

# Chapter 1

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## *Hardware Description*

This document provides information on the hardware for the Remote Data Unit™ (RDU™), a peripheral device that supports a BANDIT Plus or a VSR-1200. (The BANDIT Plus can use one RDU; the VSR-1200 can use one or two RDUs. In addition, the BANDIT Plus and the VSR-1200 can function without RDU support.)

The Remote Data Unit is a peripheral for a controlling device such as a BANDIT Plus or a VSR-1200. The RDU augments the productivity and total throughput of its BANDIT Plus or VSR-1200. Each of the 12 DB25 ports on the RDU can provide 20 logical connections to network devices, contributing up to 240 logical connections to the controlling device's configuration.

The RDU is especially useful for additional VPN tunnels or for legacy protocol support, such as those needed in financial networks or in utilities networks.

### **1.1 The Remote Data Unit Chassis**

The Remote Data Unit (RDU), an external module with 12 DB25 serial ports, is available for use with the BANDIT Plus and the VSR-1200. The BANDIT Plus can support one RDU; the VSR-1200 can support one or two RDUs.

Each serial port on the RDU can support any protocol listed for serial ports in [Section 1.1.2.2, Serial Port](#).

The RDU's Ethernet port connects to the Ethernet LAN port on the BANDIT Plus or to an Ethernet port in the DMZ switch on the VSR-1200, supplying a connection within the BANDIT Plus or VSR-1200 chassis.

The RDU is 1U (1.75", 4.4 cm) high and 19" (48.3 cm) wide. Because it is a peripheral unit, the RDU can sit in any location. It is convenient to install the RDU in an equipment rack above or below its BANDIT Plus or VSR-1200.

[Figure 1-1](#) shows the front of the RDU; [Figure 1-2](#) shows the rear of the RDU. (Note that the RDU has its own AC power connection. The RDU's power consumption is 10 watts AC; its power supply delivers 3.3 volts DC to the RDU.)

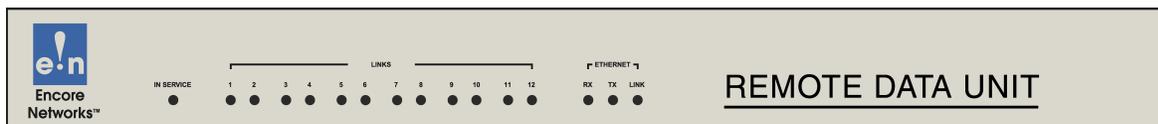


Figure 1-1. Remote Data Unit, Front

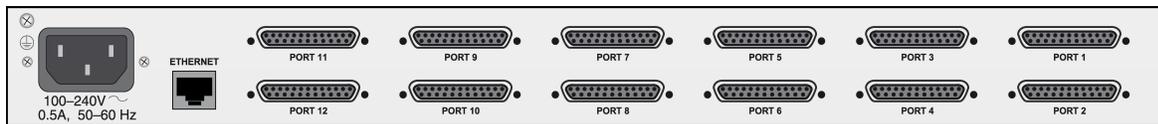


Figure 1-2. Remote Data Unit, Rear

Each serial port on the RDU is a DB25 female connector, physical DCE RS-232. If you want a port to be a physical DTE, use a DB25-to-DB25 crossover conversion cable.

The front of the RDU has 12 LEDs, one for each serial port. [Table 1-1](#) describes the LED states for the RDU's serial ports.

Table 1-1. Remote Data Unit's LEDs (1 of 2)

LED	State	Description
In Service	On	RDU system is up and operational.
	Off	RDU system is not yet fully operational. (System is off or is starting up.)

**Table 1-1. Remote Data Unit's LEDs (2 of 2)**

LED	State	Description
Links 1–12	On	Link is up. (Cable is connected properly.) <sup>1</sup>
	Blinking	Activity on port. <sup>1</sup>
	Off	Link is not up. <sup>1</sup>
Ethernet		
Rx	Blinking	Activity
Tx	Blinking	Activity
Link	On	Link is up. (Cable is connected properly.)
	Off	Link is not up.

