NetVanta 3200/3300/3400 Series Routers
Hardware Installation Guide

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To the Holder of the Manual

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Software Licensing Agreement

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Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

901 Explorer Boulevard
P.O. Box 140000
Huntsville, AL 35814-4000
Phone: (256) 963-8000

Conventions

Notes provide additional useful information.

Cautions signify information that could prevent service interruption or damage to the equipment.

WARNING

Warnings provide information that could prevent injury or endangerment to human life.

Safety Instructions

When using your networking equipment, please follow these basic safety precautions to reduce the risk of fire, electrical shock, or personal injury:

1. Do not use this product near water, such as a utility sink, water heater, or in a wet basement.
2. Use only the power cord, power supply, and batteries indicated in the manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for special disposal instructions.
3. The socket-outlet shall be installed near the equipment and shall be easily accessible.

If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your qualified service personnel:

1. The power cable, extension cable, or plug is damaged.
2. An object has fallen into the product.
3. The product has been exposed to water.
4. The product has been dropped or damaged.
5. The product does not operate correctly when you follow the operating instructions.

These units contain no user-serviceable parts. They should only be serviced by qualified service personnel.

This equipment incorporates double pole/neutral fusing. If the neutral fuse opens and the line fuse does not open, voltage could still be present in the unit.

Additional safety guidelines, such as Waste Electrical and Electronic Equipment (WEEE), are given in the document NetVanta Safety and Regulatory Information available at https://supportforums.adtran.com.

Save These Important Safety Instructions

FCC-Required Information

FCC regulations require that the following information be provided in this manual:

1. This equipment complies with Part 68 of Federal Communications Commission (FCC) rules and requirements adopted by America's Carriers Telecommunications Association (ACTA). Each registered interface has a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, provide this information to the telephone company.
2. If this equipment causes harm to the telephone network, the telephone company may temporarily discontinue service. If possible, advance notification is given; otherwise, notification is given as soon as possible. The telephone company will advise the customer of the right to file a complaint with the FCC.
3. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of this equipment. Advance notification and the opportunity to maintain uninterrupted service are given.
4. If experiencing difficulty with this equipment, please contact ADTRAN for repair and warranty information. The telephone company may require this equipment to be disconnected from the network until the problem is corrected, or it is certain the equipment is not malfunctioning.
5. This unit contains no user-serviceable parts.
6. This equipment is designed to connect to the telephone network or premises wiring using an FCC-compatible modular jack, which is compliant with Part 68 and requirements adopted by ACTA.
7. The following information may be required when applying to the local telephone company for leased line facilities:

Part Number	Registration Number	Service Type	REN/SOC	FIC	USOC
1200861L1	US: HDCDENAN1200861L1	56 kbps Digital Interface 64 kbps Digital Interface	6.0F	04DU5-56 04DU5-64	RJ-48S
1202862L1	US: HDCDENAN1202863L1	1.544 Mbps - SF 1.544 Mbps - SF and B8ZS 1.544 Mbps - ESF 1.544 Mbps - ESF and B8ZS	6.0N	04DU9-BN 04DU9-DN 04DU9-1KN 04DU9-1SN	RJ-48C
1202863L1					
1200872L1	US: HDCDENAN1200872L1				
1200864L1	US: HDCMM04A1200864L1	Analog Loop Start	0.4A/9.0Y	02LS2	RJ-11C
1200865L1	US: HDCDENAN1200865L1	Basic Rate ISDN	6.0F	02IS5	RJ-49C
1202869E1	US: HDCDL01A1200869L1	ADSL, ADSL2, ADSL2+ Modem	0.1A	Metallic	RJ-11C

8. The ringer equivalence number (REN) is useful in determining the quantity of devices you may connect to your telephone line and still have all of those devices ring when your number is called. In most areas, the sum of the RENs of all devices should not exceed five. To be certain of the number of devices you may connect to your line as determined by the REN, call your telephone company to determine the maximum REN for your calling area.
9. This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio frequencies. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Compliance Information

This product meets the applicable Industry Canada technical specifications.

The Ringer Equivalence Number (REN) is an indication of the maximum number of devices allowed to be connected to a telephone interface. The termination of an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices not exceed five.

Le présent matériel est conforme aux specifications techniques applicables d'Industrie Canada.

L'indice d'équivalence de la sonnerie (IES) sert à indiquer le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas cinq.

Canadian Emissions Requirements

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioelectriques applicables aux appareils numériques de Class A prescrites dans la norme sur le materiel brouilleur: “Appareils Numériques,” NMB-003 edictee par le ministre des Communications.

Toll Fraud Liability

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Third-Party Software

The software included in this product contains copyrighted software that is licensed under the GNU General Public License (GPL). For a list of third-party software and their licenses, go to http://www.adtran.com/software/EULA. You can obtain the complete corresponding source code of such software components from ADTRAN for a period of three years after our last shipment of this product by sending a money order or check for $5 to:

ADTRAN, Inc, P.O. Box 933638, Atlanta, GA 31193-3638
Please write **GPL Source for product NetVanta 3200/3300/3400** in the memo line of your payment.

This offer is valid to anyone in receipt of this information.

Service and Warranty

For information on the service and warranty of ADTRAN products, visit the *Support* section of the ADTRAN website at http://www.adtran.com.

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1. INTRODUCTION

The NetVanta 3200/3300/3400 Series includes the NetVanta 3200, NetVanta 3205 (AC or DC powered), NetVanta 3305, NetVanta 3430, NetVanta 3448, NetVanta 3450, and NetVanta 3458.

> **NOTE** *In this document, the term NetVanta 3200/3300/3400 Series means all of the units collectively. If a statement only applies to one particular router, the text refers to the router individually.*

This hardware installation guide lists the NetVanta 3200/3300/3400 Series units' physical characteristics and product specifications, introduces basic functionality, and provides installation instructions.

- *Physical Descriptions on page 13*
- *Option Modules on page 38*
- *Unit Installation on page 58*

For additional information on mounting options, suppling power, upgrading memory, and installing a CompactFlash card, refer to the following sections:

- *Mounting Options on page 59*
- *Supplying Power to the Unit on page 64*
- *Installing Dial Backup and Network Interface Modules on page 69*
- *Using a USB Cellular Modem with the NetVanta USB WWAN NIM on page 72*
- *Installing the NetVanta VPN Accelerator Card (included in P/N 4200368L1) on page 73*
- *Installing SODIMM for Expandable Memory on page 74*
- *Installing a CompactFlash Card on page 76*
- *Installing the Octal PoE Upgrade Module on page 77*

For information on switch configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

2. PHYSICAL DESCRIPTIONS

NetVanta 3200

The NetVanta 3200 is a modular access router designed for cost-effective branch office connectivity over MPLS, Frame Relay, multilink Frame Relay, Point-to-Point Protocol (PPP), Multilink PPP (MLPPP), or Ethernet networks.

For information on switch configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

NetVanta 3200 Features and Specifications

- Modular Network Interface: 56K/64K, T1/FT1, T1/FT1 + DSX-1, Dual T1, E1/FE1, E1/FE1 + G.703, serial, SHDSL, and ADSL
- One integrated 10/100Base-T Ethernet port (RJ-45)
- Modular IP access router for MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, PPPoE, ATM, and HDLC networks
- Integrated IP router with bridging
- Optional ISsec VPN supporting DES/3DES/AES encryption
- Compatible with ISsec VPN-equipped devices
- IP encapsulation over Frame Relay (RFC 1490)
- ADTRAN Operating System (AOS) command line interface (CLI)
- User-friendly, web-based graphical user interface (GUI)
- Standards-based eBGP/iBGP, OSPF, RIP, static routing and bridging protocols
- Integral stateful inspection firewall protects against denial of service (DoS) attacks
- Quality of service (QoS) with low latency queuing (LLQ), weighted fair queuing (WFQ), class-based weighted fair queuing (CBWFQ), and DiffServ marking
- Built-in alert and logging mechanisms
- Network address translation (NAT/NAPT), 1:1 NAT port translation, and NAT Traversal version 2
- NAT-compliant SIP ALG
- DHCP client, server, and relay
- XAUTH including RADIUS and RSA SecurID
- AAA support using local user database, RADIUS, and TACACS+
- Flash memory supports multiple images of AOS
- Remotely configurable and field upgradeable using TFTP or FTP
- Telnet, HTTP, SSH, or SNMP management options
- SNMP management
- n-Command network management
- Integrated EIA-232 DCE configuration port (DB-9)
- Optional dial backup (ISDN BRI DIM, ISDN S/T DIM, or analog modem DIM)
- Front panel LEDs
- Size: 9.3-inch W x 2.1-inch H x 6.1-inch D
- AC Power Requirements: 6 W maximum, 60 mA (regardless of configuration)
- Operating Temperature: 0°C to 50°C
- RoHS compliant (Telecommunications exemption)

Network Interface Modules and Dial Backup Interface Modules Supported

The NetVanta 3200 supports a variety of interchangeable network interface modules (NIMs) and dial backup interface modules (DIMs). The NIMs available for the NetVanta 3200 provide a variety of WAN connectivity options including the following:

- 56K/64K (DDS)
- T1/FT1
- T1/FT1 + DSX-1
- Dual T1
- E1/FE1
- E1/FE1 + G.703
- Serial (V.35/X.21/EIA 530)
- SHDSL, Annex A and Annex B
- ADSL, Annex A and Annex B

If needed, an analog modem, ISDN BRI U, or ISDN BRI S/T DIM can plug onto the NIM, providing dial backup capability. Refer to *Installing Dial Backup and Network Interface Modules on page 69* for more details.

NetVanta 3200 Shipping Contents

Each NetVanta 3200 unit is shipped in its own cardboard shipping carton. Open each carton carefully, and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for possible shipping damage. If the equipment has been damaged in transit, immediately file a claim with the carrier and contact ADTRAN Customer Service (refer to the *Support* page on the ADTRAN website at http://www.adtran.com/support).

Shipments of the NetVanta 3200 include the following items:

- NetVanta 3200 base unit
- Quick start guide
- AC power supply

System bundles are shipped with a base unit, a network interface module, and other appropriate contents based on the system-level solution ordered.

Option module shipping contents are given in Option Module Shipping Contents on page 39.

NetVanta 3200 Front Panel Design

The NetVanta 3200 front panel is shown below. Front panel LED descriptions are given in *Table 1 on page 37*.

Figure 1. NetVanta 3200 Front Panel Layout

NetVanta 3200 Rear Panel Design

The NetVanta 3200 rear panel is shown below. *Appendix A on page 79* provides pinouts.

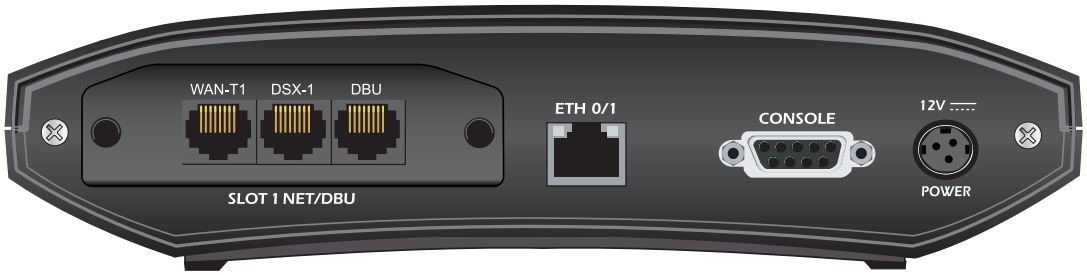

Figure 2. NetVanta 3200 Rear Panel Layout

NetVanta 3200 Rear Panel Interfaces and LEDs

SLOT 1 NET/DBU Option Slot

The **SLOT 1 NET/DBU** option slot supports various plug-in NIMs. These option modules are described in the section *Option Modules on page 38*.

10/100Base-T Ethernet Interface and Activity LEDs

The Ethernet port (**ETH 0/1**) is an RJ-45 connector with LEDs. The amber activity LED flashes when data traffic is being sent or received on the Ethernet port. The green link LED is on when the router has a good connection to the LAN. The Ethernet port provides the following:

- 10Base-T or 100Base-T with a single connector
- Auto-negotiation
- CSMA/CD
- IEEE 802.3 compatibility

CONSOLE Interface

The **CONSOLE** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (via a DB-9 female connector)

> NOTE *Connection directly to an external modem requires a cross-over cable.*

Power Connection

The rear panel has a **12V** input for the power supply included in the shipment. Please refer to *Supplying Power to the Unit on page 64*.

NetVanta 3205

The NetVanta 3205 (AC or DC powered) is a modular access router designed for cost-effective branch office connectivity over MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, or Ethernet networks.

For information on switch configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

NetVanta 3205 Features and Specifications

- Modular Network Interface: 56K/64K, T1/FT1, T1/FT1 NEBS, T1/FT1 + DSX-1, Dual T1, E1/FE1, E1/FE1 + G.703, serial, SHDSL, or ADSL
- One integrated 10/100Base-T Ethernet port (RJ-45)
- Modular IP access routers for MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, PPPoE, ATM, and HDLC networks
- Integrated IP router with bridging
- Optional ISsec VPN supporting DES/3DES/AES encryption
- IP encapsulation over Frame Relay (RFC 1490)
- ADTRAN Operating System (AOS) command line interface (CLI)
- User-friendly, web-based graphical user interface (GUI)
- Standards-based eBGP/iBGP, OSPF, RIP, static routing and bridging protocols
- Integral stateful inspection firewall protects against denial of service (DoS) attacks
- Quality of service (QoS) with low latency queuing (LLQ), weighted fair queuing (WFQ), class-based weighted fair queuing (CBWFQ), and DiffServ marking
- Built-in alert and logging mechanisms
- Network address translation (NAT/NAPT), 1:1 NAT port translation, and NAT Traversal version 2
- NAT-compliant SIP ALG
- DHCP client, server, and relay
- XAUTH including RADIUS and RSA SecurID
- AAA support using local user database, RADIUS, and TACACS+
- Flash memory supports multiple images of AOS
- Remotely configurable and field upgradeable using TFTP or FTP
- Telnet, HTTP, SSH, or SNMP management options
- SNMP management
- n-Command network management
- Integrated EIA-232 DCE configuration port (DB-9)

- Optional dial backup (ISDN BRI DIM, ISDN S/T DIM, or analog modem DIM)
- Front panel LEDs
- Size: 17.25-inch W x 1.26-inch H x 7.75-inch D
- AC Power Requirements: 6 W maximum, 60 mA (regardless of configuration)
- DC Power Requirements: 6 W maximum; +21 to +28.3 VDC (+24 VDC nominal); -40.5 to -64 VDC (-48 VDC nominal)
- Operating Temperature: 0°C to 50°C
- RoHS compliant (Telecommunications exemption) (AC version only)

Network Interface Modules and Dial Backup Interface Modules Supported

The NetVanta 3205 supports a variety of interchangeable NIMs and DIMs. The NIMs available for the NetVanta 3205 (AC or DC powered) provide a variety of WAN connectivity options including the following:

- 56K/64K (DDS)
- T1/FT1
- T1/FT1 + DSX-1
- Dual T1
- T1/FT1 NEBS (NetVanta 3205 DC only)
- E1/FE1
- E1/FE1 + G.703
- Serial (V.35/X.21/EIA 530)
- SHDSL, Annex A and Annex B
- ADSL, Annex A and Annex B

If needed, an analog modem, ISDN BRI U, or ISDN BRI S/T DIM can plug onto the NIM, providing dial backup capability. Refer to *Installing Dial Backup and Network Interface Modules on page 69* for more details.

NetVanta 3205 Shipping Contents

Each NetVanta 3205 unit is shipped in its own cardboard shipping carton. Open each carton carefully, and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for possible shipping damage. If the equipment has been damaged in transit, immediately file a claim with the carrier and contact ADTRAN Customer Service (refer to the *Support* page on the ADTRAN website at http://www.adtran.com/support).

Shipments of the NetVanta 3205 (AC) include the following items:

- NetVanta 3205 (AC) base unit with attached mounting ears/screws
- Quick start guide
- Detachable AC power cord

Shipments of the NetVanta 3205 (DC) include the following items:

- NetVanta 3205 (DC) base unit with attached mounting ears
- Quick start guide

> **NOTE** *System bundles are shipped with a base unit, a network interface module, and other appropriate contents based on the system-level solution ordered.*

> **NOTE** *Option module shipping contents are given in Option Module Shipping Contents on page 39.*

NetVanta 3205 Front Panel Design

The NetVanta 3205 front panel is shown below. Front panel LED descriptions are given in *Table 1 on page 37*.

Figure 3. NetVanta 3205 Front Panel Layout

NetVanta 3205 Rear Panel Design

The NetVanta 3205 AC and DC version rear panels are shown below with a module installed. *Appendix A on page 79* provides pinouts.

Figure 4. NetVanta 3205 (AC version) Rear Panel Layout

Figure 5. NetVanta 3205 (DC version) Rear Panel Layout

NetVanta 3205 Rear Panel Interfaces and LEDs

SLOT 1 NET/DBU Option Slot

The **SLOT 1 NET/DBU** option slot supports various NIM plug-in option modules. These option modules are described in the section *Option Modules on page 38*.

10/100Base-T Ethernet Interface and Activity LEDs

The Ethernet port (**ETH 0/1**) is an RJ-45 connector with LEDs. The amber activity LED flashes when data traffic is being sent or received on the Ethernet port. The green link LED is on when the router has a good connection to the LAN. The Ethernet port provides the following:

- 10Base-T or 100Base-T with a single connector
- Auto-negotiation
- CSMA/CD
- IEEE 802.3 compatibility

CONSOLE Interface

The **CONSOLE** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (via a DB-9 female connector).

