This chapter discusses synchronous protocols that you can configure on a BANDIT device’s ports. See the following sections:

- **Section 2.1, Binary Synchronous Communication**
- **Section 2.2, Bit-Synchronous Encapsulation**
- **Section 2.3, Byte-Synchronous Encapsulation**

Also see **Sync Burroughs Poll Select** in *Configuration of Burroughs Poll Select Protocols*.

For the Synchronous Data Link Control (SDLC) protocol, see the following sections in *SDLC Protocol Configuration*:

- **SDLC with IP**
- **SDLC 1490 Configuration**
- **SDLC Routing**

**Note:** See the **Protocols** Module for a full list of protocols.

## 2.1 Binary Synchronous Communication

Binary synchronous communication (bisync) is a character-oriented (that is, a byte-oriented) polled protocol. In bisync, a central host continually polls each device to maintain communication. If a device does not respond, the host continues to poll, but uses a slow poll for the non-responding device. (That is, the host does not poll a non-responding device as often as it polls responding devices.)

In bisync communication, all non-host devices are considered remote. A remote bisync device cannot communicate directly with another remote bisync device; the communication must go through a host.

The bisync protocol can be spoofed by the BANDIT. All of the polling is generated locally, and only data passes over the network. The benefits of this method include faster response, better network utilization, and consistent polling intervals.

The BANDIT can also respond to polls from a bisync host. The BANDIT at the host connection acts as a remote terminal answering its polls.
The BANDIT’s FastPoll™ polling algorithm has been optimized for the fastest possible transaction response times; non-responding devices are polled less frequently. Advanced buffering provides maximum throughput for applications such as printing or file transfers. Automatic error recovery requires no manual intervention to start or restart terminals after error conditions. The highest priority has been placed on the reliable delivery of every message in all network conditions.

Any serial or Ethernet port on the BANDIT supports binary synchronous communication. The BANDIT supports a maximum of one bisync device per port. Although the BANDIT’s advanced serial ports support line speeds up to 2.048 Mbps, typical legacy bisync equipment will not tolerate speeds faster than 9600 bps, synchronous.

Table 2-1 describes the LED states for a bisync port on the BANDIT.

### Table 2-1. LED States for Binary Synchronous Communication

<table>
<thead>
<tr>
<th>LED</th>
<th>LED State</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link</td>
<td>Blinking</td>
<td>Polling is finding bisync devices.</td>
</tr>
<tr>
<td></td>
<td>Steady On</td>
<td>Heavy polling is occurring.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No polling.</td>
</tr>
<tr>
<td>Activity</td>
<td>Blinking</td>
<td>BANDIT is sending or receiving data.</td>
</tr>
<tr>
<td></td>
<td>Steady On</td>
<td>Error state.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No communication.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BANDIT as Bisync Host</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BANDIT is responding to poll from host.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heavy polling is occurring.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No polling.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BANDIT as Remote Bisync Terminal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BANDIT is sending or receiving data.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Error state.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No communication.</td>
</tr>
</tbody>
</table>

#### 2.1.1 Typical Bisync-to-IP Applications

Bisync in the BANDIT supports the following applications:

- **Bisynchronous 3270/3275 to IP Protocol Conversion:** Typically, ATM cash machines, bank teller terminals, or POS terminals use the bisync 3270/3275 protocol, a half-duplex protocol. This protocol conversion spoofs the bisync protocol locally, and sends the data portion to the IP host on a TCP socket to a preconfigured IP address and TCP port. IP host/terminal devices referenced below support the 327x data portion on the TCP socket. Following are some specific applications:
  - Bisync 3270/3275 Device to IP Host Connectivity: This feature lets bisync 3270/3275 devices such as ATM machines communicate with IP hosts. The BANDIT acts like a bisync host for terminal devices (such as ATMs) by spoofing the bisync 327x connection locally. The BANDIT acts like an IP terminal device (such as an IP ATM) for the IP host.
  - IP Terminal Device to Bisync Host Connectivity: This feature lets IP Terminal devices such as ATM machines communicate with bisync hosts. The BANDIT acts like a IP host for the IP terminal devices (such as IP ATMs) by terminating the IP connection. The BANDIT acts like a bisync terminal device for the bisync host.
- Bisync 3270/3275 to Bisync Host Connectivity: This feature replaces the expensive point-to-point bisync connections with low-cost shared IP connections. Because bisync protocol spoofing is done locally both at the host end and at the terminal end, this feature solves the problems related to delays and bandwidth on the WAN links.

