



NetVanta 300 Series Hardware Installation Guide

1200422L1	NetVanta 340
1200423L1	NetVanta 344 Annex B
1200426E1/L1	NetVanta 344 Annex A

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Conventions

**NOTE**

Notes provide additional useful information.

**CAUTION**

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

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
1200422L1	US: HDCDL01A1200422L1	ADSL	0.1A/9.0F	02LS2	RJ-11C
1200426E1/L1	US: HDCDL01A1200426L1	ADSL	0.1A/9.0F	02LS2	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 B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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 communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada Compliance Information

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.

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 B 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.

Service and Warranty

For information on the service and warranty of ADTRAN products, visit the ADTRAN website at <http://www.adtran.com/support>.

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1. INTRODUCTION TO THE NETVANTA SOLUTION

The NetVanta 300 Series units are cost-effective IP routing solutions for business-class asymmetric digital subscriber line (ADSL) networks. This series includes the NetVanta 340 ADSL2+ IP router and the NetVanta 344 ADSL2+ IP router with an integral four-port Ethernet switch. These routers use the most advanced digital subscriber line (DSL) technology, ADSL2+, to provide more bandwidth and greater reach than ADSL or ADSL2. These units offer the following features:

- Affordable routing solutions for business DSL networks
- Innovative ADSL2+ technology for further reach and higher bandwidth
- Standards-based routing solutions based on the widely deployed NetVanta Series and ADTRAN Operating System (AOS)
- Recognizable command line interface (CLI) to eliminate retraining
- Interoperability with other NetVanta product offerings and many carrier-based DSL service offerings

The NetVanta 340 is an asynchronous transfer mode (ATM) router designed for economical branch office connectivity over Frame Relay or Point-to-Point Protocol (PPP) networks. This product is designed for small- to medium-sized business customers. It comes equipped with a 10/100Base-T Ethernet local area network (LAN) interface and an ADSL network interface.

The NetVanta 344 is a single network port multiservice ADSL router targeted at data-only branch office IP routing applications over ATM. It includes an integrated 10/100Base-T four-port Ethernet Layer 2 IEEE 802.1q (VLAN) compatible switch with IP router and bridging capabilities.

The NetVanta 340 and NetVanta 344 units provide the same features and perform the same functions. The main differences in the units include the following:

- Number of Ethernet ports: NetVanta 340 has one Ethernet port, while NetVanta 344 has four.
- Power connector: The NetVanta 340 accommodates a 120 VAC power supply, while the NetVanta 344 is powered by a 12 VDC power supply.



In this document, the term “NetVanta 300 Series” includes the NetVanta 340 and NetVanta 344. If a statement only applies to one particular router, the text refers to the router individually.

Features and Specifications

The following table highlights the major features of the NetVanta 300 Series units.

Table 1. Features and Specifications

Protocol Support	Layer 2 protocol: ATM
	Routed protocol: IP
	Learning bridge functionality
	Static routes
	RIP Version 1/Version 2
	802.1d bridging with spanning tree
	LLC-SNAP and VC-MUX (null) encapsulation over AAL5
10/100Base-T	RJ-45
ADSL Interface	RJ-11C
	NetVanta 340
	NetVanta 344
	Specification Type: Annex A Annex B Annex L Annex A Annex B Annex L
	ITU G.992.1 (G.dmt): Yes No N/A Yes Yes N/A
	ITU G.992.2 (G.lite): Yes No N/A Yes Yes N/A
	ITU G.992.3 (ADSL2): Yes No Yes Yes Yes Yes
	ITU G.992.5 (ADSL2+): Yes No N/A Yes Yes N/A
	ANSI T1.413 Issue 2
	Dynamic rate adaptation
Seamless rate adaptation (NetVanta 344 only)	
Bit swapping	
Dying gasp	
ATM-Specific Support	AAL5 support for 8 (NetVanta 344) and 16 PVCs (NetVanta 340)
	RFC 2364 support - PPP over AAL5 (LLC and VC multiplexing)
	RFC 2684 support - Multi-protocol over ATM
	PPPoE relay and PPPoE client (RFC 2516)
	I.610 F4/F5 OAM loopback support
	Full support of ATM WAN statistics
Firewall	Stateful inspection firewall
	Cyber assault protection
	Denial of service (DoS) protection
DHCP/DNS Support	DHCP client, DHCP server, DNS proxy
Management	Familiar CLI
	Web configuration interface (HTTP, HTTPS)
	Telnet
	SNMP
	SYSLOG logging
	RADIUS authentication
	Secure shell (SSH) management
	Policy statistics

Table 1. Features and Specifications (Continued)

