be on two different token rings with routers and a 56 Kbps line joining the two. In this case, you clearly cannot expect more than 56 Kbps of throughput.

You can tune a token ring connection with host tuning parameters and PC tuning parameters. The host tuning parameters are almost always the key to maximizing performance.

## Host Tuning Parameters

The **MAXDATA** and **PACING** parameters most dramatically affect token ring link performance. These parameters have matching settings in the BARR/RJE software, but the Barr software does *not* control them. The host computer has absolute control over these settings and the remote software merely follows orders. Table A-2 lists the default and recommended ideal values for these parameters. Neither parameter is set to its ideal value by default.

### Table A-2. Recommended MAXDATA and PACING Values

| Parameter | Range of Values | Default Value | Recommended Value |
|---|---|---|---|
| MAXDATA | 265, 521, 1033 | 265 or 521 | 1033 |
| PACING | 0-255 | 0 | 7 |

To get a **MAXDATA** of **1033,** you must specify the following:

**MAXDATA=1033**
in the NCP/VTAM PU macro

**BUFSIZE=1024**
in the JES2 remote definition

**RUSIZES=X'8787'**
in the Logon Mode Table Entry

> ***Note 1:*** If you connect to a local 3174, you must check an additional setting on the 3174. A local 3174 controls its own frame sizes for downstream connections because it is not connecting through a front-end processor. You must change the 3174's configuration to achieve the desired frame size by setting the **F** parameter to a value of **3** in **Question 941** in the 3174 configuration. See section 2.8 in this manual for more information.

> ***Note 2:*** The **BUFSIZE** parameter applies only to JES2. You can drop **BUFSIZE** from the listing for JES3. The VSE/POWER and VM/RSCS host RJE systems only support **MAXDATA=265** for remote workstations. You will not be able to increase **MAXDATA** on those systems.

To set all pacing-related parameters to **7**, you must specify the following:

**PACING=7**
in the NCP/VTAM PU macro

**PASSLIM=7**
in the NCP/VTAM PU macro

**VPACING=7**
in the NCP/VTAM PU macro

**SSNDPAC=7**
in the Logon Mode Table Entry

## Match Host Parameters in Barr Software

You can configure **MAXDATA** from the Barr Communication Link menu. When you select the 802.2 connection, the **MAXDATA** parameter displays.

## Use a Fast Network Adapter and PC

Your network adapter's speed can greatly impact the performance of any protocol you run over the network, including the 802.2 LLC protocol. Use an adapter that conforms to the newer PCI bus standard because these adapters are faster than traditional ISA bus adapters. To get the most out of the latest PCI network adapters, use a Pentium-class PC (or equivalent).

# A.3 PC Parameters for All Connections

For slower SDLC links, the PC and its components easily keep pace with the communication link speed. On a network link that uses 802.2 LLC or an SDLC link speed of 256 Kbps or higher, you might need to tune the PC for better performance. The main PC component that sometimes needs tuning is the PC's hard drive. If the Barr software cannot write to the hard drive as fast as the link speed, the software is forced to slow down the transmission. You can use the DOS **VERIFY** and **SMARTDRV** features to enhance your hard drive performance if you think it might be the bottleneck. You can set **VERIFY** in the Barr software and **SMARTDRV** in the PC's AUTOEXEC.BAT file.

## Use VERIFY OFF in Barr

The DOS **VERIFY** function requires the PC to read data back immediately after it writes data to verify that the data is correct. This feature is outdated and not necessary for modern hard drives. You can disable this feature in the Barr software Installation Description by setting an option under the Tuning and Global Options, Display and Disk Options menu. The option looks like this:

```
Use VERIFY OFF to improve disk performance? Yes
```

This option defaults to **Yes** so it should already be set correctly. Check it to be sure.

## Use SMARTDRV in DOS

Both MS DOS and PC DOS offer a program called SMARTDRV that can help improve your hard disk performance by creating a disk cache. A disk cache is an area of memory the computer uses to buffer large amounts of data when you read from or write to the hard disk. In the writing mode, the computer collects a large amount of data before it writes the data to the disk, thereby gaining better efficiency from the hard disk.