- Multi-Device Support on the Same Physical Port: Multiple terminal/host devices are supported on the same physical port (i.e., multiple devices can be connected to multiple physical device ports using a port sharing device or through a single port of the host or terminal gateway supporting multiple devices on the same port). Up to 10 devices per port are supported on the original BANDIT and up to 50 devices per port are supported on the BANDIT Plus. (The BANDIT Plus supports a total of 200 devices for all ports combined.)

- Flexible Bisync to IP address mapping for each device: Each bisync device can be connected to the same or different IP devices. For example, bisync ATM_1 and ATM_2 connected to the same port can be pointed to different IP hosts, or bisync ATM_1 and ATM_2 connected to different ports of the BANDIT can be pointed to the same primary IP device.

- Primary and Alternate IP address support for each Bisync Device: This lets bisync devices connect to alternate IP devices in case of IP connectivity loss of the primary IP device. For example, a bisync ATM device can be mapped to two mirrored IP hosts, to switch over automatically when the primary IP host connection fails, and vice versa.

- ASCII to EBCDIC data conversion: Typically, IP devices use ASCII data format and bisync devices use EBCDIC. By default, ASCII data from the IP device is converted to EBCDIC data when sending to the bisync device, and vice versa. The user can disable this conversion if required.

- Bisynchronous 3780/2780 to IP protocol Conversion: Typically, bank checksorter machines communicate with the host using the 3780/2780 protocol, a byte-sync protocol for peer-to-peer communication. This protocol conversion spoofs the bisync protocol locally, and sends the data portion to the IP host on a TCP socket to a pre-configured IP address and TCP port. The IP host/terminal devices referenced below support the 3780/2780 data portion on the TCP socket. Following are some specific applications:

  Note: Because this is a peer-to-peer protocol, device multiplexing is not possible, according to the standards of this protocol. Only one device is mapped per port.

- Bisync 3780/2780 Device to IP Host Connectivity: This feature lets Bisync 3780/2780 devices such as checksorter machines communicate with IP hosts. Bisync spoofing is done locally, and the data portion is sent to the IP host on a TCP socket.

- IP Terminal Device to Bisync Host Connectivity: This feature lets IP Terminal devices such as checksorter machines communicate with bisync hosts. The BANDIT acts like an IP host for the IP terminal devices (such as checksorters) by terminating the IP connection. The BANDIT acts like a bisync 3780/2780 device for the bisync host.

- Bisync 3780/2780 device to Bisync Host Connectivity: This feature replaces the expensive point-to-point bisync connection with low-cost shared IP connections. Since bisync protocol spoofing is done locally both at the host end and the terminal end, this feature solves the problems related to delays and bandwidth on the WAN links.

- Primary and Alternate IP address support for each Bisync Device: This lets bisync devices connect to alternate IP devices, in case of IP connectivity loss of the primary IP device—for example, a bisync device can be mapped to two mirrored IP hosts, to switch over automatically when the primary IP host connection fails, and vice versa.
**Figure 2-1** illustrates the following bisync to IP applications:

- 3270/3275 Unisys embedded bisync dial-up (typically used in automatic teller machines) converted to Unisys TCP/IP
- 3780/2780 Unisys embedded bisync (typically used in checksorter machines) converted to Unisys TCP/IP

**2.1.2 Configuring the Binary Synchronous Protocol**

The following procedures provide guidelines for configuring the bisync protocol.

**How to Configure Binary Synchronous Communication over IP**

1. From the Main Menu, select Advanced Configurations, Data Configurations. Then select a serial port or an Ethernet port. If necessary, select Undefine Current Logical Port. Then select Protocol, Bisync.

   ❖ The following menu is displayed:

   ![Diagram](image)

   *The network can be IP, Frame Relay, or another network. In this diagram, the IP network carries TCP/IP packets.*

   **Figure 2-1. Bisync Dial-Up to Unisys TCP/IP and Bisync Checksorters to Unisys TCP/IP**
2 Select **Data Rate**. This parameter specifies a synchronous clock speed (for units configured for DCE).