Routing Protocol	OSPF, RIP, BGP, and static		
Routed Protocol	IP		
	Bridging (other protocols)		
PPP	LCP, IPCP, BCP		
	Disaster recovery		
WAN Protocol	ATM		
Quality of Service (QoS)	Priority and weighted fair queuing (WFQ)		
	DiffServe packet marking and recognition		
Optional Virtual Private Network (VPN)	IPSec Mode: Tunnel		
	Encryption: DES, 3DES, and AES		
	Diffie-Hellman Group Support: Group 1 - MODP 768; Group 2 - MODP 1024		
	HAS Algorithms: MD5-HMAC, SHA1-HMAC		
	Authentication Mechanisms: XAUTH, digital certificates, preshared keys		
	Key Management: IKE (ISAKMP/Oakley)		
	IKE Modes: Main, Aggressive		
Environmental	Operating Temperature: 0°C to 50°C; humidity 8 to 100 percent, noncondensing		
	Storage/Transport Temperature: -20°C to 70°C; humidity 5 to 100 percent		
Physical	Dimensions: 7.5-inch W x 1.75-inch H x 5.375-inch D		
	Weight: 0.8 lb		
	Power: NetVanta 340: 120 VAC, 60 Hz, double insulated NetVanta 344: 12 VDC		
Compliance	NetVanta 340:	NetVanta 344 Annex A:	NetVanta 344 Annex B:
	FCC Part 15 Class B ACTA/FCC Part 68 IC CS-03 UL/CUL 60950	FCC Part 15 Class B ACTA/FCC Part 68 IC CS-03 AS/ACIF S043 AS/ACIF S002 EN 60950 IEC 60950 UL/CUL 60950 AS/NZS 60950 RoHS compliant (Telecommunications exemption)	FCC Part 15 Class B AS/ACIF S043 EN 60950 IEC 60950 AS/NZS 60950 RoHS compliant (Telecommunications exemption)

This hardware installation guide describes the NetVanta 300 Series, details basic functionality, gives installation instructions, and lists unit specifications. For more information on router configuration for a specific application, refer to the configuration guides provided on the ADTRAN website at www.adtran.com. For details on the CLI, refer to the *AOS Command Reference Guide*, also on the website.

Unpack and Inspect the System

Each NetVanta 300 Series 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 *Repair and Replacement* section of the *Support* page on the ADTRAN website at <http://www.adtran.com/support>).

Contents of ADTRAN Shipments

Shipments of the NetVanta 300 Series units include the following items:

- NetVanta 300 Series Base Unit
- NetVanta 300 Series quick start guide
- NetVanta 300 Series power cable (black)
- NetVanta 300 Series phone cable (silver)
- NetVanta 300 Series Ethernet cable (yellow)
- *AOS Documentation CD*

2. PHYSICAL DESCRIPTION

Reviewing the Base Unit Front Panel Design

Figure 1 shows the NetVanta 340 front panel. The front panel of the NetVanta 344 is identical, with the exception of the product name.

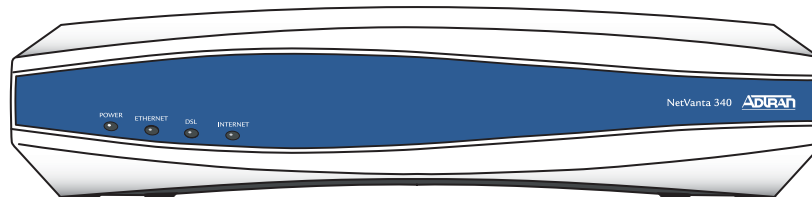


Figure 1. NetVanta 300 Series Front Panel Layout

Front Panel LEDs

Table 2 describes the front panel LEDs.

Table 2. NetVanta 300 Series Unit LEDs

LED	Activity	Indication
POWER	Green (flashing)	Unit is powering up. On power up the POWER LED flashes rapidly for five seconds, during which time the user may escape to boot mode.
	Green (solid)	Power is on and self-test passed.
	Red (solid)	Power is on, but the self-test failed or the boot mode (if applicable) code could not be booted.
ETHERNET	Green (flashing)	LAN activity is present (traffic in either direction).
	Green (solid)	Powered device is connected to the Ethernet port (i.e., link integrity).
	Off	There is no LAN activity on the Ethernet port (or modem is powered off).
DSL	Off	Modem power is off.
	Green (flashing)	Attempting DSL sync.
	Green (solid)	DSL link is up and everything is operational.
	Red (solid)	DSL connection failure.
INTERNET	Off	Modem power is off, modem is in bridged mode, or ADSL connection is not present.
	Green (flashing)	IP connected and IP traffic is passing through the device (in either direction).
	Green (solid)	IP connected (the device has a WAN IP address from IPCP or DHCP, and DSL connection is up) and no traffic is detected. If the IP or PPPoE session is dropped, the light remains green if an ADSL connection is still present. Light turns red when it attempts to reconnect and DHCP or PPPoE fails.
	Red (solid)	Modem attempted an IP connection and failed (no DHCP response, no PPPoE response, PPPoE authentication failed, no IP address from IPCP, etc.).

