Vanguard Applications Ware Software Release Notice

Release 6.5R000

Overview

Introduction

This notice contains update information for Release 6.5R000 of the operating software for these Vanguard platforms:

- Vanguard 340
- Vanguard 340 Enhanced
- Vanguard 342
- Vanguard 6435, 6455
- Vanguard 7310, 7330

Release 6.5.R000 does not support the following:

- Vanguard 100 (supported by Release 5.3M)
- Vanguard 200 (supported by Release 5.1M)
- Vanguard 300 (supported by Release 5.4)
- Vanguard 305 (supported by Release 5.5)
- Vanguard 311 (supported by Release 5.1M)
- Vanguard 311*PLUS* and 312*PLUS* (supported by Release 5.3M)
- Vanguard 320 (supported by Release 6.4R10A)
- Vanguard 6425/6430/6450 (supported by Release 6.0.R00A)
- Vanguard 6520 (supported by Release 5.5)
- Vanguard 6560 (supported by Release 6.0.R00A)
- 6500*PLUS* (supported by Release 5.1M)
- 650D (supported by Release 5.0C)
- Voice feature on the Vanguard 100 (supported by Release 5.2)

This notice supplements the full set of the Vanguard user documentation.

Memory Requirements for Release 6.5R00A

The memory requirements have changed for some Vanguard products supported by Release 6.5.R000 For more information on the memory changes that affect your Vanguard unit, refer to "Memory Requirements for Vanguard Applications Ware Release 6.5.R000" section on page 8

SAKs

Software Access Keys (SAKs) are not generally used with Release 5.2 and later products. Pre-Release 5.2 products, however, still use their SAKs. If you purchased SAKs for an earlier release, they can still be used with this release.

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Applications Ware

Introduction

This section explains how the Applications Ware are organized, implemented, and modified.

Applications Ware Licenses and Upgrades

The Applications Ware is divided into three base licenses and five license upgrades for Vanguard products. Customers are required to purchase only one base license and can purchase optional upgrade licenses to the base license:

Standard Applications Ware Packages

- IP+ Applications Ware
- SNA+ Applications Ware
- Multi-Service Applications Ware

License Upgrades

- Voice Applications Ware License Upgrade
- Security Applications Ware License Upgrade
- AS/400 BSC Applications Ware License Upgrade
- Premium Voice Services Licence Upgrade
- QoS Application Performance Management License Upgrade

Note

A license refers to both a legal document that allows a customer to use features and to the software that contains the features.

One base license must be purchased for each hardware platform.

Default Software Images and Functionality

Each license contains a large number of software features and functions. In addition, each hardware platform has a default factory image that contains a subset of the full license.

In some cases, the default image might not completely meet your needs. You can either create a new Vanguard customer image using the Software Builder application on the Vanguide CD-ROM, or use our Vanguard Customer Ware Program.

For details about all features in a particular Applications Ware License, refer to the appropriate section further on in this document.

Software Upgrade Options

Introduction

If you are upgrading the software in your network, do not skip releases. You must upgrade to each intermediate release to ensure the integrity of your configuration memory (CMEM). This upgrade procedure applies to all Vanguard products. Upgrade your software by using the step-by-step upgrade option or use the Software Upgrader application. Both upgrade options are listed below.

Step by Step Software Upgrade

The step by step software upgrade is the traditional way to upgrade Vanguard devices. The process requires you to step though loading each individual release of Applications Ware, which will update the CMEM configuration file, and then continue through to the desired final release of the Application Ware. Assuming that you want to upgrade your network software from Release 5.4 to Release 6.3.R00A, you must follow this example:

Step	*Upgrade From Release*	*To Release*
1	5.4 (Including any 5.4 point releases)	5.5
2	5.5 (Including any 5.5 point releases)	5.6.R000
3	5.6 (Including any 5.6 point releases)	6.0.R00A
4	6.0.R00A (Including any 6.0 point releases)	6.1.R000
5	6.1.R000 (Including any 6.1 point releases)	6.2.R000
6	6.2.R000 (Including any 6.2 point releases)	6.3.R00A
7	6.3.R00A (Including any 6.3 point releases)	6.4.R00A
8	6.4.R00A (Including any 6.4 point releases)	6.5R00A

Note

The Vanguard 7300 Series can be upgraded from 5.4 to Release 6.5R00A without loading 5.5 or 5.6.

Downgrading to Prior Releases

Be aware that downgrading to and from any prior release is not supported and note that problems will occur with the configuration memory. To properly downgrade, the configuration should be defaulted and then restored with the saved CMEM that was running in the prior release. (DRCaa22736)

License Upgrades

Introduction

The License Upgrades differ from standard Applications Ware packages in that they do not operate in a "stand-alone" capacity. For example, if you want the functions available in the SNA+ Applications Ware, you purchase that license and load it into your unit. However, a License Upgrade cannot be loaded into a unit by itself. You must:

- Purchase one of the standard Applications Ware packages
- Purchase the License Upgrade
- Use Software Builder to add the License Upgrade to the standard Applications Ware package

Voice Upgrade (T.38 Fax)

The Voice Upgrade adds support for Voice features. The Voice Upgrade must be used with one of the standard Applications Ware packages.

Note

The Multiservice Applications Ware already contains the Voice features. Therefore, if you have Multiservice, you do not need to purchase the Voice License Upgrade. Premium Voice is not included in the Multiservice License.

Release 6.3 supported T.38 Fax as a separate licence upgrade. Release 6.4 and greater allows you to purchase an IP+ or SNA+ Application Ware Package and an optional voice license to include T.38 Fax on the Vanguard 34x, 6435 and 6455. The 7300 Series includes T.38 Fax as part of the MultiService Applications Ware package. The 7300 Series IP+, SNA+ and Multiservice licenses include T.38 Fax over IP in the default images. Premium Voice must be purchased separately.

Security Applications Ware License Upgrade

The Security Applications Ware License Upgrade adds support for encryption, PKI and Digital Certificates and VPN (Virtual Private Network). The Security Applications Ware License Upgrade must be used with one of the standard Applications Ware packages and the Data Encryption SIMM. VPN provides Triple DES, IPSec (IP Security) and GRE Tunneling (General Router Encryption) for Vanguard 64xx Series and Vanguard 34x. Release 6.3.R00A and greater supports the Advanced Encryption Standard (AES) using the ECC DIMM on the Vanguard 342. Release 6.4 and greater supports AES using the ECC DIMM on the Vanguard 340 Enhanced. Release 6.4 and greater also supports AES on the 7300 Series Platform using the Advanced Encryption Card (AEC).

AS/400 BSC Applications Ware License Upgrade

The AS/400 BSC Applications Ware License Upgrade adds support for the AS/400 Communication Server feature, and the BSC 3270-to-SNA Conversion feature and the BSC 2780/3780-to-SNA LU0 for the Vanguard 6455 and 7300 Series. The AS/400 BSC License Upgrade must be used with one of the standard Applications Ware packages listed previously.

Premium Voice Services License Upgrade

The new supplementary voice calling services enhance Vanguard's current call establishment and provide services that are commonly found on enterprise PABX's and H.323 voice gateways. These capabilities include:

- Caller ID
- Call Waiting
- Call Hold
- Call Transfer
- Call Forward
- Third Party Voice Mail Server Support

Premium Voice Services are available to users of traditional TDM voice services over analog FXO/FXS voice ports or digital E&M interfaces on Vanguard routers. Premium Voice Services are also available to native H.323 VOIP calls. Vanguard routers also support packetization of TDM voice traffic between sites where Vanguard routers are situated using Vanguard's SOTCP protocol. The Vanguard 34x and 64xx platforms that use the IP+ or SNA+ base licenses and the Voice upgrade license or use the Multiservice base license can order the separate Premium Voice License. The Vanguard 7300 Series does not support the Voice upgrade license, therefore any base license IP+, SNA+ or MultiService will permit Premium Voice. Premium Voice is a separate orderable upgrade license, not included in MultiService.

QoS Application Performance Management License Upgrade

The QoS Application Performance Management and Bandwidth Prioritization feature delivers a proactive policy monitoring tool that provides more predictable traffic management capabilities to enterprises. This powerful set of instrumentation permits IS managers to discover the complete spectrum of authorized and unauthorized applications that are crossing their WAN access boundaries. QoS Application Performance Management is an optional add-on software license for the Vanguard 34x, 6435, 6455 and 7300 Series platforms. The following capabilities are supported:

- Traffic Discovery: The ability to discover, classify and prioritize traffic flows into categories or classes based on application type, protocol, or sending/receiving host addresses.
- Traffic Monitoring: The ability to allocate packet collection counters for analyzing different types of applications based on various aspects. These counters provide the basis for real-time and historical performance monitoring by sampling data in regular intervals. Information can be displayed locally on CTP and CLI screens or remotely through the SNMP management protocol.
- Traffic Control: The ability to provide policy-based bandwidth (including minimum/maximum bandwidth allocations and excess burst rates) and traffic shaping by user or application to pace burst intensive applications into conformance with service contracts. Provides configurable usage thresholds that when crossed trigger alarm notification to enterprise element management consoles with configurable event severity levels.

QoS Application Performance Management services are available for the Vanguard 34x, 6435, 6455 and 7300 Series.

Monitoring Tools

QoS Traffic Reporting Tool

The QoSTraffic Reporting Tool (available in April 2004) provides a report scheduling tool that can be used with any statistical information that is monitored on a Vanguard router. This feature provides enterprise managers with an analytical graphical reporting aid that can be used to view application-specific QoS performance reports as bar charts, line charts or pie graphs. IS managers have the flexibility to view historical performance reports for configurable time intervals including the last day, the last month, or comparisons between specific dates. In addition, enterprise users have the ability to generate a number of different reports to identify such information as bandwidth consumption across top applications, protocols or service classes.

Voice Network Manager Tool Release 1.0.

The Vanguard Voice Network Management Tool allows users to monitor the usage of voice ports amongst their network of Vanguard Managed Solutions nodes. The tool is installed on a host computer where it runs continually, polling defined nodes on the network to collect data about voice port usage. The tool allows users to create reports based on the collected data. All usage and configuration of the tool is performed using a web browser. The Voice Management Tool is available on a separate orderable CD.

Memory Requirements for Vanguard Applications Ware Release 6.5.R000

Memory Changes for Release 6.5.R000

In order to support the Vanguard Applications Ware Release 6.5.R000, some Vanguard products require memory upgrades. The *total memory* required for each product at release 6.5.R000 is listed in this table:

Product	*Total Memory Required at Release 6.5.R000*
Vanguard 340 (Ships with 16MB)	16MB, 32MB DRAM - 4MB Flash
Vanguard 340 Enhanced (Ships with 32MB)	16MB, 32MB DRAM - 8MB Flash
Vanguard 342 (Ships with 32MB)	32MB DRAM - 8MB Flash
Vanguard 6435	16MB, 32MB DRAM - 8MB Flash
Vanguard 6455	32MB DRAM - 8MB Flash
Vanguard 7310, 7330 (Version 1 and 2)	32MB or 64MB Compact Flash 128MB or 512MB DRAM

Note

The table above lists the memory that is shipped.

Vanguard 6435 and 6455 8MB Flash Memory

Release 6.3.R00A includes a flash memory increase. The Vanguard 6435 and 6455 now ship with the 8MB of Flash memory as part of the base unit. Flash memory includes the 8MB flash SIMM, for a total of 12MB flash that can be partitioned in the software to support 6MB primary (current) and 6MB alternate bank. (DRFaa21731)

Release 6.3.R00A and 6.2 software includes the ability to report and test the size of all the flash memory. Release 6.1 software requires software patch 6.1.P08A (which supports 4MB of the 8MB Flash).

If you intend to use Release 6.3.R00A and your Vanguard unit does not have sufficient memory, please contact your representative to order memory upgrades.

Note

The Vanguard 6425, 6430, 6450, 6520, 6560, 100, 200, 300, 305, 311, 311*PLUS*, 312*PLUS*, and 320 are not supported at Release 6.5.R000 and do not require memory upgrades.

Products Supported

Products Supported for Release 6.5R00A

Products supported by release 6.5R00A:

Product	*Support*
Vanguard 340, 340 Enhanced	Normal product release.
Vanguard 342	Normal product release.
Vanguard 6435 and 6455	Normal product release.
Vanguard 7310 and 7330 (Version 1 and 2)	Normal product release.

Products Not Supported

Release 6.5R00A is not supported on these products:

Product	*Support*
Vanguard 100	This product is maintained at 5.3M.
Vanguard 200	This product is maintained at 5.1M.
Vanguard 300	This product is maintained at 5.4.
Vanguard 305	This product is maintained at 5.5.
Vanguard 311	This product is maintained at 5.1M.
Vanguard 31x+	This product is maintained at 5.3M.
Vanguard 320	This product is maintained at 6.4.R10A
Vanguard 6425, 6430, and 6450	This product is maintained at 6.0.R00A.
6500+	This product is maintained at 5.1M.
650-D	This product is maintained at 5.0c. The battery backup version has been sunset.
Vanguard 6520	This product is maintained at 5.5.
Vanguard 6560	This product is maintained at 6.0.R00A.

New Features

Introduction

The new features available for Release 6.5.R000 are described briefly below. This section also lists where to find user documentation that contains detailed explanations of these features.

Documentation on the Web

You can find detailed descriptions of the new Release 6.5.R000 features in the referenced documents at the following web site:

http://www.vanguardms.com/support/documentation

Instructions for obtaining on-line and hardcopy versions of the documents that contain detailed explanations of these features appear in the "How to Obtain User Documentation" section on page 78.

Release 6.5.R000 Features

These are the new features available with Release 6.5.R000:

Vanguard Congestion Control

Vanguard Congestion Control configures actions into the network to minimize the amount of congestion and the duration that the network is congested. It minimizes the reliance on AAL and higher-layer traffic management schemes to reduce congestion.

Vanguard Secure Shell

Vanguard's Secure Shell (SSH) protocol secures connections between systems.It can be used to secure remote logins and other network services over an insecure network. SSH provides strong authentication and secure communication over unsecured channels. It is intended as a replacement for rlogin, vsh, and rsh. SSH can also be used to secure forwarding of arbitrary TCP connections.Vanguard's SSH supports SSH2 protocol only. The SSH2 protocol contains improvements to security, performance, functionality, and portability over the previous SSH1 protocol.