❖ The following list of speeds is displayed:

<table>
<thead>
<tr>
<th>Configure Synchronous Clock Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 2400</td>
</tr>
<tr>
<td>2) 4800</td>
</tr>
<tr>
<td>3) 9600</td>
</tr>
<tr>
<td>4) 19200</td>
</tr>
<tr>
<td>5) 38400</td>
</tr>
<tr>
<td>6) 48000</td>
</tr>
<tr>
<td>7) 56000</td>
</tr>
<tr>
<td>8) 64000</td>
</tr>
<tr>
<td>9) 96000</td>
</tr>
<tr>
<td>A) 128000</td>
</tr>
<tr>
<td>B) 192000</td>
</tr>
<tr>
<td>C) 256000</td>
</tr>
<tr>
<td>D) 384000</td>
</tr>
<tr>
<td>E) 512000</td>
</tr>
<tr>
<td>F) 768000</td>
</tr>
<tr>
<td>G) 1024000</td>
</tr>
<tr>
<td>H) 1536000</td>
</tr>
<tr>
<td>I) 2048000</td>
</tr>
<tr>
<td>J) External (DTE)</td>
</tr>
</tbody>
</table>

```
Enter Choice :
```

**Note:** When the port is configured as **External (DTE)**, as opposed to DCE, the parameters menu reflects that the speed is provided by the external device connected to the unit.

a Select the speed.

❖ The Bisync Parameters menu is redisplayed.

3 Select **Protocol Role** to indicate the unit’s role in the connection.

❖ The following menu is displayed:

<table>
<thead>
<tr>
<th>Configure Protocol Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 327x Poll Generator (Master)</td>
</tr>
<tr>
<td>2) 327x Poll Receiver (Slave)</td>
</tr>
<tr>
<td>3) 2780/3780 Point-To-Point</td>
</tr>
</tbody>
</table>

```
Enter Choice :
```

a Select the role.

❖ The Bisync Parameters menu is redisplayed.

4 Select **Protocol Mode**. This option refers to the bisync data format.

❖ The following menu is displayed:
a Select one of the following formats:

- **Normal**: Bisync normal, raw data (not typically used)
- **Transparent**: Bisync transparent, raw data (not typically used)
- **Unisys Embedded Auto**: Bisync normal or transparent, depending on the Unisys embedded header (ITI dial-up)
- **Unisys Embedded Transparent**: Bisync transparent, regardless of the Unisys embedded header (ITI sorters)

❖ The Bisync Parameters menu is redisplayed.

5 Select **Protocol Line**. This parameter refers to the type of serial connection.

❖ The following menu is displayed:

```
Configure Protocol Line Type
---------------------------
1) Leased Line
2) Dial Up Line
3) DTR Dial Line
```

Enter Choice :

a Select one of the following connections:

- **Leased Line**: For direct-connect or leased line
- **Dial Up Line**: For dial-up modem (senses the DSR to disconnect IP connection)
- **DTR Dial Line**

❖ The Bisync Parameters menu is redisplayed.

6 Select **Response Timeout** to set the number of milliseconds the unit will wait for a response before timing out and moving on to poll the next device.

❖ The following prompt is displayed:

```
Enter Response Timeout (100 - 60000 Milliseconds):
```
a Enter the number of milliseconds the unit will wait for a response before timing out, and press Enter.

❖ The Bisync Parameters menu is redisplayed.

7 Select Transmit Delay to indicate the number of milliseconds to delay transmission of protocol sequences. (That is, this parameter sets the number of milliseconds that a unit will wait before polling or responding to a poll.) You can set this parameter to prevent the unit from over-running slower devices.

❖ The following prompt is displayed:

Enter Transmit Delay (0 - 1000 Milliseconds):

a Enter the milliseconds the unit may delay transmission.

Note: A value of 0 indicates that the unit will not delay transmissions.

❖ The Bisync Parameters menu is redisplayed.

8 Select Disconnect Delay to set the number of seconds to wait after modem hang-up before disconnecting the IP connection.

a Type the number of seconds to delay before disconnecting, and press Enter.

❖ The Bisync Parameters menu is redisplayed.

9 Select Devices. See Section 2.1.2.1, Setting Up a Bisync Device Table.

10 When you have finished configuring items on the Bisync Parameters menu, press the Escape key to return to the Logical Port Attribute menu.