1. The exact meaning of an LED state for Links 1–12 depends on the protocol the port carries.

### 1.1.1 Power Supply

The RDU has an internal power supply—contained within the chassis. The power supply for the BANDIT Plus also is internal. The VSR-1200 has two internal power supplies; these power supplies loadshare power distribution to the VSR-1200 chassis and components. Each internal power supply has a connector in the chassis for a power cable to an external AC power source.

Each BANDIT power supply for AC sources, whether internal or external, is autosensing to receive universal 100–240 VAC input at 47–63 Hz.

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**Note:** For product specifications, see [Appendix A, Specifications](#).

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**Note:** A power cable for AC models is included in shipments within North America. In other locations, the local or regional distributor is responsible for supplying a power cable that meets the specifications of the country in which the BANDIT product will be used.

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## 1.1.2 Standard Network Ports

The following sections discuss the BANDIT Plus or VSR-1200 port connections to the RDU.

- [Section 1.1.2.1, Ethernet Ports](#)
- [Section 1.1.2.2, Serial Port](#)

Also see [Section 1.2.3, Expansion Ports](#).

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**Note:** The BANDIT device's data ports can be remotely configured in the software. The data rates for synchronous and asynchronous data ports are shown in [Table A-11](#) and [Table A-12](#).

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### 1.1.2.1 Ethernet Ports

Each 10-Base-T, 10/100-Base-T, or 100/1000-Base-T Ethernet connection is implemented over unshielded twisted-pair (UTP) wire, using a standard RJ45 connector. [Table A-7](#) lists the RJ45 pin configuration. [Figure A-1](#) shows the connector pins (looking into the connector).

#### 1.1.2.1.1 The LAN Ethernet Port

The LAN Ethernet port is available on all BANDIT models. [Table 1-2](#) shows the interface options for the LAN port.

*Table 1-2. LAN Port Interface Options*

Standard
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- |   |
|---|
| <ul style="list-style-type: none"><li>• Ethernet 10-Base-T, with an RJ45 connector</li><li>• VSR-1200: Ethernet 100/1000-Base-T, with an RJ45 connector</li></ul> |
|---|

The LAN Port has the following IP features:

- Throughput: 512 kbps–2 Mbps (depending on encryption type)
- Static routing
- RIP V1, V2 routing
- Prioritization on Layers 3, 4, 5

- Fragmentation (MTU) LAN
- 256–4096 and LAN 256–1500
- DHCP/Bootp; DHCP Agent
- RFC 1592
- ARP; Proxy ARP

### 1.1.2.2 Serial Port

The RDU has 12 DB25 serial ports. [Table 1-3](#) lists the serial port's interface options. [Table 1-4](#) lists its protocol options. For the DB25 serial port's pin configuration, see [Table A-5](#).

**Table 1-3. Serial Port Interface Options**

Standard
<ul style="list-style-type: none"> <li>• Serial with a V.35, EIA-530, RS-232, X.21/V.11, or RS-449 connector <ul style="list-style-type: none"> <li>- RS-232: serial</li> <li>- V.35: binary</li> <li>- X.21 following EIA-530 on DB25 with an optional adapter cable to M-34: asynchronous data</li> </ul> </li> </ul>
Optional
<ul style="list-style-type: none"> <li>• Serial: <ul style="list-style-type: none"> <li>- 2 Mbps (DCE)</li> <li>- V.35 (EIA-530)</li> <li>- RS-232 (128 kbps sync, 115.2 kbps async)</li> <li>- RS-449/422/423</li> </ul> </li> </ul>

Table 1-4. Serial Port Protocols

Protocol	Features Supported
Frame Relay	<ul style="list-style-type: none"> <li>• Link Management               <ul style="list-style-type: none"> <li>- LMI, CCITT, Q.933 Annex A;</li> <li>- ANSI T1.617 Annex D</li> </ul> </li> <li>• IP over Frame Relay</li> <li>• CIR Enforcement</li> <li>• Fragmentation FRF12</li> <li>• Fast Connection</li> <li>• Prioritization</li> <li>• Unicasting</li> <li>• Multicasting</li> </ul>
PPP, Multilink PPP	<ul style="list-style-type: none"> <li>• Sync PPP</li> <li>• Async PPP</li> <li>• PAP</li> <li>• CHAP</li> <li>• IP over PPP</li> </ul>
IP	<ul style="list-style-type: none"> <li>• All standard IP features</li> </ul>
X.25	<ul style="list-style-type: none"> <li>• All standard X.25 features</li> </ul>