> NOTE *Connection directly to an external modem requires a cross-over cable.*

Power Connection

The rear panel has a power input for connection to the power supply. Power supplies are shipped with final destinations in mind. For example, domestic routers are shipped with a wallmount supply and international routers are shipped with a universal input lump-in-line supply with the appropriate cables. All of the 1U-high products have universal power supplies and are shipped with the appropriate cable. Please refer to *Supplying Power to the Unit on page 64* for connection details.

NetVanta 3305

The NetVanta 3305 is a modular access router designed for cost-effective branch office connectivity over MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, or Ethernet networks.

For VPN applications using the NetVanta 3305, the optional NetVanta VPN Accelerator Card provides encryption/decryption and security acceleration services. Refer to *Installing the NetVanta VPN Accelerator Card (included in P/N 4200368L1) on page 73*.

For information on switch configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

NetVanta 3305 Features and Specifications

- Modular Network Interface: 56K/64K, T1/FT1, T1/FT1 + DSX-1, Dual T1, E1/FE1, E1/FE1 + G.703, serial, SHDSL, ADSL, or USB WWAN
- Optional VPN Accelerator Card provides encryption/decryption and security acceleration services
- Two integrated 10/100Base-T Ethernet ports (RJ-45)
- Modular IP access routers for MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, PPPoE, ATM, and HDLC networks
- Integrated IP router with bridging
- IP encapsulation over Frame Relay (RFC 1490)
- ADTRAN Operating System (AOS) command line interface (CLI)

- User-friendly, web-based graphical user interface (GUI)
- Standards-based eBGP/iBGP, OSPF, RIP, static routing and bridging protocols
- Integral stateful inspection firewall protects against denial of service (DoS) attacks
- Quality of service (QoS) with low latency queuing (LLQ), weighted fair queuing (WFQ), class-based weighted fair queuing (CBWFQ), and DiffServ marking
- Built-in alert and logging mechanisms
- Network address translation (NAT/NAPT), 1:1 NAT port translation, and NAT Traversal version 2
- NAT-compliant SIP ALG
- DHCP client, server, and relay
- XAUTH including RADIUS and RSA SecurID
- AAA support using local user database, RADIUS, and TACACS+
- Flash memory supports multiple images of AOS
- Remotely configurable and field upgradeable using TFTP or FTP
- Telnet, HTTP, SSH, or SNMP management options
- SNMP management
- n-Command network management
- Integrated EIA-232 DCE configuration port (DB-9)
- Optional dial backup (ISDN BRI DIM, ISDN S/T DIM, or analog modem DIM)
- Front panel LEDs
- Size: 17.25-inch W x 1.26-inch H x 7.75-inch D
- AC Power Requirements: 6 W maximum, 60 mA (regardless of configuration)
- Operating Temperature: 0°C to 50°C
- RoHS compliant (Telecommunications exemption)

Network Interface Modules and Dial Backup Interface Modules Supported

The NetVanta 3305 supports a variety of interchangeable NIMs and DIMs. The NIMs available for the NetVanta 3305 provide a variety of WAN connectivity options including the following:

- 56K/64K (DDS)
- T1/FT1
- T1/FT1 + DSX-1
- Dual T1
- E1/FE1
- E1/FE1 + G.703
- Serial (V.35/X.21/EIA 530)
- SHDSL, Annex A and Annex B
- ADSL, Annex A and Annex B
- USB WWAN

If needed, an analog modem, ISDN BRI U, or ISDN BRI S/T DIM can plug onto the NIM, providing dial backup capability. Refer to *Installing Dial Backup and Network Interface Modules on page 69* for more details.

Refer to *Using a USB Cellular Modem with the NetVanta USB WWAN NIM on page 72* for details on installing and removing a USB cellular modem from the USB WWAN NIM.

NetVanta 3305 Shipping Contents

Each NetVanta 3305 unit is shipped in its own cardboard shipping carton. Open each carton carefully, and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for possible shipping damage. If the equipment has been damaged in transit, immediately file a claim with the carrier and contact ADTRAN Customer Service (refer to the *Support* page on the ADTRAN website at http://www.adtran.com/support).

Shipments of the NetVanta 3305 include the following items:

- NetVanta 3305 base unit with attached mounting ears/screws
- Quick start guide
- Detachable AC power cord

> NOTE *System bundles are shipped with a base unit, a network interface module, and other appropriate contents based on the system-level solution ordered.*

> NOTE *Option module shipping contents are given in Option Module Shipping Contents on page 39.*

NetVanta 3305 Front Panel Design

The NetVanta 3305 front panel is shown below. Front panel LED descriptions are given in *Table 1 on page 37*.

Figure 6. NetVanta 3305 Front Panel Layout

NetVanta 3305 Rear Panel Design

The NetVanta 3305 rear panel is shown below with modules installed. *Appendix A on page 79* provides pinouts.

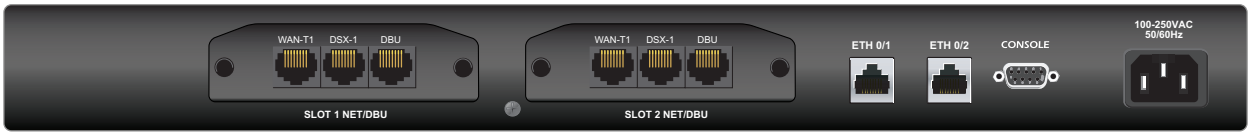

Figure 7. NetVanta 3305 Rear Panel Layout

NetVanta 3305 Rear Panel Interfaces and LEDs

NET/DBU Option Slots

The **SLOT x NET/DBU** option slots support various NIM plug-in option modules. These option modules are described in the section *Option Modules on page 38*.

10/100Base-T Ethernet Interface and Activity LEDs

The Ethernet ports (**ETH 0/1** and **ETH 0/2**) are RJ-45 connectors with LEDs. The amber activity LED flashes when data traffic is being sent or received on the Ethernet port. The green link LED is on when the router has a good connection to the LAN. The Ethernet port provides the following:

- 10Base-T or 100Base-T with a single connector
- Auto-negotiation
- CSMA/CD
- IEEE 802.3 compatibility

CONSOLE Interface

The **CONSOLE** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (via a DB-9 female connector).

> NOTE *Connection directly to an external modem requires a cross-over cable.*

Power Connection

The rear panel has a power input for connection to the power supply. Power supplies are shipped with final destinations in mind. For example, domestic routers are shipped with a wallmount supply and international routers are shipped with a universal input lump-in-line supply with the appropriate cables. All of the 1U-high products have universal power supplies and are shipped with the appropriate cable. Please refer to *Supplying Power to the Unit on page 64* for connection details.

NetVanta 3430

The NetVanta 3430 is a high-performance, modular IP access routers designed for cost-effective branch office connectivity over MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, or Ethernet networks.

For information on switch configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

NetVanta 3430 Features and Specifications

- Single-slot, dual-Ethernet modular IP router
- Modular Network Interface: 56K/64K DDS, T1/FT1, T1/FT1 + DSX-1, Dual T1, E1/FE1, E1/FE1 + G.703, or ADSL (Annex A or Annex B), SHDSL (Annex A or Annex B), serial, or USB WWAN
- Modular IP access routers for MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, PPPoE, ATM, and HDLC networks
- High-performance processor
- Hardware encryption engine embedded
- On-board Flash memory

- Expandable memory storage via a CompactFlash® card slot on the front panel and SODIMM slot
- Two integrated 10/100Base-T WAN/LAN ports
- ADTRAN Operating System (AOS) command line interface (CLI)
- User-friendly, web-based graphical user interface (GUI)
- Standards-based BGP, OSPF, RIP, static routing, and bridging protocols
- Integral stateful inspection firewall protects against denial of service (DoS) attempts
- Flash memory supports multiple images of AOS
- Interchangeable network interface modules (NIMs)
- Dial backup to any PPP-compliant device
- Analog modem, ISDN BRI U, or ISDN BRI S/T dial backup interface modules (DIMs) available
- 500 ISsec VPN tunnels (software optional) with DES, 3DES, and AES encryption
- Compatible with ISsec VPN-equipped devices
- Quality of service (QoS) with class-based weighted fair queuing (CBWFQ), low latency queuing (LLQ), weighted fair queuing (WFQ), and DiffServ marking
- Built-in alert and logging mechanisms
- Network address translation (NAT/NAPT) and NAT Traversal version 2
- NAT-compatible SIP ALG
- DHCP client, server, and relay
- XAUTH including RADIUS and RSA SecurID
- AAA support using local user database, RADIUS, and TACACS+
- TFTP, FTP, XMODEM for firmware upgrades and maintenance updates
- Telnet, HTTP, SSH, SSL, Syslog, craft/console port, or SNMP management options
- Field-upgradable and remotely configurable
- Supports up to two T1s of bandwidth
- 1U-high desktop or rackmountable metal enclosure (requires rackmount kit P/N 1200827E1, which must be ordered separately, for rack mounting)
- Size: 1.7-inch H x 11.7-inch W x 7.5-inch D (1200820E1)
- Size: 1.7-inch H x 10.5-inch W x 5.8-inch D (1202820G1)
- AC Power Requirements: Auto-ranging power, 100 to 250 VAC, 50/60 Hz, 0.4 A maximum
- Operating Temperature: 0°C to 50°C
- RoHS compliant

Network Interface Modules and Dial Backup Interface Modules Supported

The NetVanta 3430 supports a variety of interchangeable NIMs and DIMs. The NIMs available for the NetVanta 3430 provide a variety of WAN connectivity options including the following:

- 56K/64K (DDS)
- T1/FT1
- T1/FT1 + DSX-1
- Dual T1
- E1/FE1
- E1/FE1 + G.703
- Serial (V.35/X.21/EIA 530)
- SHDSL, Annex A and Annex B

- ADSL, Annex A and Annex B
- USB WWAN

If needed, an analog modem, ISDN BRI U, or ISDN BRI S/T DIM can plug onto the NIM, providing dial backup capability. Refer to *Installing Dial Backup and Network Interface Modules on page 69* for more details.

Refer to *Using a USB Cellular Modem with the NetVanta USB WWAN NIM on page 72* for details on installing and removing a USB cellular modem from the USB WWAN NIM.

NetVanta 3430 Shipping Contents

Each NetVanta 3430 unit is shipped in its own cardboard shipping carton. Open each carton carefully, and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for possible shipping damage. If the equipment has been damaged in transit, immediately file a claim with the carrier and contact ADTRAN Customer Service (refer to the *Support* page on the ADTRAN website at http://www.adtran.com/support).

Domestic Shipping Contents

Shipments of the NetVanta 3430 domestic units include the following items:

- NetVanta 3430 base unit
- Quick start guide
- Rackmount brackets
- Wallmount brackets
- 4 rubber mounting feet
- Power cord

International Shipping Contents

Shipments of the NetVanta 3430 international units include the following items:

- NetVanta 3430 base unit
- Quick start guide
- Rackmount brackets
- Wallmount brackets
- 4 rubber mounting feet
- All necessary power cords

Option module shipping contents are given in Option Module Shipping Contents on page 39.

The NetVanta 3430 ships with a 144-pin, 128 MB SODIMM (P/N 1200828G1) installed. It can be upgraded to provide a maximum of 512 MB of memory using the 144-pin, 512 MB SODIMM (P/N 1200829G1).

NetVanta 3430 Front Panel Design

The NetVanta 3430 front panel is shown below. Front panel LED descriptions are given in *Table 1 on page 37*. In addition to the LEDs, this front panel contains a **CompactFlash** slot for nonvolatile configuration storage and compressed code storage. ADTRAN supports any industry standard 1 GB CompactFlash card. Refer to *Installing a CompactFlash Card on page 76*.

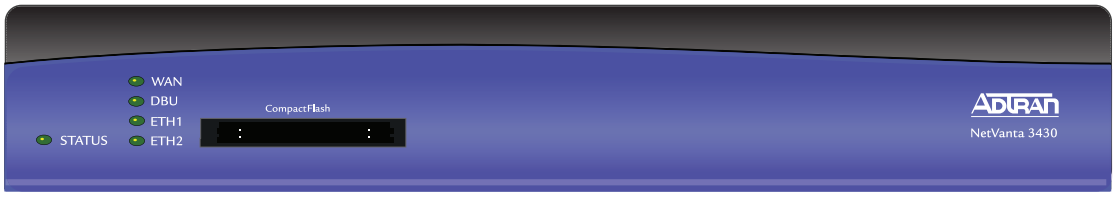

Figure 8. NetVanta 3430 (1202820G1) Front Panel Layout

NetVanta 3430 Rear Panel Design

The NetVanta 3430 rear panel is shown below with a module installed. *Appendix A on page 79* provides pinouts.

Figure 9. NetVanta 3430 (1202820G1) Rear Panel Layout

NetVanta 3430 Rear Panel Interfaces

SLOT 1 NET/DBU Option Slot

The **SLOT 1 NET/DBU** option slot supports various NIM plug-in option modules. These option modules are described in the section *Option Modules on page 38*.

10/100Base-T Ethernet Interfaces

The Ethernet ports (**ETH 0/1** and **ETH 0/2**) are RJ-45 connectors. These ports provide the following:

- 10Base-T or 100Base-T with a single connector
- Auto-negotiation
- CSMA/CD
- IEEE 802.3 compatibility

CONSOLE Interface

The **CONSOLE** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (via a DB-9 female connector).

> NOTE *Connection directly to an external modem requires a cross-over cable.*

Power Connection

All of the 1U-high products have universal power supplies and are shipped with the appropriate cable. Please refer to *Supplying Power to the Unit on page 64* for connection details.

NetVanta 3448

The NetVanta 3448 is a high-performance modular access router designed for cost-effective branch office connectivity over MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, or Ethernet networks. It offers an integrated 8-port fully managed Ethernet switch.

The NetVanta 3448 switch ports can be upgraded using the Octal Power over Ethernet (PoE) Upgrade Bundle to provide PoE capability. PoE provides the ability to detect attached powered devices (PDs) and deliver 48 VDC to the PDs via existing CAT 5 and CAT 6 cabling. The NetVanta 3448 PoE option is fully compliant with the IEEE 802.3af PoE standard.

For information on switch configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

NetVanta 3448 Features and Specifications

- Single-slot, dual-Ethernet modular IP router
- Modular Network Interface: 56K/64K DDS, T1/FT1, T1/FT1 + DSX-1, Dual T1, E1/FE1, E1/FE1 + G.703, ADSL (Annex A or Annex B), SHDSL (Annex A or Annex B), serial, or USB WWAN
- High-performance processor
- Hardware encryption engine embedded
- On-board Flash memory (32 MB)
- Expandable memory storage via a CompactFlash card slot on the front panel and SODIMM slot
- Two integrated 10/100 Base-T WAN/LAN ports
- Integrated 8-port fully-managed Ethernet switch
- Optional Octal PoE upgrade for switch ports to provide (802.3af/Legacy) PoE capability
- ADTRAN Operating System (AOS) command line interface (CLI)
- User-friendly, web-based graphical user interface (GUI)
- Modular IP access routers for MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, PPPoE, ATM, and HDLC networks
- Standards-based BGP, OSPF, RIP, static routing and bridging protocols
- Integral stateful inspection firewall protects against denial of service (DoS) attempts
- Flash memory supports multiple images of AOS
- Interchangeable network interface modules (NIMs)
- Dial backup to any PPP-compliant device
- Analog modem, ISDN BRI U, or ISDN BRI S/T dial backup interface modules (DIMs) available
- 500 ISsec VPN tunnels (optional) with DES, 3DES, and AES encryption
- Compatible with ISsec VPN-equipped devices
- Quality of service (QoS) with class-based weighted fair queuing (CBWFQ), low latency queuing (LLQ), weighted fair queuing (WFQ), and DiffServ marking
- Built-in alert and logging mechanisms
- Network address translation (NAT/NAPT) and NAT Traversal version 2

- NAT-compatible SIP ALG
- DHCP client, server, and relay
- XAUTH including RADIUS and RSA SecurID
- AAA support using local user database, RADIUS, and TACACS+
- TFTP, FTP, XMODEM for firmware upgrades and maintenance updates
- Telnet, HTTP, SSH, SSL, Syslog, craft/console port, or SNMP management options
- Field-upgradable and remotely configurable
- Supports up to two T1s of bandwidth
- 1U-high desktop or rackmountable metal enclosure (requires rackmount kit P/N 1200827E1, which must be ordered separately, for rack mounting)
- Size: 1.7-inch H x 11.7-inch W x 7.5-inch D
- AC Power Requirements: Auto-ranging power, 100 to 250 VAC, 50/60 Hz, 0.4 A maximum
- Operating Temperature (non-PoE applications): 0°C to 50°C
- Operating Temperature (PoE applications): 0°C to 40°C
- RoHS compliant

Network Interface Modules and Dial Backup Interface Modules Supported

The NetVanta 3448 supports a variety of interchangeable NIMs and DIMs. The NIMs available for the NetVanta 3448 provide a variety of WAN connectivity options including the following:

- 56K/64K (DDS)
- T1/FT1
- T1/FT1 + DSX-1
- Dual T1
- E1/FE1
- E1/FE1 + G.703
- Serial (V.35/X.21/EIA 530)
- SHDSL, Annex A or Annex B
- ADSL, Annex A or Annex B
- USB WWAN

If needed, an analog modem, ISDN BRI U, or ISDN BRI S/T DIM can plug onto the NIM, providing dial backup capability. Refer to *Installing Dial Backup and Network Interface Modules on page 69* for more details.

Refer to *Using a USB Cellular Modem with the NetVanta USB WWAN NIM on page 72* for details on installing and removing a USB cellular modem from the USB WWAN NIM.

