



NetVanta 1224STR DC Hardware Installation Guide

1200590E1	NetVanta 1224STR DC
4200368L1	Enhanced Feature Pack (Hardware and Software) for IPSec VPN Upgrade
1200861L1	NetVanta 56K/64K Network Interface Module
1200862L2#NEBS	NetVanta T1/FT1 NEBS Network Interface Module
1202862L1	NetVanta T1/FT1 Network Interface Module
1202863L1	NetVanta T1/FT1 + DSX-1 Network Interface Module
1200872L1	NetVanta Dual T1 Network Interface Module
1200868E1/L1	NetVanta E1/FE1 Network Interface Module
1200878E1/L1	NetVanta E1/FE1 + G.703 Drop Network Interface Module
1200866E1	NetVanta Serial Network Interface Module
1200936E1	NetVanta SHDSL Network Interface Module, Annex A
1200937E1	NetVanta SHDSL Network Interface Module, Annex B
1202869E1	NetVanta ADSL Network Interface Module, Annex A
1202889E1	NetVanta ADSL Network Interface Module, Annex B
1200864L1	NetVanta Analog Modem Dial Backup Interface Module
1200865L1	NetVanta ISDN BRI Dial Backup Interface Module
1200875L1	NetVanta ISDN S/T Dial Backup Interface Module

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Conventions

**NOTE**

Notes provide additional useful information.

**CAUTION**

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 telephone 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 bathtub, wash bowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There is a remote risk of shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. 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.
5. 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.



Additional safety guidelines, such as Waste Electrical and Electronic Equipment (WEEE), are given in the document [NetVanta Safety and Regulatory Information](http://supportforums.adtran.com) available online at <http://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	6.0N	04DU9-BN	RJ-48C
1202863L1		1.544 Mbps - SF and B8ZS		04DU9-DN	
1200872L1	US: HDCDENAN1200872L1	1.544 Mbps - ESF 1.544 Mbps - ESF and B8ZS		04DU9-1KN 04DU9-1SN	
1200864L1	US: HDCMM04A1200864L1	Analog Loop Start	0.4A/9.0Y	02LS2	RJ-11C
1200865L1	US: HDCDENAN1200865L1	Basic Rate ISDN	6.0F	02LS5	RJ-49C
1202869E1	US: HDCDL01A1200869L1	ADSL Modem	0.1A	Metallic	RJ-11C

8. The ringer equivalency 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.

Electromagnetic Compatibility (EMC) Table

NetVanta Module P/N and Name	NetVanta 1224STR DC
1200861L1 56K/64K NIM	FCC Part 15 Class A EN 55022 Class A
1200862L2#NEBS T1/FT1 NEBS NIM	FCC Part 15 Class A, EN 55022 Class A GR-1089-CORE, Sections 2 and 3
1202862L1 1202863L1 1200872L1 T1/FT1 NIM T1/FT1 + DSX-1 NIM Dual T1 NIM	FCC Part 15 Class A EN 55022 Class A
1200868E1/L1 1200878E1/L1 E1/FE1 NIM E1/FE1 + G.703 Drop NIM	FCC Part 15 Class A EN 55022 Class A EN 55024
1200866E1 Serial NIM	FCC Part 15 Class A EN 55022 Class A EN 55024
1200936E1 1200937E1 SHDSL NIM, Annex A SHDSL NIM, Annex B	FCC Part 15 Class A EN 55022 Class A EN 55024
1202869E1 1202889E1 ADSL NIM, Annex A ADSL NIM, Annex B	FCC Part 15 Class A EN 55022 Class A EN 55024
1200864L1 1200865L1 1200875L1 Analog Modem DIM ISDN BRI DIM ISDN S/T DIM	FCC Part 15 Class A EN 55022 Class A EN 55024
1202368L1 VPN Accelerator Card (included in P/N 4200368L1)	FCC Part 15 Class A EN 55022 Class A EN 55024 EN 61000-3-2 EN 61000-3-3

Industry Canada Compliance Information

Notice: The Industry Canada label applied to the product (identified by the Industry Canada logo or the “IC:” in front of the certification/registration number) signifies that the Industry Canada technical specifications were met.

Notice: The REN for this terminal equipment is supplied in the documentation or on the product labeling/markings. The REN assigned to each terminal device indicates the maximum number of terminals that can be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices should not exceed five (5).

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 radioélectriques applicables aux appareils numériques de Class A prescrites dans la norme sur le matériel brouilleur: “Appareils Numériques,” NMB-003 édictée par le ministre des Communications.

Toll Fraud Liability

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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

This hardware installation guide describes the NetVanta 1224STR DC unit's physical characteristics, lists its features and specifications, introduces basic functionality, and provides installation instructions.

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 DESCRIPTION

The NetVanta 1224STR DC is a managed switch housed in a 1U-high rack-mountable metal enclosure that includes a DC power supply. The front panel contains 24 10/100Base-T Ethernet interfaces (RJ-45), one Gigabit Ethernet interface that provides one fixed RJ-45 connector, and one standard small form-factor pluggable (SFP) slot for fiber connectivity.