Reviewing the Rear Panel Design

Figure 2 shows the NetVanta 340 rear panel. The activity and link LEDs, which are present on all NetVanta Ethernet ports, are labeled. The NetVanta 340 accommodates a 120 VAC power supply.

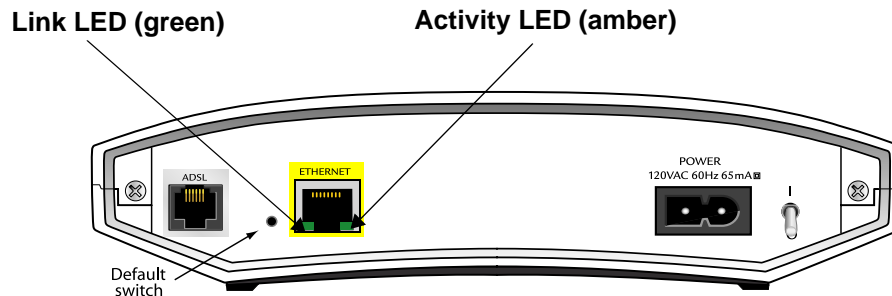


Figure 2. NetVanta 340 Rear Panel Layout

Figure 3 shows the NetVanta 344 rear panel. Note that the NetVanta 344 has four Ethernet ports, each with its own activity and link LEDs. Note that the activity and link LEDs on the NetVanta 344 are reversed from the NetVanta 340. The NetVanta 344 accommodates a 12 VDC power supply.

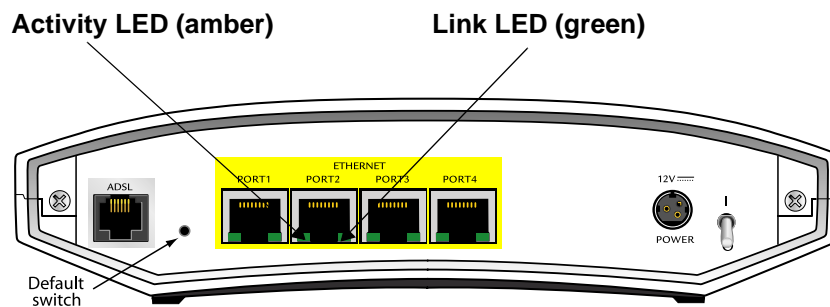


Figure 3. NetVanta 344 Rear Panel Layout

Rear Panel Interfaces and LEDs

ADSL Interface

The **ADSL** port on each NetVanta 300 Series unit is an RJ-11C connector. See Table A-1 on page 27 for the ADSL port pinouts. The following charts show some of the ADSL port features.

Specification Type	NetVanta 340			NetVanta 344		
	Annex A	Annex B	Annex L	Annex A	Annex B	Annex L
ITU G.992.1 (G.dmt)	Yes	No	N/A	Yes	Yes	N/A
ITU G.992.2 (G.lite)	Yes	No	N/A	Yes	Yes	N/A
ITU G.992.3 (ADSL2)	Yes	No	Yes	Yes	Yes	Yes
ITU G.992.5 (ADSL2+)	Yes	No	N/A	Yes	Yes	N/A

	NetVanta 340	NetVanta 344
ANSI T1.413 Issue 2	Yes	Yes
Dynamic Rate Adaptation (DRA)	Yes	Yes
Seamless Rate Adaptation (SRA)	No	Yes
Bit Swapping	Yes	Yes
Dying Gasp	Yes	Yes

10/100Base-T Ethernet Interface and Activity LEDs

The **ETHERNET** ports on the NetVanta 300 Series 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 unit has a good connection to the LAN. (As mentioned earlier, the NetVanta 344 has four Ethernet ports, each with its own activity and link LEDs.) See Table A-2 on page 27 for the Ethernet port pinouts. The Ethernet port provides the following:

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

3. UNIT INSTALLATION

The instructions and guidelines provided in this section cover hardware installation topics, such as wall mounting and supplying power to the unit.

WARNING

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



Maximum recommended ambient operating temperature is 50°C.

Mounting Options

The NetVanta 300 Series units can be installed in a wallmount or tabletop configuration. The following section provides step-by-step instructions for wall mounting.

Wall Mounting

Instructions for Wall Mounting	
Step	Action
1	Decide on a location for the NetVanta 300 Series 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. Important! Mounting to a stud ensures stability. Using sheetrock anchors may not provide sufficient long-term stability.
3	Install two #8 PAN headscrews (1 1/2-inch or greater in length) wood screws into the mounted board, following these guidelines and referring to Figure 4: <ul style="list-style-type: none"> • 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 NetVanta 300 Series 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 <i>Getting Started</i> on page 24.