Firewall Lite

The Vanguard Firewall Lite feature adds more basic IP header sanity checks to filter out bad IP packet and allows more parameters for access control specifications. Prior to the Firewall Lite feature, VG routers lack dynamic access control. All access controls are static and cannot be modified at run-time based on the active flow information. This firewall Lite feature also adds the dynamic access control based on stateful firewall technology. The Firewall Lite feature can support aggregate cache.

Voice Integrated PBX Services - Voice Management

Release 6.4 and greater software supports Vanguard Voice Integrated PBX Services. PBX services have been integrated into the Vanguard Voice Signaling Software. Callers that have phones networked through a Vanguard Voice product can use the following Integrated PBX services:

- Caller ID - Provides a called user with a visual display of calling user's number and, if applicable, the calling user's name.
- Call Waiting - Permits the served user, while engaged in a call, to be notified of an incoming call and then to have the choice of accepting, rejecting or ignoring the waiting call.
- Call Hold - Allows a served user A (holding user) to interrupt communications on an existing call to User-B (held user), and then subsequently re-establish communications. The holding user can then perform other actions such as originate another call and optionally transfer the held call, answer an incoming call waiting, or retrieve the previously held call.
- Call Transfer - (Second Call Consultation/Call Transfer for non CSS Ports) The Call Transfer service enables a served user (User-A) to transform two of that user's calls into a new call between the other two users of the two calls (User-B and User-C). Each call can either be an incoming call to User-A or an outgoing call from User-A.
- Call Forward - Incoming calls to a served user are, subject to conditions, forwarded to another destination as programmed by the served user at the time of activation of the service, or ti voice mail, if this service is available. Programmable conditions include Call Forward if busy, Call Forward if No Answer, and Call Forward Unconditional.
- Third Party Voice Mail Server Support - Vanguard FXS ports provide integrated DTMF signalling to an attached third party voice mail server for calls forwarded to voice mail and to receive and deliver message waiting notifications in the form of a flashing LED and/or stutter dial tone.

Selection of the "Integrated PBX Services" feature in Vanguide Builder is only allowed if the "Premium Voice Services" software license has been purchased. For more information, refer to the *Vanguard Voice Manual* (Part Number T0104-05). Premium Voice Service License information can be found on page 6.

Vanguard FXO Disconnect

Release 6.5 and greater now allows the Vanguard capability to monitor the tones sent over the port. If the tone is busy, the circuit disconnecting the call can now be opened. Five configurable parameters have been added to the Voice Node and Port parameters. For more information, refer to the *Vanguard Voice Manual* (Part Number T0104-05).

SAM

7300 now supports SAM, Vanguard proprietary encryption protocol for VPN Tunnel encryption, which was not supported with 7300's AEC PMC in the prior to Release 6.5.

Dual LAN

From Release 6.5, both 6435 and 6455 support three LAN ports physically altogether. It means 6435 can have 3 Ethernet ports, using Port 5 (On-Board 10 M Ethernet Port) and two 10/100 MB Ethernet daughter cards on port 7 and port 13. 6455 also support a Token Ring port (either port 17 or port 33) and two Ethernet ports (two ports out of port 5, port 7, or port 13).

Dynamic Tunnel Address

Release 6.5 allows VPN tunnel, i.e. IPSec tunnel, to use dynamically learned addresses to identify the tunnel endpoints. With this new feature, the IPSec Tunnel can be used in most of the broad band service providers who issue IP address dynamically to their clients, using the IP Control Protocol (IPCP) for Point-to-Point and/or PPP over Ethernet connection. Or the Dynamic Host Configuration Protocol (DHCP) vial LAN.

Vanguard 7300 Series Routers - Version 1 and Version 2

Release 6.1 Vanguard 7300 Chassis Redesign (Version 2)

The Vanguard 7300 Series chassis has been redesigned. The redesigned chassis is referred to as The Vanguard 7300 Series Version 2. Software must be configured to match the chassis type and version. (DRFaa20456)

7300 Version 1 Enclosure Features

The table below summarizes common and distinct features of each Vanguard Version 1 Series enclosure:

Feature	*Vanguard 7310 Version 1*	*Vanguard 7330 Version 1*
Number of Slots	5 (horizontal)	8 (vertical)
Height	3U	8U
Rack-mountable	Yes	Yes
Redundant AC and DC Power	none	Yes, dual power supplies

7300 Version 2 Enclosure Features

The table below summarizes common and distinct features of each Vanguard Version 2 Series enclosure:

Feature	*Vanguard 7310 Version 2*	*Vanguard 7330 Version 2*
Number of Slots	5 (horizontal)	8 (horizontal)
Height	4U	4U
Rack-mountable	Yes	Yes
Redundant AC and DC Power	Yes, dual power supplies	Yes, dual power supplies

Set the Chassis Version Settings

When upgrading a 7300 Series Version 1 to release 6.1.R000 or greater, you must set the chassis version setting. If the setting is incorrect (for example, upgrading a Version 1 7310 to 6.1 or greater software) the interface cards will not be recognized by the node in the correct physical slot location. Incorrect settings can be fixed by setting the software Chassis Version through the ZAP diagnostics menu.

Note

Units shipping from the factory with Release 6.1.R000 or greater will have the version set to match the chassis. Release 6.1.R000 or greater software is required for Vanguard 7310 and 7330 Version 2.

Verification

Verification can be done by checking the Chassis Version printed at the top right of page one of the Detailed Node Statistics.

```
Node: 7310_1    Address: 100 Date: 13-AUG-2002 Time:15:53:07

Detailed Node Statistics Page: 1 of 11

Product Type: VANGUARD 7310        Chassis Version: 2

Bootprom Revision: V1.50
```

Figure 1. Page 1 of the Detailed Node Statistics

Configuration

If a Vanguard 7300 Series Version 1 is set to Version 2 and needs to be configured, use the ZAP menu to set it to Version 1. This is required for the node to work properly. Follow the steps below to set the correct version.

Configuring and Setting the Version

Step	*Procedure*
1	Load 6.1.R000 or greater on the Vanguard 7300 Series.
2	Reset the node, either by a software cold boot (CTP menu item 7.5) or by pressing the reset button on the CPU card. When the hardware diagnostics program starts executing, type ZAP (upper or lower case). Figure2 shows the menu that will appear.
3	Change the Chassis version.
4	Reboot. **■Note** Once the Chassis Version is set, it is maintained regardless of the clearing or loading of CMEM. The only way this pararmeter could be lost is if the FLASH is reformatted.

```
      Diagnostics ZAP Mode Menu (Rev: 1.6)
================================================================
       <ESC> Exit
1 - Force ColdLoad                      2 - Activate Current CMEM
3 - Activate Alternate CMEM             4 - Clear All CMEM
5 - Change Chassis Version

Selection: 5

 Change Chassis Version [1/2] ? (Currently set to 1): ==>>

or (Currently set to 2)
```

Figure 2. Diagnostics Zap Mode Menu

The Vanguard 7300 family of high-performance, redundant, multiservice routers includes Models 7310 and 7330 Version 1 and Version 2 with the following features:

- CompactPCI architecture designed for carrier class requirements.
- Rack-mountable 5-slot and 8-slot chassis with AC or DC power.
- MCP750 processor card with industry-standard peripheral and I/O options.

The following table lists Vanguard 7300 high-density port capacities. Port counts are given for both the Vanguard Model 7310 and the Vanguard Model 7330, along with the total port capacity for a typical seven-foot rack of Vanguard 7330 routers.

Port Capacities	***Vanguard 7310***	***Vanguard 7330***
Ethernet	5	5
T1/E1/PRI	48	84
Voice Channels -- T1	192	336
Voice Channels -- E1	240	420
Serial Ports: X.21, V.35/V.36, EIA232, EIA530	32	56
Token Ring:	2	2
Power Supplies	*V1 (1) V2 (2)	2
*Version 1, V1 or Version 2, V2		

Note

For more information on the Vanguard 7300 Series, refer to the *Vanguard 7300 Installation Guide* (Part Number T0185) included on this CD-ROM.

Vanguard Feature Comparison Chart

Below is the Vanguard Feature Comparison Chart:

Feature	*Vanguard 6560*	*Vanguard 6450/6455*	*Vanguard 7300*
Dual T1 Network Interface Specification	Connectors: Dual RJ-45 (100 ohm) Framing: SF and ESF Line Coding: AMI, B8ZS, B7ZS Timing Source: Int, Receive T1 CSU: Optional Daughtercard	Connectors: Dual RJ-45 (100 ohm) Framing: SF and ESF Line Coding: AMI, B8ZS Timing Source: Int, Receive T1 CSU: Built In	Two card versions: **1.** 12 port T1 or E1 (RJ-45 120 ohm) **2.** 8 port T1 or E1 (RJ-45 120 ohm) E1-75 ohm support Future Node wide CLOCK control
Dual E1 Network Interface Specification	Connectors: Dual RJ-45 (120 ohm) BNC Via Ext Cable Framing: E1_CAS, E1_CAS_CRC, E1_CAS_FEBE Line Coding: HDB3, AMI Timing Source: Int, Receive	Connectors: Dual RJ-45 (120 ohm) - Dual BNC (75 ohm) Framing: E1_CAS, E1_CAS_CRC, E1_CAS_FEBE Line Coding: HDB3, AMI Timing Source: Int, Receive	T1 Framing: SF & ESF Line Coding: AMI, B8ZS Timing Source: Int, Receive T1 CSU: Built In E1 Framing: E1_CAS, E1_CAS_CRC, E1_CAS_FEBE Line Coding: HDB3, AMI
Channelized Data Support	Protocols Supported: X.25, FR, TBOP, PPP Maximum Number of Channels: 30 Maximum Aggregated rate: 1.920 Mbps	Protocols Supported: X.25, FR, TBOP, PPP Maximum Number of Channels: 24 (T1) Maximum Number of Channels: 31 (E1) Maximum Aggregated rate: 1.984 Mbps	Protocols Supported: X.25, FR, TBOP, PPP Max Number of Channels per T1/E1 port: 24 (T1), 31 (E1) Total No. of channels per card: (T1) 8*24=192, 12*24=288 (E1) 8*31=248, 12*31=372 Total No. of channels per System: (7310 T1) 192*4=768, 288*4=1152 (7310 E1) 248*4=992, 372*4=1488 (7330 T1) 192*7=1344, 288*7=2016 (7330 E1) 248*7=1736, 372*7=2604 *Note: all numbers subject to processing capabilities of the 7300.*
ISDN PRI Data Support	Switch Types (1): 4ESS, 5ESS, DMS100, DMS250, Siemens, NTT, CCITT, MD110 Switch Variants: AT&T, NT, NI-2, JATE, Net5, 1TR6, VN3 TS014 (Austel)	Switch Types (User Side Only): N/A Bundle (T1) NI-1, 4ESS, 5ESS, DMS100 European Bundle (E1) ETSI Asia Bundle (T1) NTT Switch Variants: None Required	Switch Types (User Side Only): N/A Bundle (T1) NI-1, 4ESS, 5ESS, DMS100 European Bundle (E1) ETSI Asia Bundle (T1) NTT Switch Variants: None Required

Feature	Vanguard 6560	Vanguard 6450/6455	Vanguard 7300
Voice Signaling Support	CAS: E&M (Wink, Delay, Immediate Colisee, and Seizure Ack) FXS (Loopstart) FXO (Loopstart) CSS: All Switch Types/Variants included in PRI Data (1) Q.SIG (Master/Slave) • Basic Call • Supplementary Services • Segmentation Transparent CCS	CAS: E&M (Wink, Delay, Immediate Colisee, and Seizure Ack) FXS (Loopstart) FXO (Loopstart) CCS (2,3,4): • N/A Bundle (T1) – Q.Sig (Master/Slave) (5) – 5ESS (Network/User) (6) – NI-1 (Network/User) (6) – DMS100 (Network/User) (6) •Euro Bundle (E1) –ETSI (Network/User) –Q.Sig (Master/Slave) (5)	CAS: E&M (Wink, Delay, Immediate Colisee, and Seizure Ack) FXS (Loopstart) FXO (Loopstart) CCS (2,3,4): • N/A Bundle (T1) – Q.Sig (Master/Slave) (5) – 5ESS (Network/User) (6) – NI-1 (Network/User) (6) – DMS100 (Network/User) (6) •Euro Bundle (E1) –ETSI (Network/User) –Q.Sig (Master/Slave) (5)
Proprietary Features	Timeslot Bypass CCS Bypass	Timeslot Bypass	Timeslot Bypass
Additional Clocking Features	None	Node Wide Network Clock Source	Node Wide Network Clock Management Data Applications: Each Group of 4 T1/E1 ports can synchronize to a different carrier Voice & Data Applications: Each card has to be connected to one carrier
SDLC HPAD/ TPAD	Protocols: SDLC Characteristics: HDX, FDX, TWA Network:QLLC/X.25/Frame Relay (Annex G) Host Interface:SDLC PTP, SDLC MP, X.25 (IBM NPSI) Physical Interface:V.21, V.24, V.35	Protocols: SDLC Characteristics: HDX, FDX, TWA Network:QLLC/X.25/Frame Relay (Annex G) Host Interface:SDLC PTP, SDLC MP, X.25 (IBM NPSI) Physical Interface: V.21, V.24, V.35	Same as 6560 except: Characteristics: no HDX
LLC2 (SNA) Conversion	Protocols: LLC2, X.25 (QLLC), SDLC, FR (RFC1490) Characteristics: HDX, FDX, TWA Network:QLLC/X.25/Frame Relay (Annex G) Frame Relay (RFC1490) Host Protocols: SDLC PTP, SDLC MP, X.25 (IBM NPSI), LLC2, Frame Relay (RFC1490) LAN: Token Ring (4 or 16 mbps), Ethernet 802.3 (10 mbps), Ethernet2. WAN Physical Interface: V.21, V.24, V.35	Protocols: LLC2, X.25 (QLLC), SDLC, FR (RFC1490) Characteristics: HDX, FDX, TWA Network:QLLC/X.25/Frame Relay (Annex G) Frame Relay (RFC1490) Host Protocols: SDLC PTP, SDLC MP, X.25 (IBM NPSI), LLC2, Frame Relay (RFC1490) LAN: Token Ring (4 or 16 mbps), Ethernet 802.3 (10 mbps), Ethernet2. WAN Physical Interface: V.21, V.24, V.35	Same as 6560 except: Characteristics: no HDX

5) Q.Sig Support now includes Basic Call, Supplementary Services and Segmentation.