This section includes a list of features and specifications, a list of shipping contents, and a description of the unit's front and rear panel designs. For additional information, refer to the following sections:

- *Mounting Options on page 36*
- *Supplying Power to the Unit on page 38*
- *Installing Dial Backup and Network Interface Modules on page 39*
- *Installing the NetVanta VPN Accelerator Card (included in P/N 4200368L1) on page 41*

Features and Specifications

- Physical Interfaces
 - 24 10/100Base-T Ethernet interfaces on the front panel
 - One 1000Base-T Gigabit Ethernet interfaces on the front panel (SFP slots for fiber connectivity/RJ-45 connectors for copper connectivity)
 - Integrated DB-9, EIA-232 console port (DCE) on the rear panel
 - Modular network interface on the rear panel
- Stacking
- Spanning Tree Support (802.1D and 802.1w)
- Link Aggregation (802.3ad)
- VLAN Support (802.1Q), up to 255 active VLANs
- Priority QoS (802.1p)
- Management
 - Console
 - Telnet CLI
 - SSH CLI
 - SNMP V2
 - Port mirroring
- DC Power: 24 to 48 VDC
- Mechanical Specifications
 - Housing: 1U-high metal enclosure (1.72-inch H x 17.22-inch W x 7.8-inch D)

- 10/100Base-T Ethernet: 24 ganged RJ-45 jacks
- 10/100/1000Base-T Ethernet: SFP slots/standard RJ-45 jacks
- Console Port: DB-9, female
- Environmental Specifications
 - DC Input Power: 24 to 48 VDC at 2.5 A
 - Storage Temperature: -20°C to 70°C
 - Operating Temperature: 0°C to 50°C
 - Relative Humidity: Up to 95 percent, noncondensing

Module Network Interface

The NetVanta 1224STR DC contains a module network interface that support the following network interface modules (NIMs) and dial backup interface modules (DIMs):

- 1200861L1 56K/64K NIM
- 1202862L1 T1/FT1 NIM
- 1200862L2#NEBS T1/FT1 NEBS NIM
- 1202863L1 T1/FT1 + DSX-1 NIM
- 1200872L1 Dual T1 NIM
- 1200868E1/L1 E1/FE1 NIM
- 1200878E1/L1 E1/FE1 + G.703 Drop NIM
- 1200866E1 Serial NIM
- 1200936E1 SHDSL NIM, Annex A
- 1200937E1 SHDSL NIM, Annex B
- 1202869E1 ADSL NIM, Annex A
- 1202889E1 ADSL NIM, Annex B
- 1200864L1 Analog Modem DIM
- 1200865L1 ISDN BRI DIM
- 1200875L1 ISDN S/T DIM

SFP Module Slots

The NetVanta 1224STR DC supports one SFP slot. It accepts a number of industry standard SFP modules. The SFP modules provide Gigabit Ethernet fiber connectivity for high-speed uplinks or switch stacking. For a list of supported SFP modules, visit the ADTRAN website at <http://www.adtran.com>.

Shipping Contents

Each NetVanta 1224STR DC unit is shipped in their own cardboard shipping carton. Open the 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 *Repair and Replacement* section of the *Support* page on the ADTRAN website at <http://www.adtran.com/support>).

Domestic shipments of the NetVanta 1224STR DC include the following items:

- NetVanta 1224STR DC base unit
- Quick start guide
- A detachable power cable with a grounded, three-prong plug

International shipments of the NetVanta 1224STR DC include the following items:

- NetVanta 1224STR DC base unit
- Quick start guide
- All necessary power cords

Front Panel Design

The NetVanta 1224STR DC front panel is shown below. *Table 1 on page 18* describes all of the LEDs, and *Appendix A on page 43* shows the connector pinouts.

NetVanta 1224STR DC Front Panel Features

Status LEDs

The status LEDs are located to the lower left of RJ-45 port 1. The **WAN** LED reflects the status of an installed NIM. The **DBU** LED reflects the status of an installed DIM. The **STAT** LED indicates the unit's status.

10/100Base-T Ethernet Interfaces

The NetVanta 1224STR DCs contain 24 10/100Base-T Ethernet interfaces (RJ-45). These interfaces are consecutively numbered 1 through 24, from left to right, with the numbers screened directly above each port. Status LEDs for each of these interfaces are located directly over these numbers.

Gigabit Ethernet Interfaces/SFP Slots

The NetVanta 1224STR DC front panel contains one Gigabit Ethernet interface that provides one fixed RJ-45 connector and one standard SFP slot for fiber connectivity. (Use either the RJ-45 connector *or* the SFP slot. The fiber slot has precedence.) This interface is labeled **G1**, and the status LED is located to the left of RJ-45 port 1, above the **STAT** LED.

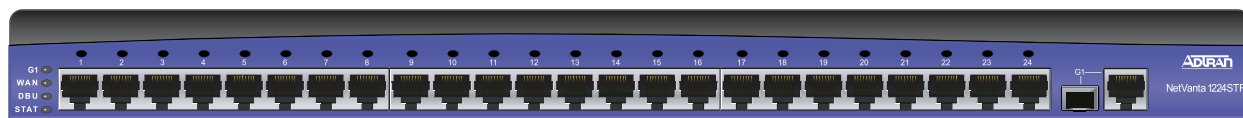


Figure 1. Front Panel Layout

Rear Panel Design

The NetVanta 1224STR DC rear panel is shown below. Refer to *Appendix A on page 43* for pinouts.