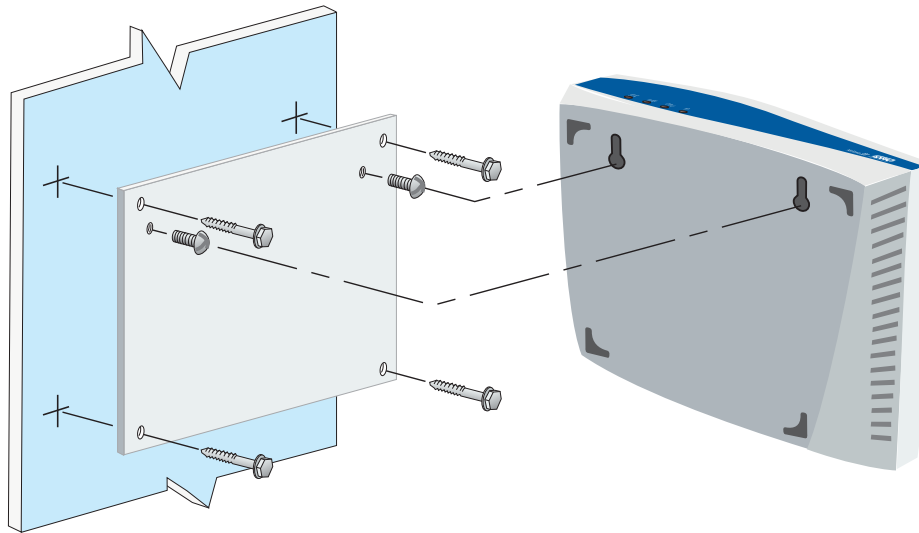


Figure 4. Wall Mounting the NetVanta 300 Series Unit

Getting Started



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

Connect to the NetVanta 300 Series Unit

1. Connect the NetVanta 300 Series unit to the PC using one of the **ETHERNET** ports on the back of the unit and the appropriate Ethernet cable.
2. Supply power to the PC and the NetVanta 300 Series unit and begin the operating system boot up process. During boot up, the PC will obtain an IP address from the NetVanta 300 Series unit DHCP server. By default, both the DHCP and HTTP servers are enabled. The default IP address is 10.10.10.1.



When inserting the 12 VDC power supply connector into the **POWER** receptacle on the back of the chassis, make sure to push the connector into the receptacle until you hear a soft click. This ensures that the connector will not become disengaged during use.

3. Enter the unit's IP address in your browser address line. The default IP address is **10.10.10.1**.
4. You will then be prompted for the user name and password (the default settings are **admin** and **password**).
5. The initial Web-based graphical user interface (GUI) screen appears.
6. Click on **Getting Started** in the **System** menu on the left side of your screen and follow the online instructions.



For security purposes, you should set up an **admin** password immediately. Use the **Passwords** page of the GUI to change this password.



By default, the NetVanta 300 Series unit comes with an ADSL and an ATM port already configured and enabled. The service provider should provide a PVC (VPI/VCI) number that will be used to configure the ATM PVC.

Configure the ATM PVC

1. Select the **Getting Started** link under the **System** menu. This will bring up a side bar page.
2. Select **Step 1 - Configure the Public Interface** at the top of the side bar page to open the **ATM PVC** page.
3. Fill in the PVC number and select an **Interface Mode**. This is usually PPP or PPPoE; however, if **IP Routing** is chosen, you will need to enter an IP address.

4. Select **Apply**. If PPP or PPPoE is selected as the **Interface Mode**, you will be taken to the **PPP** page after selecting **Apply**. Here you will need to select the type of authentication needed, authentication passwords, and the **Address Type**. In most cases, you will want the **Address Type** to be **Negotiated**. Select **Apply** when all the information is complete.

Factory Default Switch

- If the factory default switch is pressed during bootup, the unit will stay in bootstrap mode. Since the unit has no serial port, Telnet has been built into the boot code. The default IP address is 10.10.10.1.



The default switch must be pressed WHILE the power light is flashing green. Do not press the default switch BEFORE the power light is flashing green, as this will cause boot to be missed.

- If the factory default switch is pressed and held for 5 seconds after boot, the **ETHERNET** interface on the NetVanta 340 (or the **VLAN 1** interface on the NetVanta 344) will default to 10.10.10.1 and all access policies will be removed from that interface.
- If the factory default switch is pressed for 30 seconds, a default configuration will overwrite your existing configuration and reboot the unit.

APPENDIX A. CONNECTOR PIN DEFINITIONS

The following tables provide the pin assignments for the NetVanta 300 Series units.

Table A-1. ADSL Connector Pinouts

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

Table A-2. 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

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