6) Enblock Signalling Support only at this time.

Feature	*Vanguard 6560*	*Vanguard 6450/6455*	*Vanguard 7300*
AS/400 5494 Communications Server	Protocols: LLC2, X.25 (QLLC), SDLC, FR (RFC1490) Characteristics: HDX, FDX, TWA Network:QLLC/X.25/Frame Relay (Annex G) Frame Relay (RFC1490) Host Protocols: LLC2, Frame Relay (RFC1490) LAN: Token Ring (4 or 16 mbps), Ethernet 802.3 (10 mbps), Ethernet2. WAN Physical Interface: V.21, V.24, V.35	Protocols: LLC2, X.25 (QLLC), SDLC, FR (RFC1490) Characteristics: HDX, FDX, TWA Network:QLLC/X.25/Frame Relay (Annex G) Frame Relay (RFC1490) Host Protocols: LLC2, Frame Relay (RFC1490) LAN: Token Ring (4 or 16 mbps), Ethernet 802.3 (10 mbps), Ethernet2. WAN Physical Interface: V.21, V.24, V.35	Same as 6560 except: Characteristics: no HDX
Other SNA protocols	BSC3270 HPAD/TPAD BSC2780/3780 IBM 2260 PAD TCOP TBOP MX25 NCRBSC HPAD/TPAD ALC Pad Scope	BSC3270 HPAD/TPAD BSC2780/3780 IBM 2260 PAD TCOP TBOP MX25 NCRBSC HPAD/TPAD ALC Pad Scope	TBOP All others not supported
BSC3270 -to-SNA Conversion	Not supported	Supported on the 6455 256 Devices Supported	2,000 Devices Supported
BSC2780/3780-to-SNA/LU0 Conversion	Not supported	Supported on the 6455 256 Devices Supported	256 Devices Supported
Frame Relay	FRI, FRA and FRF.12 Supported	FRI, FRA, FRF.12 Support	Same as 6450/ except no FRA and FRF.12 support
IP/LAN	VPN/IPSEC/3DES	VPN/IPSEC/3DES	Not supported, planned for future.
ATM	No ATM Support	2 T1 or E1 EDC cards supported on 6455 UBR, VBR and CBR 300 VCCs IP over ATM No AnnexG	ATM supported over T3 or E3. UBR, VBR and CBR 4000 VCCs IP over ATM AnnexG over ATM

Feature	*Vanguard 6560*	*Vanguard 6450/6455*	*Vanguard 7300*
CLI (Command Line Interface)	The following new commands are supported: > getdefault > getdefaultall > getnondefault > getnondefaultall > update CLI instance value: Support HEX instance value Supporting port number: Up to 255 port number	The following new commands are supported: > getdefault > getdefaultall > getnondefault > getnondefaultall > update CLI instance value: Support HEX instance value Supporting port number: Up to 255 port number	Commands supported only in 7300: > flash copyimage > flash copycmem > flash activeimage > flash activecmem > flash deleteimage CLI instance value: Support only INTEGER instance value Supporting port number: Up to 65536 bit port number
SNMP	The following MIB objects are supported only in 6560/5.5 platform. cdx6500T1E1VGTable cdx6500TdmClkTable	The following MIB objects are supported only in 6560/5.5 platform. cdx6500T1E1VGTable cdx6500TdmClkTable	The following MIB objects are supported only in 7300 platform. cdx6500PSTT1E1TGPortTable cdx6500PSTT1E1TGTable cdx6500STTdmtgClkGroup

1) All signalling types/variant combinations support user or Network side and T1 or E1.

2) Q.Sig/Euro ISDN support on T1 interfaces is now available in Release 5.5, 5.6, 6.0.R00A, 6.1.R000, 6.2.R000, 6.3.R00A, 6.4.R00A, 6.5.R000

3) NTT Signalling support is currently unavailable and is targeted to be added in a future release.

4) Transparent CCS can be supported manually by means of configuring the TBOP data channel for "Signalling" channel and Voice Bearer channels with None for signalling. Virtual port mapping table entries for voice ports must be TDM-VOICE.

5) Q.Sig Support now includes Basic Call, Supplementary Services and Segmentation.

6) Enblock Signalling Support only at this time.

Software Configuration Limits

Introduction

This section describes the software configuration limits.

Configuration Limits

This table lists the software configuration limits for:

- Physical Ports (physical port counts are set by software, not the actual number of physical ports)
- Frame Relay
- Sessions
- Network Services
- LAN - (IP specific)
- Voice
- SNA/IBM Support

Software Configuration	*7300 Series*	*6435/55*
Physical Port	***Maximum Limits***	
Physical ports	VG7330 - 91 VG7310 - 55	VG6455 - 25 VG6435 - 17
Ethernet ports per node - MPC750 CPU Ethernet ports per node - IBM750FX CPU	5 20	
Total LAN ports (ETH) per node (not bridge port support count) MPC750 Total LAN ports (ETH) per node (not bridge port support count) IBM750FX	5 20	
Devices supported per Ethernet segment (Relevant to Bridge operation)	255	255
High speed (V.35) serial links per node	56	
PRI ports (data only) per node	84	2
T1/E1/PRI voice only ports per node	14	2
T3/E3 ATM ports per node	2	0
Voice circuits per voice server card	60	60
Number voice calls per node (Number shown is E1 max.)	420	60
Number voice calls per node (Number shown is T1 max.)	336	60
Frame Relay		
Number of DLCIs per FR Port	820	820
Number of PVCs per FR Annex-G station	128	128
Number of SVCs per FR Annex-G station	512	512
Number of Voice SVC per Annex-G station	15	15
Number of DLCIs per node	8,000	1,024
Session		

Software Configuration *(continued)*	***7300 Series***	***6435/55***
Number of LCON	2,000	2,000
Number of Virtual Ports (FR, X25, PPP, Voice)	2,000	155
Max. Number of Multi-link PPP profiles (7300 Series original size was 600) (6435/55 original size was 60)	1,000	200
Max. Number of MLPPP switched links per MLPPP Profile	60	30
Number of UDP (SoTCP) sessions terminating in the node	2,000	188
Number of TCP (SoTCP) sessions terminating in the node	2,000	500
Number of simultaneous calls per node	8,000	2,000
Network Services		
Number of Network Services Tables Entries	1,000	128
Number of PVCs table entries	8,000	2,000
Number of mnemonic table entries (7300 Series original size - 2,000)	8,000	2,000
Number of Switch Service table entries	1,024	1,024
Number of X25 routing table entries	8,000	2,000
LAN IP (Specific)		
Routing table size	15,000	4,000
Routing Cache	512	512
Accelerated/ Aggregated Route cache	512	512
Number of LCONs (7300 Series original size - 2,000)	8,000	2,000
Number of Interfaces	1,000	255
Access Control List table size	255	255
Policy based routing table size	255	255
Static ARP table	255	255
Number of static routes (7300 Series original size - 1,024)	8,000	8,000
MAC Filter Table Entries (7300 Series original size - 300)	1,200	300
RIP Route Control table	255	255
NAT table size (7300 Series original size - 255)	1,023	255

Software Configuration *(continued)*	***7300 Series***	***6435/55***
IP Multicast DVMRP Tables size	4,000	4,000
Maximum number of Multicast Interfaces supported	1,000	256
CIDR: RIP aggregate table	255	255
CIDR: Multihome table size	255	255
Voice		
Number of voice switching table entries: An increase to the voice switching table entries from 3,000 to 6,000 on the 6435 and 6455 platforms is available with Service Pak 6.1.S100 and greater software. **Note** Save your CMEM before configuring a large number of entries. If your CMEM becomes too large, the node may reset or default its configuration.	10,000	6,000
SNA/IBM Support		
Number of stations per LAN **interface** (SLAC) - *Note: Two LAN interfaces allowed per node -- 1,000 stations per interface,*	1,000	250
Maximum number of SLAC Stations supported for BSC/LU Devices ***20 SLAC Stations are supported on the 6455**	100	*
Number of stations per **Node** (SLAC) - *Note: Two LAN interfaces allowed per node -- 2,000 max stations per node.* **LLC LAN Conversion Stations:** Vanguard 7300 Series - 1,000 per interface, 2,000 per node (Release 6.0 and greater) Vanguard 6435/55 - 250 per interface, 500 per node Vanguard 34x - 250 stations on one port Vanguard 320 - 64 per node **LLC FRI Conversion Stations:** Vanguard 7300 Series - 2,000 per node (Release 6.1 or greater) Vanguard 7300 Series - 1,000 per node (Prior to Release 6.1) Vanguard 34x, 6435/55 - 250 per node Vanguard 320 - 64 per node	2,000	500
Additional Limits		
Number of bridge links entries (7300 Series original size - 250)	1,000	1,000
ARP (queue size)	50	50
Max. number of IPX interfaces+	1,000	1,000
Number of OSPF routes	7,500	2,048
Max. SVCs per SoTCP session	64	50
Max. Total Data SVCs (SoTCP)	2,000	1,024
Max. Total Voice SVCs (SoTCP)	2,000	1,024

Software Configuration *(continued)*	***7300 Series***	***6435/55***
IP Broadcast Forwarding Table Size	255	255
UDP Broadcast Forwarding Table Size	255	255
Outbound Translation Table Entries (7300 Series original size - 1,600)	16,000	1,600
Additional Limits - ATM		
ATM Stations * Vanguard 6400 Series - 300 * Vanguard 6560 - Not Applicable	4,000	*
Maximum FRST Entries * Vanguard 6400 Series - 300 * Vanguard 6560 - Not Applicable	4,000	*
SAR Profile * Vanguard 6400 Series - 50 * Vanguard 6560 - Not Applicable	500	*
X25 Profile * Vanguard 6400 Series - 50 * Vanguard 6560 - Not Applicable	500	*
Maximum Compressed Data Connections	500	
Additional Limits - LAN		
Transparent Bridge Forwarding Table Size (7300 Series original size - 8,000)	16,000	255
Max. number of OSPF interfaces	255	255
BGP Policy Table	2,048	768
BGP to OSPF Import Policy Table	1,024	1,024
BGP Maximum peers	128	16
QoS - QCL Profiles	1,000	1,000
QoS - IP MF Classifiers	10,000	10,000
VLAN Sessions - 16 per port, 50 per node Vanguard 34x - 20 per node	50 per node	30 per node

Boot Prom Software Updates

Introduction

This section provides instructions for Coldloading the Boot prom using Software Loader or Procomm Communication software.

Software Loader

Software Loader automatically upgrades or downgrades the boot prom. When an image is loaded and it requires a version of bootprom different from the one currently loaded, Software Loader changes the boot prom to successfully load the image. For more information on bootprom-image compatibility, refer to the Bootprom Directory table on page 30.

The bootprom can be uploaded and downloaded manually using a communication application such as Procomm.

Note

Release 6.5R000 software loader requires V7300 bootprom be upgraded to version 3.00 using the Procomm Procedure method outlined in the Boot Prom Software Updates section of this software release notice.

Caution

Backup your configuration. Upgrading to a new release could cause configuration loss. If you choose to downgrade to a previous release, you must reload the configuration saved from that release or risk corrupting the configuration.

Procomm Procedure

Below is a step procedure on how to coldload the Bootprom using Procomm Communication software. This procedure example was documented using a Vanguard 7300 Series router. Figure 7 on page 31 shows the various product directories.

Note

Bootprom revision 3.00 is current for release 6.5.R000 7300 series routers using the IBM750FX CPU and MPC750 CPU.

1) To determine the current version of Bootprom loaded on your Vanguard, perform these steps:

Step	*Action*
a)	Access the Console Terminal Program's (CTP) Main Menu.
b)	Select Option 5, **Status/statistics**.

Step	Action
c)	Select Option 1, **Node Stat**, from the Status/statistics menu. The Node Stats' displays the Bootprom Revision: 7300 Series Examples: Version 1.10, 1.11, 1.30, 1.40, 1.50, 1.51, Version 2.00, or Version 3.00. **■Note** Refer to the Bootprom Directory table in Step 9.

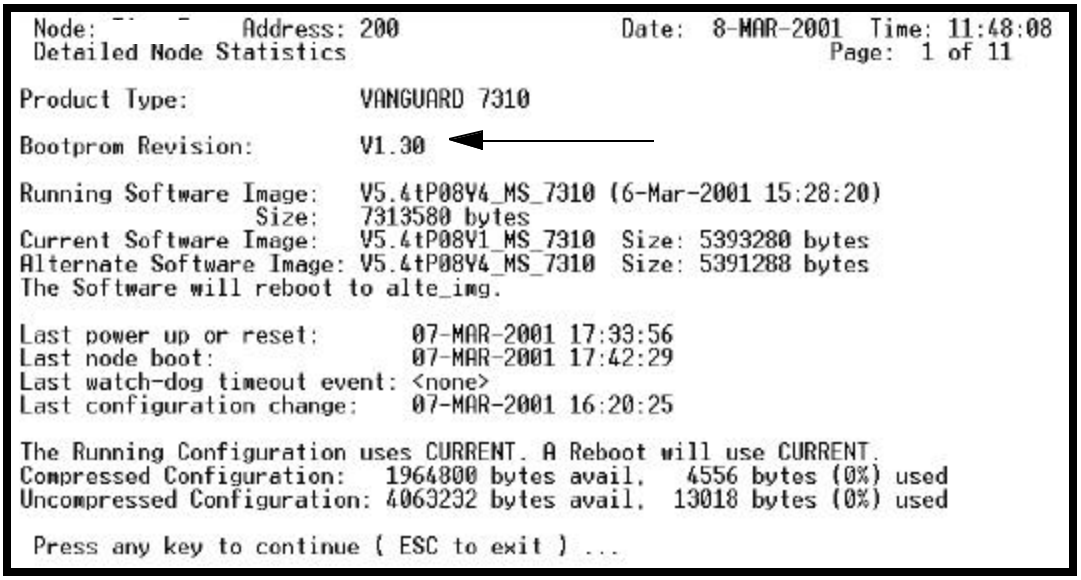

Figure 3. Bootprom Revision Example

2) Use the Procomm application to update the Bootprom. Open the Procomm application to get a Data Terminal Window. The settings should be 9.6k, N-8-1, and RAW-ASCII transfer mode. Use a regular Control Terminal Port (CTP) connection.