2.1.2.1 Setting Up a Bisync Device Table

When using the bisync protocol, the BANDIT must know about each device to which it is connected. The Devices parameter, on the Bisync Parameters menu, sets up a table of devices.

Within each unit are logical units, each of which serves as an internal address that is mapped to a given device. This internal logical address is called the local station number (LSN). The address of the local physical device is called the local poll address.

The Device Table maps the local host’s LSNs to the local poll addresses, the remote LSNs to the remote IP addresses, and the Local LSNs to the remote LSNs. It is recommended that LSNs be mapped to logical ports as follows:

- LSNs 100–199 on Logical Port 1
- LSNs 200–299 on Logical Port 2
• LSNs 300–399 on Logical Port 3
• and so on.

How to Configure the Bisync Device Table

1 From the Main Menu, select Advanced Configurations, Data Configurations. Then select a serial port. If necessary, select Undefine Current Logical Port. Then select Protocol, Bisync. Then select Devices.

❖ The following prompt is displayed:

Empty Device Table
Add Device Table Entry
Enter Local LSN ID: (1-999):

2 Local LSN ID. This defines the local LSN for the first time. If you are configuring Port 1, you might enter a value of 100. Each device must have a unique number. Enter the address and press Enter.

❖ The following menu is displayed:

Remote Connection Type: BANDIT
0) BANDIT
1) Telnet
2) Cts 1
3) Cts 2

Choice <Enter for Default>:

3 The Remote Connection Type defines the type of spoofing to use. Do one of the following:

a To connect to a remote BANDIT for bisync-to-bisync, select BANDIT. (Spoofs bisync through the network.)

b To connect to a Telnet host, select Telnet.

c To use common transport system (CTS) mode 1 to connect to a tandem host, select CTS 1.

d To use common transport system (CTS) mode 2 to connect to a tandem host, select CTS 2.

❖ The next prompt appears:

Enter Remote IP Address (N.N.N.N):
4 The **Remote IP Address** specifies the IP address of the remote device. Type this address and press **Enter**.

- The following prompt is displayed:

```
Enter Secondary Remote IP Address (N.N.N.N):
```

5 **Secondary Remote IP Address.** This parameter specifies the alternate IP address to use when the remote IP address is not reachable. Type this address and press **Enter**.

- If you selected **BANDIT** as the connection type in Step 3, the following prompt is displayed. Go to Step 8.

```
Enter Remote LSN ID (1-999):
```

- If you selected **Telnet** as the connection type in Step 3, the following prompt is displayed. Go to Step 7.

```
Enter Telnet Location Code:
```

- If you selected **CTS 1** or **CTS 2** as the connection type in Step 3, the following prompt is displayed.

```
Enter Remote TCP Port (1024-65535):
```

6 **Remote TCP Port.** This parameter specifies a TCP port for CTS1 and CTS2. Type the TCP port number and press **Enter**.

- The following prompt is displayed. Go to Step 9.

```
Device Traps Enabled: No
1) No
2) Yes
Choice <Enter for Default>:
```

7 **Telnet Location Code.** This parameter allows you to enter a code that will become the station name in the mainframe. An example is STATION001. Type a unique code and press **Enter**.

- The following prompt is displayed. Go to Step 9.
8 **Remote LSN ID.** This option allows the user to enter the LSN associated with the remote terminal. Enter the remote LSN ID.

❖ The following prompt is displayed.

   Device Traps Enabled: No
   1) No
   2) Yes

   Choice <Enter for Default>:

9 **Device Traps.** This parameter enables or disables the Device Up and Device Down SNMP traps for the local device. Select **Yes** to enable them, or **No** to disable them.

❖ The following confirmation is displayed:

   Entry Added

❖ Then a prompt appears to enter another record in the table.

   Enter Local Lsn ID (1 - 999) :

10 Do one of the following:

a To add another record to the Device Table, go to Step 2.

b If you have finished adding records to the Device Table, press **Escape**.

❖ The Bisync Device Table is displayed.