NetVanta 3448 Shipping Contents

Each NetVanta 3448 unit is shipped in its own cardboard shipping carton. Open each carton carefully, and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for possible shipping damage. If the equipment has been damaged in transit, immediately file a claim with the carrier and contact ADTRAN Customer Service (refer to the *Support* page on the ADTRAN website at http://www.adtran.com/support).

Domestic Shipping Contents

Shipments of the NetVanta 3448 domestic units include the following items:

- NetVanta 3448 base unit
- Quick start guide
- 4 rubber mounting feet
- Power cord
- PoE external power supply with power cord (with PoE option only)

International Shipping Contents

Shipments of the NetVanta 3448 international units include the following items:

- NetVanta 3448 base unit
- Quick start guide
- 4 rubber mounting feet
- All necessary power cords
- PoE external power supply with all necessary power cords (with PoE option only)

> NOTE
>
> *Option module shipping contents are given in Option Module Shipping Contents on page 39.*

> NOTE
>
> *The NetVanta 3448 ships with a 200-pin, 128 MB SODIMM (P/N 1200812E1) installed. It can be upgraded to provide 256 MB of memory using the 200-pin, 256 MB SODIMM (P/N 1200813E1) or 512 MB using the 200-pin, 512 MB SODIMM (P/N 1200814E1).*

NetVanta 3448 Front Panel Design

The NetVanta 3448 front panel is shown below. Front panel LED descriptions are given in *Table 1 on page 37*. In addition to the LEDs, this front panel contains a **CompactFlash** slot for nonvolatile configuration storage and compressed code storage. ADTRAN supports any industry standard 1 GB CompactFlash card. Refer to *Installing a CompactFlash Card on page 76*.

Figure 10. NetVanta 3448 Front Panel Layout

NetVanta 3448 Rear Panel Design

The NetVanta 3448 rear panel is shown below with a module installed. *Appendix A on page 79* provides pinouts.

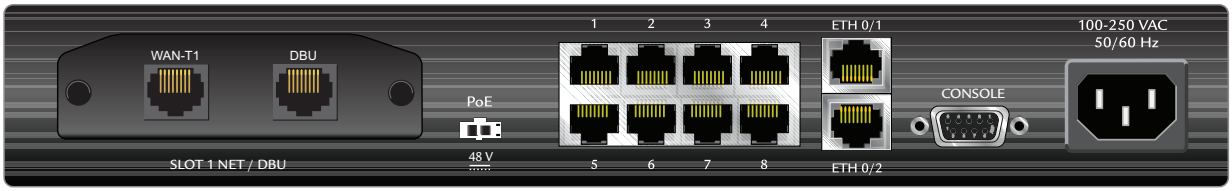

Figure 11. NetVanta 3448 Rear Panel Layout

NetVanta 3448 Rear Panel Interfaces

SLOT 1 NET/DBU Option Slot

The **SLOT 1 NET/DBU** option slot supports various NIM plug-in option modules. These option modules are described in the section *Option Modules on page 38*.

PoE

The NetVanta 3448 has a 48 VDC port on the rear panel to provide the voltage required for PoE applications. This port is active only if the NetVanta 3448 has been ordered with the PoE option. Note that the NetVanta 3448 itself cannot be powered by this port.

8 Switch Port Interfaces

Ports 1 through 8 are RJ-45 connectors used to access the fully managed 10/100Base-T Ethernet switch.

10/100Base-T Ethernet Interfaces

The Ethernet ports (**ETH 0/1** and **ETH 0/2**) are RJ-45 connectors.

CONSOLE Interface

The **CONSOLE** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (via a DB-9 female connector).

> NOTE *Connection directly to an external modem requires a cross-over cable.*

Power Connection

All of the 1U-high products have universal power supplies and are shipped with the appropriate cable. Please refer to *Supplying Power to the Unit on page 64* for connection details.

NetVanta 3450

The NetVanta 3450 is a high-performance, modular IP access router designed for cost-effective branch office connectivity over MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, or Ethernet networks.

For information on switch configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

NetVanta 3450 Features and Specifications

- Dual-slot, dual-Ethernet modular IP router
- Modular Network Interface: 56K/64K DDS, T1/FT1, T1/FT1 + DSX-1, Dual T1, E1/FE1, E1/FE1 + G.703, or ADSL (Annex A or Annex B), SHDSL (Annex A or Annex B), serial, or USB WWAN
- Modular IP access routers for MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, PPPoE, ATM, and HDLC networks
- High-performance processor
- Hardware encryption engine embedded
- On-board Flash memory
- Expandable memory storage via a CompactFlash card slot on the front panel
- Two integrated 10/100Base-T WAN/LAN ports
- ADTRAN Operating System (AOS) command line interface (CLI)
- User-friendly, web-based graphical user interface (GUI)
- Standards-based BGP, OSPF, RIP, static routing, and bridging protocols
- Integral stateful inspection firewall protects against denial of service (DoS) attempts
- Flash memory supports multiple images of AOS
- Interchangeable network interface modules (NIMs)
- Dial backup to any PPP-compliant device
- Analog modem, ISDN BRI U, or ISDN BRI S/T dial backup interface modules (DIMs) available
- 500 ISsec VPN tunnels (software optional) with DES, 3DES, and AES encryption
- Compatible with ISsec VPN-equipped devices
- Quality of service (QoS) with class-based weighted fair queuing (CBWFQ), low latency queuing (LLQ), weighted fair queuing (WFQ), and DiffServ marking
- Built-in alert and logging mechanisms
- Network address translation (NAT/NAPT) and NAT Traversal version 2
- NAT-compatible SIP ALG
- DHCP client, server, and relay
- XAUTH including RADIUS and RSA SecurID
- AAA support using local user database, RADIUS, and TACACS+
- TFTP, FTP, XMODEM for firmware upgrades and maintenance updates
- Telnet, HTTP, SSH, SSL, Syslog, craft/console port, or SNMP management options
- Field-upgradable and remotely configurable
- Supports up to two T1s of bandwidth
- 1U-high desktop or rackmountable metal enclosure (requires rackmount kit P/N 1200827E1, which must be ordered separately, for rack mounting)
- Size: 1.7-inch H x 17.2-inch W x 8.0-inch D
- AC Power Requirements: Auto-ranging power, 100 to 250 VAC, 50/60 Hz, 0.4 A maximum
- Operating Temperature: 0°C to 50°C
- RoHS compliant (Telecommunications exemption)

Network Interface Modules and Dial Backup Interface Modules Supported

The NetVanta 3450 supports a variety of interchangeable NIMs and DIMs. The NIMs available for the NetVanta 3450 provide a variety of WAN connectivity options including the following:

- 56K/64K (DDS)
- T1/FT1
- T1/FT1 + DSX-1
- Dual T1
- E1/FE1
- E1/FE1 + G.703
- Serial (V.35/X.21/EIA 530)
- SHDSL, Annex A and Annex B
- ADSL, Annex A and Annex B
- USB WWAN

If needed, an analog modem, ISDN BRI U, or ISDN BRI S/T DIM can plug onto the NIM, providing dial backup capability. Refer to *Installing Dial Backup and Network Interface Modules on page 69* for more details.

Refer to *Using a USB Cellular Modem with the NetVanta USB WWAN NIM on page 72* for details on installing and removing a USB cellular modem from the USB WWAN NIM.

NetVanta 3450 Shipping Contents

Each NetVanta 3450 unit is shipped in its own cardboard shipping carton. Open each carton carefully, and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for possible shipping damage. If the equipment has been damaged in transit, immediately file a claim with the carrier and contact ADTRAN Customer Service (refer to the *Support* page on the ADTRAN website at http://www.adtran.com/support).

Domestic Shipping Contents

Shipments of the NetVanta 3450 domestic units include the following items:

- NetVanta 3450 base unit with attached mounting brackets and screws
- Quick start guide
- Power cord

International Shipping Contents

Shipments of the NetVanta 3450 international units include the following items:

- NetVanta 3450 base unit with attached mounting brackets and screws
- Quick start guide
- All necessary power cords

Option module shipping contents are given in Option Module Shipping Contents on page 39.

NetVanta 3450 Front Panel Design

The NetVanta 3450 front panel is shown below. Front panel LED descriptions are given in *Table 1 on page 37*.

Figure 12. NetVanta 3450 Front Panel Layout

CONSOLE Interface

The **CONSOLE** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (via a DB-9 female connector).

> NOTE *Connection directly to an external modem requires a cross-over cable.*

CompactFlash

The front panel contains a **CompactFlash** slot for nonvolatile configuration storage and compressed code storage. ADTRAN supports any industry standard 1 GB CompactFlash card. Refer to *Installing a CompactFlash Card on page 76*.

NetVanta 3450 Rear Panel Design

The NetVanta 3450 rear panel is shown below with a module installed. *Appendix A on page 79* provides pinouts.

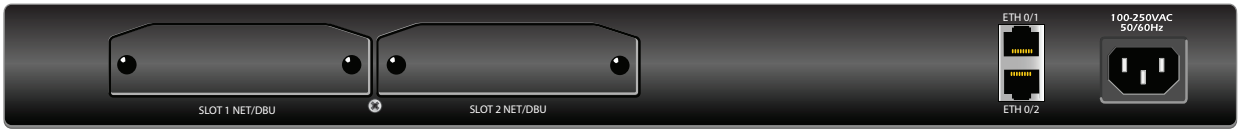

Figure 13. NetVanta 3450 Rear Panel Layout

NetVanta 3450 Rear Panel Interfaces

SLOT 1/SLOT 2 NET/DBU Option Slots

The **SLOT 1/SLOT 2 NET/DBU** option slots support various NIM plug-in option modules. These option modules are described in the section *Option Modules on page 38*.

10/100Base-T Ethernet Interfaces

The Ethernet ports (**ETH 0/1** and **ETH 0/2**) are RJ-45 connectors. These ports provide the following:

- 10Base-T or 100Base-T dual stacked connector
- Auto-MDIX
- Auto-negotiation
- CSMA/CD
- IEEE 802.3 compatibility

Power Connection

All of the 1U-high products have universal power supplies and are shipped with the appropriate cable. Please refer to *Supplying Power to the Unit on page 64* for connection details.

NetVanta 3458

The NetVanta 3458 is a high-performance, modular IP access router designed for cost-effective branch office connectivity over MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, or Ethernet networks. It offers an integrated 8-port fully managed Ethernet switch.

The NetVanta 3458 switch ports can be upgraded using the Octal Power over Ethernet (PoE) Upgrade Bundle to provide PoE capability. PoE provides the ability to detect attached powered devices (PDs) and deliver 48 VDC to the PDs via existing CAT 5 and CAT 6 cabling. The NetVanta 3458 PoE option is fully compliant with the IEEE 802.3af PoE standard.

For information on switch configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

NetVanta 3458 Features and Specifications

- Dual-slot, dual-Ethernet modular IP router
- Modular Network Interface: 56K/64K DDS, T1/FT1, T1/FT1 + DSX-1, Dual T1, E1/FE1, E1/FE1 + G.703, or ADSL (Annex A or Annex B), SHDSL (Annex A or Annex B), serial, or USB WWAN
- Modular IP access router for MPLS, Frame Relay, multilink Frame Relay, PPP, MLPPP, PPPoE, ATM, and HDLC networks
- Embedded eight port 10/100Base-T Ethernet switch
- Switch ports can optionally be equipped to provide (802.3af) PoE
- High-performance processor
- Hardware encryption engine embedded
- On-board Flash memory
- Expandable memory storage via a CompactFlash card slot on the front panel
- Two integrated 10/100Base-T WAN/LAN ports
- ADTRAN Operating System (AOS) command line interface (CLI)
- User-friendly, web-based graphical user interface (GUI)
- Standards-based BGP, OSPF, RIP, static routing, and bridging protocols
- Integral stateful inspection firewall protects against denial of service (DoS) attempts
- Flash memory supports multiple images of AOS
- Interchangeable network interface modules (NIMs)
- Dial backup to any PPP-compliant device
- Analog modem, ISDN BRI U, or ISDN BRI S/T dial backup interface modules (DIMs) available
- 500 ISsec VPN tunnels (software optional) with DES, 3DES, and AES encryption
- Compatible with ISsec VPN-equipped devices
- Quality of service (QoS) with class-based weighted fair queuing (CBWFQ), low latency queuing (LLQ), weighted fair queuing (WFQ), and DiffServ marking
- Built-in alert and logging mechanisms
- Network address translation (NAT/NAPT) and NAT Traversal version 2

- NAT-compatible SIP ALG
- DHCP client, server, and relay
- XAUTH including RADIUS and RSA SecurID
- AAA support using local user database, RADIUS, and TACACS+
- TFTP, FTP, XMODEM for firmware upgrades and maintenance updates
- Telnet, HTTP, SSH, SSL, Syslog, craft/console port, or SNMP management options
- Field-upgradable and remotely configurable
- Supports up to two T1s of bandwidth
- 1U-high desktop or rackmountable metal enclosure (requires rackmount kit P/N 1200827E1, which must be ordered separately, for rack mounting)
- Size: 1.7-inch H x 17.2-inch W x 8.0-inch D
- AC Power Requirements: Auto-ranging power, 100 to 250 VAC, 50/60 Hz, 0.4 A maximum
- Operating Temperature (non-PoE applications): 0°C to 50°C
- Operating Temperature (PoE applications): 0°C to 40°C
- RoHS compliant (Telecommunications exemption)

Network Interface Modules and Dial Backup Interface Modules Supported

The NetVanta 3458 supports a variety of interchangeable NIMs and DIMs. The NIMs available for the NetVanta 3458 provide a variety of WAN connectivity options including the following:

- 56K/64K (DDS)
- T1/FT1
- T1/FT1 + DSX-1
- Dual T1
- E1/FE1
- E1/FE1 + G.703
- Serial (V.35/X.21/EIA 530)
- SHDSL, Annex A and Annex B
- ADSL, Annex A and Annex B
- USB WWAN

If needed, an analog modem, ISDN BRI U, or ISDN BRI S/T DIM can plug onto the NIM, providing dial backup capability. Refer to *Installing Dial Backup and Network Interface Modules on page 69* for more details.

Refer to *Using a USB Cellular Modem with the NetVanta USB WWAN NIM on page 72* for details on installing and removing a USB cellular modem from the USB WWAN NIM.

NetVanta 3458 Shipping Contents

Each NetVanta 3458 unit is shipped in its own cardboard shipping carton. Open each carton carefully, and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for possible shipping damage. If the equipment has been damaged in transit, immediately file a claim with the carrier and contact ADTRAN Customer Service (refer to the *Support* page on the ADTRAN website at http://www.adtran.com/support).

Domestic Shipping Contents

Shipments of the NetVanta 3458 domestic units include the following items:

- NetVanta 3458 base unit with attached mounting brackets and screws
- Quick start guide
- Power cord

International Shipping Contents

Shipments of the NetVanta 3458 international units include the following items:

- NetVanta 3458 base unit with attached mounting brackets and screws
- Quick start guide
- All necessary power cords

> **NOTE** *Option module shipping contents are given in* *Option Module Shipping Contents on page 39*.

NetVanta 3458 Front Panel Design

The NetVanta 3458 front panel is shown below. Front panel LED descriptions are given in *Table 1 on page 37*.

Figure 14. NetVanta 3458 Front Panel Layout

CONSOLE Interface

The **CONSOLE** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (via a DB-9 female connector).

> **NOTE** *Connection directly to an external modem requires a cross-over cable.*

CompactFlash

The front panel contains a **CompactFlash** slot for nonvolatile configuration storage and compressed code storage. ADTRAN supports any industry standard 1 GB CompactFlash card. Refer to *Installing a CompactFlash Card on page 76*.

NetVanta 3458 Rear Panel Design

The NetVanta 3458 rear panel is shown below with a module installed. *Appendix A on page 79* provides pinouts.

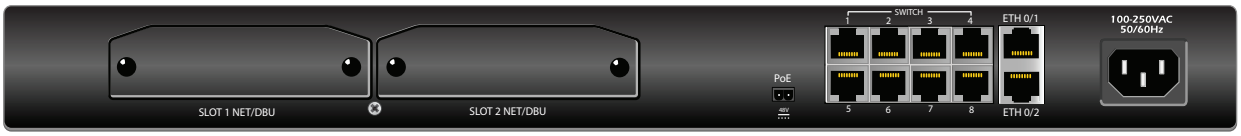

Figure 15. NetVanta 3458 Rear Panel Layout

NetVanta 3458 Rear Panel Interfaces

SLOT 1/SLOT 2 NET/DBU Option Slots

The **SLOT 1/SLOT 2 NET/DBU** option slots support various NIM plug-in option modules. These option modules are described in the section *Option Modules on page 38*.

PoE

The NetVanta 3458 has a 48 VDC port on the rear panel to provide the voltage required for PoE applications. This port is active only if the NetVanta 3458 has been ordered with the PoE option. Note that the NetVanta 3458 itself cannot be powered by this port.

8 Switch Port Interfaces

Ports 1 through 8 are RJ-45 connectors used to access the fully managed 10/100Base-T Ethernet switch.

10/100Base-T Ethernet Interfaces

The Ethernet ports (**ETH 0/1** and **ETH 0/2**) are RJ-45 connectors. These ports provide the following:

- 10Base-T or 100Base-T dual stacked connector
- Auto-MDIX
- Auto-negotiation
- CSMA/CD
- IEEE 802.3 compatibility

Power Connection

All of the 1U-high products have universal power supplies and are shipped with the appropriate cable. Please refer to *Supplying Power to the Unit on page 64* for connection details.

NetVanta 3000 Series Front Panel LEDs

Table 1 describes the front panel LEDs.