To turn on SMARTDRV for your PC, add the following line to your AUTOEXEC.BAT file:

```
c:\dos\smartdrv 2048 0
```

This command sets up a 2 megabyte cache for your C: drive and any floppy drives. If your PC has less than 4 megabytes of memory, reduce the number from **2048** to **1024**. If you also have a D: drive you want to cache, add a **D+** to the line as follows:

```
c:\dos\smartdrv 2048 0 d+
```

Make sure the **/X** parameter is *not* on this line because **/X** disables write caching and prevents you from using SMARTDRV with the Barr software. For further information about SMARTDRV, see your DOS manual or use the DOS online help feature.

*Notes:*

# Glossary

**802.2 TRN**
The IEEE protocol number for link layer communications.

**ADLC**
Asynchronous data link. A way to dial up a mainframe from asynchronous workstations.

**APPLID**
Application identification.

**asynchronous**
Two or more processes that do not depend on the occurrence of specific events such as common timing signals.

**asynchronous communication**
A communications technique in which each character is transmitted as a discrete unit. The character transmitted is preceded by a start bit and followed by one or more stop bits. As each character is bracketed by start and stop bits, varying amounts of time can elapse between characters. Also called start-stop communications. Contrast with synchronous communication.

**bind**
In SNA communications, operation in which the host and remote logical units (LUs) initiate a session and agree on the protocol to use in that session.

**bps**
Bits per second. A way to gage modem speeds.

**buffer**
An area of computer memory used to perform input or output operations. The software reads data into a buffer or writes data from a buffer.

**CCITT**
International Telegraph and Telephone Consultative Committee. An organization with a central office in Geneva, Switzerland, that is concerned with international telephony and telegraphy problems.

**channel printer**
A printer directly attached to a mainframe channel.

**class of service (COS)**
A set of characteristics (such as route security, transmission priority, and bandwidth) used to construct a route between session partners.

**coax**
Coaxial cable. A cable consisting of one conductor within and surrounded by a shield made of a separate, electrically insulated wire that separates it from a conductor of large diameter.

**coaxial cable**
A heavily shielded and insulated carrier wire with high immunity to electrical interference and a low data error rate. Coax can carry multiple data streams

on one line. It is similar to the cable commonly used in the cable TV industry.

**communication controller**
A communication control unit that manages line control and data transfer through a network. Operations are controlled by one or more programs stored and executed in the unit. Examples are the IBM 3705, 3725, and 3745 communication controllers.

**communication link**
The physical connection and link protocol between the remote workstation and the host computer.

**communications protocol**
A specification of data and control message formats and their meanings followed by sender and receiver in a communication link.

**cyclic redundancy check (CRC)**
An error-checking system performed at both the sending and receiving station after a block-check character has been accumulated.

**data link**
Two data terminal equipments (DTEs) that are controlled by a link protocol and the interconnecting data circuit. A data link includes the physical medium of transmission, the protocol, and associated devices and programs.

**DCD**
Data carrier detect. Tells a program that it is receiving a carrier from the opposite modem.

**DCE**
Data circuit-terminating equipment. In a data station, the equipment that provides the signal conversion and coding between the DTE and the line.

**dedicated line**
See nonswitched line.

**DFT**
Diagnostic function test or distributed function terminal.

**dial-up line**
See switched line.

**DOS**
Disk operating system. An operating system for computer systems that uses disks for auxiliary storage of programs and data.

**DTE**
Data terminal equipment. That part of a data station that serves as a data source, data sink, or both.

**encrypt**
Systematic alteration of data that prevents unauthorized persons from viewing and using the data.

**frame**
In SNA communications, a consecutive string of bits sent as a unit. The frame begins with a flag followed by an address, control byte, data, and cyclical redundancy check (CRC) and ends with a flag.

**full duplex**
A communication link that allows simultaneous transmission of data in both directions (in contrast to half duplex).

**gateway**
A device that uses protocol conversion to connect dissimilar communications systems or networks. For example, RJE+3270 serves as a gateway between a LAN and a mainframe. (In contrast, a bridge connects systems or networks with similar architectures.)

**half duplex**
A communication link that only allows for transmission of data in one direction at a time (in contrast to full duplex).

**header**
Data at the start of a file that describes the file and how to print it.

**host computer**
In a computer network, a computer that usually performs network control functions and provides end users with services such as computation and database access.