<table>
<thead>
<tr>
<th>Local Lsn</th>
<th>Remote Type</th>
<th>Remote Connection IP</th>
<th>Remote Connection ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>BANDIT</td>
<td>162.1.2.3</td>
<td>300</td>
</tr>
<tr>
<td>101</td>
<td>Telnet</td>
<td>162.1.2.4</td>
<td>sta01</td>
</tr>
<tr>
<td>102</td>
<td>Telnet</td>
<td>162.1.2.5</td>
<td>sta02</td>
</tr>
<tr>
<td>103</td>
<td>Cts1</td>
<td>162.1.2.6</td>
<td>1024</td>
</tr>
<tr>
<td>104</td>
<td>Cts2</td>
<td>162.1.2.7</td>
<td>1025</td>
</tr>
</tbody>
</table>

Add, Modify, or Delete an Entry? (Enter A, M, or D):
11 Do one of the following:
   a To add a record, type a and follow the directions on the screen.
   b To modify a record, type m and follow the directions on the screen.
   c To delete a record, type d and follow the directions on the screen.
   d If you have finished configuring the Device Table, press Escape.

   ❖ The following prompt appears. Then the Bisync Parameters menu appears. Go to Section 2.1.2, Configuring the Binary Synchronous Protocol.

2.1.3 Setting Up an ITI Bisync Sorter or ITI Bisync Dial-Up Device to a Telnet Host

The following steps provide an overview for configuring a connection from a bisync device to a host.

How to Set Up a Connection from an ITI Bisync Sorter or ITI Bisync Dial-Up Device to a Telnet Host

1 Make sure you have the following information:
   • Host IP Address (for example, 10.1.1.1)
   • Bandit device’s IP Address (for example, 10.1.1.2)
   • Station Name (for example, M0001) for the remote device (terminal)

2 Enter the IP Address and Name for the BANDIT. See Section 4.2, Identifying the BANDIT in the Network.

3 Add a Static IP Route to the mainframe (the host). See Section 2.1.3, Static Routing.

4 Configure a bisync port. See Section 2.1.2, Configuring the Binary Synchronous Protocol. Note the following:
   • Make the Data Rate External.
   • The Protocol Role is 2780/3780 Point-to-Point.
   • Use one of the following settings for the Protocol Mode:
     ☰ For dial-up, use Unisys Embedded Auto.
     ☰ For sorters, use Unisys Embedded Transparent.
   • Use one of the following setting for the Protocol Line:
     ☰ For dial-up, use Dialup Line.
     ☰ For sorters, use Leased Line.
For the local LSN ID, Encore Networks’ products, including the BANDIT, usually use 100 through 199 on logical port 1, 200 through 299 on logical port 2, etc.).

- Make the Remote Connection Type Telnet.
- Enable the Device Traps only if you have set the BANDIT up for SNMP.

**5 Save and reset.** See Section 3.4.7, Write Configuration, and Section 3.4.8, Reset Unit.

**Note:** Use a ping to verify that you have an IP path to the mainframe (the host). Select Statistics to verify that the connection status is open. (The dial-up will not open until the modem is on line).

### 2.2 Bit-Synchronous Encapsulation

Bit-synchronous encapsulation can be used to transparently carry an HDLC-based protocol across a Frame Relay network. This configuration allows bit-sync encapsulated traffic (any HDLC-like frame) to be conveyed between a unit port at the host and a unit port at a remote site. Each PVC (DLCI) carries one connection.

![Figure 2-2. Configuration for Bit-Sync Encapsulation](image)

#### How to Configure Bit-Sync Encapsulation

**Note:** If you have not already done so, follow the instructions in Section 5.2, X.25 Protocol, or Section 4.1, Frame Relay.

1. From the Main Menu, select Advanced Configurations, Data Configuration, Undefine Port, Protocol, then select Bit Sync Encapsulation.

   • When you select Bit Sync Encapsulation from the Logical Port Protocol Selection Menu, the following is displayed:
2 **Speed.** This option allows you to specify a synchronous clock speed for units configured for DCE. Select Speed.