Table 1. NetVanta 3000 Series Front Panel LEDs

LED	Color	Indication
STATUS (STAT)	Green (flashing)	The unit is powering up. On power up the **STAT** LED flashes rapidly for five seconds, during which time the user can escape to boot mode from the console port.
	Green (solid)	The power is on and self-test passed.
	Red (solid)	The power is on, but the self-test failed or the boot mode (if applicable) code could not be booted.
WAN	Off	No NIM is installed, or interface is administratively down.
	Green (solid)	The link is up and everything is operational.
	Green (flashing)	The port has activity (3430/3448 only).
	Red (solid)	An alarm condition is occurring on the WAN interface, or there is a self-test failure.
	Amber (solid)	The unit is in test.
DBU	Off	No DIM is installed.
	Green (solid)	The DIM is ready. For the ISDN BRI DIM, green solid indicates that the negotiation with the switch is complete.
	Green (flashing)	The unit is in dial backup.
	Red (solid)	An alarm condition is occurring on the DBU interface, or there is a self-test failure.
	Amber (solid)	The unit is in test.
NET TD/RD (not present on all units)	Off	There is no activity on the WAN or DBU port.
	Green (flashing)	There is activity on the WAN or DBU port.
LAN TD/RD (not present on all units)	Off	There is no activity on the Ethernet port.
	Green (flashing)	There is activity on the Ethernet port.
LNK (not present on all units)	Green (solid)	The 10Base-T Ethernet link is up.
	Amber (solid)	The 100Base-T Ethernet link is up.
POE (not present on all units)	Off	PoE card not installed, or no attached devices are being powered.
	Green (solid)	PoE card is actively powering an attached device.
	Red (solid)	PoE card has detected a fault condition on an attached device.
ETH1/ETH2 (not present on all units)	Off	The port is administratively disabled or does not have link.
	Green (solid)	The port is enabled and the link is up.
	Amber (flashing)	The port has activity (transmit or receive).
INET (not present on all units)	Off	PPP or PPPoE is not connected, IP has no IP address via DHCP, or IP is static.
	Green (solid)	PPP or PPPoE is connected or IP has an address via DHCP.
	Green (flashing)	WAN interface is attempting to obtain an IP address via DHCP.
SWITCH (not present on all units)	Off	The port is administratively disabled or does not have link.
	Green (solid)	The port is enabled and the link is up.
	Amber (flashing)	The port has activity (transmit or receive).
VPN (not present on all units)	Off	No encrypted traffic.
	On	Encrypted traffic present.

3. OPTION MODULES

The NetVanta 3000 Series accepts several option modules designed to meet a variety of networking requirements. The option modules are of two types: plug-in network interface modules (NIMs) and plug-on dial backup interface modules (DIMs).

NIMs are cards that plug directly into the option module slots (labeled **SLOT 1 NET/DBU** or **SLOT 2 NET/DBU**), located on the rear of the base unit. These cards provide the following types of interfaces:

DIMs are plug-on cards that plug directly onto the NIM prior to installation into the base unit. A DIM must be plugged onto a NIM in order for the **DBU** port on the NIM to be active. The NetVanta 3000 Series supports three DIMs (only one DIM per slot can be installed):

This section describes each module, providing individual card shipping contents, specifications, and features. Refer to *Connector Pin Definitions on page 79* for pinout information. *Installing Dial Backup and Network Interface Modules on page 69* provides information on installing the modules.

Refer to *Using a USB Cellular Modem with the NetVanta USB WWAN NIM on page 72* for details on installing and removing a USB cellular modem from the USB WWAN NIM.

Option Module Shipping Contents

NetVanta 56K/64K NIM (1200861L1)
Shipments of the 56K/64K NIM include the following items:

- 56K/64K Network Interface Module
- Quick start guide
- 6-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3127004)

NetVanta T1/FT1 NIM (1202862L1)
Shipments of the T1/FT1 NIM include the following items:

- T1/FT1 Network Interface Module
- Quick start guide
- 15-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3125M008@A)

NetVanta T1/FT1 NEBS NIM (1200862L2#NEBS)
Shipments of the T1/FT1 NEBS NIM include the following items:

- T1/FT1 NEBS Network Interface Module
- Quick start guide
- 15-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3125M008@A)

NetVanta T1/FT1 + DSX-1 NIM (1202863L1)
Shipments of the T1/FT1 + DSX-1 NIM include the following items:

- T1/FT1 + DSX-1 Network Interface Module
- Quick start guide
- 15-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3125M008@A)

NetVanta Dual T1 NIM (1200872L1/1202872L1)
Shipments of the Dual T1 NIM include the following items:

- Dual T1 Network Interface Module
- Quick start guide
- Two 15-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3125M008@A)

NetVanta E1/FE1 NIM (1200868E1)
Shipments of the E1/FE1 NIM include the following items:

- E1/FE1 Network Interface Module
- Quick start guide
- 15-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3125M008@A)

NetVanta E1/FE1 + G.703 NIM (1200878E1)
Shipments of the E1/FE1 + G.703 NIM include the following items:

- E1/FE1 + G.703 Network Interface Module
- Quick start guide
- 15-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3125M008@A)

NetVanta Serial NIM (1200866E1)
Shipments of the Serial NIM include the following items:

- Serial Network Interface Module
- Quick start guide
- 15-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3125M008@A)

NetVanta SHDSL NIM, Annex A (1200936E1)
Shipments of the SHDSL NIM, Annex A, include the following items:

- SHDSL Network Interface Module
- Quick start guide
- 15-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3125M008@A)

NetVanta SHDSL NIM, Annex B (1200937E1)
Shipments of the SHDSL NIM, Annex B, include the following items:

- SHDSL Network Interface Module
- Quick start guide
- 15-foot RJ-45 to RJ-45 cable (ADTRAN P/N 3125M008@A)

NetVanta ADSL NIM, Annex A (1202869E1)
Shipments of the ADSL NIM, Annex A, include the following items:

- ADSL Network Interface Module
- Quick start guide
- 7-foot RJ-11 to RJ-11 cable (ADTRAN P/N 3127014)

NetVanta ADSL NIM, Annex B (1202889E1)
Shipments of the ADSL NIM, Annex B, include the following items:

- ADSL Network Interface Module
- Quick start guide
- 7-foot RJ-11 to RJ-11 cable (ADTRAN P/N 3127014)

NetVanta USB WWAN NIM (1702803F1)

Shipments of the USB WWAN, include the following items:

- USB WWAN Network Interface Module
- Quick start guide

NetVanta Analog Modem DIM (1200864L1)
Shipments of the Analog Modem DIM include the following items:

- Analog Modem Dial Backup Interface Module
- Quick start guide
- 7-foot RJ-45 to RJ-11 cable (ADTRAN P/N 3125M007@A)

NetVanta ISDN BRI DIM (1200865L1)
Shipments of the ISDN BRI DIM include the following items:

- ISDN BRI Dial Backup Interface Module
- Quick start guide
- 7-foot RJ-45 to RJ-11 cable (ADTRAN P/N 3125M007@A)

NetVanta ISDN S/T DIM (1200875L1)

Shipments of the ISDN S/T DIM include the following items:

- ISDN S/T Dial Backup Interface Module
- Quick start guide
- 7-foot RJ-45 to RJ-11 cable (ADTRAN P/N 3125M007@A)

Option modules are intended to be serviced by qualified service personnel only.

System bundles are shipped with a base unit, a network interface module, and other appropriate contents based on the system-level solution ordered.

Network Interface Modules

NetVanta 56K/64K NIM (P/N 1200861L1)

The NetVanta 56K/64K NIM (shown in *Figure 16*) provides a DDS WAN interface for the NetVanta 3000 Series. This module provides a single 56K or 64K DDS network interface. See *Table A-6 on page 81* for the WAN-DDS connector pinouts, and see *Table A-15 on page 85* for the DBU connector pinouts. An optional DIM is required for dial backup applications.

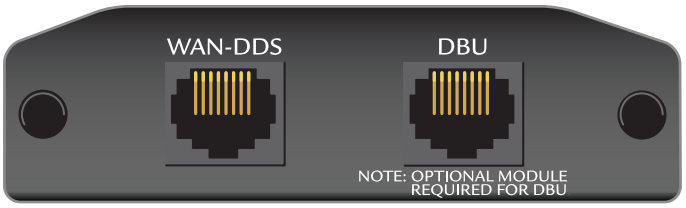

Figure 16. NetVanta 56K/64K NIM

Features and Specifications

Operating Modes
- Dedicated DDS (leased line)

DDS Interface
- Supported Standards: AT&T TR 62310
- 4-wire, full-duplex
- Receiver Sensitivity: -45 dB, all rates
- Data Rates: 56K, 64K, and auto
- Connector: RJ-48C

Clock Source
- Network
- Internal

Diagnostics
- CSU and DSU Loopbacks

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- UL/CUL 60950-1
- ACTA/FCC Part 68
- IC CS-03

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta T1/FT1 NIM (P/N 1202862L1)

The NetVanta T1/FT1 NIM (shown in *Figure 17*) provides a T1 (full or fractional) WAN interface for the NetVanta 3000 Series. See *Table A-7 on page 81* for the WAN-T1 connector pinouts, and *Table A-15 on page 85* for the DBU connector pinouts. An optional DIM is required for dial backup applications.

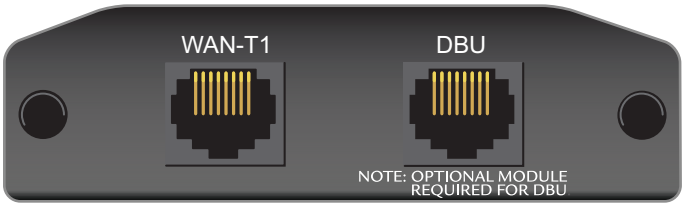

Figure 17. NetVanta T1/FT1 NIM

Features and Specifications

Operating Modes
- Frame Relay, multilink Frame Relay
- PPP, MLPPP
- HDLC

T1/FT1 Interface
- Supported Standards: AT&T TR 62411, AT&T TR 65016, ANSI T1.403, Bellcore TR 194
- Line Rate: 1.544 Mbps ±75 bps
- Line Code: AMI or B8ZS
- Framing: D4 (SF) or ESF
- FT1 Line Rate: DS0 channelized (multiples of 64 kbps)
- Input Signal: 0 to -36 dB (DS1)
- Line Build Out: 0, -7.5, -15, -22.5 dB (long), 0 to 655 ft. (short)
- DS0 Assignment: Programmable
- Connector: RJ-48C

Clock Source
- Network
- Internal

Diagnostics
- Test Pattern Generation and Detection: 511, QRSS, all ones, all zeros
- Network loopbacks (local and remote); responds to both inband and FDL loop codes
- Alarm generation and detection
- Network and user sets of performance data (15 minutes and 24 hours)

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- UL/CUL 60950-1
- ACTA/FCC Part 68
- IC CS-03

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta T1/FT1 NEBS NIM (P/N 1200862L2#NEBS)

The NetVanta T1/FT1 NEBS NIM (shown in *Figure 18*) provides a T1 (full or fractional) WAN interface for the NetVanta 3205 DC. The T1 NEBS NIM provides a full T1 or fractional T1 network interface. See *Table A-7 on page 81* for the WAN-T1 connector pinouts.

> NOTE *The 1200862L2#NEBS is intended for use only with the NetVanta 3205 DC (P/N 1202980L1).*

Figure 18. NetVanta T1/FT1 NEBS NIM

Features and Specifications

Operating Modes
- Frame Relay, multilink Frame Relay
- PPP, MLPPP
- HDLC

T1/FT1 Interface
- Supported Standards: AT&T TR 62411, AT&T TR 65016, ANSI T1.403, Bellcore TR 194
- Line Rate: 1.544 Mbps ±75 bps
- Line Code: AMI or B8ZS
- Framing: D4 (SF) or ESF
- FT1 Line Rate: DS0 channelized (multiples of 64 kbps)
- Input Signal: 0 to -36 dB (DS1)
- Line Build Out: 0, -7.5, -15, -22.5 dB (long), 0 to 655 ft. (short)
- DS0 Assignment: Programmable
- Connector: RJ-48C

Clock Source
- Network
- Internal

Diagnostics
- Test Pattern Generation and Detection: QRSS, 511, 2^{15} - 1, 2^{20} - 1, all ones, all zeros
- Network loopbacks (local and remote); responds to inband and FDL loop codes
- Alarm generation and detection
- Network and user sets of performance data (15 minutes and 24 hours)

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- UL/CUL 60950-1
- NEBS Level 3
- GR-63-CORE
- GR-1089-CORE

7Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta T1/FT1 + DSX-1 NIM (P/N 1202863L1)

The NetVanta T1/FT1 + DSX-1 NIM (shown in *Figure 19*) provides a full T1 or fractional T1 network interface and a DSX-1 interface. See *Table A-7 on page 81* for the WAN-T1 connector pinouts, *Table A-9 on page 82* for the DSX-1 connector pinouts, and *Table A-15 on page 85* for the DBU connector pinouts. An optional DIM is required for dial backup applications.

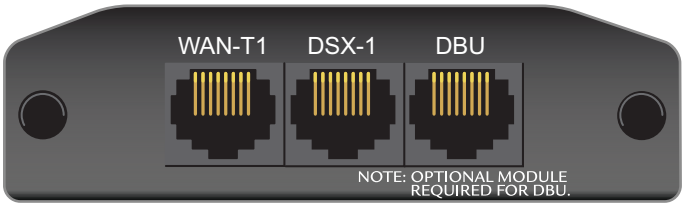

Figure 19. NetVanta T1/FT1 + DSX-1 NIM

Features and Specifications

Operating Modes
- Frame Relay, multilink Frame Relay
- PPP, MLPPP
- HDLC

T1/FT1 Interface
- Supported Standards: AT&T TR 62411, AT&T TR 65016, ANSI T1.403, Bellcore TR 194
- Line Rate: 1.544 Mbps ±75 bps
- Line Code: AMI or B8ZS
- Framing: D4 (SF) or ESF
- FT1 Line Rate: DS0 channelized (multiples of 56/64 kbps)
- Input Signal: 0 to -36 dB (DS1)
- Line Build Out: 0, -7.5, -15, -22.5 dB (long), 0 to 655 ft. (short)
- DS0 Assignment: Programmable
- Connector: RJ-48C

DSX-1 Interface
- Line Interface: DSX-1 per ANSI T1.102
- DSX Receiver Input Range: -10 dBdsx to +6 dBdsx
- Line Rate: 1.544 Mbps
- Capacity: 1 to 24 DS0s
- Line Codes: AMI, B8ZS
- DSX-1 Interface to PBX
- Framing: D4 (SF) or ESF
- Line Length: 0 to 655 feet and -7.5 dB
- Connector: RJ-48C

Clock Source
- Network
- Internal
- Through

Diagnostics
- Test Pattern Generation and Detection: 511, QRSS, all ones, all zeros
- Network loopbacks (local and remote); responds to inband and FDL loop codes (T1 interface only)
- Alarm generation and detection
- Network and user sets of performance data (15 minutes and 24 hours)

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- UL/CUL 60950-1
- ACTA/FCC Part 68
- IC CS-03

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta Dual T1 NIM (P/N1200872L1/1202872L1)

The NetVanta Dual T1 NIM (shown in *Figure 20*) provides two WAN T1 interfaces for the NetVanta 3000 Series. The module provides up to 2.048 Mbps on each network interface. See *Table A-7 on page 81* for the pinouts. See *Table A-15 on page 85* for the DBU connector pinouts. An optional DIM is required for dial backup applications.

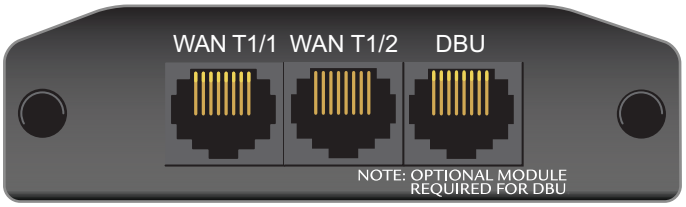

Figure 20. NetVanta Dual T1 NIM

Features and Specifications

Operating Modes
- Frame Relay, multilink Frame Relay
- PPP, MLPPP
- HDLC

T1 Interface
- Supported Standards: AT&T TR 62411, AT&T TR 65016, ANSI T1.403, Bellcore TR 194
- Line Rate: 1.544 Mbps ±75 bps
- Line Code: AMI or B8ZS
- Framing: D4 (SF) or ESF
- FT1 Line Rate: DS0 channelized (multiples of 64 kbps)
- Input Signal: 0 to -36 dB (DS1)
- Line Build Out: 0, -7.5, -15, -22.5 dB (long), 0 to 655 ft. (short)
- DS0 Assignment: Programmable
- Connector: RJ-48C

Clock Source
- Network
- Internal
- Through

Diagnostics
- Test Pattern Generation and Detection: QRSS, 511, 2^{15} - 1, 2^{20} - 1, all ones, all zeros
- Network loopbacks (local and remote); responds to both inband and FDL loop codes
- Alarm generation detection
- Network performance data (15 minutes and 24 hours)

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- UL/CUL 60950-1
- ACTA/FCC Part 68
- IC CS-03

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NOTE

The 1200872L1 Dual T1 module supports the analog modem (1200864L1), ISDN BRI (1200865L1), and ISDN S/T (1200875L1) DIMs for dial backup applications. The 1202872L1 Dual T1 module supports only the analog modem (1200864L1) DIM for dial backup applications.

NetVanta E1/FE1 NIM (P/N 1200868E1)

The NetVanta E1/FE1 NIM (shown in *Figure 21*) provides a WAN-E1 interface for the NetVanta 3000 Series, meeting the requirements of ITU-T G.703/G.704. The module provides a single 2.048 Mbps network interface. See *Table A-8 on page 81* for the pinouts. See *Table A-15 on page 85* for the DBU connector pinouts. An optional DIM is required for dial backup applications.