3) Activate a Force Cold-Load (16.12.y.y):

Flash Memory->Force-Cold-Load->yes

Cold Boot the node (7.5.y):

Boot->Node (cold)->yes

A Download Coldloader prompt from the (CTP) displays.

4) Choose an appropriate speed coldloader indicated in the current bank column of the table below. Typically the **c73cv115.xrc** file is used.

Current Bank	Kbps
c73cv115.xrc	115

Current Bank	*Kbps*
c73cv192.xrc	19.2
c73cv288.xrc	28.8
c73cv384.xrc	38.4
c73cv576.xrc	57.6
c73cv96.xrc	9.6

5) Download the appropriate coldloader to your PC for the correct Bootprom version, from the following directory example:

C:\Vanguard\SFW_IMGS\73*0\COLDLOAD\T300BP1**

Note

You must use the coldloader from the current bank column of the table in step 4 to load the Bootproms.

6) When using the Procomm application:

- Select Send File from the Procomm Data Menu
- Select RAW ASCII transfer mode
- Select 9600 for the Coldloader speed

The following figures show the Procomm application.

Note

To be sure you are in RAW ASCII transfer mode, when in Procomm, check the setup file. **Options->Data Options**

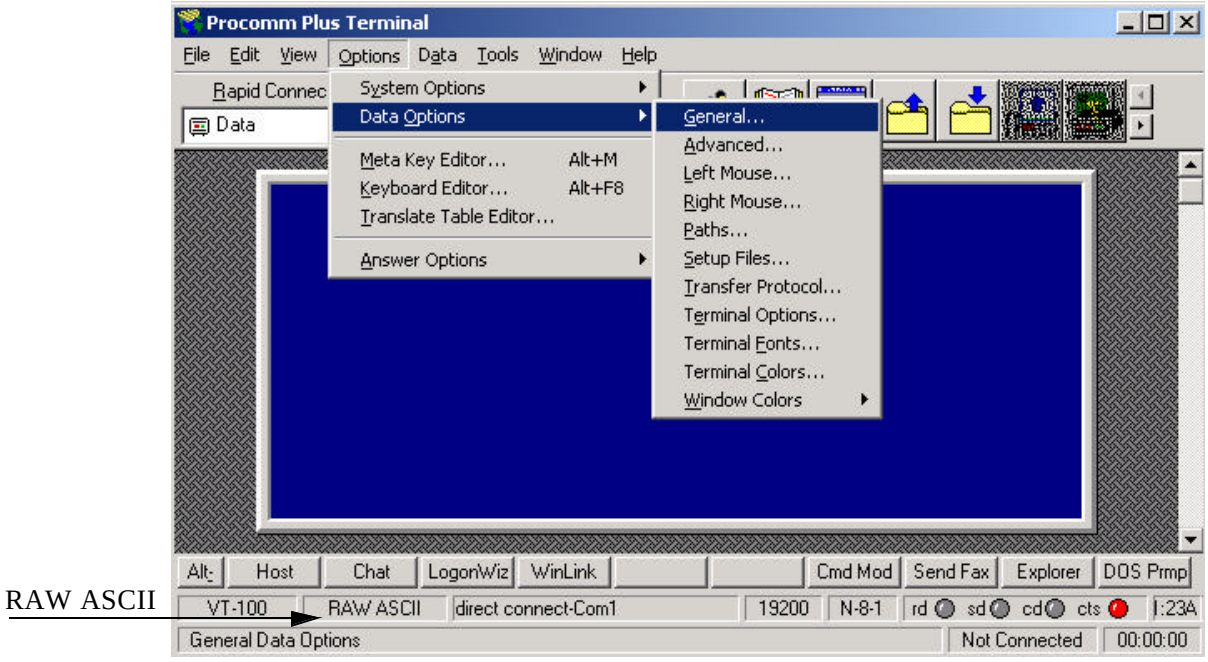

Figure 4. Procomm Plus Terminal

Procomm Setup

When **Options->Data Options->Transfer Protocol** is selected, a Setup menu displays.

- Select RAW ASCII from the Current Transfer Protocol pull down menu
- Click the Transfer Protocols button

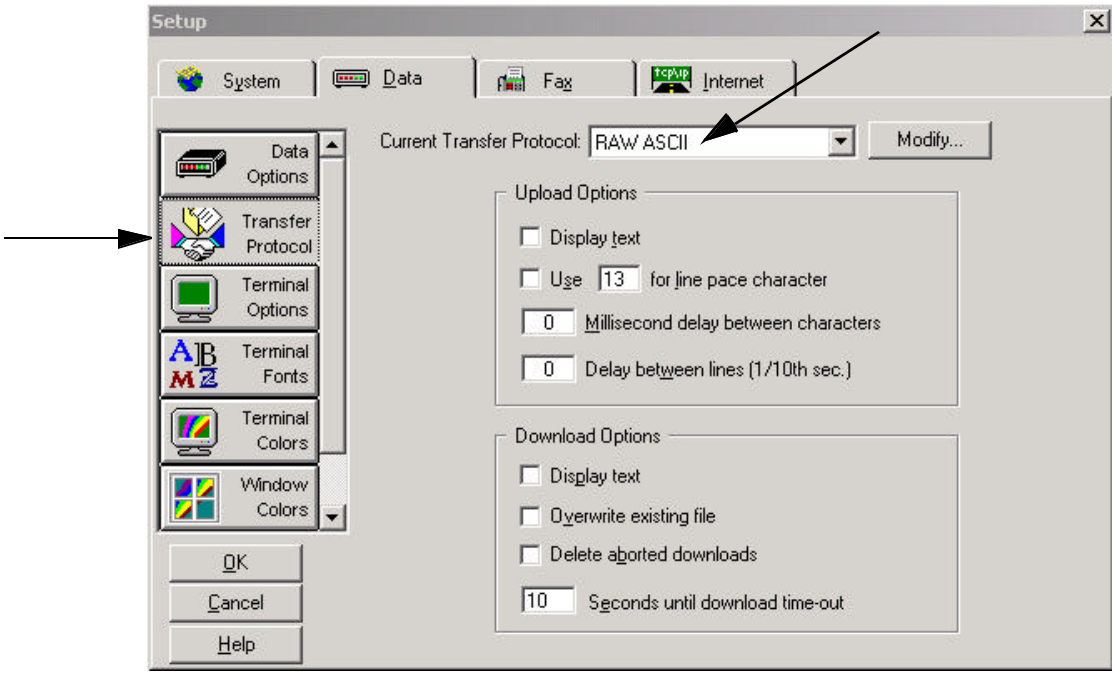

Figure 5. Procomm Setup Menu

Send File

To send a file, open the Procomm application. Under the **Data Menu** select **Send File**.

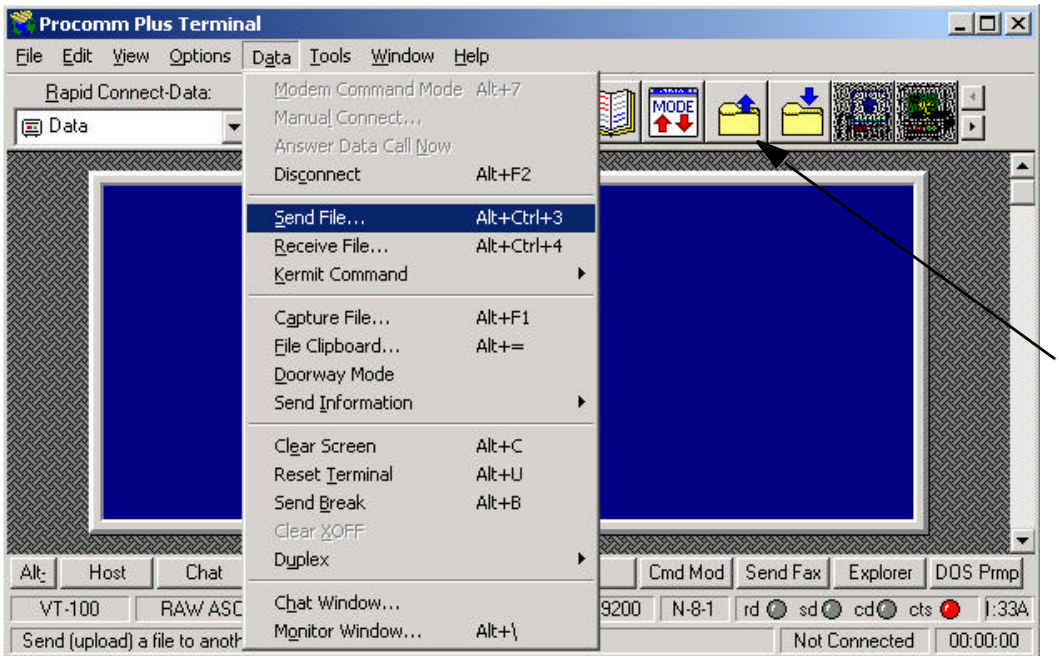

Figure 6. Procomm Plus Terminal Send File

Send the correct file using one of the enclosed "c73 loaders" below:

c73cv115.xrc for 115 Kbps **c73cv288.xrc for 28.8 Kbps**

c73cv192.xrc for 19.2 Kbps **c73cv384.xrc for 38.4 Kbps**

c73cv576.xrc for 57.6 Kpbs **c73cv96.xrc for 9.6 Kbps**

Note

To reduce the download time, Vanguard Managed Solutions recommends **c73cv115.xrc for 115 Kbps**.

7) Once the download is complete, **change the terminal speed to the appropriate coldloader speed chosen in step 4**. Download the Bootprom.xrc file. The required Bootprom version (such as T10BP111.xrc) can be acquired from the directory containing the same name:

C:\Vanguard\SFW_IMGS\73*0\COLDLOAD\T10BP1**

8) Open the Procomm Plus Terminal Manual application:

- Select Send File, under the Procomm Data Menu
- Select the correct bootprom version

9) Choose the correct bootprom directory that includes the coldloaders. The example below shows the 7300 Series Bootprom Directories. **T10BP1**** refers to:

T10BP110	T10BP150
T10BP111	T10BP151
T10BP130	T20BP200
T10BP140	T30BP300

Bootprom Directory	*ONS Image Compatibility*	*Bootprom Version*
T10BP110	5.4.P08A 5.4.P08B	1.10
T10BP111	5.4.P08# ■**Note** The pound sign "#" represents a letter from C to Z.	1.11
T10BP130	5.4.P0LA, 5.4.P0KA, and 5.4.P0JA ■**Note** Bootprom version 1.30 is required to run the 5.4 Point Release L software. The 1.30 version of the bootprom does not work with any earlier 5.4.P08* software. **If you have a new CPU card, use bootprom 1.40 or 1.50.** The asterisk "*" represents a letter from A to Z.	1.30 or greater
T10BP140	5.4.P0LB **Warning** Bootprom version 1.40 or greater is required to run with the new CPU cards.	1.40 or greater
T10BP150	6.0.R00A, 6.1.R000, 6.2.R000, 6.3.R00A, 6.4.R00A, 6.4.R10A	1.50
T10BP151	6.0.R00A, 6.1.R000, 6.2.R000, 6.3.R00A, 6.4.R00A, 6.4.R10A ■**Note** Bootprom 1.51 is the latest for the MCP750 CPU. **Do not** use bootprom 2.00 on the MCP750 CPU.	1.51
T20BP200	6.4.R00A and 6.4.R10A ■**Note** The IBM750 CPU must use bootprom 2.00	2.00
T30BP300	6.5.R000 ■**Note** Bootprom revision 3.00 supports IBM750 and MPC750 CPUs. ■**Note** Bootprom revision 3.00 is mandatory for Release 6.5.R000.	3.00

■**Note**
The respective.xrc file is contained in the directory with the same name.
Example: T10BP140.xrc would be found in the T10BP140 directory. T10BP150.xrc would be found in the T10BP150 directory.

Directory Example

Figure 7 shows a Vanguard 7310 Directory selected.