❖ The following menu is displayed:

```
Configure Synchronous Clock Speed
-1) 2400
  2) 4800
  3) 9600
  4) 19200
  5) 38400
  6) 48000
  7) 56000
  8) 64000
  9) 96000
A) 128000
B) 192000
C) 256000
D) 384000
E) 512000
F) 768000
G) 1024000
H) 1536000
I) 2048000
```

Enter Choice :

**Note:** When the port is configured as DTE, as opposed to DCE, the parameters menu reflects that the speed is provided by the device connected to the unit. In this case, you do not need to configure the speed. If you attempt to do so, the following message is displayed and you are returned to the parameters menu:

*Port is DTE, Can Not Change Speed.*

3 **Data Format.** This option allows you to specify whether the data format should be Non-Return-to-Zero (NRZ) or Non-Return-to-Zero Inverted (NRZI). Select Data Format.

❖ The following menu is displayed:
4 Select DCD. This parameter specifies whether Data Carrier Detect (DCD) is forced or switched.

❖ The following options are displayed:

Configure DCD
-----------------------
1) SWITCHED
2) FORCED
Enter Choice:

Note: DCD is effective only on ports with DCE interfaces. The SWITCHED option activates DCE only when valid data is sent to the port. The FORCED option activates DCE at all times.

5 Idle Character. This option allows you specify whether MARK or FLAG characters (7E) should be transmitted between frames. MARK indicates the binary digit “1” (one) in most coding schemes. FLAG is a pattern of six consecutive “1” bits used to mark the beginning and end of a “Frame” (packet). Select Idle Character.

❖ The following options are displayed:

Configure Idle Character
-----------------------
1) MARK
2) FLAG
Enter Choice:

6 Enter the number of the option you want.

7 Select GPT Name. This option allows you to identify the Global Path entry that corresponds to the path this traffic will take through the network. This is accomplished by entering the name you assigned to the Global Path.

A Global Path entry contains information such as port numbers, path types, channel numbers, DLCIs and X.121 addresses. This option is accessed from the Main Menu.

❖ The following prompt is displayed:

Enter Path Name (1 to 10 characters):
8 Type the Global Path Name and press **Enter**.

- If you entered a path name that is not already associated with a Global Path, you are prompted to enter the path now:

```
Path Name Does Not Exist in GPT Table.
To Add Global Path Entry, Press "Y". Press Escape Otherwise.
```

9 Do one of the following:

a Type “Y” to open the Global Path option and configure a path with that name.

b Press ESC to return to the GPT prompt and enter a different name.

**Note:** You cannot save this configuration if a valid GPT name has not been entered.

10 **Priority.** This option allows you to assign a priority level to a DLCI, so that traffic using a particular DLCI is sent before or after other traffic in a given ratio.

To assign a priority level to traffic using this DLCI, select **Priority**.

- The following options are displayed:

```
Enter Priority ( default = Medium )
for outgoing traffic on DLCI 65535, port: Port 1

(1) Immediate
(2) High
(3) Medium
(4) Low

Enter Choice :
```

11 Select the priority level you want traffic on this DLCI to have. If you have no preference, use **Medium**, which is the default.

- The following confirmation is displayed:

```
Priority set to Medium for DLCI 65535 on port: Port 1
```

**Note:** To save the new configuration, you must Write and Reset (see Section 3.4.7, Write Configuration).

### 2.3 Byte-Synchronous Encapsulation

This encapsulation protocol allows any byte-oriented synchronous data to be transported across any data network. (All the bisync traffic is in this category. See Section 2.1, Binary Synchronous Communication.)
There are several synchronous protocols that use a byte-synchronous transmission method rather than a bit-synchronous method. These protocols use a special character, known as SYN, to synchronize the transmitter and receiver. They use special control characters to designate the start and end of a frame. ASCII variants of these protocols usually use a seven data-bit character with Odd parity and a Longitudinal Redundancy Check (LRC) character as a Block Check Character.

The BANDIT supports these protocols on a point-to-point basis using byte-synchronous encapsulation. Multiple logical byte-sync ports can share a path on Frame Relay, IP, or X.25 if the ports are going to a common destination. CRC or BCC is transmitted along with the data, to allow the user equipment to perform error checking.

This configuration allows byte-sync encapsulated traffic to be transmitted between a unit port at the host and a unit port at a remote site.

The user can select ASCII or EBCDIC encoding for the data on the line. Byte-sync encapsulation enables ASCII-to-EBCDIC device connectivity. If one device supports only ASCII format and the device at the other end supports EBCDIC, each can be attached to a BANDITs; the two BANDITs can use byte-sync encapsulation to allow the two end devices to communicate.