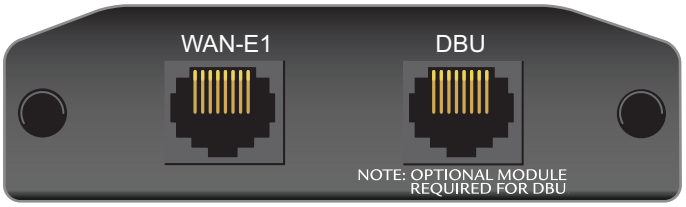

Figure 21. NetVanta E1/FE1 NIM

Features and Specifications

Operating Modes
- Frame Relay, multilink Frame Relay
- PPP, MLPPP
- HDLC

WAN-E1 Interface
- Supported Standards: ITU G.703, ITU-T G.704 (CRC-4), ITU-T G.823, ITU-T G.797
- Line Rate: 2.048 Mbps ±50 PPM
- Line Code: AMI or HDB3
- Framing: FAS with optional CRC-4
- FE1 Line Rate: Channelized timeslot (in multiples of 64 kbps)
- Receiver Sensitivity: -30 dB
- Connector: RJ-48C

Clock Source
- Network
- Internal

Diagnostics
- Test Pattern Generation and Detection: QRSS, 511, all ones, all zeros
- Network loopbacks
- Network performance data (15 minutes and 24 hours)
- Alarm generation and detection

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- AS/ACIF S016
- ETSI TBR 12/TBR 13
- EN/IEC 60950-1
- AS/NZS 60950.1
- RoHS compliant (Telecommunications exemption)

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta E1/FE1 + G.703 NIM (P/N 1200878E1)

The NetVanta E1/FE1 + G.703 NIM (shown in *Figure 22*) provides a single WAN-E1 interface (2.043 Mbps) with user-selectable TS0 assignment and a G.703 drop port that can be used to drop and insert traffic to an E1 PBX. See *Table A-8 on page 81* for the WAN-E1 pinouts. See *Table A-10 on page 82* for the G.703 pinouts. See *Table A-15 on page 85* for the DBU connector pinouts. An optional DIM is required for dial backup applications.

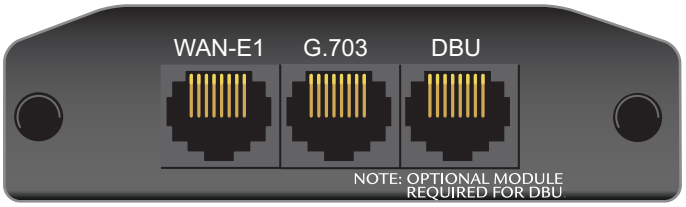

Figure 22. NetVanta E1/FE1 + G.703 NIM

Features and Specifications

Operating Modes
- Frame Relay, multilink Frame Relay
- PPP, MLPPP
- HDLC

WAN-E1 Interface
- Supported Standards: ITU G.703, ITU-T G.704 (CRC-4), ITU-T G.823, ITU-T G.797
- Line Rate: 2.048 Mbps ±50 PPM
- Line Code: AMI or HDB3
- Framing: FAS with optional CRC-4
- FE1 Line Rate: Channelized timeslot (in multiples of 64 kbps)
- Receiver Sensitivity: -30 dB
- Connector: RJ-48C

G.703 Interface
- Receiver Sensitivity: -30 dB
- Line Rate: 2.048 Mbps ±50 PPM
- Line Code: AMI or HDB3
- Framing: FAS with optional CRC-4
- Capacity: 1 to 31 timeslots
- Connector: RJ-48C

Clock Source
- Network
- Internal
- Through

Diagnostics
- Test Pattern Generation and Detection: QRSS, 511, all ones, all zeros
- Network loopbacks
- Network performance data (15 minutes and 24 hours)
- Alarm generation and detection

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- AS/ACIF S016
- ETSI TBR 12/TBR 13
- EN/IEC 60950-1
- AS/NZS 60950.1
- RoHS compliant (Telecommunications exemption)

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta Serial NIM (P/N 1200866E1)

The NetVanta Serial NIM (shown in *Figure 23*) can be configured by the user as a V.35, X.21 (V.11), or EIA 530 interface. This module supports rates up to a maximum of 10 Mbps. An additional V.35 (ADTRAN P/N 1200873L1), X.21 (ADTRAN P/N 1200874L1), or EIA 530 (ADTRAN P/N 1200883L1) cable is required (see *Caution* below). See *Table A-14 on page 84* for the serial connector pinouts, and *Table A-15 on page 85* for the DBU connector pinouts. An optional DIM is required for dial backup applications.

> **CAUTION** *Cable length for the Serial NIM should not exceed 25 feet.*

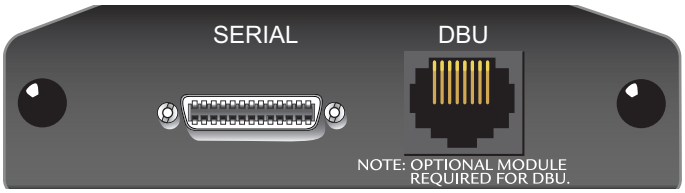

Figure 23. NetVanta Serial NIM

Features and Specifications

Operating Mode
- DTE only

Serial Interface
- Supported Standards: ISO 4903 (X.21), CCITT V.35 Synchronous (V.35), EIA 530 Synchronous
- Provides V.35, X.21 (V.11), or EIA 530 electrical interface
- Connector: 26-pin smart serial (DTE)

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- ETSI TBR1
- ETSI TBR2
- EN/IEC 60950-1
- UL/CUL 60950-1
- AS/NZS 60950.1
- RoHS compliant (Telecommunications exemption)

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta SHDSL NIM, Annex A (P/N 1200936E1)

The NetVanta SHDSL NIM, Annex A (shown in *Figure 24*) provides a WAN-SHDSL interface for the NetVanta 3200/3300/3400 Series. See *Table A-11 on page 82* for the SHDSL connector pinouts.

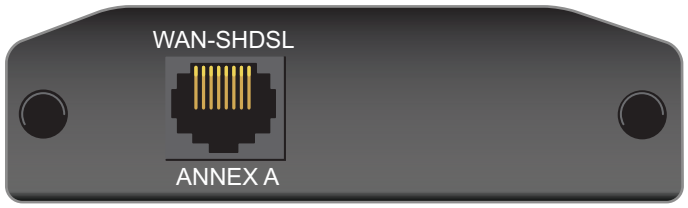

Figure 24. NetVanta SHDSL NIM, Annex A

Features and Specifications

Operating Mode
- Line termination (CO)
- Network termination (CPE)

G.SHDSL Interface
- Supported Standards: ITU-T G.991.2, SHDSL Annex A
  M-pair bonding of 2 pairs - ITU-T G.991.2
- Line Rate (2-wire mode): 192 to 2304 kbps in 64k increments
- Line Rate (4-wire mode): 384 to 4608 kbps in 128k increments
- Payload: ATM (AAL5)
- Line Code: TC-PAM
- Connector: RJ-45

Clock Source
- CPE Operating Mode: Network
- CO Operating Mode: Internal

Diagnostics
- Network loopbacks (local and remote)
- Alarm generation and detection
- Programmable alarm threshold setting for loop attenuation and signal-to-noise ratio

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- ACTA/FCC Part 68
- UL/CUL 60950-1
- RoHS compliant (Telecommunications exemption)

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta SHDSL NIM, Annex B (P/N 1200937E1)

The NetVanta SHDSL NIM, Annex B (shown in *Figure 25*) provides a WAN-SHDSL interface for the NetVanta 3200/3300/3400 Series. See *Table A-11 on page 82* for the SHDSL connector pinouts.

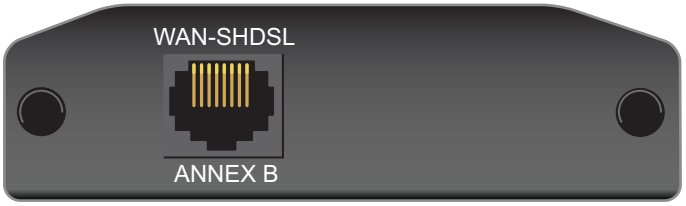

Figure 25. NetVanta SHDSL NIM, Annex B

Features and Specifications

Operating Mode
- Line termination (CO)
- Network termination (CPE)

G.SHDSL Interface
- Supported Standards: ITU-T G.991.2, SHDSL Annex B
  M-pair bonding of 2 pairs - ITU-T G.991.2
- Line Rate (2-wire mode): 192 to 2304 kbps in 64k increments
- Line Rate (4-wire mode): 384 to 4608 kbps in 128k increments
- Payload: ATM (AAL5)
- Line Code: TC-PAM
- Connector: RJ-45

Clock Source
- CPE Operating Mode: Network
- CO Operating Mode: Internal

Diagnostics
- Network loopbacks (local and remote)
- Alarm generation and detection
- Programmable alarm threshold setting for loop attenuation and signal-to-noise ratio

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- AS/ACIF S043
- EN/IEC 60950-1
- AS/NZS 60950.1
- RoHS compliant (Telecommunications exemption)

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta ADSL NIM, Annex A (P/N 1202869E1)

The NetVanta ADSL NIM, Annex A, (shown in *Figure 26*) adds ADSL capability to the NetVanta 3000 Series. The module provides a single ADSL, ADSL2, or ADSL2+ network interface to support rates up to 25 Mbps. See *Table A-12 on page 83* for the pinouts. The ADSL NIM supports an optional DIM for dial backup applications. See *Table A-15 on page 85* for the DBU connector pinouts.

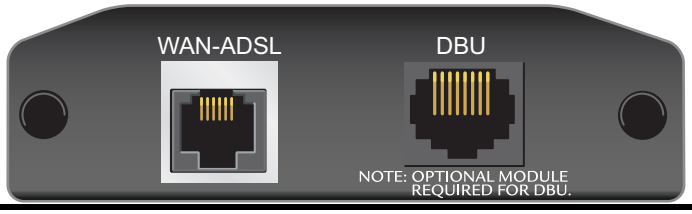

Figure 26. NetVanta ADSL NIM, Annex A

Features and Specifications

ADSL Interface
- ADSL over POTS, Annex A
- Supported Standards:
  - ITU G.992.1 (G.dmt)
  - ITU G.992.2 (G.lite)
  - ITU G.992.3 ADSL2 (G.dmt.bis)
  - ITU G.992.5 ADSL2+
  - ANSI T1.413 Issue 2
  - Reach Extended ADSL (READSL2)
- Connector: RJ-1C (6-pin jack, inner pair)

ATM
- Multiple Protocol over AAL5 (RFC 2684)
- PPP over ATM (RFC 2364)
- PPP over Ethernet (RFC 2516)
- ATM Forum UNI 3.1/4.0 PVC
- ATM class of service (UBR)
- ATM F5 OAM
- Up to 16 virtual circuits

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- ACTA/FCC Part 68
- AS/ACIF S043
- AS/ACIF S002
- IC CS-03
- EN/IEC 60950-1
- UL/CUL 60950-1
- AS/NZS 60950.1
- RoHS compliant (Telecommunications exemption)

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta ADSL NIM, Annex B (P/N 1202889E1)

The NetVanta ADSL NIM, Annex B, (shown in *Figure 27*) adds ADSL capability to the NetVanta 3000 Series. See *Table A-12 on page 83* for the pinouts. The ADSL NIM supports an optional DIM for dial backup applications. See *Table A-15 on page 85* for the DBU connector pinouts.

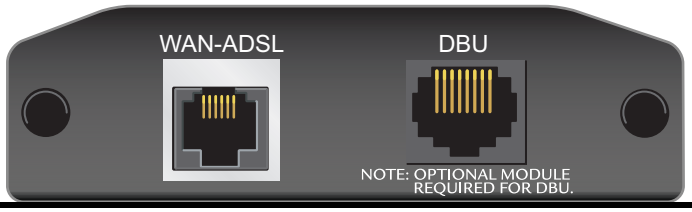

Figure 27. NetVanta ADSL NIM, Annex B

Features and Specifications

ADSL Interface
- ADSL over ISDN, Annex B
- Supported Standards: ITU G.992.1 (G.dmt)
- Connector: RJ-11C (6-pin jack, inner pair)

ATM
- Multiple Protocol over AAL5 (RFC 2684)
- PPP over ATM (RFC 2364)
- PPP over Ethernet (RFC 2516)
- ATM Forum UNI 3.1/4.0 PVC
- ATM class of service (UBR)
- ATM F5 OAM
- Up to 16 virtual circuits

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- AS/ACIF S043
- EN/IEC 60950-1
- AS/NZS 60950.1
- RoHS compliant (Telecommunications exemption)

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

NetVanta USB WWAN NIM (P/N 1702803F1)

The NetVanta USB WWAN NIM (shown in *Figure 28*) provides a USB interface for the NetVanta 3300 Series and NetVanta 3400 Series. For specific connection and configuration instructions, refer to the *NetVanta USB WWAN NIM Quick Start Guide* shipped with the NIM or online at https://supportforums.adtran.com. See *Table A-13 on page 83* for the USB WWAN connector pinouts.

Figure 28. NetVanta USB WWAN NIM

Features and Specifications

USB Interface
- Supported Standards: USB 2.0
- Connector: USB Type A

Compliance
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- EN/IEC 60950-1
- UL/CUL 60950-1
- AS/NZS 60950.1
- RoHS compliant

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.75-inch W x 4.25-inch D

Dial Backup Interface Modules

NetVanta Analog Modem DIM (P/N 1200864L1)

The NetVanta Analog Modem DIM provides a modem with data rates up to 33.6 kbps for the NetVanta 3000 Series. This DIM is a plug-on card that connects to the NIM. For installation instructions, refer to *Installing Dial Backup and Network Interface Modules on page 69*.

Features and Specifications

Features
- ITU V.90 compliant
- Async

Standards
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- UL/CUL 60950-1
- ACTA/FCC Part 68
- IC CS-03

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.5-inch W x 3.75-inch D

The Analog Modem DIM can be used in two different modes:
1. Backup interface for a primary connection.
2. ***CONSOLE*** *port for remote dial-in access.*

NetVanta ISDN BRI DIM (P/N 1200865L1)

The NetVanta ISDN BRI DIM provides dial backup access to the public switched telephone network (PSTN) via Basic Rate ISDN for the NetVanta 3000 Series. This DIM is a plug-on module that connects to the NIM. For installation instructions, refer to *Installing Dial Backup and Network Interface Modules on page 69*.

Features and Specifications

Features
- Clear Channel and bonding mode 1 call protocols
- Network support for 64 kbps (1 B-channel) or 128 kbps (2 B-channels)
- D-channel switch compatibility with AT&T 5ESS, Northern Telecom DMS-100, and National ISDN-1
- V.54 network loopback support

Standards
- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- UL/CUL 60950-1
- ACTA/FCC Part 68
- IC CS-03

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical
- Dimensions: 2.5-inch W x 3.75-inch D

NetVanta ISDN S/T DIM (P/N 1200875L1)

The NetVanta ISDN S/T DIM provides dial backup access to the PSTN via Basic Rate ISDN for the NetVanta 3000 Series. This DIM is a plug-on module that connects to the NIM. For installation instructions, refer to *Installing Dial Backup and Network Interface Modules on page 69*.

Features and Specifications

Features

- Clear channel and bonding mode 1 call protocols
- Network support for 64 kbps (1 B-channel) or 128 kbps (2 B-channels)
- D-channel switch compatibility with AT&T 5ESS, Northern Telecom DMS-100, National ISDN-1, and Euro-ISDN
- V.54 network loopback support

Standards

- FCC Part 15 Class A
- EN 55022 Class A
- EN 55024
- AS/ACIF S031
- ETSI TBR 003
- EN/IEC 60950-1
- AS/NZS 60950.1

Environmental

- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: Up to 95 percent, noncondensing

Physical

- Dimensions: 2.5-inch W x 3.75-inch D

4. UNIT INSTALLATION

The instructions and guidelines provided in this section cover hardware installation topics, such as wall mounting/rack mounting the unit and installing option cards. These instructions are presented as follows:

For information on router configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

WARNING

To prevent electrical shock, do not install equipment in a wet location or during a lightning storm.

CAUTION

The NetVanta 3200/3300/3400 Series is intended to be installed, maintained, and serviced by qualified service personnel only and should be installed in a restricted access location as described in UL/IEC 60950-1.

WARNING

- *PoE cables are intended for intrabuilding use only. Connecting an ADTRAN PoE unit directly to PoE cables that run outside the building in which the unit is housed will void the user's warranty and could create a fire or shock hazard.*
- *Ethernet cables are intended for intrabuilding use only. Connecting an ADTRAN unit directly to Ethernet cables that run outside the building in which the unit is housed will void the user's warranty and could create a fire or shock hazard. To connect an ADTRAN unit to Ethernet cables that run outside the building, ADTRAN's Ethernet Port Protection Device (EPPD) (P/N 1700502G1) must be connected between the unit and the outside plant cable. Use of any Ethernet protector other than ADTRAN's for this purpose will void the user's warranty.*

Tools Required

The customer-provided tools required for the hardware installation of the NetVanta 3000 Series are:

- Ethernet cable
- Network cable (module dependent)
- DSX-1 cable (T1/FT1 + DSX-1 module only)
- DBU cable (dial backup functions require an optional DIM)
- Phillips-head screwdriver (rack mounting applications only)

NOTE *To access the CLI of the NetVanta, you will also need a PC with terminal emulation software and a console port cable. Instructions on how to access the CLI are available in the quick start guide shipped with your unit or online on the ADTRAN Support Community.*

NOTE *The rackmount kit for the NetVanta 3430 and NetVanta 3448 is not included in shipments of these products. You must order the rackmount kit separately:*

NetVanta 3430/3448 Series Rackmount Kit, part number 1200827E1

Mounting Options

The NetVanta 3200 can be installed in a wallmount or tabletop configuration. The NetVanta 3205 and NetVanta 3305, NetVanta 3430, NetVanta 3448, NetVanta 3450, and NetVanta 3458 can be installed in a tabletop, wallmount, or 19-inch rackmount configuration.