C:\Vanguard\SFW_IMGS\7310\COLDLOAD

Note

Under the SFW_IMGS directory all the Vanguard products are listed. To select a Vanguard 6455 the path would be:

C:\Vanguard\SFW_IMGS\6455\COLDLOAD

C: Vanguard

SFW_IMGS

7310

COLDLOAD

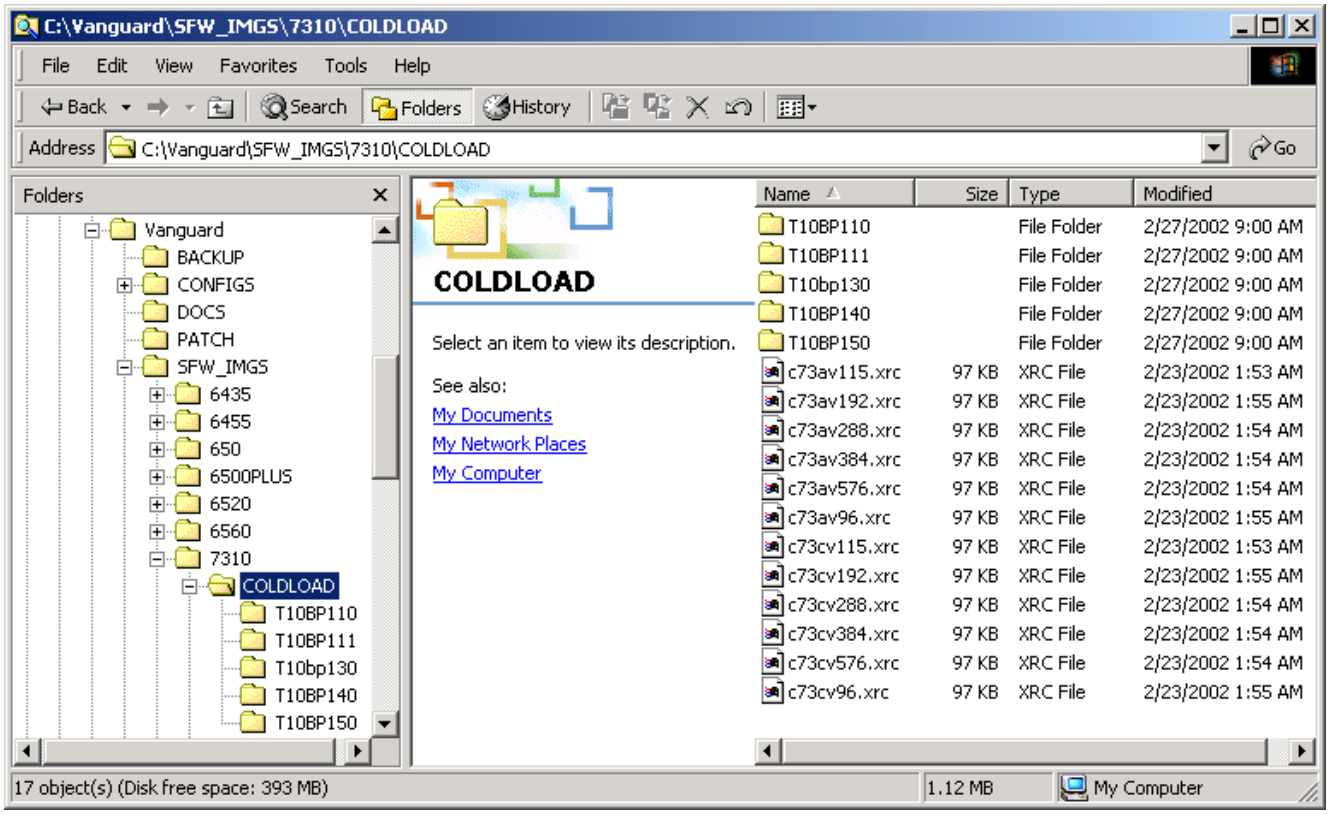

Figure 7. COLDLOAD Directory

10) Once completed, the 7300 shows “Restarting”. **Change your terminal speed immediately back to 9600**. The unit should automatically reboot and go to ONS, provided that the bootprom and ONS images are compatible.

Note

If the ONS images are not compatible, the node responds by removing the current image and prompts the user with a “download coldloader” message. If you received this message check the table in step 9. The table contains the correct compatibility information. To load a compatible ONS image, repeat these steps substituting the ONS image instead of the bootprom image instruction in step 8.

11) Upon completion of loading a compatible image, the node restarts.

Boot Prom Information for the MPC750 Controller Card

Any MPC750 CPU controller card (numbered 75836G01) with revision D or greater **REQUIRES** the new bootprom code and must not be downgraded past 1.40. You must **NOT** load an earlier version of boot prom or attempt to load software with a Vanguide CD prior to release 5.4.P0LB. This card is functionally equivalent to the original card, but does require new boot prom code and coldloaders to operate. This new boot prom code is release 1.40 or greater.

The new 1.40 or greater boot prom is fully compatible with the original controller card and all software versions that worked with boot prom revision 1.30. If you use an older Vanguide CD to load an older image, it attempts to downgrade the boot prom which renders the controller card inoperable and it will have to be replaced.

In order to prevent inadvertently loading boot prom revision 1.30 onto a new system controller card, please discard any CD's previous to the 5.4.P0LB CD.

For more information, refer to the Vanguard 7300 Controller Card Hardware Advisory Notice (Part Number T0185-04) located on the web at:

http://www.vanguardms.com/support/documentation

Also refer to the “Boot Prom Software Updates” section on page 24 of this Software Release Notice.

Note

The most current bootprom for the MCP750 and IBM750 CPU card is 3.00. Do not use bootprom 2.00 on the MCP750 CPU card.

The IBM750FX CPU card available with release 6.4.R10A and greater must use bootprom 2.00.

Controller Card Board Assembly Number Location

Refer to Figure8 to locate your board assembly number:

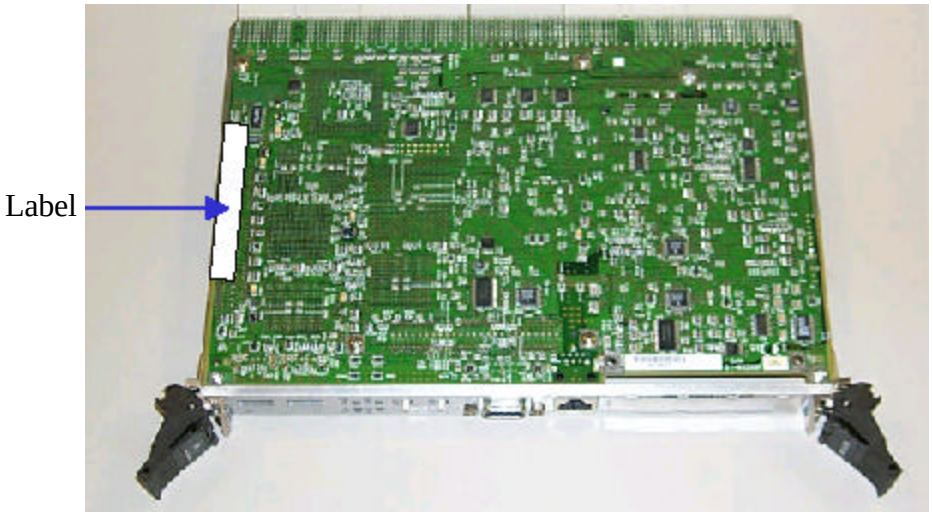

Figure 8. Board Assembly Number Label

Vanguard 7300 CPU Card Upgrade

The Vanguard 7300 Series MCP750 (part number 75836G02) system cards are supported by software releases 6.1.T14A and greater. If you have a part number 75836G02 system card and are running older versions of release 6.1, a new 6.1 software patch is required (6.1.T14A). The system cards have a different revision PCI-PCI bridge than previous system cards (part number 75836G01). The new system cards are not being recognized by software older than 6.1.T14A. Software patch 6.1.T14A must be installed when using part number 75836G02. For more information reference the 7300 Hardware Advisory Notice (part number T0258).

Bootprom and Coldloader Matrix Upgrade

Note
New 7300 Bootprom Upgrade is mandatory for Release 6.5.R000.

Introduction

The following tables describe the valid combinations of released flash image, boot code, on-board flash, flash SIMM and DRAM for the Vanguard 34x, 6435, 6455 and 7300 platforms. In the following tables, the Status column can be Valid, Invalid and VR (Valid and Recommended). “Valid” means that the router is basically working, but some functionalities such as an option feature support, might not be available. “Invalid” means that the router is not working with such a combination. “VR” (Valid and Recommended) means that the combination is valid and recommended to use according to our current knowledge.

Vanguard 340 Bootprom, Coldloader and Image Matrix

No.	*Release*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
1	6.1 or earlier	1.1	6.1	4M	4M or None	Valid	64k CMEM, 4M image maximum
2	6.1 or earlier	1.1	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
3	6.1 or earlier	1.1	6.3 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
4	6.1 or earlier	1.1.1	6.1	4M	4M or None	Valid	64k CMEM, 4M image maximum
5	6.1 or earlier	1.1.1	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
6	6.1 or earlier	1.1.1	6.3 or later	4M	4M or None	VR	64k CMEM, 4M image maximum
7	6.1 or earlier	1.20	6.1	4M	4M or None	Valid	64k CMEM, 4M image maximum
8	6.1 or earlier	1.20	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
9	6.1 or earlier	1.20	6.3 or later	4M	4M or None	VR	64k CMEM, 4M image maximum
10	6.2	1.1	6.1	4M	4M or None	Valid	64k CMEM, 4M image maximum
11	6.2	1.1	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum

Vanguard 340 Bootprom, Coldloader and Image Matrix

No.	*Release*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
12	6.2	1.1	6.3 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
13	6.2	1.1.1	6.1	4M	4M or None	Valid	64k CMEM, 4M image maximum
14	6.2	1.1.1	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
15	6.2	1.1.1	6.3 or later	4M	4M or None	VR	64k CMEM, 4M image maximum
16	6.2	1.20	6.1	4M	4M or None	Valid	64k CMEM, 4M image maximum
17	6.2	1.20	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
18	6.2	1.20	6.3 or later	4M	4M or None	VR	64k CMEM, 4M image maximum
19	6.3 or later	1.1	6.1	4M	4M or None	Valid	64k CMEM, 4M image maximum
20	6.3 or later	1.1	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
21	6.3 or later	1.1	6.3 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
22	6.3 or later	1.1.1	6.1	4M	4M or None	Valid	64k CMEM, 4M image maximum
23	6.3 or later	1.1.1	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
24	6.3 or later	1.1.1	6.3 or later	4M	4M or None	VR	64k CMEM, 4M image maximum
25	6.3 or later	1.20	6.1	4M	4M or None	Valid	64k CMEM, 4M image maximum
26	6.3 or later	1.20	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
27	6.3 or later	1.20	6.3 or later	4M	4M or None	VR	64k CMEM, 4M image maximum

Note

Vanguard 340 platform:

1) DRAM is 16Mbyte.

2) Boot code 1.1.1 was initially created for an escalation. The purpose was to support the patches 6.0T16F, 6.0T16G and 6.0T16H. Boot code 1.1.1 was based on 1.1 and is compatible with the old released software. It contains the watchdog FER changes. Boot code 1.1.1 was released with 6.2.S100.

3) Boot code 1.20 is the same as boot code 1.1.1 except for the version number. Boot code 1.20 is released with 6.3.R00A.

4) Coldload from 6.3.R00A was improved by adding valid flash address checking.

Vanguard 340 Enhanced Bootprom, Coldloader and Image Matrix

No.	*Release*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
1	6.4	2.31	6.4	8M	8M or none	Valid	128K CMEM, 8M image maximum

Note

Vanguard 340 Enhanced platform:

1) ECC is supported.

Vanguard 342 Bootprom, Coldloader, Image, ECC and FLASH SIMM Matrix

No.	*Rel.*	*DRAM DIMM*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Physical Flash SIMM*	*Status*	*Comment*
1	6.2	32M from Micron	2.1	6.2	8M	8M or None	Valid	128k CMEM, 8M image maximum
2	6.2	32M from Micron	2.1	6.3 or later	8M	8M or None	Valid	128k CMEM, 8M image maximum
3	6.2	32M from Micron	2.30	6.2	8M	8M or None	Valid	128k CMEM, 8M image maximum
4	6.2	32M from Micron	2.30	6.3 or later	8M	8M or None	VR	128k CMEM, 8M image maximum
5	6.2	32M from Micron	2.31	6.2	8M	8M or None	Valid	128k CMEM, 8M image maximum
6	6.2	32M from Micron	2.31	6.3 or later	8M	8M or None	VR	128k CMEM, 8M image maximum
7	6.2	32M from Viking	2.1 to 2.30	6.2 or later	8M	8M or None	Invalid	Viking 32M DRAM DIMM works only with 2.31 bootcode

Vanguard 342 Bootprom, Coldloader, Image, ECC and FLASH SIMM Matrix

No.	*Rel.*	*DRAM DIMM*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Physical Flash SIMM*	*Status*	*Comment*
8	6.2	32M from Viking	2.31	6.2	8M	8M or None	Valid	Viking 32M DRAM DIMM works only with 2.31 bootcode
9	6.2	32M from Viking	2.31	6.3 or later	8M	8M or none	VR	Viking 32M DRAM DIMM works only with 2.31 bootcode
10	6.3 or later	32M from Micron	2.1	6.2	8M	8M or none	Valid	128k CMEM, 8M image maximum. ECC not supported.
11	6.3 or later	32M from Micron	2.1	6.3 or later	8M	8M or none	Valid	128k CMEM, 8M image maximum. ECC not supported
12	6.3 or later	32M from Micron	2.30	6.2	8M	8M or none	Valid	128k CMEM, 8M image maximum
13	6.3 or later	32M from Micron	2.30	6.3 or later	8M	8M or none	Valid	128k CMEM, 8M image maximum
14	6.3 or later	32M from Micron	2.31	6.2	8M	8M or none	Valid	128k CMEM, 8M image maximum
15	6.3 or later	32M from Micron	2.31	6.3 or later	8M	8M or none	VR	128k CMEM, 8M image maximum
16	6.3 or later	32M from Viking	2.1 to 2.30	6.2 or later	8M	8M or none	Invalid	Viking 32M DRAM DIMM works only with 2.31 bootcode
17	6.3 or later	32M from Viking	2.31	6.2	8M	8M or none	Valid	Viking 32M DRAM DIMM works only with 2.31 bootcode
18	6.3 or later	32M from Viking	2.31	6.3 or later	8M	8M or none	VR	Viking 32M DRAM DIMM works only with 2.31 bootcode

Note

Vanguard 342 platform:

1) The Vanguard 342 uses 32Mbyte DRAM. If the DRAM DIMM's vendor is Viking (Viking Part Number VI8GU083236BTB) 2.31 boot code must be used.

2) Boot code 2.1 was released with 6.2.

3) Boot code 2.1.1 was based on 2.1 and is compatible with the old released software. It contains the watchdog FER changes. Boot code 2.1.1 was released with 6.2.S100.

4) Boot code 2.20 (which is not mentioned in the above matrix) is the same as 2.1.1 except for the version string.

5) Boot code 2.30 is released with 6.3.R00A. It is based on 2.1.1. The ECC card is supported by the Boot code 2.30 and release 6.3.R00A or later.

6) Coldloader in 6.3.R00A or later was improved by adding valid flash address checking.

7) Boot code should be updated to 2.31 for when a SDRAM DIMM from "Viking" is used.