**host programmer**
The person who installs and maintains host computer software.

**JES2**
An MVS subsystem that receives jobs into the system, converts them to internal format, selects them for execution, processes their output, and purges them from the system.

**JES3**
An MVS subsystem that receives jobs into the system, converts them to internal format, selects them for execution, processes their output, and purges them from the system. In complexes that have several loosely coupled processing units, the JES3 program manages processors so that the global processor exercises centralized control over the local processors and distributes jobs to them from a common job queue.

**LAN**
See local area network.

**LCN**
Logical channel number.

**leased line**
See nonswitched line.

**local area network (LAN)**
A high-speed communications network within a limited geographic area. Typically, several PCs are linked together within a single building or campus. (In contrast, a wide area network might span hundreds or thousands of miles.)

**logical unit (LU)**
In SNA communications, an independ-ent stream of data multiplexed with other streams within a physical unit.

**LOGMODE**
In SNA communications, a list of parameters specifying the type of session to establish between a mainframe application and a remote workstation. VTAM uses the LOGMODE during the bind oper-
ation.

**LU**
See logical unit.

**magnetic tape**
A tape with a magnetizable layer on which data can be stored.

**Mbps**
Megabits per second. A way to measure transmission speed.

**modem**
Modulate/demodulate. A device designed to interface between a digital communication link and an analog communication link. The digital communication link is usually a computer or terminal. The analog communication link is usually a telephone line. Modulate means to convert a digital signal from the computer into an analog signal capable of being transmitted by the telephone system. Demodulate is the opposite of modulate.

**modulo 8**
With respect to a specified modulus: 10 is congruent to 18 modulo 8 because both 10 and 18 leave 2 as a remainder when you divide them by 8.

**modulus**
A number by which two given numbers can be divided and produce the same remainder.

**MVS/JES2 (ESA)**
Multiple Virtual Storage/Enterprise Systems Architecture, an IBM operating system, with JES2.

**MVS/JES2 (XA)**
Multiple Virtual Storage/Extended Architecture, an IBM operating system, with JES2.

**NCP**
Network Control Program. In SNA communications, a program that controls a communication controller's operation. It is generated by the user from a library of IBM-supplied modules.

**NetBIOS**
Network Basic Input/Output System is a standard interface between PC software and LAN adapters such as token ring, Ethernet, or Arcnet adapters.

**network**
An arrangement of nodes and connecting branches for information interchange.

**network user identification (NUI)**
In X.25, the facility that enables the transmitting DTE to provide billing, security, or management information on a per-call basis to DCE. The NUI can identify a network user independently from the port being used.

**nonswitched (dedicated) line**
A communication link provided by the telephone company dedicated for use by one customer. It is also called a private line service and can be a privately owned cable between two points.

**Novell IPX**
Novell Internet Packet Exchange comes with the Novell LAN. Novell has implemented IPX for most LAN adapters, including Ethernet, Arcnet, and token ring.

**NPSI**
X.25 NCP Packet Switching Interface. An IBM-licensed program that allows SNA

users to communicate over packet-switched data networks that have interfaces complying with Recommendation X.25 of the CCITT. It allows SNA programs to communicate with SNA or non-SNA equipment over such networks.

**NRZI**
In SNA communications, a way to code data transmission so that the sender changes the signal from a binary 0 to the opposite state and leaves the signal for binary 1 in the same state. Also known as invert on zero coding.

**NSPE**
Network services procedure error.

**NUI**
See network user identification.

**pacing**
In SNA communications, a way to control data flow from VTAM to the remote.

**PADS**
Packet assemblers/disassemblers.

**PDIR**
Peripheral dataset information record.

**physical unit (PU)**
In SNA communications, an independ-ent unit attached to an SDLC line. The component that manages and monitors the resources (such as attached links and adjacent link stations) associated with a node as requested by an SSCP via an SSCP-PU session. An SSCP activates a session with a PU to indirectly manage resources of the node, such as attached links, through the PU. This term applies to type 2.0, type 4, and type 5 nodes only.

**protocol**
See communications protocol.

**PSDN**
Packet-switching data network. A network that uses packet switching as a way to transmit data.

**PU**
See physical unit.

**punch device**
A device for making holes in some kind of data medium or a device that interprets coded electrical signals to produce holes in cards or tapes.