For tabletop mounting, you can attach rubber mounting feet to the bottom of the unit if desired. The following sections provide step-by-step instructions for rack mounting and wall mounting.

NOTE *If you have purchased P/N 4200368L1, which includes the VPN Accelerator Card with the NetVanta 3305, install the card before mounting the unit. Refer to* *Installing the NetVanta VPN Accelerator Card (included in P/N 4200368L1) on page 73*.

Rack Mounting NetVanta 3205, NetVanta 3305, NetVanta 3430, NetVanta 3448, NetVanta 3450, and NetVanta 3458

The NetVanta 3205, NetVanta 3305, NetVanta 3430, NetVanta 3448, NetVanta 3450, and NetVanta 3458 are 1U-high, rack-mountable units that can be installed into 19-inch equipment racks. Follow these steps to mount the NetVanta 3000 Series unit into a rack.

CAUTION

- *If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature specified by the manufacturer.*
- *Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Allow 1-inch clearance between units for sufficient air flow.*
- *Be careful not to compromise the stability of the equipment mounting rack when installing this product.*
- *Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading the circuit might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.*
- *Reliable grounding of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).*

The rackmount kit for the NetVanta 3448 is not included in shipments of these products. You must order the rackmount kit (P/N 1200827E1) separately.

Instructions for Rack Mounting the NetVanta 3205, NetVanta 3305, NetVanta 3430, NetVanta 3448, NetVanta 3450, and NetVanta 3458	
Step	**Action**
1	To allow proper grounding, scrape the paint from the rack around the mounting holes where the NetVanta will be positioned.
2	Position the NetVanta in a stationary equipment rack. Allow 1-inch of clearance between units.
3	Have an assistant hold the unit in position as you install two mounting bolts through the unit's brackets and into the equipment rack using a #2 Phillips-head screwdriver.
4	Proceed to the steps given in *Supplying Power to the Unit on page 64*.

Wall Mounting NetVanta 3200/3300/3400 Series

The NetVanta 3200/3300/3400 Series units can be wall mounted. By following these instructions exactly, the NetVanta can be safely mounted to the wall.

- *NetVanta units are to be installed only by qualified service personnel.*
- *To avoid damaging the unit, use only the screws included in the shipment when attaching mounting ears to the chassis.*
- *Wall mounting of the equipment should be such that the amount of air flow required for safe operation of the equipment is not compromised. Allow 1-inch clearance on the top and sides of the unit for sufficient air flow.*
- *When wall mounting the NetVanta, care must be taken not to damage the power cord. Do not attach the power cord to the building surface or run it through walls, ceilings, floors, or openings in the building structure.*
- *The socket-outlet must be installed near the equipment and must be easily accessible.*

Instructions for Wall Mounting NetVanta 3200	
Step	**Action**
1	Decide on a location for the unit. Keep in mind that the unit needs to be mounted at or below eye level so that the LEDs are viewable.
2	Prepare the mounting surface by attaching a board (typically plywood, 3/4-inch to 1-inch thick) to a wall stud using #6 to #10 (2.5-inch or greater in length) wood screws. ***Important! Mounting to a stud ensures stability. Using sheetrock anchors may not provide sufficient long-term stability.***
3	Install two #8 PAN head screws (1-inch or greater in length) into the mounted board, following these guidelines and referring to *Figure 29*. • Screws should be spaced horizontally, approximately 5 inches apart. Find exact positioning by using the location of the two keyed insets on the bottom of the unit as a guide. • Screws should be horizontally level with each other. • Leave approximately 1/4-inch of the screws protruding from the board to allow the heads of the screws to slide into place in the unit's keyed insets.
4	Slide the keyed insets on the bottom of the unit's chassis securely onto the screws.
5	Proceed to the steps given in *Supplying Power to the Unit on page 64*.

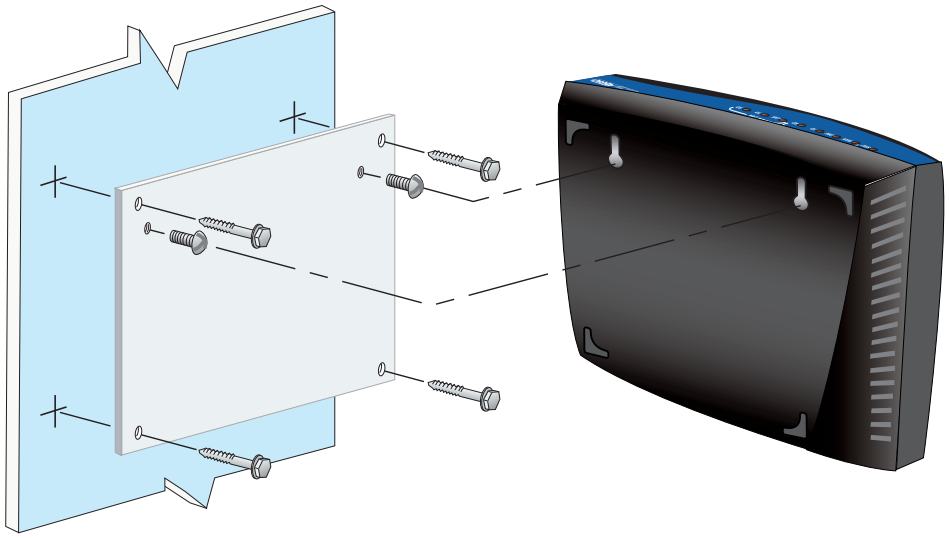

Figure 29. Wall Mounting the NetVanta 3200

Instructions for Wall Mounting NetVanta 3205/NetVanta 3305	
Step	**Action**
1	Remove the mounting ears. Rotate them 90° so that the portion of the bracket with the mounting holes is flush with the bottom of the chassis, and reattach them to the chassis (see *Figure 30*).
2	Decide on a location for the unit. Keep in mind that the unit needs to be mounted at or below eye level so that the LEDs are viewable. ***Important! Mount the chassis with LEDs facing to the side as shown in Figure 30 (not facing up or down).***
3	Prepare the mounting surface by attaching a board (typically plywood, 3/4-inch to 1-inch thick) to a wall stud using #6 to #10 (2.5-inch or greater in length) wood screws. ***Important! Mounting to a stud ensures stability. Using sheetrock anchors may not provide sufficient long-term stability.***
4	Have an assistant hold the unit in position as you install two #6 to #10 (1-inch or greater in length) wood screws through the unit's brackets and into the mounted board. See *Figure 30*.
5	Proceed to the steps given in *Supplying Power to the Unit on page 64*.

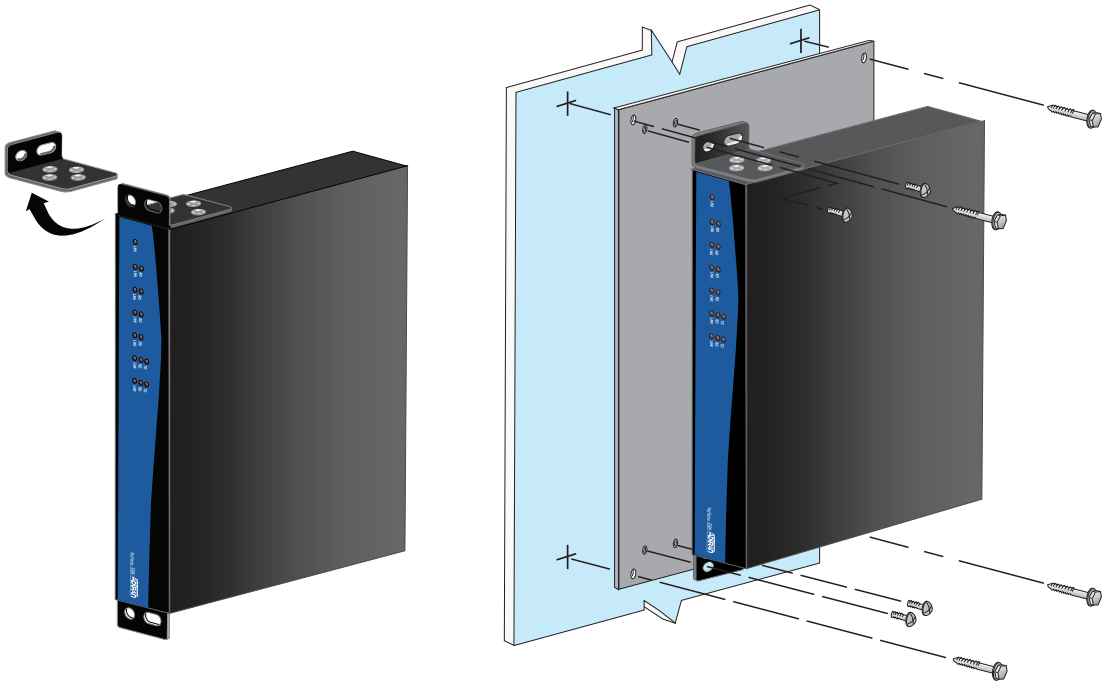

Figure 30. Repositioning the Mounting Bracket for Wall Mounting the NetVanta 3205/3305

Instructions for Wall Mounting NetVanta 3430/NetVanta 3448	
Step	**Action**
1	Decide on a location for the unit. Keep in mind that the unit needs to be mounted at or below eye level so that the LEDs are viewable and enough space needs to be left on each side for the removal of the CompactFlash card and option module.
2	Attach the wallmount bracket to the bottom of the chassis using the two screws included with the shipment (see *Figure 31*).
3	Prepare the mounting surface by attaching a board (typically plywood, 3/4-inch to 1-inch thick) to a wall stud using #6 to #10 (2.5-inch or greater in length) wood screws. ***Important! Mounting to a stud ensures stability. Using sheetrock anchors may not provide sufficient long-term stability.***
4	Install two #6 PAN head screws (1-inch or greater in length) into the mounted board, following these guidelines and referring to *Figure 31*. • Screws should be spaced horizontally, approximately 2 3/4 inches apart. Find exact positioning by using the location of the two keyed insets on the bottom of the unit as a guide. • Screws should be horizontally level with each other. • Leave approximately 1/4-inch of the screws protruding from the board to allow the heads of the screws to slide into place in the unit's keyed insets.
5	Slide the keyed insets on the bottom of the unit's chassis securely onto the screws.
6	Once the unit is hanging, screw the wallmount bracket securely to the wall using a #6 PAN head screw (1.5-inch or greater in length).
7	Proceed to the steps given in *Supplying Power to the Unit on page 64*.

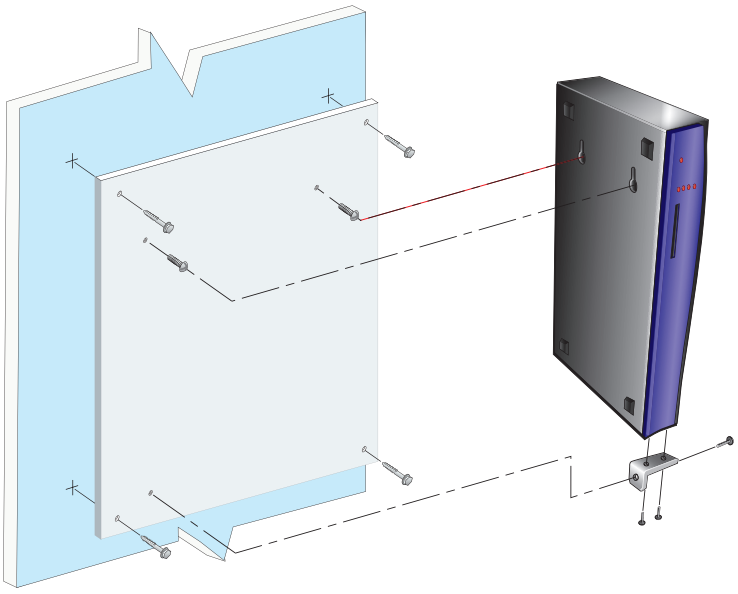

Figure 31. Wall Mounting the NetVanta 3430/NetVanta 3448

Instructions for Wall Mounting NetVanta 3450/NetVanta 3458	
Step	**Action**
1	Remove the mounting ears. Rotate them 90° so that the portion of the bracket with the mounting holes is flush with the bottom of the chassis, and reattach them to the chassis (see *Figure 32*).
2	Decide on a location for the unit. Keep in mind that the unit needs to be mounted at or below eye level so that the LEDs are viewable. ***Important! Mount the chassis with LEDs facing to the side as shown in Figure 32 (not facing up or down).***
3	Prepare the mounting surface by attaching a board (typically plywood, 3/4-inch to 1-inch thick) to a wall stud using #6 to #10 (2.5-inch or greater in length) wood screws. ***Important! Mounting to a stud ensures stability. Using sheetrock anchors may not provide sufficient long-term stability.***
4	Have an assistant hold the unit in position as you install two #6 to #10 (1-inch or greater in length) wood screws through the unit's brackets and into the mounted board. See *Figure 32*.
5	Proceed to the steps given in *Supplying Power to the Unit on page 64*.

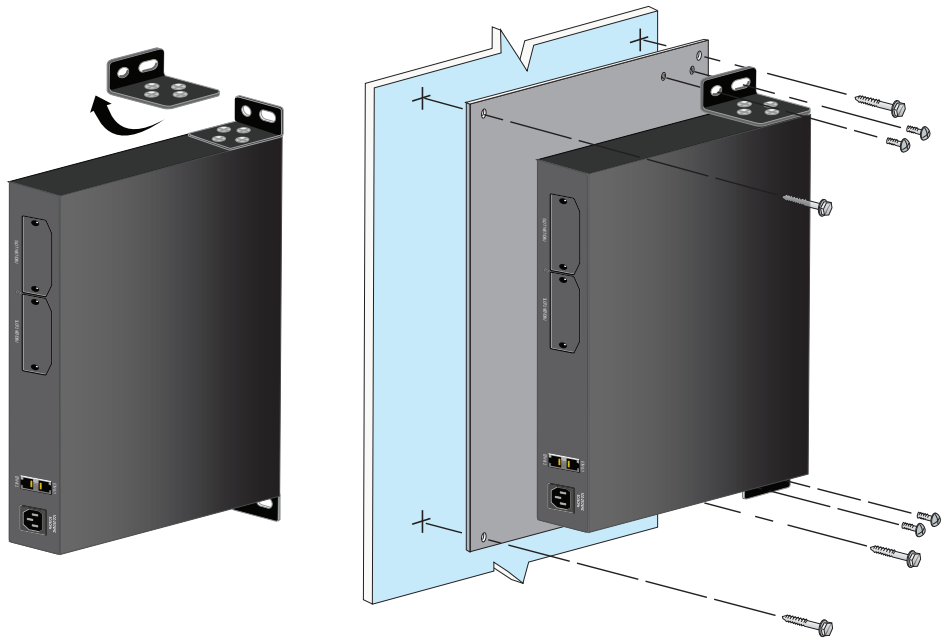

Figure 32. Wall Mounting the NetVanta 3450 and NetVanta 3458

Supplying Power to the Unit

As shipped, each NetVanta 3200/3300/3400 Series is set to factory default conditions. After installing the base unit and any option modules, the NetVanta is ready to be powered. To power the unit, ensure that the unit is properly connected to an appropriate power source (as outlined in the sections that follow).

Powering the NetVanta 3200

The NetVanta 3200 comes equipped with a 12 VDC power supply for connecting to the proper power receptacles.

CAUTION

- *This unit shall be installed in accordance with Articles 300 and 400 of NEC NFPA 70.*
- *Maximum recommended ambient operating temperature is 50°C.*

Instructions for Powering the NetVanta 3200	
Step	**Action**
1	To insert the 12 VDC power connector, pull the outer sheath back from the metal connector.
2	Insert the connector into the receptacle (labeled **POWER**) on the back of the unit keeping the sheath retracted until the connector is fully inserted into the receptacle.
3	Release the sheath so that it covers the metal connector. This ensures that the connector will not become disengaged during use.

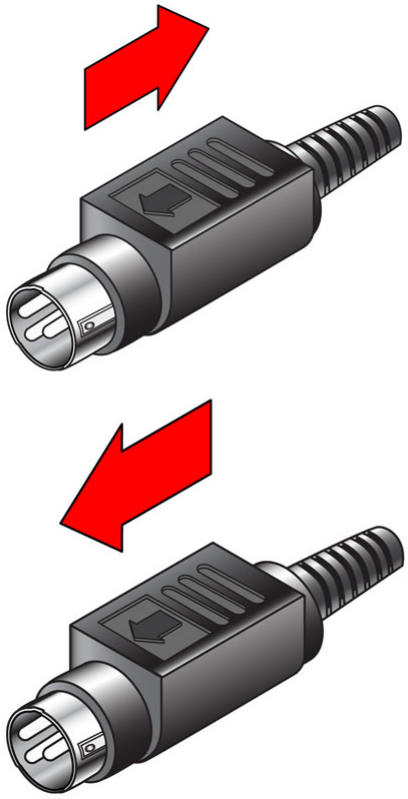

Figure 33. NetVanta 3200 Power Connector

Powering the NetVanta 3205 (AC), NetVanta 3305, NetVanta 3430, NetVanta 3448, NetVanta 3450, and NetVanta 3458

The AC-powered NetVanta 3205, NetVanta 3305, NetVanta 3430, NetVanta 3448, NetVanta 3450, and NetVanta 3458 come equipped with an auto-sensing 100 to 250 VAC, 50/60 Hz power supply for connecting to the proper power receptacle. A grounded, three-plug detachable cable is included with the shipment.