Vanguard 64xx Bootprom, Coldloader, Image and FLASH SIMM Matrix

No.	*Release*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
1	6.1 or earlier	5.1	6.1*	4M	4M or None	Valid	64k CMEM, 4M image maximum
2	6.1 or earlier	5.1	6.1*	4M	8M	Valid	64k CMEM, 4M image maximum. The 8M flash SIMM is used as 4M flash SIMM by the software.
3	6.1 or earlier	5.1	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
4	6.1 or earlier	5.1	6.2	4M	8M	Invalid	6.2 Coldloader will load 6.1 or earlier images to a higher address (128k CMEM mode) when 8M flash SIMM is installed. 6.1 or earlier images will not run from a higher address.
5	6.1 or earlier	5.1	6.3	4M	4M or None	VR	64k CMEM, 4M image maximum
6	6.1 or earlier	5.1	6.3	4M	8M	VR	64k CMEM, 4M image maximum, The 8M flash SIMM is used as 4M flash SIMM by the software.
7	6.1 or earlier	5.2	6.1*	4M	4M or None	Valid	64k CMEM, 4M image maximum
8	6.1 or earlier	5.2	6.1*	4M	8M	Valid	64k CMEM, 4M image maximum, The 8M flash SIMM is used as 4M flash SIMM by the software.
9	6.1 or earlier	5.2	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
10	6.1 or earlier	5.2	6.2	4M	8M	Invalid	The Coldloader will load 6.1 or earlier images to a higher address (128k CMEM mode) when 8M flash SIMM is installed. The 6.1 image will not run from a higher address.

Vanguard 64xx Bootprom, Coldloader, Image and FLASH SIMM Matrix

No.	*Release*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
11	6.1 or earlier	5.2	6.3 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
12	6.1 or earlier	5.2	6.3 or later	4M	8M	Valid	64k CMEM, 4M image maximum, The 8M flash SIMM is used as 4M flash SIMM by the software.
13	6.1 or earlier	5.3	6.1*	4M	4M or none	Valid	64k CMEM, 4M image maximum
14	6.1 or earlier	5.3	6.1*	4M	8M	Valid	64k CMEM, 4M image maximum flash SIMM is used as 4M flash SIMM by the software.
15	6.1 or earlier	5.3	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
16	6.1 or earlier	5.3	6.2	4M	8M	Invalid	The Coldloader will load 6.1 or earlier images to a higher address (128k CMEM mode) when 8M flash SIMM is installed. The 6.1 or earlier image will not run from a higher address.
17	6.1 or earlier	5.3	6.3 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
18	6.1 or earlier	5.3	6.3 or later	4M	8M	Valid	64k CMEM, 4M image maximum. The 8M flash SIMM is used as 4M flash SIMM by the software.
19	6.2 or later	5.1	6.1*	4M	4M or None	Valid	64k CMEM, 4M image maximum
20	6.2 or later	5.1	6.1*	4M	8M	Invalid	The 6.2 or later image is loaded at a lower address. When the 6.2 or later image runs, it finds the 8M flash SIMM, 128k CMEM will be generated. The larger size CMEM will destroy the BANK1 flash image. The BANK2 flash image will not be destroyed. Please force a coldload to download the image again using the correct cold-loaders.
21	6.2 or later	5.1	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum

Vanguard 64xx Bootprom, Coldloader, Image and FLASH SIMM Matrix

No.	*Release*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
22	6.2 or later	5.1	6.2	4M	8M	Invalid	When coldloading is done, the 5.1 bootprom does not find a valid checksum image, it asks for a coldloader.
23	6.2 or later	5.1	6.3 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
24	6.2 or later	5.1	6.3 or later	4M	8M	Invalid	When coldloading is done, the 5.1 bootprom does not find a valid checksum image, it asks for a coldloader.
25	6.2 or later	5.2	6.1*	4M	4M or None	Valid	64k CMEM, 4M image maximum
26	6.2 or later	5.2	6.1*	4M	8M	Invalid	The 6.2 or later image is loaded at a lower address. When the 6.2 or later image runs, it finds the 8M flash SIMM, 128k CMEM will be generated. The larger size CMEM will destroy the BANK1 flash image. The BANK2 flash image will not be destroyed. Please force a coldload to download the image again using the correct coldloader.
27	6.2 or later	5.2	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
28	6.2 or later	5.2	6.2	4M	8M	Valid	128k CMEM, 6M image maximum
29	6.2 or later	5.2	6.3 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
30	6.2 or later	5.2	6.3 or later	4M	8M	Valid	128k CMEM, 6M image maximum
31	6.2 or later	5.3	6.1*	4M	4M or None	Valid	64k CMEM, 4M image maximum
32	6.2 or later	5.3	6.1*	4M	8M	Invalid	The 6.2 or later image is loaded to a lower address. When the 6.2 or later image runs, it finds the 8M flash SIMM, 128k CMEM will be generated. The larger size CMEM will destroy the BANK1 flash image. The BANK2 flash image will not be destroyed. Please force a cold-load to download the image again using the correct cold-loader.

Vanguard 64xx Bootprom, Coldloader, Image and FLASH SIMM Matrix

No.	*Release*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
33	6.2 or later	5.3	6.2	4M	4M or None	Valid	64k CMEM, 4M image maximum
34	6.2 or later	5.3	6.2	4M	8M	Valid	128k CMEM, 6M image maximum
35	6.2 or later	5.3	6.3 or later	4M	4M or None	VR	64k CMEM, 4M image maximum
36	6.2 or later	5.3	6.3 or later	4M	8M	VR	128k CMEM, 6M image maximum

Note

Vanguard 6435/6455 platform:

1) 5.1 boot code works with images in 4M (64k CMEM) mode (6.1, 6.2 or later images). The boot code does not work with images loaded in 6M (128k CMEM) mode.

2) 5.2 boot code was released with 6.2 and supports both 4M (no flash SIMM or 4M flash SIMM) and 6M image (8M flash SIMM installed, 6.2 or later image).

3) 5.3 bootcode fixed a "boot from alternate bank" bug and is released with 6.3.R00A.

4) From 6.1, the Vanguard 6425 and 6530 are no longer supported.

5) Boot code 5.3 and coldloader from 6.3 work with all the released 6435/6455 software versions and flash SIMMs.

6) The Comment column above mentions flash image sizes such as 4M and 6M. This size includes the compressed executive code size and the capsule size. The size of the decompressed executive code in the DRAM should not exceed 8233776 (Hex: 7DA330).

7) *As the flash chip AM29F016B on the flash SIMM is being replaced by AM29F016D, the coldloader from 6.1 might not load image to the flash SIMM successfully.

This problem is fixed in cold loader from 6.2. To load 6.1 image to correct flash address when 8M flash SIMM is installed, cold loader from 6.3 or later is strongly recommended.

6435/6455 DRAM Requirement Matrix

Platform	*FLASH SIMM*	*DRAM*
6435	4M or None	16M or 32M

6435/6455 DRAM Requirement Matrix

6435	8M	16M, 32M (Recommended)
6455	4M or None	16M or 32M
6455	8M	16M, 32M (Recommended)

Vanguard 64XX Bootprom, Image, FLASH SIMM TFTP Matrix

No.	*Image to be TFTP'd*	*Boot prom*	*Running Image*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
1	6.1 or earlier	5.1	6.1 or earlier	4M	4M or none	VR	64k CMEM, 4M image maximum
2	6.1 or earlier	5.1	6.1 or earlier	4M	8M	Valid	64k CMEM, 4M image maximum, 8M flash SIMM works as 4M flash SIMM in software.
3	6.1 or earlier	5.1	6.2 or later	4M	4M or None	VR	64k CMEM, 4M image maximum
4	6.1 or earlier	5.1	6.2 or later	4M	8M	Invalid	The running 6.2 or later image will load 6.1 or earlier images to higher address (128k CMEM mode) when 8M of flash SIMM is installed. 6.1 images will not run from higher addresses. The loaded image will not run. There will be no dead lock, TFTP another valid image or coldload another valid image.
5	6.1 or earlier	5.2	6.1 or earlier	4M	4M or None	Valid	64k CMEM, 4M image maximum
6	6.1 or earlier	5.2	6.1 or earlier	4M	8M	Valid	64k CMEM, 4M image maximum, 8M flash SIMM works as 4M flash SIMM in the software.
7	6.1 or earlier	5.2	6.2 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
8	6.1 or earlier	5.2	6.2 or later	4M	8M	Invalid	The running of 6.2 or later images will load 6.1 or earlier images to a higher address (128k CMEM mode) as 8M flash SIMM is installed. 6.1 or earlier images will not run from a higher address.
9	6.1 or earlier	5.3	6.1 or earlier	4M	4M or None	VR	64k CMEM, 4M image maximum
10	6.1 or earlier	5.3	6.1 or earlier	4M	8M	VR	64k CMEM, 4M image maximum, 8M flash SIMM works as 4M flash SIMM in the software.
11	6.1 or earlier	5.3	6.2 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum

Vanguard 64XX Bootprom, Image, FLASH SIMM TFTP Matrix

No.	*Image to be TFTP'd*	*Boot prom*	*Running Image*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
12	6.1 or earlier	5.3	6.2 or later	4M	8M	Invalid	The running of 6.2 or later images will load 6.1 or earlier images to a higher address (128k CMEM mode) as 8M flash SIMM is installed. 6.1 or earlier images will not run from a higher address.
13	6.2 or later	5.1	6.1 or earlier	4M	4M or None	VR	64k CMEM, 4M image maximum
14	6.2 or later	5.1	6.1 or earlier	4M	8M	Invalid	The 6.2 or later image will be TFTP'd to a lower address (64k CMEM). When the 6.2 or later image runs, it finds the 8M flash SIMM, 128k CMEM will be generated. The larger size CMEM will destroy the BANK1 flash image. The BANK2 flash image will not be destroyed. Please force a coldload to download the image again using the correct coldloader or tftp valid image. If the size of the image to be TFTP'd is larger than 4M, TFTP will fail.
15	6.2 or later	5.1	6.2 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
16	6.2 or later	5.1	6.2 or later	4M	8M	Invalid	The 6.2 or later image will be TFTP'd to a higher address (128k CMEM mode). 5.1 boot code does not work with 128k CMEM mode flash image.
17	6.2 or later	5.2	6.1 or earlier	4M	4M or None	Valid	64k CMEM, 4M image maximum
18	6.2 or later	5.2	6.1 or earlier	4M	8M	Invalid	The 6.2 or later image will be TFTP'd to a lower address (64k CMEM). When the 6.2 or later image runs, it will find the 8M flash SIMM, 128k CMEM will be generated. The large size CMEM will destroy the BANK1 flash image. The BANK2 flash image will not be destroyed. Please force a coldload to download the image again using the correct coldloader or TFTP valid image.
19	6.2 or later	5.2	6.2 or later	4M	4M or None	Valid	64k CMEM, 4M image maximum
20	6.2 or later	5.2	6.2 or later	4M	8M	Valid	128k CMEM, 6M image maximum
21	6.2 or later	5.3	6.1 or earlier	4M	4M or None	VR	64k CMEM, 4M image maximum

Vanguard 64XX Bootprom, Image, FLASH SIMM TFTP Matrix

No.	*Image to be TFTP'd*	*Boot prom*	*Running Image*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
22	6.2 or later	5.3	6.1 or earlier	4M	8M	Invalid	The 6.2 or later image will be TFTP'd to a lower address (64k CMEM). When the 6.2 or later image runs, it will find the 8M flash SIMM, 128k CMEM will be generated. The large size CMEM will destroy the BANK1 flash image. The BANK2 flash image will not be destroyed. Please force a coldload to download the image again using the correct coldloader or TFTP valid image.
23	6.2 or later	5.3	6.2 or later	4M	4M or None	VR	64k CMEM, 4M image maximum
24	6.2 or later	5.3	6.2 or later	4M	8M	VR	128k CMEM, 6M image maximum

Note

The TFTP image updating functionality works efficiently for the Vanguard 320, 34x and 7300 Series platforms. The Vanguard 6435 and 6455 have two maximum flash image sizes, one is 4M, the other is 6M, it is necessary to be cautious when you TFTP an image.

For the boot code version, DRAM size, flash image size and decompressed image size, please refer to 64xx Coldload matrix.

Vanguard 7300 Series Bootprom, Coldloader, Image Matrix

No.	*Rel.*	*Sys. Module*	*Boot Code Version*	*Cold-loader from Release*	*Compact Flash*	*On board flash*	*Status*	*Comment*
1	6.1 to 6.3	MPC750 CPU	1.50	6.1 to 6.4	32M	1M	Valid	2M CMEM Compressed
2	6.1 to 6.3	MPC750 CPU	1.51	6.1 to 6.4	32M	1M	VR	2M CMEM Compressed
3	6.1 to 6.3	MPC750 CPU	2.00	6.1 to 6.4	32M	1M	Invalid	2M CMEM Compressed
4	6.1 to 6.3	IBM750 FX CPU	1.50 to 3.00	6.1 to 6.4	32M or 64M	16M (curr) + 16M (alt)	Invalid	New System Module released in 6.4

Vanguard 7300 Series Bootprom, Coldloader, Image Matrix

No.	*Rel.*	*Sys. Module*	*Boot Code Version*	*Cold-loader from Release*	*Compact Flash*	*On board flash*	*Status*	*Comment*
5	6.4	MPC750 CPU	1.50	6.1 to 6.4	32M	1M	Valid	2M CMEM Compressed
6	6.4	MPC750 CPU	1.51	6.1 to 6.4	32M	1M	VR	2M CMEM Compressed
7	6.4	MPC750 CPU	2.00	6.1 to 6.4	32M	1M	Invalid	2M CMEM Compressed
8	6.4	IBM750 FX CPU	1.50 and 1.51	6.1 to 6.4	32M or 64M	16M (curr) + 16M (alt)	Invalid	1.5x bootcode not working with IBM750FX CPU card
9	6.4	IBM750 FX CPU	2.00	6.1 to 6.3	32M or 64M	16M (curr) + 16M (alt)	Invalid	6.1 to 6.3 coldloader not working with IBM750FX CPU card
10	6.4	IBM750 FX CPU	2.00	6.4	32M	16M (curr) + 16M (alt)	Valid	2M CMEM Compressed
11	6.4	IBM750 FX CPU	2.00	6.4	64M	16M (curr) + 16M (alt)	VR	2M CMEM Compressed
12	6.5	IBM750 FX CPU	3.00	6.5	64M	16M (curr) + 16M (alt)	VR	2M CMEM Compressed
13	6.5	MPC750	3.00	6.5	32M	1M	VR	2M CMEM Compressed

Note

Vanguard 7300 Series platform:

1) The MPC750 CPU system module has 128Mbyte DRAM.