The cable for the serial port provides the proper V.35, RS-449, or RS-232 electrical interface. In addition, the cable provides the port's physical DCE or DTE interface. Make sure you have the correct cable for your network needs. (For cable options, see [Table A-14](#) and [Table A-15](#). [Table A-14](#) lists the cable pin settings for the port to be a physical DCE or DTE. [Table A-15](#) lists the cable pin settings for the serial port's electrical interface.)

## 1.2 BANDIT Plus and VSR-1200 Chassis

The chassis for the BANDIT family of products is a small unit designed for easy collocation with other networking equipment. [Section 1.2.1, BANDIT Chassis Models](#), describes the chassis for the BANDIT models. (Also see [Section A.2.1, Chassis Physical Specifications](#).)

## 1.2.1 BANDIT Chassis Models

All products in the BANDIT family use the ELIOS™ operating system. The following products are available for use with the RDU:<sup>1</sup>

- The BANDIT Plus™ is a rack-mounted model, providing all features of the original BANDIT, plus enhanced performance features, a full choice of connections for the expansion port, and support of 100 simultaneous IPsec VPN tunnels. The BANDIT Plus uses an internal power supply. (See [Section 1.2.1.1, The BANDIT Plus.](#)) The BANDIT Plus can also use a Remote Data Unit for additional serial ports. (See [Section 1.1, The Remote Data Unit Chassis.](#))
- The VSR-1200™, a rackmount unit, has two 100/1000-Base-T Ethernet ports, has eight 10/100-Base-T Ethernet ports (in a DMZ switch), uses DRAM and Flash, supports broadband internet access, supports VOIP, and can support 1200 VPN tunnels. The VSR-1200 is a high-end unit, and is typically placed as a central-site hub or VPN gateway solution for large enterprises. (See [Section 1.2.1.2, The VSR-1200.](#)) The VSR-1200 can also use one or two Remote Data Units for additional serial ports. (See [Section 1.1, The Remote Data Unit Chassis.](#))

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**Note:** The VSR series provides legacy-to-IP support only if the model has access to one or more serial ports (via an expansion module or via RDUs).

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### 1.2.1.1 The BANDIT Plus

The BANDIT Plus™ is a rack-mounted unit, providing all features of the original BANDIT, plus enhanced performance features, a full choice of connections for the expansion port, and support of 100 simultaneous IPsec VPN tunnels. This model uses an internal power supply.

[Figure 1-3](#) shows the front of the BANDIT Plus. The front contains the Supervisory port and LEDs for power, alarm, LAN port, WAN port, modem port, optional serial port, and expansion port.

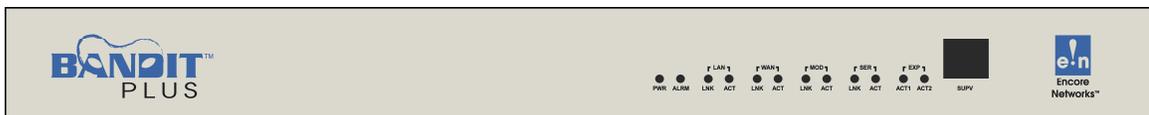


Figure 1-3. BANDIT Plus Chassis, Front

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1. Unless stated otherwise, each model autosenses 110–220 VAC input power.

Figure 1-4 shows the rear of the BANDIT Plus, with connectors for the expansion port, HD26 serial port, modem port, WAN port, and LAN port. The chassis also has a power switch and an AC power connector.