- *This unit shall be installed in accordance with Articles 300 and 400 of NEC NFPA 70.*
- *Power to the AC system must be from a grounded 100 to 250 VAC, 50/60 Hz source.*
- *Maximum recommended ambient operating temperature is 50°C.*

Powering the NetVanta with Octal PoE Upgrade

The NetVanta PoE Power Supply is an auto-sensing 100 to 250 VAC, 50/60 Hz power supply for connecting to the proper power receptacle. This power supply is only available with the Octal PoE Upgrade bundle for the NetVanta 3448 and the NetVanta 3458, which include the power supply and the Octal PoE module. A grounded, three-plug detachable cable is included with the shipment.

- *This unit shall be installed in accordance with Articles 300 and 400 of NEC NFPA 70.*
- *Power to the AC system must be from a grounded 100 to 250 VAC, 50/60 Hz source.*
- *Maximum recommended ambient operating temperature is 40°C.*

The NetVanta PoE Power Supply is intended

- *to supply up to 8 PoE ports at 48 VDC, 15.4 watts per port.*
- *to be installed, maintained, and serviced by qualified service personnel only.*
- *for use only with NetVanta units with the Octal PoE Upgrade module installed.*

Before powering your NetVanta with the PoE Power Supply, the Octal PoE Upgrade module must first be installed. Refer to *Installing the Octal PoE Upgrade Module on page 77* *for more information.*

The NetVanta PoE Power Supply should be installed in a restricted access location as described in UL 60950-1.

Under full load, the NetVanta PoE Power Supply may be hot to the touch.

Instructions for Powering the NetVanta with Octal PoE Upgrade	
Step	**Action**
1	Plug the 2-pin connector from the PoE Power Supply into the **PoE** receptacle on the rear panel of the NetVanta unit.
2	Plug the female end of the PoE Power Supply's power cord into the receptacle on the power supply.
3	Connect the 3-prong plug of the PoE Power Supply's power cord to properly grounded 100 to 250 VAC, 50/60 Hz power source.
4	Plug the NetVanta base unit's power cord into the **100-250 VAC, 50/60 Hz** receptacle on the rear of the unit.
5	Connect the 3-prong plug of the NetVanta base unit's power cord to a properly grounded 100 to 250 VAC, 50/60 Hz power source.

Powering the NetVanta 3205 (DC)

The DC-powered NetVanta 3205 connects to a centralized DC power source via the three-position terminal block on the rear of the chassis (see *Figure 5 on page 18*). Power and ground connections require copper conductors and ring lugs.

CAUTION

The NetVanta 3205 DC is designed to operate with a nominal operating voltage of -48 VDC or ±24 VDC and a minimum operating voltage of ±20 VDC. The NetVanta 3205 DC will not be damaged by any steady state voltage between 20 VDC and 56.7 VDC in magnitude.

CAUTION

- *Power to the NetVanta 3205 DC system must be from a reliably grounded +24 or -48 VDC source that is electrically isolated from the AC source.*
- *Use only copper conductors when making power connections.*
- *Install unit in accordance with Article 400 and 364.8 of NEC NFPA 70.*
- *The branch circuit overcurrent protection shall be a fuse or circuit breaker rated minimum 60 VDC, maximum 10 A.*
- *A readily accessible disconnect device, that is suitably approved and rated, shall be incorporated in the field wiring.*
- *Maximum recommended ambient operating temperature is 50°C.*

CAUTION

*The 10/100Base-T Ethernet interface **MUST NOT** be metallically connected to interfaces that connect to the outside plant or its wiring. This interface is designed for use as an intra-building interface only. The addition of primary protectors is not sufficient protection in order to connect this interface metallically to OSP wiring.*

CAUTION

*To comply with GR-1089-CORE, Issue 3, this equipment must be installed **ONLY** in a DC-C (common) bonding and grounding environment. It must **NOT** be utilized in a DC-I (isolated) bonding and grounding environment.*

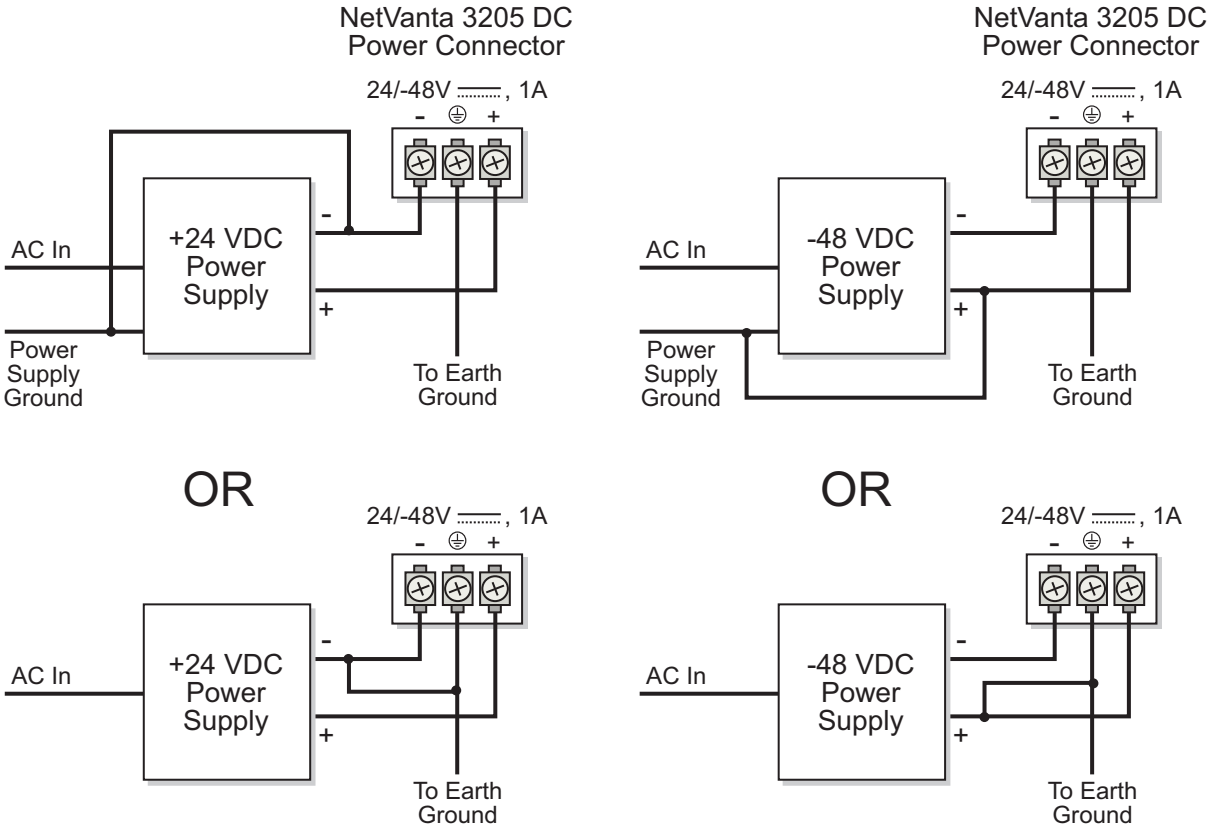

Figure 34. NetVanta 3205 DC Power Connection

Instructions for Connecting DC Power Source to the NetVanta 3205	
Step	**Action**
For +24 VDC operation:	
1	Connect the negative terminal of the +24 VDC power source to the negative terminal of the NetVanta 3205 DC power connector located on the rear of the unit. (See *Figure 34 on page 68*.)
2	Connect the negative terminal of the +24 VDC power source to the chassis ground of the +24 VDC power source. **or** Connect the negative terminal of the +24 VDC power source to Earth ground.
3	Connect the positive terminal of the +24 VDC power source to the positive terminal of the NetVanta 3205 DC power connector.
4	Connect the ground terminal of the NetVanta 3205 DC power connector to Earth ground.
For -48 VDC operation:	
1	Connect the positive terminal of the -48 VDC power source to the positive terminal of the NetVanta 3205 DC power connector located on the rear of the unit. (See *Figure 34 on page 68*.)
2	Connect the positive terminal of the -48 VDC power source to the chassis ground of the -48 VDC power source. **or** Connect the positive terminal of the -48 VDC power source to Earth ground.
3	Connect the negative terminal of the -48 VDC power source to the negative terminal of the NetVanta 3205 DC power connector.
4	Connect the ground terminal of the NetVanta 3205 DC power connector to Earth ground.

Installing Dial Backup and Network Interface Modules

The DIMs plug onto the NIMs. The NIMs are then installed in the rear panel option module slot. The following tables list the installation steps. Also, see *Figure 35 on page 70* and *Figure 36 on page 71*.

WARNING

For NetVanta modules with outside plant connections, ensure that all cables are removed from the module before installing or removing it from the NetVanta chassis.

CAUTION

- *Electronic modules can be damaged by static electrical discharge. Before handling modules, put on an antistatic discharge wrist strap to prevent damage to electrical components. Place modules in antistatic packing material when transporting or storing. When working on modules, always place them on an approved antistatic mat that is electrically grounded.*
- *Always remove power from the unit prior to removing or installing a module.*
- *Improper installation could result in damage to the modules.*
- *Option slot cover plates should remain in place until a module is installed.*

Instructions for Installing the DIMs	
Step	**Action**
1	Remove power from the unit.
2	If the NIM is already in the NetVanta chassis, remove all cables, release the pins at both edges of the NIM front panel and slide the module out of the chassis.
3	Carefully align the P1 connector on the NIM with the J1 connector on the DIM. *Using only fingertip pressure* so that neither circuit board bends or flexes, ensure that the connectors are firmly seated. Secure the DIM to the NIM using the screws and standoff posts supplied. See *Figure 35*.
4	Slide the NIM with the DIM attached into the NetVanta chassis, continuing with the normal NIM installation (refer to *Instructions for Installing the NIMs* below).

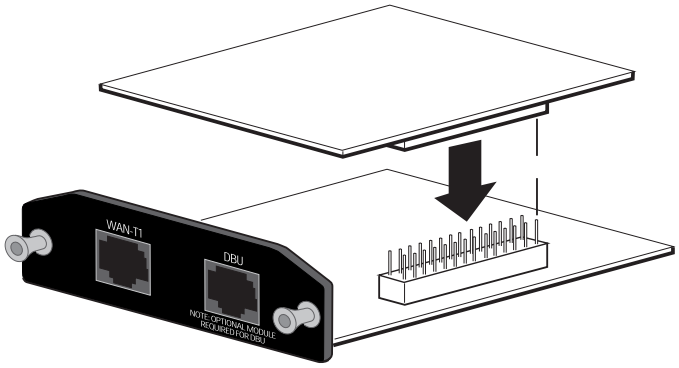

Figure 35. Installing DIMs

Instructions for Installing the NIMs	
Step	**Action**
1	Remove power from the unit.
2	Remove the cover from the option slot.
3	Slide the option module into the option slot until the module is firmly seated against the chassis.
4	Secure the pins at both edges of the module.
5	Connect the cables to the associated device(s).
6	Restore power to the unit.

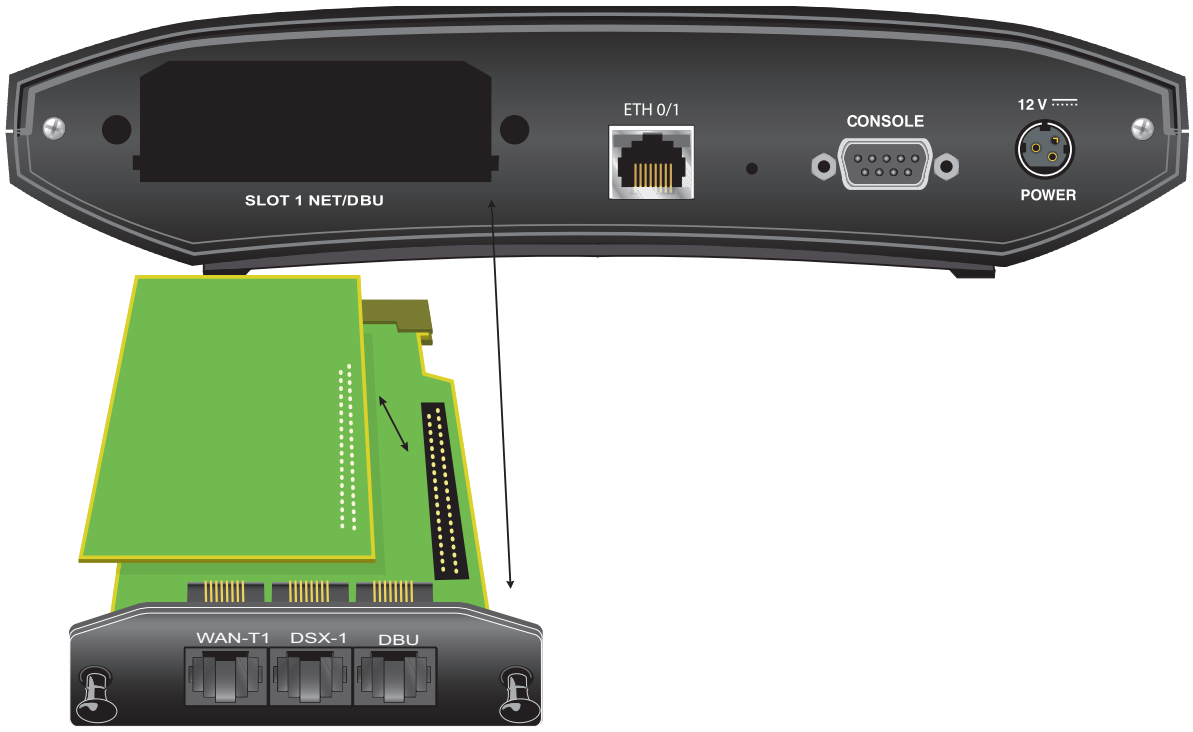

Figure 36. NIM and DIM Installation

Using a USB Cellular Modem with the NetVanta USB WWAN NIM

The NetVanta USB WWAN NIM contains a Type A USB connector that supports a variety of third-party USB cellular modems.

Visit the NetVanta USB WWAN NIM product page at http://www.adtran.com for a list of supported third-party USB cellular modems.

- *Always remove power from the unit prior to removing or installing a module.*
- *Improper installation may result in damage to the modules.*

Instructions for Installing a USB Cellular Modem in the USB WWAN NIM	
Step	**Action**
1	Remove power from the base unit.
2	Remove the cover from the base unit's option slot.
3	Slide the USB WWAN NIM into the option slot until the module is firmly seated against the chassis.
4	Secure the pins at both edges of the module.
5	Restore power to the base unit.
6	Refer to the quick start guide that shipped with the NetVanta USB WWAN NIM for instructions on obtaining a cellular account and activating your USB cellular modem.

An optional USB Locking Mechanism is available from ADTRAN (P/N 1700643G1) to lock the USB to the NetVanta USB WWAN NIM.

Installing the NetVanta VPN Accelerator Card (included in P/N 4200368L1)

The optional VPN Accelerator Card plugs into a 32-bit PCI slot and is designed to be used in the NetVanta 3305 to provide encryption/decryption and security acceleration services. The card provides the following security services to the host processor: DES, triple-DES (3DES), AES, SHA-1, MD5, and random number generation. Performance metrics include 528 Mbps (DES), 176 Mbps (3DES), and 422 Mbps (AES). The power consumption of the card does not exceed 2 watts.

NOTE *The AOS Enhanced Feature Pack software is required to take advantage of the VPN acceleration features of this card.*

CAUTION *The Accelerator Card is intended to be installed only by qualified service personnel.*

Instructions for Installing the VPN Accelerator Card	
Step	**Action**
1	Remove power from the unit.
2	Remove the nine screws and, if necessary, two mounting brackets (see *Figure 37*).
3	Using a 3/16-inch hex driver, remove the two jack screws located on either side of the DB-9 port.
4	Carefully lift and remove the unit's cover to expose the circuit board.
5	Gently slide the accelerator card into the PCI slot as shown. The card is keyed to fit into the slot only one way. To avoid damaging the card pins, do not use excessive force.
6	Replace the unit cover, screws, and mounting brackets.
7	Restore power to the unit.

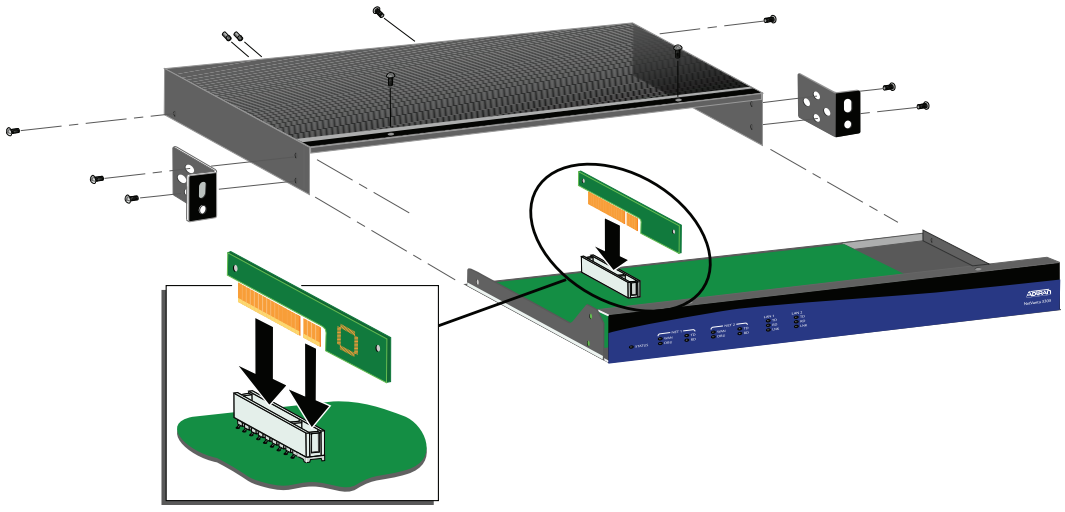

Figure 37. NetVanta VPN Accelerator Card Installation

Installing SODIMM for Expandable Memory

The NetVanta 3430 ships with a 144-pin, 128 MB SODIMM (P/N 1200828G1) installed. It can be upgraded to provide a maximum of 512 MB of memory using the 144-pin, 512 MB SODIMM (P/N 1200829G1).