2) For the MPC750 CPU system module, a feature was implemented in Boot code 1.51. It enabled the node to be booted from current bank or alternate bank in the cold load menu. This boot code was released with 6.3.

3) The IBM750FX CPU system module has 512Mbyte DDR RAM.

4) For the IBM750FX CPU module, bootcode 2.00 should be used. It has all the functionalities in 1.51.

5) For the MPC750 CPU system module, boot code 2.00 should not be used.

6) The on-board flash is primarily used for bootcode.

7) For Release 6.5, bootcode 3.00 is mandatory.

Software Improvements

Introduction

This section describes specific improvements to the Applications Ware software. It includes:

- Corrected limitations
- Customer-initiated Change Requests

6.5.R000 Corrected Limitations

RTP+UDP Compression - Vanguard 6455

Compression may not occur on LCONs with RTP and UDP compression enabled, (RTP or RTP+UDP) when non-RTP UDP packets are passed over the LCON. The characteristics of the user data portion of the UDP packet can cause all the transmit compression contexts to be consumed such that no compression occurs. This condition may persist while the non-RTP UDP data is present on the LCON. Once the data is removed, the contexts are released. (DRCaa22524).

This is fixed.

Vanguard 7300 MAC Address Filter Table Displays an Extra Hyphen

The MAC Addresses displayed in the MAC Address filter table are not displaying correctly. (DRCaa23181)

This is fixed.

Node Crash May Occur When Running RADIUS Voice Accounting and H.323 Voice Calls

The RADIUS voice accounting data forwarding function should not be used together with H.323 voice calls, it may cause a node crash (DRCaa23452).

When running H.323 voice call together with RADIUS, the forwarding of voice accounting data to the RADIUS server should be disabled.

This is fixed.

SNABSC Requires a Second Boot

SNABSC Requires two LU boots when adding a record. (DRFaa21434)

This is fixed.

Vanguard Data Compression Not Supported in ATM Bypass Stations

LCON's connected to ATM stations via PVC connections will not work properly with Vanguard's Frame Data compression. (DRFaa21038)

This is fixed.

Vanguard 7300 Series Embedded Web Group Configuration

When you configure the voice port interface type (FXS), the next parameter is Signaling Mode. When you change the port interface type to E&M, the next parameter should change to Signal Type. Currently the next menu displayed is Signaling Mode. (DRFaa18769)

This is fixed.

All Vanguards Using Radius and HP Openview - Two RADIUS MIB Files Corrupted

Two RADIUS MIB files were corrupted on the 6.2 CD: rfc2618a.mib and rfc2620a.mib. This caused a problem with the HP Openview MIB complier.

6.2 Download the corrected versions of the .mib files from our external web site at:

http://www.vanguardms.com/support/software_and_tools/vanguard/mibs/

Files "mib62ux.zip" and "mib62pc.zip" contain the Unix and PC 6.2 files.

This is fixed.

Vanguard 342 BRI-SO B-Channels

BRI-SO B-channels do not come up when debugging is enabled. (CR 13099)

If you configured the CSK which enables the debug menu, and you need to run BRI-SO, delete the CSK.

This is fixed.

Release 6.3.R00A Vanguard 340/342 ISDN (Data or Voice) Configuration Changes, AUTOMATIC CMEM CONVERSION is Not Working for ISDN B Channel Port Configurations

Enhancements were made in the software's ISDN support capabilities for the Vanguard 340 and 342. In order to support these new capabilities, it was necessary to move ISDN Data configurations (both S/T and U) from physical ports to virtual ports. To ease this process, for upgrades from an earlier revision of software (for example Release 6.1, or 6.2) a utility was included in the Release 6.3.R00A Software (when ISDN is included in the image and ISDN CMEM records are present) which converts these physical ports and associated configuration items automatically. Unfortunately, the conversion did not work properly and as a result, configuration items for the second B channel, items in the route selection, PVC, and switched services tables were not properly converted. This incorrect processing does however, update the associated CMEM records when the ISDN is present.

This is fixed.

6.5.S100 Corrected Limitations

Vanguard 6455 Clearing "All Statistics" Creates a Node Crash

If you try and clear all statistics from the CTP Main Menu the node will crash and generate an error "FAULT: Data TLB Miss Exception Encountered". This will fail with 6.1, 6.2, 6.2.S100, 6.3, 6.3.S100 software. The problem is related to having more BSC3270 devices configured than you have Quantity of DSP Devices set for in the node record. (CR 13842)

This is fixed.

Vanguard 34x GRE_IPSEC Configuration

The node may crash if you configure GRE_IPSEC before IPSEC and boot the node. (CR 14546)

This is fixed.

All Vanguards- Display of Status and Alarms

PKI status and alarms may not display correctly (CR 14555)

This is fixed.

Vanguard 7300 PBX Services and H.323 Voice

Vanguard 7300's increased memory consumption of PBX Services and H.323 Voice requires users not to use more than 216 voice ports. (CR 14577)

This is fixed.

All Vanguards - BGP Route Table Update

BGP route tables may not update correctly. (CR 14617)

This is fixed.

All Vanguards - Deleting a Configured CA

When deleting a configured CA, the CA configuration record is removed from non-volatile memory (CMEM), but not removed from the system database. CA configuration information in CMEM may not the same as the systems memory. The information appears in the "Get CA and ID" enrollment menu. (CR 14687)

This is fixed.

All Vanguards - Voice Calls with Mismatched Coders

Voice calls with mismatched coders can lose audio after a call consult occurs. (CR 14499)

This is fixed.

6.5.R000 Customer Initiated Change Requests

These Change Requests were reported to Customer Service and interim patch releases were released to fix the problems. These Change Requests are incorporated into Release 6.5.R000, and where applicable, interim patch releases have been replaced by Release 6.5.R000:

Change Request (CR#)	*Limitation Number*	*Interim Patch Release Replaced by Release 6.5.R000*	*Problem Description*
12103	N/A	6.4.T1DA	VG7310 - Voice Congestion control capabilities on the ATM/FRST module that are currently available on FRI stations when supporting ANNEX_G. We need the ability to manually select, individually enable or disable, and define the throughput limit (when voice is present) to ANY VALUE for each FRST station.
14838	N/A	6.3.T1FF	VG6455- crashes (Autoreboots) in an "IP over E1" application
14601 15050 15239 15257 15279 15354 15379	N/A N/A N/A N/A N/A N/A N/A	6.4.T1AA	Vanguide - The OSPF interface parameter Router Priority help text does not contain the same Note that is contained in the Applications Ware OSPF documentation.
15291	N/A	6.4.T17A	VG6455 - Prior to 6.4S100, our H323 ports did not include the presentation indicator in the calling party number. This has been added in to support caller ID functions that require the presentation indicator.
15342	N/A	6.4.T14A	VG6455 - Unable to open IP SEC tunnels via VLAN networks.
15376	N/A	6.4.T19A	VG7310 - BGP TO RIP import issue.

Change Request (CR#)	***Limitation Number***	***Interim Patch Release Replaced by Release 6.5.R000***	***Problem Description*** *(continued)*
15402 14584	N/A N/A	6.4.T1JA	VG6450 - 2780 responses are not getting acknowledged
15423	N/A	6.4.T1CA	VG7310 - The fault is "System Reset 750 Exception Encountered" which indicates either the reset button was pressed, or a watchdog timer expired. .
15424	N/A	6.4.T1EA	VG6455 - Can not configure "Maximum Routing Hops for Voice. .
15442 15661	N/A N/A	6.4.T16C	VG7310 - Application is failing to connect due to Don't Fragment bit being set and egress IP interface is to small to forward packet with Tunnel header added. Option to clear the DF bit and pre-fragment the packet before sending through tunnel
15475	N/A	6.4.T1EB	VG7310 - Need SAM Encryption Support 7300.
15486	N/A	6.4.T1FA	VG7330 - IBM750FX CPU ETH ports 101 & 103 doesnt work correctly with RIP
15526	N/A	6.4.T1BA	VG6455 - Lack of FAX trace on TI DSP.
15536	N/A	6.4.T1GA	VG6455 - Incorrect source address in ARP.
15547	N/A	6.4.T1HA	VG342 - The 10FD and 100FD will not sync up to a hard coded hub/switch/or it's own Ethernet ports.
15567 15920	N/A N/A	6.4.T1UA	VG6455 - Quad FXS/FXO cards crash when V.33/ V.17 Fax call attempt is made.
15581	N/A	6.4.T1QB	VG6455 - Protocol Prioritie queue's , Expedite and High, they do not work in release 6.4.
15607	N/A	6.4.T1KA	VG6455 - NAT proxy becomes corrupted

Change Request (CR#)	Limitation Number	Interim Patch Release Replaced by Release 6.5.R000	Problem Description *(continued)*
15626	N/A	6.4.T1DB	VG7330 - When using VBR single with PCR set to same value as carrier PCR, the carrier discards many cells due to violation of the switch Cell Deviation Timer.
15634	N/A	6.4.T1HB	VG6455 - Call Forward No Reply doesn't forward when it is a Call Waiting No Answer.
15674	N/A	6.4.T1OA	VG6455 - BGP - rejecting a valid update
15681	N/A	6.4.T1TA	VG340 - Instability during the activation of new points of remote IP access via PPP port using the V.90 daughter card,
15682	N/A	6.4.T1NA	VG6455 - Enable and Disable Traffic Monitor Meater Point booting Traffic Monitoring Meter Point Table to put change into place 3 times and you will exhaust the Static Memory Heap under node stats.
15731	N/A	6.4.T1EC	VG7310 - DC compression lock up results in a crash on the CPUI.
15746	N/A	6.3.T1LB	VG6455 - Customer has a 6455 connected to a Meridian PBX. Voice calls fail inbound .
15862	N/A	6.3.T1GD	VG6455 - NAPT translation statement is not allowing me to configure more than 2 addresses for the internal address.

6.4.R10A Customer Initiated Change Requests

These Change Requests were reported to Customer Service and interim patch releases were released to fix the problems. These Change Requests are incorporated into Release 6.4.R10A, and where applicable, interim patch releases have been replaced by Release 6.4.R10A:

Change Request (CR#)	*Limitation Number*	*Release Where Problem Was Reported*	*Interim Patch Release Replaced by Release 6.4.R10A*	*Problem Description*
15272	N/A	6.4.S100	6.4.T13A	All Vanguards - When Advertise Default Route is set for "Enabled_unconditional", the route should be sent out independent of whether advertise network routes is "Enabled" or "Disabled".

Service Pak 6.4.S100 Change Requests and Software Improvements

The table below lists change requests and software improvements. Change requests reported to Customer Service have an assigned change request number, and, in most cases, interim patches are released to fix the problems. These change requests and software improvements are incorporated into the Vanguard Applications Ware Release 6.4.R00A Service Pak 1 (6.4.S100), and, where applicable, interim patch releases have been replaced by the Release 6.4.R00A ServicePak 6.4.S100:

Note

The Change Request Number and Limitation Number are numbers assigned by Vanguard Managed Solutions and are used exclusively for tracking purposes.

Change Request Number	*Limitation Number*	*Release Where Problem Was Reported*	*Interim Patch Release Replaced by Release 6.4 Service Pak 6.4.S100*	*Problem or Enhancement Description*
11620	DRFaa20365	N/A	6.0.T1KA	All Vanguards - TCP acknowledgments are delaying the delivery of packets.
12431 13760	N/A N/A	6.1.T1CA 6.3.S100	6.2.T13C N/A	Vanguard 64xx node crashed with an error: "FAULT: Data TLB Miss Exception Encountered."
13319	N/A	6.3.R00A	N/A	Vanguard 7300 Series node crash with an error: "ISI 750 Exception Encountered".
14108	N/A	5.5.S200	6.3.T1GA	Vanguard 6455 - BSC3270 HPAD port "Error Threshold Count" does not work properly.

Change Request Number	***Limitation Number***	***Release Where Problem Was Reported***	***Interim Patch Release Replaced by Release 6.4 Service Pak 6.4.S100***	***Problem or Enhancement Description*** *(continued)*
14218	N/A	6.3.S100	N/A	Vanguard 6455 - When NAT is enabled with IPX the node resets.
14309	N/A	6.3.R00A	6.3.T1GA	Vanguard 6455 - BSC3780 port does not send a NAK to a TTD when it should.
14319	N/A	6.3.R00A	N/A	Vanguard 6455 - BSC3780 SNA does not handle SOH frames.
14359	N/A	6.3.T04A	6.3.T04B	Vanguard 6455 - NAT stops translating after a ping command. A NAT boot is required to recover.
14392	N/A	6.0.T1SA	N/A	Vanguard 6435 - When BSC2780 ports are set to SNAINT, changes to Data Link Role or Port Options parameters effect each other.
14450	N/A	6.3.R00A	6.3.T1KA	Vanguard 342 - A bridge link is inactive after a node boot or a power cycle.
14591	N/A	6.0.R000	6.0.T24A	Vanguard 64xx - Failed Key Exchange after a link up.
14650	N/A	6.3.T1FB	6.3.T1FC	Vanguard 73xx - PRI-ISDN MLPPP fails to connect. Only the first MLPPP dial connection is accepted. The second connection to a new profile fails MLPPP authentication.
14652	N/A	6.3.T1FB	6.3.T1FC	Vanguard 73xx - OSPF 100M Ethernet does not “auto learn” the OSPF metric. The metric remains at zero.
14675	N/A	6.3.S100	6.3.T1CB	Vanguard 34x - T1 indicates a red alarm when the unit has no problems.
14690	N/A	6.3.R00A	N/A	Vanguard 73xx - MIBs not providing ISDN B-Channel statistics.
14694	N/A	6.4.R00A	N/A	Vanguard 73xx - PIM restoral problem.
14698	N/A	6.3T1FB	6.3.T1FC	Vanguard 73xx - MLPPP with unnumbered IP has RIP routing conflicts when more than one profile is active.
14725	N/A	6.4.R00A	N/A	Vanguard 73xx - Conditional Default Gateway Advertisement does not work. The Default Gateway cannot be seen at the remote.