EBCDIC variants use an eight data-bit character and a 16-bit CRC for error checking. The EBCDIC protocols also allow a special mode known as “transparency” for transmission of all types of data.

Figure 2-3. Sample Network for Byte-Sync Encapsulation
How to Configure Byte-Sync Encapsulation

Note: Before you start, see Section 4.3, Defining Global Paths.

If you have not already done so, follow the instructions in Section 5.2, X.25 Protocol, or Section 4.1, Frame Relay, to configure the port that will carry encapsulation traffic.

1 From the Main Menu, select Advanced Configurations, Data Configurations >> select a Port >> Undefine Logical Port. Then select Protocol >> Byte Sync Encapsulation.

- When you select Byte Sync Encapsulation from the Logical Port Protocol Selection menu, the following menu is displayed:

```
Byte Synchronous Encapsulation Parameters : SERIAL
---------------------------------------------
1) Speed : 9600
2) GPT Name : 
3) Priority : Medium
4) Destination Port : SERIAL
5) Code Set : EBCDIC

Enter Choice :
```

2 Select Speed. This option allows you to specify a synchronous clock speed for units configured for DCE.

- The following list is displayed:

```
Configure Synchronous Clock Speed
1) 2400
2) 4800
3) 9600
4) 19200
5) 38400
6) 48000
7) 56000
8) 64000
9) 96000
A) 128000
B) 192000
C) 256000
D) 384000
E) 512000
F) 768000
G) 1024000
H) 1536000
I) 2048000

Enter Choice:
```

Note: When the port is configured as DTE, as opposed to DCE, the parameters menu reflects that the speed is provided by the device connected to the unit. In this case, you do not need to configure the speed. If you attempt to configure the speed, the following message is displayed and you are returned to the parameters menu:

Port is DTE; Cannot Change Speed.
3 Select **GPT Path Name**. This option allows you to identify the Global Path entry that corresponds to the path this traffic will take through the network. This is accomplished by entering the name you assigned to the Global Path.

A Global Path entry contains information such as port numbers, path types, channel numbers, DLCIs, and X.121 addresses. This option is accessed from the Main Menu.

❖ The following prompt is displayed:

```
Enter Path Name (1 to 10 Characters):
```

a Type the Global Path Name and press **Enter**.

❖ If you enter a name that is not already associated with a Global Path, you are prompted to enter the path now:

```
Path Name Does Not Exist In GPT Table.
To Add Global Path Entry, Press 'Y'.  Press Escape Otherwise.
```

4 Do one of the following:

a Type **Y** to open the Global Path option and configure a path with that name.

b Press **ESC** to return to the GPT prompt and enter a different name.

**Note:** You cannot save this configuration if a valid GPT name has not been entered.

5 Select **Priority**. This parameter assigns a priority level to a DLCI, so that traffic using a particular DLCI is sent before or after other traffic in a given ratio. See *Section 4.1, Frame Relay*, for a detailed discussion of the Priority function.

❖ The following options are displayed:

```
Enter Priority ( default = Medium )
   for outgoing traffic on DLCI 300, port: Port 1
   (1) Immediate
   (2) High
   (3) Medium
   (4) Low
Enter Choice:
```

a Select the priority level you want traffic on this DLCI to have. (If you have no preference, use **Medium**, which is the default.)

❖ The following confirmation is displayed:

```
Priority set to Medium for DLCI 300 on port: Port 1
```
6 Select **Destination Port**. This option allows you to select the port on the remote unit to which you are transmitting traffic.

- The following prompt is displayed:

```
Enter Encapsulation Destination Port (N (Network) or 1-16 (Ports)):
```

**a** Type the port number and press **Enter**.

7 Select **Code Set**. This option allows you to choose the Code Set to be used.

- The following menu is displayed:

```
Configure Byte Synchronous Code Set
1) ASCII
2) EBCDIC
Enter Choice:
```

**a** Select the code you want to use. (IBM equipment normally requires EBCDIC; most other equipment uses ASCII.)

**Note:** To save the new configuration, you must WRITE and RESET. This is accomplished by selecting “Write Configuration” then reset the unit from the Main Menu to implement the new configuration. The destination port is the port on the remote unit through which data will be passed to the end user equipment (See Section 3.4.7, Write Configuration).