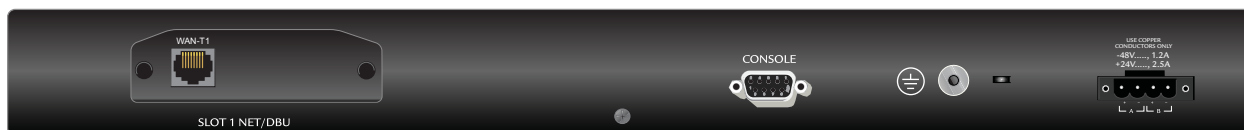


Figure 2. Rear Panel Layout

NetVanta 1224STR DC Rear Panel Features

NIM Option Slot

The NIM option slot accepts a variety of NIM option modules (refer to *Option Modules on page 19*).

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).



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

Power Connection

The NetVanta 1224STR DC connects to a centralized DC power source via a four-position power connector. Please refer to *Supplying Power to the Unit on page 38* for connection details.

Table 1. Front Panel LED Descriptions

LED	Color	Indication
STAT	Off	Unit is not receiving power.
	Green (solid)	Power is on and self-test passed.
	Green (flashing)	On power-up, the STAT LED flashes rapidly for five seconds, during which time the user may escape to boot mode from the CONSOLE port.
	Red (solid)	Power is on, but the self-test failed or the boot code could not be booted.
DBU	Off	No DIM is installed.
	Green (solid)	DIM is ready. For the ISDN BRI DIM, green solid indicates that the negotiation with the switch is complete.
	Green (flashing)	Unit is in dial backup.
	Amber (solid)	Unit is in test.
	Red (solid)	Alarm condition is occurring on the DBU interface, or there is a self-test failure.
WAN	Off	No NIM is installed, or interface is administratively down.
	Green (solid)	NIM is up and everything is operational.
	Green (flashing)	Port has activity (transmit or receive).
	Amber (solid)	Unit is in test.
	Red (solid)	Alarm condition is occurring on the WAN interface, or there is a self-test failure.
Port LEDs (1 through 24 and G1)	Off	Port is administratively disabled or does not have a connection.
	Green (solid)	Port is enabled and has a connection.
	Amber (flashing)	Port has activity (transmit or receive).

3. OPTION MODULES

The NetVanta 1224STR DC supports several option modules designed to meet a variety of networking requirements. The option modules include plug-in NIMs and plug-on DIMs.

NIMs are cards that plug directly into the option module slot located on the rear of the base unit. These cards provide the following types of interfaces:

- *NetVanta 56K/64K NIM (P/N 1200861L1) on page 20*
- *NetVanta T1/FT1 NIM (P/N 1202862L1) on page 21*
- *NetVanta T1/FT1 NEBS NIM (P/N 1200862L2#NEBS) on page 22*
- *NetVanta T1/FT1 + DSX-1 NIM (P/N 1202863L1) on page 23*
- *NetVanta Dual T1 NIM (P/N 1200872L1) on page 24*
- *NetVanta E1/FE1 NIM (P/N 1200868E1/L1) on page 25*
- *NetVanta E1/FE1 + G.703 Drop NIM (P/N 1200878E1/L1) on page 26*
- *NetVanta Serial NIM (P/N 1200866E1) on page 27*
- *NetVanta SHDSL NIM, Annex A (P/N 1200936E1) on page 28*
- *NetVanta SHDSL NIM, Annex B (P/N 1200937E1) on page 29*
- *NetVanta ADSL NIM, Annex A (P/N 1202869E1) on page 30*
- *NetVanta ADSL NIM, Annex B (P/N 1202889E1) on page 31*

DIMs are plug-on cards that plug directly on to the NIM prior to installation into the base unit. A DIM must be plugged on to a NIM in order for the interfaces on the NIM to be active. The NetVanta supports the following DIMs:

- *NetVanta Analog Modem DIM (P/N 1200864L1) on page 32*
- *NetVanta ISDN BRI DIM (P/N 1200865L1) on page 33*
- *NetVanta ISDN S/T DIM (P/N 1200875L1) on page 34*

This section describes each module, providing individual card specifications and features. Refer to *Connector Pin Definitions on page 43* for pinout information. *Installing Dial Backup and Network Interface Modules on page 39* provides information on card installation.

Network Interface Modules

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

The 56K/64K NIM (shown in [Figure 3](#)) provides a DDS WAN interface for the NetVanta. This module provides a single 56K or 64K DDS network interface. See [Table A-5 on page 45](#) for the WAN-DDS connector pinouts, and [Table A-13 on page 48](#) for the DBU connector pinouts. An optional DIM is required for dial backup applications.