**PVC**
Permanent virtual circuit. A type of X.25 virtual circuit. PVCs are fixed to a pair of physical terminal points (that is, V.24/RS232 or X.21 connection points). This circuit provides network security because the connection is locked to two fixed locations.

**QLLC**
Qualified logical link control. Used to transport SNA over X.25 networks. You make the host connection between the X.25 network and the 3725 or 3745 controller with the NPSI software. The Barr software connects to the X.25 network through a V.24/RS232, V.35, RS530, or X.21 adapter and cable.

**reader device**
A logical device that reads jobs from the RJE workstation and sends them to the

host system. At the host, the operating system places jobs in a job queue for processing.

**record length**
The number of characters or bytes in a record.

**remote**
A terminal attached through a communication link to a mainframe computer.

**RH**
Request/response header. In SNA, control information preceding a request/response unit (RU) that specifies the type of RU and contains control information associated with the RU.

**RJE**
Remote job entry. A computing environment in which a user can create programs and data on the PC and then transmit them to the mainframe, receive the printouts at high speed on disk or printers, and control the status of jobs by using remote operator commands.

**RJPWS**
Remote job processing workstation.

**RU**
Request/response unit. In SNA, a generic term for a request unit or a response unit.

**SAA**
Systems Application Architecture.
A set of IBM software interfaces, conventions, and protocols that provide a framework for designing and devel-oping applications that are consistent across systems.

**SCS**
SNA character string. In SNA, a character string composed of EBCDIC controls, optionally intermixed with end-user data, that is carried within a request/response unit.

**SDLC**
Synchronous data link control. A low-level communications protocol for synchronous communications. It is defined for both full-duplex and half-duplex operation. SNA uses SDLC as its low-level communications protocol.

**SLD**
Set line density.

**SNA**
Systems Network Architecture. The description of logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

**SSCP**
System services control point. A component within a subarea network for managing the configuration, coordinating network operator and problem determination requests, and providing directory services and other session services for network end users. Multiple SSCPs, cooperating as peers, can divide the network into domains of control. Each SSCP has a hierarchical control relationship to the physical units and logical units within its own domain.

**SVC**
Switched virtual circuit, a type of X.25 virtual circuit. SVCs are not fixed to any particular connection points and are made through dedicated or dial lines.

**SVF**
Set vertical format.

**switched (dial-up) line**
A telephone line connected to the switched telephone network where you select the destination by dialing a multi-digit number. Also called a dial line. Opposite of leased line or dedicated line.

**SYSOUT**
A system output stream or an indicator used in data definition statements to tell the operating system to write a dataset on a system output unit.

**TCP/IP**
Transmission Control Protocol/Internet Protocol. A suite of protocols designed to allow communication between networks, regardless of the technologies implemented in each network.

**token ring interface coupler (TIC)**
An interface adapter installed in the 3745 or 3725 front-end processor to connect to a token ring network.

**token ring network**
High-speed communication network that consists of physical equipment and architecture. The IBM architecture for LANs. The network is characterized by a ring structure with a single token continuously circling the ring.

**transmission header (TH)**
In SNA, control information, optionally followed by a basic information unit (BIU) or a BIU segment that path control creates and uses to route message units and control their flow within the network.

**V.35**
In data communications, a specification of the CCITT that defines the list of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) at data rates of 48 kilobits per second.

**virtual circuits**
In packet switching, the facilities provided by a network that give users the appearance of an actual connection.

**VSE/POWER**
An S/370 operating system program that simultaneously operates readers, printers, and remote communications devices.

**VTAM**
Virtual Telecommunications Access Method. An IBM operating system program that resides on the mainframe and controls SNA communications between the mainframe applications software and the remote terminals.

**X.25**
A CCITT recommendation for the interface between data terminal equipment and packet-switched data networks.

**Xid**

The mainframe sends an exchange ID request (Xid) as the first message to a dial-up remote to identify the remote's physical unit (PU). The host responds with an Exchange ID response (Xidr).

**Xidr**

The mainframe sends an exchange ID request (Xid) as the first message to a dial-up remote to identify the remote's physical unit (PU). The host responds with an Exchange ID response (Xidr).

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