The NetVanta 3448 ships with a 200-pin, 128 MB SODIMM (P/N 1200812E1) installed. It can be upgraded to provide 256 MB of memory using the 200-pin, 256 MB SODIMM (P/N 1200813E1) or 512 MB using the 200-pin, 512 MB SODIMM (P/N 1200814E1).

Follow these instructions to install a SODIMM module.

- *SODIMMs are intended to be installed only by qualified service personnel.*
- *There are three types of SODIMM memory modules used by ADTRAN: 200-pin DDR1, 200-pin DDR2, and 144-pin DDR2. Although these modules look very similar, they are not interchangeable. Prior to beginning the upgrade process, make sure you have purchased the correct upgrade module for your ADTRAN product.*
- *Before touching electronic components, make sure you are properly grounded. By wearing a wrist strap (or using some other type of static control device), you can prevent static electricity stored on your body or clothing from damaging your installation.*

Instructions for Installing SODIMM	
Step	**Action**
1	Remove power from the unit.
2	Remove the screws holding the base unit and the cover together, and, if necessary, the two mounting brackets.
3	Using a 3/16-inch hex driver, remove the two jack screws located on either side of the DB-9 port (if applicable).
4	Carefully lift and remove the unit's cover to expose the circuit board.
5	Remove the old SODIMM by pulling outward on the clips (shown in *Figure 40 on page 75*) to release the module. Gently pull the module out of the memory slot.
6	Once you have discharged your static electricity, pick up the SODIMM by its top or sides. Do not touch the gold contacts at the bottom.
7	Gently insert the module into the memory slot at a slight angle (approximately 30 degrees) as shown in *Figure 38 on page 75*. Note that the socket and module are both keyed, which means the module can be installed one way only.
8	To avoid damage, do not use excessive force. To seat the module into the socket, apply firm, even pressure to each end of the module (see the arrows in *Figure 39 on page 75*) until you feel it slip down into the socket. If you are having problems getting the module to seat properly, try rocking the module up and down slightly, while continuing to apply pressure. When properly seated, the contact fingers on the edge of the module will almost completely disappear inside the socket.
9	With the module properly seated in the socket, rotate the module downward, as indicated in *Figure 40 on page 75*. Continue pressing downward until the clips at each end of the socket lock into position. With most sockets, you will hear a distinctive CLICK, indicating the module is correctly locked into position.
10	Replace the unit cover, screws, and mounting brackets.
11	Restore power to the unit.

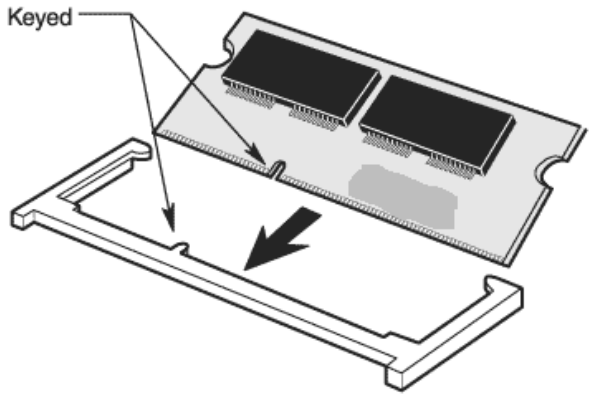

Figure 38. SODIMM Installation – Keyed Slots

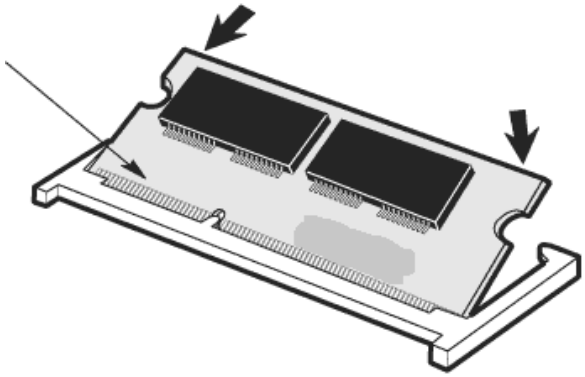

Figure 39. SODIMM Installation – Applying Pressure

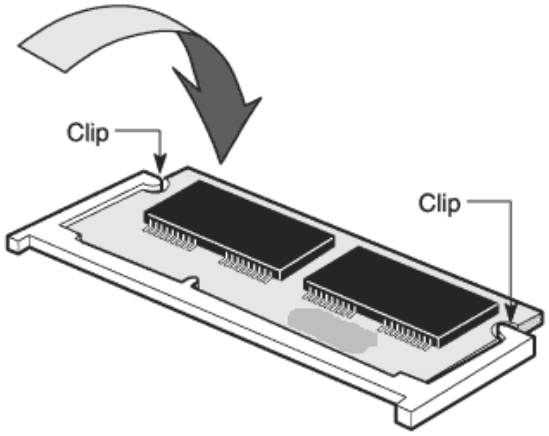

Figure 40. SODIMM Installation – Rotating the Module Downward

Installing a CompactFlash Card

The **CompactFlash** slot supports any industry standard 1 GB CompactFlash card. Follow these instructions when installing a card.

> NOTE *The CompactFlash card is hot-swappable and can be inserted or removed while power is applied to the unit.*

Instructions for Installing a CompactFlash Card	
Step	**Action**
1	Slide the module into the CompactFlash slot until the card is firmly seated against the chassis.
2	The CompactFlash options will now be available in the GUI and the AOS CLI.

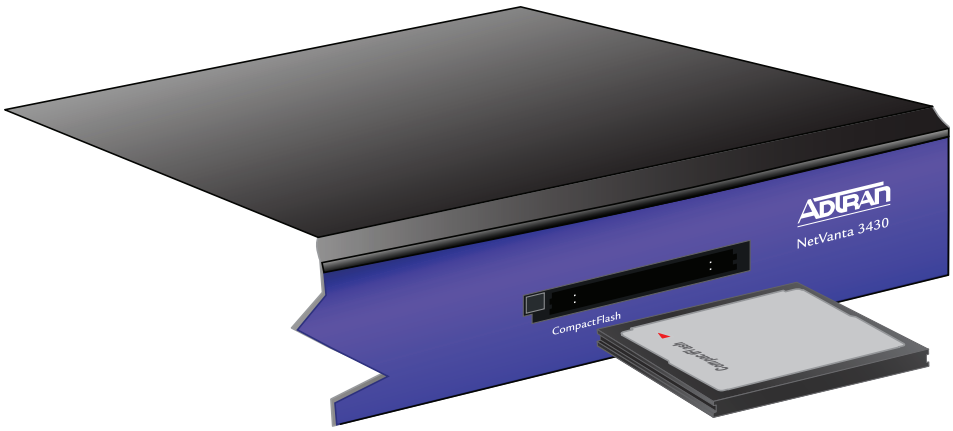

Figure 41. CompactFlash Card Installation

Installing the Octal PoE Upgrade Module

The NetVanta Octal PoE Upgrade provides the ability to detect attached PDs and deliver 48 VDC to the PDs via existing CAT 5 and CAT 6 cabling. If your NetVanta 3448 or NetVanta 3458 did not originally come with PoE capability, it can be upgraded using the Octal PoE Upgrade. The Octal PoE Upgrade is shipped with the Octal PoE module, two standoffs, the Octal PoE power supply, and appropriate power cords.

Instructions for Installing the Octal PoE Upgrade Module	
Step	**Action**
1	Remove power from the unit and all connecting cables from the unit.
2	Remove any installed NIMs.
3	Remove the screws holding the base unit and the cover together, the two jack screws from the back panel (if necessary), and the two mounting brackets (if necessary). See *Figure 42 on page 78*.
4	Carefully lift and remove the unit's cover to expose the circuit board.
5	Remove the two PC board mounting screws (do not discard). See *Figure 42 on page 78*.
6	Thread and secure the two standoffs (supplied with the NetVanta Octal PoE module) into the two holes from which you removed the PC board mounting screws.
7	Carefully align the 34-pin receptacle on the Octal PoE module with the 34-pin header located on the circuit board. Applying even pressure, press the module until it is well seated.
8	Align the holes in the standoffs with the holes in the Octal PoE module. Attach the module to the standoffs using the two previously removed PC board mounting screws.
9	Replace the unit cover, screws, mounting brackets, NIMs, and all connecting cables.
10	Restore power to the unit following the instructions in *Powering the NetVanta with Octal PoE Upgrade on page 66*.

Electronic modules can be damaged by static electrical discharge. Before handling modules, wear an antistatic discharge wrist strap to prevent damage to electrical components. Place modules in antistatic packing material when transporting or storing. When working on modules, always place them on an approved antistatic mat that is electrically grounded.

The NetVanta Octal PoE Upgrade Module is intended to be installed only by qualified service personnel.

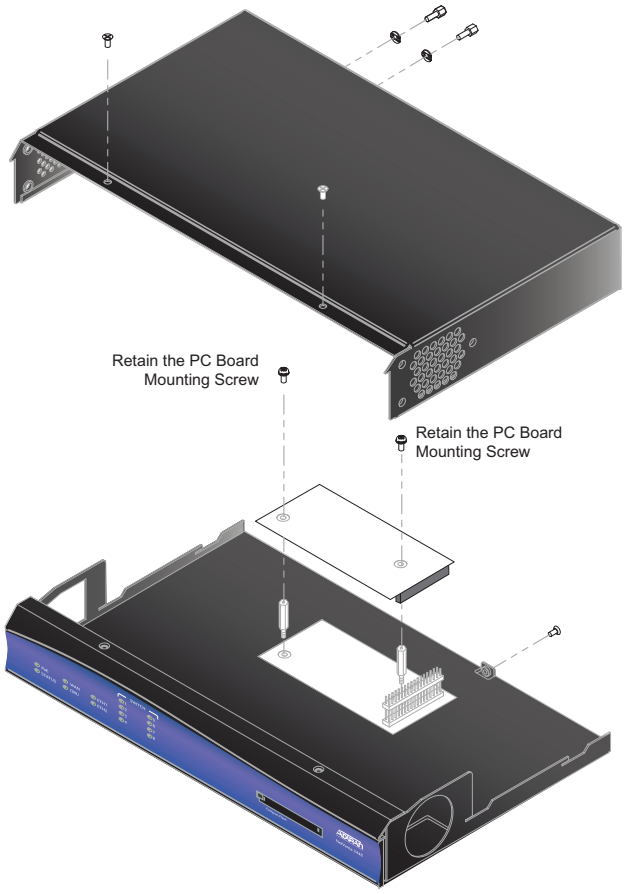

Figure 42. NetVanta Octal PoE Upgrade Installation

Your NetVanta unit is now ready to be configured and connected to the network. For information on configuration for a specific application, refer to the configuration guides provided on the ADTRAN Support Community. For details on the command line interface (CLI), refer to the *AOS Command Reference Guide*. All other related documents are also available online at http://supportforums.adtran.com.

APPENDIX A. CONNECTOR PIN DEFINITIONS

The following tables provide the pin assignments for the base units, network interface modules (NIMs), and dial backup interface modules (DIMs).

Base Unit Pinouts

Table A-1. 10/100Base-T Ethernet Port Pinouts

Pin	Name	Description
1	TX1	Transmit Positive (PoE negative rail, switch ports only)
2	TX2	Transmit Negative (PoE negative rail, switch ports only)
3	RX1	Receive Positive (PoE negative rail, switch ports only)
4, 5	—	Unused
6	RX2	Receive Negative (PoE negative rail, switch ports only)
7, 8	—	Unused

Table A-2. CONSOLE Port (DCE) Pinouts for NetVanta 3200, 3205, 3430, and 3448

Pin	Name	Description
1	DCD	Data Carrier Detect (output)
2	RD	Receive Data (output)
3	TD	Transmit Data (input)
4	DTR	Data Terminal Ready (input)
5	SG	Signal Ground
6	DSR	Data Set Ready (output) **Tied to pin 1**
7	—	Unused
8	CTS	Clear to Send (output) **Tied to pin 1**
9	—	Unused

Table A-3. CONSOLE Port (DCE) Pinouts for NetVanta 3305

Pin	Name	Description
1	DCD	Data Carrier Detect (output)
2	RD	Receive Data (output)
3	TD	Transmit Data (input)
4	DTR	Data Terminal Ready (input)
5	SG	Signal Ground
6	DSR	Data Set Ready (output) **Tied to pin 1**
7	RTS	Request to Send (input)
8	CTS	Clear to Send (output) **Tied to pin 1**
9	RI	Ring Indicate (output)

NOTE *Connection directly to an external modem requires a cross-over cable.*

Table A-4. DC Power Supply Connection (NetVanta 3205 DC Version Only)

Pin	Name	+24 VDC Source	-48 VDC Source
1	+	+24 VDC	Ground (GND)
2	-	Ground (GND)	-48 VDC

Table A-5. ADSL Connector Pinouts

Pin	Name	Description
1, 2	—	Unused
3	T	ADSL Tip
4	RT	ADSL Ring
5, 6	—	Unused

Network Interface Module Pinouts

Table A-6. WAN-DDS Connector Pinouts

Pin	Name	Description
1	R1	Transmit data to the network–Ring 1
2	T1	Transmit data to the network–Tip 1
3-6	—	Unused
7	T	Receive data from the network–Tip
8	R	Receive data from the network–Ring

Table A-7. WAN-T1 Connector Pinouts

Pin	Name	Description
1	R1	Receive data from the network–Ring 1
2	T1	Receive data from the network–Tip 1
3	—	Unused
4	R	Transmit data toward the network–Ring
5	T	Transmit data toward the network–Tip
6-8	—	Unused

Table A-8. WAN-E1 Connector Pinouts

Pin	Name	Description
1	R1	Receive data from the network–Ring 1
2	T1	Receive data from the network–Tip 1
3	—	Unused
4	R	Transmit data toward the network–Ring
5	T	Transmit data toward the network–Tip
6-8	—	Unused

Table A-9. DSX-1 Connector Pinouts

Pin	Name	Description
1	R	Transmit data toward the DTE–Ring
2	T	Transmit data toward the DTE–Tip
3	—	Unused
4	R1	Receive data from the DTE–Ring 1
5	T1	Receive data from the DTE–Tip 1
6-8	—	Unused

Table A-10. G.703 Connector Pinouts

Pin	Name	Description
1	R	Transmit data toward the DTE–Ring
2	T	Transmit data toward the DTE–Tip
3	—	Unused
4	R1	Receive data from the DTE–Ring 1
5	T1	Receive data from the DTE–Tip 1
6-8	—	Unused

Table A-11. WAN-SHDSL Connector Pinouts

Pin	Name	Description
1	T2	Loop 2–Tip
2	R2	Loop 2–Ring
3	—	Unused
4	T1	Loop 1–Tip
5	R1	Loop 1–Ring
6-8	—	Unused

Table A-12. WAN-ADSL Connector Pinouts

Pin	Name	Description
1, 2	—	Unused
3	R	ADSL Ring
4	T	ADSL Tip
5, 6	—	Unused

Table A-13. USB WWAN Connector Pinouts

Pin	Name	Description
1	Vbus	Provides 5 VDC power up to 1000 mA
2	D-	Data
3	D+	Data
4	Ground	Ground

Table A-14. Serial to Cable Connector Pinouts

Serial Pin	V.35 Pin	X.21 Pin	EIA 530 Pin	Name
1	P	2	2	TD_A
2	U	N/A	24	ETC_A
3	Y	N/A	15	TCLK_A
4	V	6	17	RCLK_A
5	R	4	3	RD_A
6	F	N/A	8	DCD_A
7	H	N/A	20	DTR_A
8	C	3	4	RTS_A
9	N/A	10	19	RTS_B (V.11 only)
10	N/A	12	13	CTS_B (V.11 only)
11	D	5	5	CTS_A
12	E	N/A	6	DSR_A
13	K	N/A	25	TM_A
14	S	9	14	TD_B
15	W	N/A	11	ETC_B
16	AA	N/A	12	TCLK_B
17	X	13	9	RCLK_B
18	T	11	16	RD_B
19-25	N/A	N/A	N/A	Unused
26	B	8	7	Ground

Dial Backup Interface Module Pinouts (DBU Connector)

NOTE *An optional DIM is required for dial backup applications.*

Table A-15. Analog Modem and ISDN BRI DBU Connector Pinouts

Pin	Name	Description
1-3	—	Unused
4	R	Network–Ring
5	T	Network–Tip
6-8	—	Unused

Table A-16. ISDN S/T DBU Connector Pinouts

Pin	Name	Description
1, 2	—	Unused
3	R1	Network Receive–Ring 1
4	R	Network Transmit–Ring
5	T	Network Transmit–Tip
6	T1	Network Transmit–Tip 1
7, 8	—	Unused