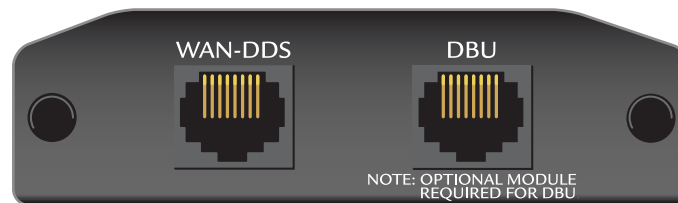


Figure 3. NetVanta 56K/64K NIM

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-48S

Clock Source

- Network
- Internal

Diagnostics

- CSU and DSU Loopbacks

Compliance

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- ACTA/FCC Part 68
- IC CS-03
- UL/CUL 60950

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 T1/FT1 NIM (shown in [Figure 4](#)) provides a T1 WAN interface for the NetVanta. This module provides a full T1 or fractional T1 network interface. See [Table A-6 on page 45](#) for the WAN-T1 connector pinouts, and [Table A-13 on page 48](#) for the DBU connector pinouts. An optional DIM is required for dial backup applications.

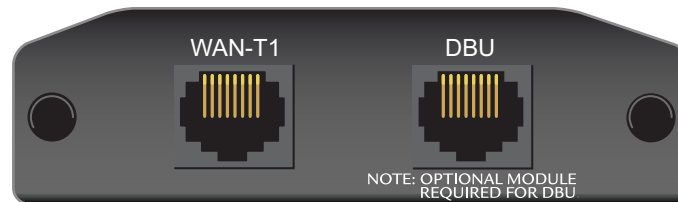


Figure 4. NetVanta T1/FT1 NIM

Features and Specifications

Operating Modes

- Frame Relay, Multilink Frame Relay
- PPP, Multilink PPP
- 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 \pm 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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- ACTA/FCC Part 68
- IC CS-03
- UL/CUL 60950

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 T1/FT1 NEBS NIM (see [Figure 5](#)) T1 WAN interface for the NetVanta 1224STR DC. The T1 NEBS NIM is NEBS Level 3 compliant, and provides a full T1 or fractional T1 network interface. See [Table A-6 on page 45](#) for the WAN-T1 connector pinouts.



Although the T1/FT1 NEBS NIM is compliant with NEBS Level 3, the NetVanta 1224STR DC unit supports only NEBS Level 1.



Figure 5. NetVanta T1/FT1 NEBS NIM

Features and Specifications

Operating Modes

- Frame Relay, Multilink Frame Relay
- PPP, Multilink PPP
- 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 \pm 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, 2¹⁵ - 1, 2²⁰ - 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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- NEBS Level 3
- GR-63-CORE
- GR-1089-CORE
- UL/CUL 60950

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

The T1/FT1 + DSX-1 NIM (see [Figure 6](#)) provides a T1 WAN interface for the NetVanta, a full or fractional T1 network interface, and a DSX-1 interface. See the pinouts in [Table A-6 on page 45](#) for the WAN-T1 connector, [Table A-8 on page 46](#) for the DSX-1 connector, and [Table A-13 on page 48](#) for the DBU connector pinouts. An optional DIM is required for dial backup applications.

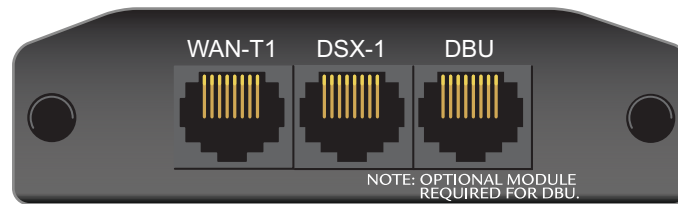


Figure 6. NetVanta T1/FT1 + DSX-1 NIM

Features and Specifications

Operating Modes

- Frame Relay, Multilink Frame Relay
- PPP, Multilink PPP
- 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 \pm 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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- ACTA/FCC Part 68
- IC CS-03
- UL/CUL 60950

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/N 1200872L1)

The NetVanta Dual T1 NIM (see [Figure 7](#)) provides two T1 WAN interfaces for the NetVanta. See [Table A-6 on page 45](#) for the pinouts. See [Table A-13 on page 48](#) for the DBU connector pinouts. An optional DIM is required for dial backup applications.

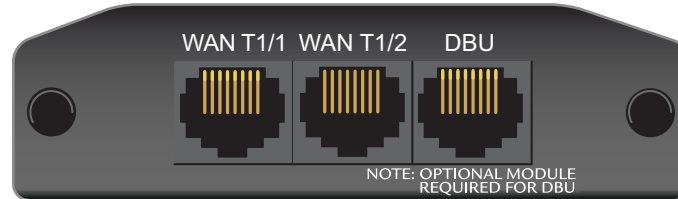


Figure 7. NetVanta Dual T1 NIM

Features and Specifications

Operating Modes

- Frame Relay, Multilink Frame Relay
- PPP, Multilink PPP
- HDLC

T1 Interface

- Supported Standards: AT&T TR 62411, AT&T TR 65016, ANSI T1.403, Bellcore TR 194
- Line Rate: 1.544 Mbps \pm 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, 2¹⁵ - 1, 2²⁰ - 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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- ACTA/FCC Part 68
- IC CS-03
- UL/CUL 60950

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 NIM (P/N 1200868E1/L1)

The NetVanta E1/FE1 NIM (see [Figure 8](#)) provides a WAN-E1 interface for the NetVanta meeting the requirements of ITU-T G.703/G.704. The module provides a single 2.048 Mbps network interface. See [Table A-7 on page 45](#) for the pinouts. See [Table A-13 on page 48](#) for the DBU connector pinouts. An optional DIM is required for dial backup applications.