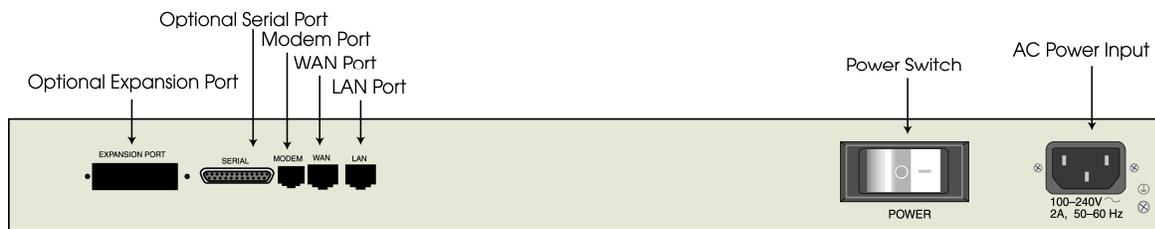


Figure 1-4. BANDIT Plus Chassis, Rear

The expansion slot holds one of several expansion ports; for more information, see [Section 1.2.3, Expansion Ports](#).

A Remote Data Unit (RDU), providing 1 to 12 additional serial ports, can connect to one of the Ethernet ports on the BANDIT Plus. See [Section 1.1, The Remote Data Unit Chassis](#).

### 1.2.1.2 The VSR-1200

Encore Networks' VPN Satellite Router 1200™ (VSR-1200™) is a high-end router designed to function as a gateway or a central-site hub. It supports legacy-to-IP protocol encapsulation and also supports virtual private networks; it can support up to 1200 IPsec VPN connections over ground-based or satellite networks. (In satellite networks, the VSR-1200 uses Selective Layer Encryption™, SLE™, to work with PEPs to enhance performance. For more information on SLE and satellite networks, see the *BANDIT Products Software Configuration and Maintenance Guide*.) Like all BANDIT products, the VSR-1200 can be managed locally via direct connection or remotely via SNMP, Telnet, and similar applications. This chassis model is a rack-mounted unit and uses two internal power supplies.

Like other BANDIT VPN devices, the VSR-1200's VPNs support DES and 3DES; in addition, the VSR-1200 can support AES. (If you wish to use VPNs with AES, a VSR-1200 must reside on each end of the VPN connection.) The VSR-1200 has a built-in encryption accelerator.

Like all BANDIT products, the VSR-1200 can support legacy protocols over IP. But the VSR-1200 chassis itself does not do so; instead, it uses its connection to one or two Remote Data Units (RDUs) to support legacy protocols. Any Ethernet port on the VSR-1200's DMZ switch can connect to an RDU, for a total of two RDUs per VSR-1200.

The VSR-1200 has two 100/1000BaseT Ethernet LAN and WAN ports, one modem port, one Supervisory port, and 128 Mbytes of DRAM/128 Mbytes of Flash, and uses two Hifn VPN chips to support up to 1200 VPN tunnels. It also holds a DMZ switch of eight 10/100BaseT Ethernet ports, and it can support one or two RDUs for serial connections.

The entire DMZ switch connects via one internal port to the VSR-1200's processor and supports a part of the LAN. You can assign the internal DMZ switch an IP address.

The Ethernet ports on the DMZ switch can support different hardware devices. (You use subnet masks to identify devices connected to the DMZ switch's ports.) If they are on the same subnet, devices named PC1, PC2, and PC3 can talk with each other. If a packet with a MAC address of a device connected to the DMZ switch comes in through an Ethernet port on the DMZ switch, the packet will be switched to an outgoing port on the DMZ switch without sending the packet through the processor. In effect, you can create a mini-LAN on the DMZ switch, and the VSR-1200 becomes a gateway for this mini-LAN to reach the LAN and the internet.

With its broadband internet access, VOIP support, and role as a VPN gateway, the VSR-1200 is typically placed as a hub solution for large enterprises. Spoofing and conversion of legacy data applications to IP provide host solutions for vertical markets—for example, in banking, travel, and financial networks.

Figure 1-5 shows the front of the VSR-1200 chassis. The front contains the Supervisory port; the front also holds status LEDs for power, for ports on the DMZ switch (in a bank of LEDs), for the LAN port, and for the WAN port. The rackmountable VSR-1200 chassis is 1U (1.75") in height by 19" in length.