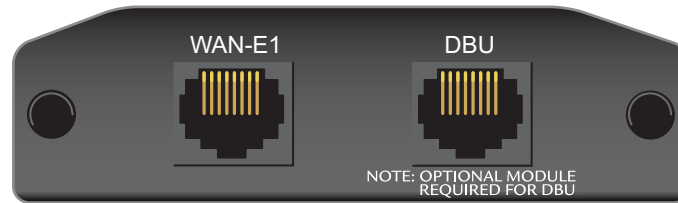


Figure 8. NetVanta E1/FE1 NIM

Features and Specifications

Operating Modes

- Frame Relay, Multilink Frame Relay
- PPP, Multilink PPP
- 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 \pm 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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- AS/ACIF S016
- ETSI TBR 12/TBR 13
- EN 60950
- IEC 60950
- AS/NZS 60950
- 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 Drop NIM (P/N 1200878E1/L1)

The NetVanta E1/FE1 + G.703 Drop NIM (see [Figure 9](#)) provides a single WAN-E1 interface (2.043 Mbps) with user-selectable TS0 assignment, and a G.703 drop port that may be used to drop and insert traffic to an E1 PBX. See [Table A-7 on page 45](#) for the WAN-E1 pinouts. See [Table A-9 on page 46](#) for the G.703 pinouts. See [Table A-13 on page 48](#) for the DBU connector pinouts. An optional DIM is required for dial backup applications.

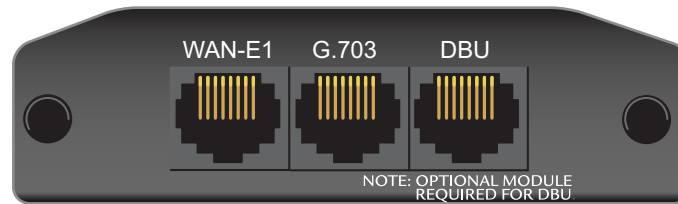


Figure 9. NetVanta E1/FE1 + G.703 Drop NIM

Features and Specifications

Operating Modes

- Frame Relay, Multilink Frame Relay
- PPP, Multilink PPP
- 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 \pm 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 \pm 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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- AS/ACIF S016
- ETSI TBR 12/TBR 13
- EN 60950
- IEC 60950
- AS/NZS 60950
- 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 10](#)) 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 (refer to *Caution*, below). See [Table A-12 on page 47](#) for the serial connector pinouts, and [Table A-13 on page 48](#) for the DBU connector pinouts. An optional DIM is required for dial backup applications.

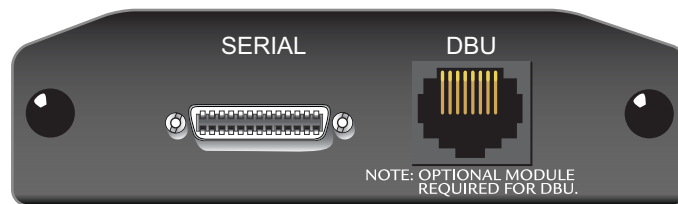
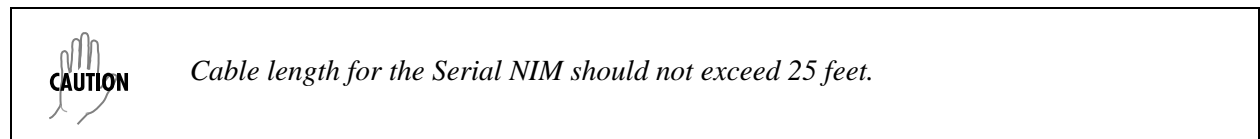


Figure 10. NetVanta Serial NIM

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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6* .
- ETSI TBR1
- ETSI TBR2
- EN 60950
- IEC 60950
- UL/CUL 60950
- AS/NZS 60950
- 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 11](#)) provides a WAN SHDSL interface for the NetVanta. See [Table A-10](#) on page 46 for the SHDSL connector pinouts.



Figure 11. NetVanta SHDSL NIM, Annex A
Features and Specifications

Operating Mode

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

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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- ACTA/FCC Part 68
- UL/CUL 60950
- 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 12](#)) provides a WAN SHDSL interface for the NetVanta. See [Table A-10](#) on page 46 for the SHDSL connector pinouts.

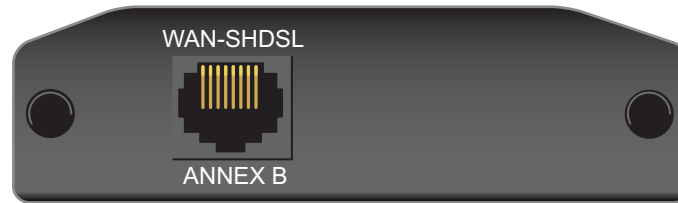


Figure 12. NetVanta SHDSL NIM, Annex B
Features and Specifications

Operating Mode

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

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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- AS/ACIF S043
- EN 60950
- AS/NZS 60950
- 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 (see [Figure 13](#)) adds ADSL capability to the NetVanta. The module provides a single ADSL, ADSL2, or ADSL2+ network interface to support rates up to 25 Mbps. See [Table A-11 on page 47](#) for the pinouts. The ADSL NIM supports an optional DIM for dial backup applications. See [Table A-13 on page 48](#) for the DBU connector pinouts.

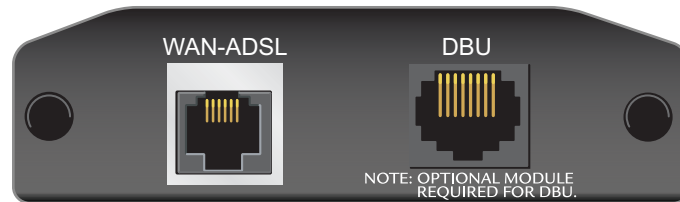


Figure 13. NetVanta ADSL NIM, Annex A

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-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

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- ACTA/FCC Part 68
- AS/ACIF S043
- AS/ACIF S002
- IC CS-03
- EN 60950
- IEC 60950
- UL/CUL 60950
- AS/NZS 60950
- 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 (see [Figure 14](#)) adds ADSL capability to the NetVanta. See [Table A-11](#) on [page 47](#) for the pinouts. The ADSL NIM supports an optional DIM for dial backup applications. See [Table A-13](#) on [page 48](#) for the DBU connector pinouts.

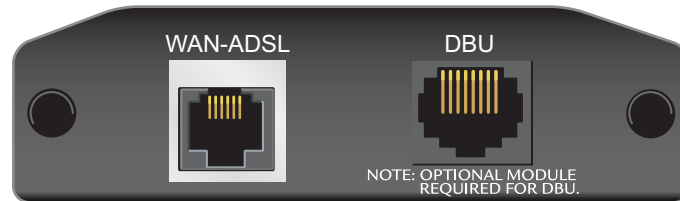


Figure 14. NetVanta ADSL NIM, Annex B

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

- EMC - see *Electromagnetic Compatibility (EMC) Table* on [page 6](#).
- AS/ACIF S043
- EN 60950
- IEC 60950
- AS/NZS 60950
- 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

Dial Backup Interface Modules

NetVanta Analog Modem DIM (P/N 1200864L1)

The Analog Modem DIM provides a modem with data rates up to 33.6 kbps for the NetVanta. 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 39 .

Features and Specifications

Features

- Supported Standards: ITU V.90
- Async

Compliance

- EMC - see *Electromagnetic Compatibility (EMC) Table* on page 6 .
- ACTA/FCC Part 68
- IC CS-03
- UL/CUL 60950

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. 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 39*.

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

Compliance

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- ACTA/FCC Part 68
- IC CS-03
- UL/CUL 60950

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. 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 39*.

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

Compliance

- EMC - see *Electromagnetic Compatibility (EMC) Table on page 6*.
- AS/ACIF S031
- ETSI TBR 3
- EN 60950
- IEC 60950
- AS/NZS 60950

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 mounting options, supplying power to the unit, and installing option cards. These instructions are presented as follows:

- *Mounting Options on page 36*
- *Supplying Power to the Unit on page 38*
- *Installing Dial Backup and Network Interface Modules on page 39*
- *Installing the NetVanta VPN Accelerator Card (included in P/N 4200368L1) on page 41*

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>.

WARNING

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



- *The NetVanta 1224STR DC 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.*
- *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 are:

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



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 at [ADTRAN's Support Forum](#).

Mounting Options

The unit may be installed in rackmount, wallmount, or tabletop configurations. The following sections provide step-by-step instructions for rack mounting and wall mounting.



*If you have purchased the VPN Accelerator Card for your NetVanta 1224STR DC, install it first (refer to *Installing the NetVanta VPN Accelerator Card* (included in P/N 4200368L1) on page 41).*

Rack Mounting the NetVanta

The NetVanta is a 1U-high, rack-mountable unit that can be installed into a 19-inch equipment rack. The following steps guide you in mounting the NetVanta into a rack.




- *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.*
- *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).*

Instructions for Rack Mounting the NetVanta

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. This unit occupies 1U of space.
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	Apply power to the unit (refer to <i>Supplying Power to the Unit</i> on page 38).

Wall Mounting the NetVanta

By following these instructions exactly, the NetVanta can be safely mounted to the wall.