Figure 1-5. VSR-1200 Chassis, Front

Figure 1-6 shows the rear of the VSR-1200 chassis. It has a PCI expansion slot, a modem port, a WAN Ethernet port, a LAN Ethernet port, and a DMZ switch that contains eight 10/100BaseT Ethernet ports. The chassis also has two AC power connectors for its internal power supplies. In future releases, the PCI expansion slot can hold a PCI expansion card.

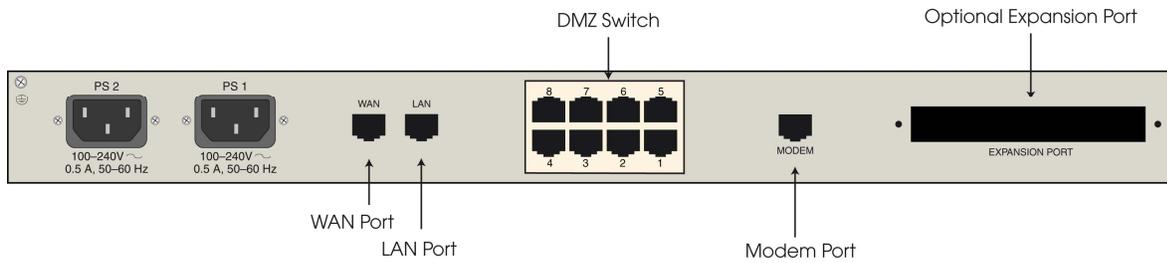


Figure 1-6. VSR-1200 Chassis, Rear

One or two Remote Data Units (RDUs), each providing 1 to 12 serial ports, can connect to Ethernet ports on the VSR-1200's DMZ switch. Each RDU has 12 serial ports and can support up to 240 remote locations or terminals (20 per port), enabling conversion and spoofing of legacy protocols such as SDLC, bisync, X.25, polled async, ALC, CDLC, and X.42. See [Section 1.1, The Remote Data Unit Chassis](#).

## 1.2.2 Supervisory Port

A Supervisory cable and an adapter connect the Supervisory port of a BANDIT Plus or a VSR-1200 to a control console (such as a PC). The Supervisory port is RS-232 on an EIA-561 eight-pin modular (RJ45) connector. [Figure 1-7](#) shows the RJ45 pin configuration for the Supervisory connection.

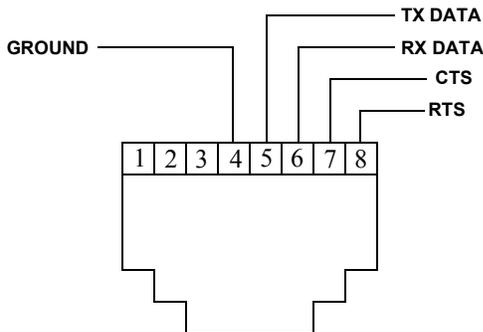


Figure 1-7. Socket View of RJ45 Supervisory Port

The Supervisory port is DCE in the connection. The following adapters can connect the RJ45 Supervisory cable to your control console's DB9 COM1 port.

- For a PC connection, use an RJ45-to-DB9 adapter. This is the adapter used for most BANDIT Supervisory port connections. (For this adapter's pin configuration, see [Table A-18](#).)
- For an async terminal connection, use an RJ45-to-DB25 adapter. (For this adapter's pin configuration, see [Table A-19](#).)
- For a modem connection, use an RJ45-to-DB25 modem adapter. (For this adapter's pin configuration, see [Table A-20](#).)

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**Note:** If the control console connection is through a Universal Serial Bus (USB) port, use an appropriate adapter—for example, a DB9-to-USB adapter.

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### 1.2.3 **Expansion Ports**

An expansion slot on the BANDIT Plus can hold one of several expansion ports. The ports available for the expansion slot depend on the BANDIT model you are using. (You select an expansion port when you order your BANDIT product.)

The VSR-1200 has a PCI expansion slot, for future use.

For more information on expansion ports, see the *BANDIT Products Hardware Reference Guide*.