 <p>CAUTION</p>	<ul style="list-style-type: none"> To avoid damaging the unit, use only the screws included in the shipment when attaching mounting ears to the chassis. 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 the NetVanta	
Step	Action
1	Remove the mounting ears. Rotate them 90 degrees so that the portion of the bracket with the mounting holes is flush with the bottom of the chassis. Reattach the mounting ears to the chassis (see Figure 15).
2	Decide on a location for the NetVanta. Keep in mind that the unit needs to be mounted at or below eye-level so that the LEDs are viewable.
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. <i>Important! Mounting to a stud ensures stability. Using sheetrock anchors may not provide sufficient long-term stability.</i>
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 15).
5	Proceed to the steps given in <i>Supplying Power to the Unit</i> on page 38 .

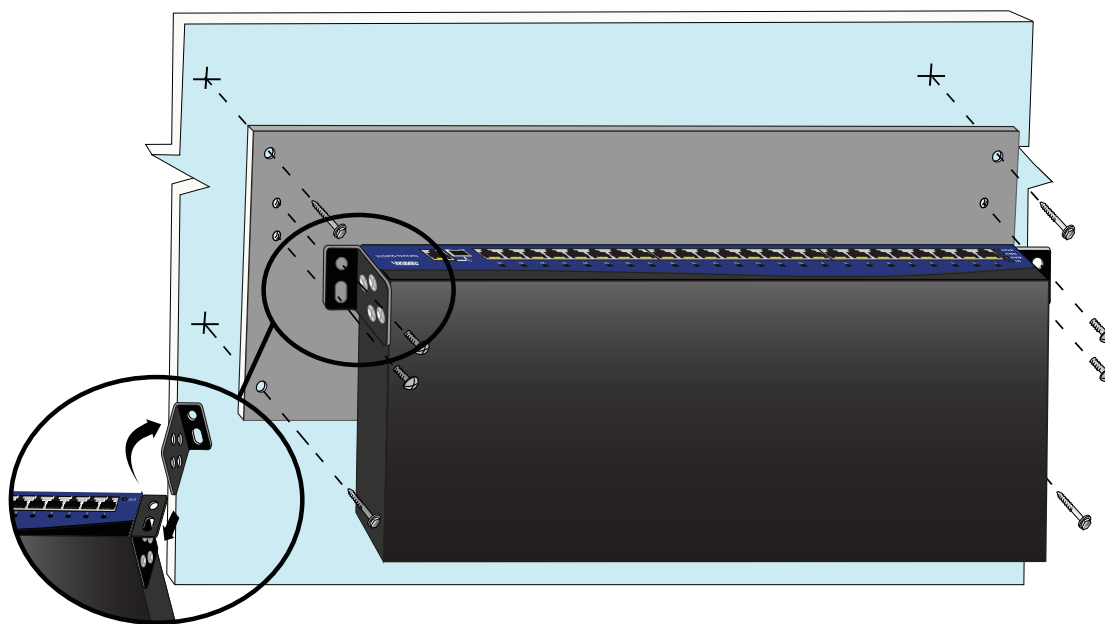



Figure 15. Wallmount Installation


Supplying Power to the Unit

The NetVanta 1224STR DC connects to a centralized DC power source via the four-position power connector on the rear of the chassis (see [Figure 16](#) below). Power and ground connections require copper conductors and a ring lug.


Instructions for Connecting DC Power Source to the NetVanta 1224STR DC	
Step	Action
1	With the power disconnected, connect the primary power source to input A of the power connector.
2	Connect a ground wire (fitted with a loop terminal end) to the grounding point using the screw provided. Connect the other end of the ground wire to a protective earth ground. See Figure 16 below.
3	If using a backup power source, connect it to input B of the power connector.



- *Power to the NetVanta 1224STR DC System must be from a reliably grounded 24 or 48 VDC.*
- *Use only copper conductors when making power connections.*
- *Install unit in accordance with the requirements of NEC NFPA 70.*
- *The branch circuit overcurrent protection shall be a fuse or circuit breaker rated minimum 48 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.*



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



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



Figure 16. Grounding the NetVanta 1224STR DC

Installing Dial Backup and Network Interface Modules

The DIM plugs on to the NIM. The NIM is then installed into the rear panel option module slot. The following tables list the installation steps. Also, see [Figure 17](#) below and [Figure 18](#) on page 41 .

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

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

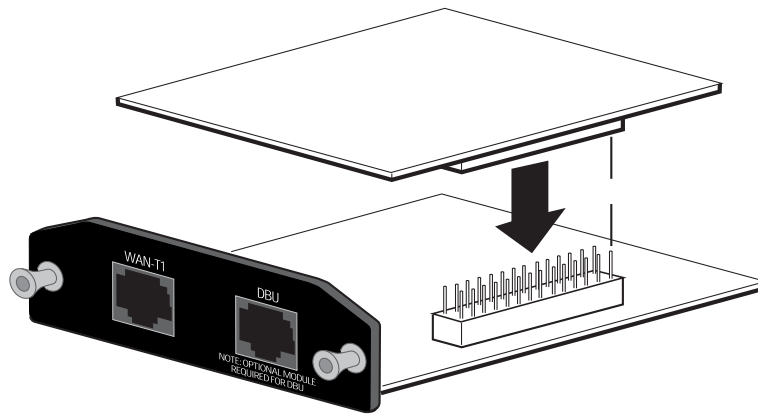


Figure 17. Installing DIMs

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. <i>Using only fingertip pressure</i> 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 17 .
4	Slide the NIM with the DIM attached into the NetVanta chassis, continuing with the normal NIM installation (refer to <i>Instructions for Installing the NIMs on page 41</i>).

Instructions for Installing the NIMs	
Step	Action
1	Remove power from the unit.
2	Use a screwdriver to remove the cover plate from the appropriate option slot in the NetVanta base unit.
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 18. NIM and DIM Installation

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 1224STR DC 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 virtual private network (VPN) acceleration features of this card.*

CAUTION *The NetVanta VPN accelerator card is intended to be serviced/installed by qualified service personnel only.*

Instructions for Installing the NetVanta VPN Accelerator Card	
Step	Action
1	Remove power from the unit.
2	Remove the screws holding the base unit and the cover together and, if necessary, two mounting brackets (see Figure 19).
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.

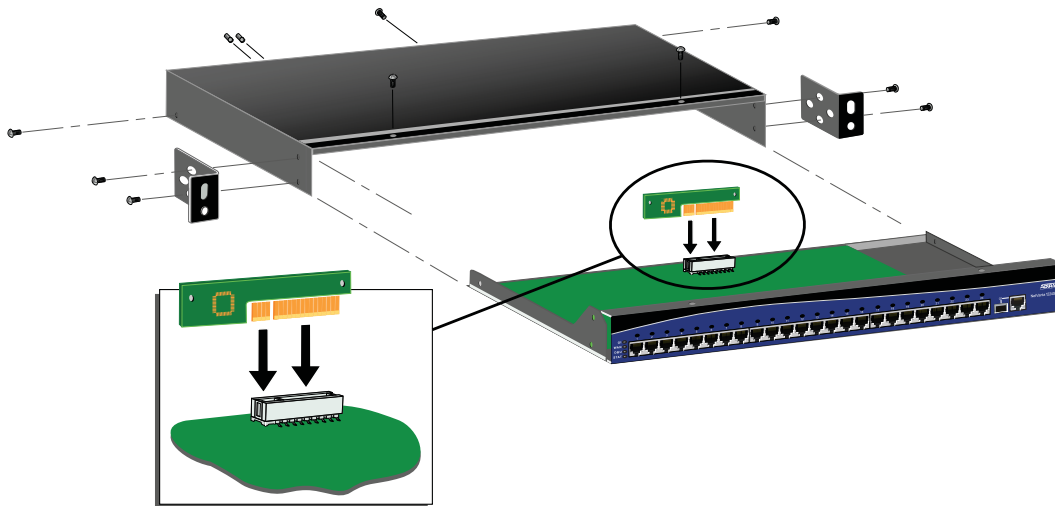


Figure 19. NetVanta VPN Accelerator Card Installation

Your NetVanta unit is now ready to be configured and connected to the network. For information on switch configuration for a specific application, refer to the configuration guides provided online on [ADTRAN's Support Forum](#). For details on the CLI, refer to the [AOS Command Reference Guide](#) (ADTRAN's Support Forum article 2219). All other related documents are also available online on [ADTRAN's Support Forum](#).

APPENDIX A. CONNECTOR PIN DEFINITIONS

The following tables provide the pin assignments for the base unit, NIMs, and DIMs.

Base Unit Pinouts

Table A-1. CONSOLE Port Pinouts

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 Tied to pin 1 (output)
7	—	Unused
8	CTS	Clear to Send Tied to pin 1 (output)
9	—	Unused

Table A-2. SFP Slot Pinouts

Pin	Name	Pin	Name
1	TGND	11	RGND
2	TX FAULT	12	RX-
3	TX DISABLE	13	RX+
4	MOD DEF(2)	14	RGND
5	MOD DEF(1)	15	VccR
6	MOD DEF(0)	16	VccT
7	RATE SELECT	17	TGND
8	LOS	18	TX+
9	RGND	19	TX-
10	RGND	20	TGND

Table A-3. 10/100Base-T Ethernet Port Pinouts

Pin	Name	Description
1	TX1	Transmit Positive
2	TX2	Transmit Negative
3	RX1	Receive Positive
4, 5	—	Unused
6	RX2	Receive Negative
7, 8	—	Unused

Table A-4. 1000Base-T Gigabit Ethernet Port Pinouts

Pin	Name	Description
1	TRD0+	Transmit/Receive Positive
2	TRD0-	Transmit/Receive Negative
3	TRD1+	Transmit/Receive Positive
4	TRD2+	Transmit/Receive Positive
5	TRD2-	Transmit/Receive Negative
6	TRD1-	Transmit/Receive Negative
7	TRD3+	Transmit/Receive Positive
8	TRD3-	Transmit/Receive Negative

Network Interface Module Pinouts

Table A-5. 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-6. 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-7. 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-8. 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-9. 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-10. 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-11. WAN-ADSL Connector Pinouts

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

Table A-12. 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)



An optional DIM is required for dial backup applications.

Table A-13. 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-14. 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