Change Request Number	Limitation Number	Release Where Problem Was Reported	Interim Patch Release Replaced by Release 6.4 Service Pak 6.4.S100	Problem or Enhancement Description *(continued)*
14737	N/A	6.3.T1GA	N/A	Vanguard 6455's node continually rebooted when two T1 option cards were installed.
14755	N/A	6.3.T1CA	6.3.T1CB	Vanguard 342 continually reboots when a Quad FXS card is installed.
14756	N/A	6.3.R00A	6.3.T1FC	Vanguard 73xx - During ISDN backup the unit learned RIPv2 routes from the unnumbered link (SL/57), but advertised SINK/102 as the next hop.
14773	N/A	6.4.R00A	N/A	Vanguard 342 - When configuring a VPN tunnel (IPSec) the tunnel statistics do not appear. User cannot troubleshoot tunnels within the router.
14785	N/A	6.3.S100	N/A	Vanguard 340 - When a BRI-SO card is in slot 1, the node boots in cycle after a software upgrade.
14787	N/A	6.3.T1FA	6.3.T1FC	Vanguard 73xx - An OSPF error occurs "bad OSPF Checksum".
14788	N/A	6.3.T1FA	6.3.T1FC	Vanguard 73xx - When OSPF has an external summarization for a network, the same network cannot be aggregated on a backup by RIP.
14792	N/A	6.4.R00A	N/A	Vanguard 342 - After creating a base key to access the CTP remotely, the node crashes. After rebooting VPN will not connect.
14818	N/A	6.3.T1FC	N/A	Vanguard 73xx - OSPF backup routes stay active after a node boot.
14825	N/A	6.4.R00A	N/A	Vanguard 340 - Local loopbacks were not functioning properly. CTP sessions were locking up.
14948	N/A	6.4.R00A	N/A	Vanguard 73xx - Duplicate Multicast packets are consistently generated on Multi-Access LAN segments.
14981	N/A	6.4.1S	N/A	Vanguard 73xx - Node crash, router stopped responding.

Change Request Number	Limitation Number	Release Where Problem Was Reported	Interim Patch Release Replaced by Release 6.4 Service Pak 6.4.S100	Problem or Enhancement Description *(continued)*
15095	N/A	6.4.s1	N/A	Vanguard 73xx - After receiving a default route, the periodic RIP timer that updates the nexthop of different subnet routes does not inform MBR of route changes (PIM never updates the iif information).
15143	N/A	6.4.R000	N/A	Vanguard 73xx - Default Route 0.0.0.0 is being sent when all of the Ethernet cables are removed.
15183 15187	N/A N/A	6.4.R000 6.4.R000	N/A N/A	Vanguard 73xx - When PIM is implemented a steady loss of Dynamic Pool memory occurs that results in the node running out of Dynamic Pool Memory. IP functions may not work properly. Node boot required.

Known Software Limitations

Introduction

This section lists limitations known to exist in Release 6.5.R0000 Applications Ware software.

RTP Header Compression

RTP Header Compression Interoperability Between Cisco and Vanguard Managed Solutions Products over Frame Relay Limitations

Incompatible Cisco Features- There are a few Cisco proprietary features that must be disabled in order to ensure proper interoperability over Frame Relay links. The table below identifies the incompatible features.

Feature	*Comments*
tcp header-compression	Vanguard Managed Solutions products do not support tcp header compression over Frame Relay. TCP header compression must be disabled on Cisco Frame Relay interfaces.
Frame relay end-to-end keepalives	Encapsulation for keep alive packets is Cisco proprietary and as a result is not supported on links between Vanguard Managed Solutions and Cisco nodes.
Cisco discovery protocol	CDP must be disabled on links connected to non-Cisco devices.

Protocols Not Supported - Vanguard Frame Relay links configured for CENCAP encapsulation do not support Transparent Bridging traffic.

Configuration - The “Number of Session to be Compressed” parameter must not be configured to a value greater than 255 when the encapsulation is configured to “CENCAP”. Cisco products are limited to 8-bit Context Identifiers (CIDs) over Frame Relay. Configuring a Vanguard node for more than 255 sessions will cause it to use 16-bit CIDs.

Descriptions

SNMP M.I.B. Objects

No SNMP M.I.B. objects are available for the SSH feature. (CR15574)

Workaround: At present, there is no workaround for this issue. This will be resolved in a future release.

Control M.I.B. Objects Not Defined

No control M.I.B. objects are defined for the Firewall Lite feature. Users would be unable to choose both Boot Stateful Access Parameter and Boot Stateful Access Control Entries via SNMP. (CR15779)

Workaround: Boot these parameters with CTP or Telnet.

Coldloading Builds Larger Than 8 Megabytes - Vanguard 7300

Cannot coldload 6.5R000 build's larger than 8 Meg. for the 7300 platform (Old & New CPU). (CR15796)

Workaround: There is a Bootprom upgrade, which corrects this problem. If attempts at coldloading have failed for images larger than 8 Meg. You must manually upgrade to the 3.00 Bootprom located in the COLDLOAD directory on the Vanguide CD. This can be accomplished by following the established Bootprom upgrade procedure.

Copying Public Keys

Copying a public key to the User Public Key field requires a precise procedure. SSH public key accepts "LF (0x0A)": Line Feed only. Windows based text applications add "CRLF" 0x0D 0x0A. (CR15824)

Workaround: Copy one line at a time or be sure to copy public keys, which were saved with LF ONLY.

SSH Session with MindTerm 2.4.2

Unable to bring up an SSH session with MindTerm 2.4.2. "Error connecting to X.X.X.X, reason: ---> Key exchange failed: server's signature didn't verify." (CR15871)

Workaround: Use other SSH Client applications such as PuTTY.

SSH Session with Tectia Client

Unable to bring up an SSH session with Tectia Client from SSH Communication. This is a problem with the Tectia Client version string when SSH2 is selected, Client Protocol should send "SSH-2.0", not "SSH-1.99". (CR15879)

Workaround: The version string bug will be corrected in the next Tectia Client maintenance release, which is 4.3.1. It will be released during summer.

Firewall Lite, Flow Statistics

Firewall Lite, Flow Statistics show Src/Dst IP Masks with no Src/Dst addr set. (CR15897)

Workaround: This is a statistic problem only. This display should be ignored.

Firewall Lite, Empty Default Value

Firewall Lite, default value for Interfaces is "empty". Should be "NONE". The parameter, Interfaces, for Access Control Entry has empty value as a default. (CR15900)

Workaround: This value should be set to the desired value within the valid range.

SSH Session with SecureCRT

Unable to bring up a SSH session due to failing to verify the key with SecureCRT. The error message is: Disconnect (1) "The Server's host key failed to verify. This could mean that the server you are connected t is impersonating the server it claims to be. A connection could not be established." (CR15925)

Workaround: Use other SSH Client applications such as PuTTY.

Coldload Images - Vanguard 7300

Unable to Coldload 7300 images with the Vanguide Software Loader application. This is a problem with the Vanguide Software Loader application. (CR15936)

Workaround: To perform a Coldload of a 6.5R000 based image you must use the Procomm Coldloading procedure.

SSH Client Option

The SSH Client option "None" for Cipher and/or MAC aborts a session. (CR16002)

Workaround: Since, this is an optional parameter at the SSH Client side, it is recommended that the user set the Client to:

(Cipher: 3DES-CBC)

(MAC: hmac-md5 or hmac-sha1)

Encrypted (SAM) Tunnel

Encrypted (SAM) Tunnel over WAN/LAN with (RTP+UDP/UDP)+IP Header compression is not working for certain size UPD-IP packets where IP packet length is greater than 46 (Version 5.5 and 5.6). Compression works for IP packets where the IP packet length is less than 46. (INDaa01629)

Workaround: At present, there is no workaround.

Node crashes when Bridge is configured on VPN over LAN

When you have TB Bridge traffic over the LAN Tunnel (Tunnel over LAN Link), the traffic from TB-1 is transported to TB-2 and from TB-2 to TB-1 over Tunnel. Refer to Figure9 below:

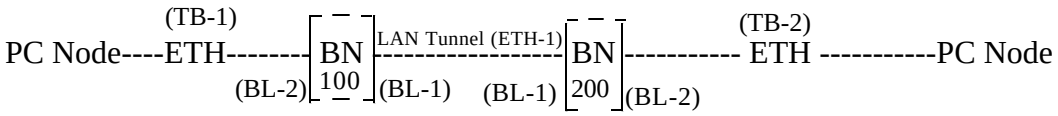

Figure 9. TB Bridge Traffic over A LAN Tunnel

The tunnel carrier ETH-1 does not have Bridge enabled. If the user (by mistake) enables the Bridge Link (BL-1) corresponding to ETH-1 which is the tunnel physical link, the node starts to repeatedly crash until the Bridge Link (BL-1) is disabled. (INDaa01627)

Workaround: In the practical scenario, you do not have to enable the Bridge link corresponding to the ETH physical link of Tunnel. To avoid the node crashing, disable the Bridge Link (BL-1) corresponding to the ETH-1 (which is the Tunnel carrier). This workaround does not impact the other functionality's. All the functionality (including Bridge Traffic over LAN Tunnel) will work as usual.

Basic Rate Interface (BRI) Boot - Vanguard 6400 Series, Vanguard 320

A BRI interface does not recover with the first BRI interface boot following a node boot. A second BRI interface boot clears and recovers the interface. (DRFaa18340)
Workaround: Boot the interface twice.

Alarms when Doing Warm or Cold Boot of Release 5.5 - Vanguard 6455

The alarm message "DBG-Error-Module:L3 Function:L3_Go Error:L3_Get_NLCB failed" may display when you boot the node during the handling of the T314_timer expiry. These alarms do not impact the node's functionality. (DRCaa22131)

Workaround: At present, there is no workaround.

T1 N. American ISDN B-Channels appear IDLE - Vanguard 6400 Series

When you look at the detailed PRI statistics with the D-channel connected, all of the associated B-channels are shown to be in an IDLE state, even if some of the channels are not configured in the ISDN interface. (DRCaa22080)

Workaround: At present, there is no workaround.

Digital Voice Server Card - Vanguard 6400 Series

T1/E1 Interface 5 will not get initialized if Interface 4 is not configured. T1/E1 Interface 7 will not get initialized if Interface 6 is not configured. (DRCaa21619)

Workaround: Always configure both interfaces even if only the second interface on the card is used.

Packet Re-construction Statistic Running 8kbps is Inaccurate Vanguard 6400 Series

When the time for packets to reach DSP exceeds the smoothing-delay time, DSP increments the reconstruct packet counter. With 60 voice ports configured and Voice Activity Detection (VAD) turned on, excessive reconstructed packets are reported. (DRCaa21596)

Workaround: At present, there is no workaround.

Received PRI Voice SETUP messages with Incompatible Coder are Not Rejected - Vanguard 6400 Series

If a PRI Voice virtual port is configured incorrectly as U-Law (or A-Law) and receives a SETUP from the PBX with the opposite bearer capability of A-Law (or U_Law), the call is not rejected. When the call goes through, the audio quality is unsatisfactory. (DRFaa15495)

Workaround: Be sure to configure the PRI Voice virtual port correctly to match the PBX.

PAD Port Dynamic Configuration - Vanguard 6560, 6400 Series

When a node is configured for Dynamic Configuration, a PAD port running as a PVC connection cannot switch to SVC mode unless the PAD port is dynamically booted. If you fail to boot the PAD port dynamically, the port reverts to an unusable state and you see these symptoms:

- The PAD port sends this error message: “Cannot forward data, there is no connection.”
- There is no associated PVC entry in the PVC Connection Summary table.
- The PAD port statistics show Port State as PAD. (DRFaa11231)

Workaround: At present, there is no workaround.

Configuring the Date in the Vanguard 6400 Series Products

In the Vanguard 6400 node record, the range for the Date/Year record is 1988 to 2100. Two limitations exists:

- On the Vanguard 6425, 6430, and 6450, if you enter a date and time beyond Feb 6, 2037, 6:28:10, the node resets the date to an arbitrary date.
- On the Vanguard 6435 and 6455, if you enter a date between 2088 and 2100, the node subtracts 100 years from the date and set the date to a value between 1988 and 2000. (DRFaa11666).

Workaround: At present, there is no workaround.

Encryption Channel Summary Statistics - Vanguard 6400, 6560 and 340

Encryption Channel Summary Statistics can display “DATA” when the channel claims to be in a “NONDATA” state. (DRFaa15846)

Workaround: At present, there is no workaround.

Password Limitation BGP - All Products

The Vanguard Router supports limited passwords. Cisco supports MD5. Currently we do not have Authentication compatible with Cisco. MD5 should be supported in the Vanguard products in future releases. (DRFaa18829)

Workaround: At present, there is no workaround.

Four Digit Virtual Port Number (Destination Subaddress) Vanguard 7300 Series

The four digit virtual port number cannot be used as the destination subaddress. Only three digit subaddresses are allowed. (DRCaa22259)

Workaround: The three digit Hunt Group must be used. If you need to target a virtual port, that virtual port should have a unique Hunt Group value.

Vanguard 7300 Series H.323 Statistics

In certain configurations, once a call is established, the PSTN port statistic show that TX and RX pps do not match the H.323 port statistics. The H.323 port pps rate is 1 or 2 pps less than the PSTN port. It should be equal. (DRFaa18071)

Workaround: At present, there is no workaround.

Software Image Naming Convention is Different - Alternate and Current Vanguard 7300 Series

The software image naming convention is different for the Vanguard 7300 platform. In the Vanguard 7300 platform, you are able to boot from the Alternate image and the system shows that it was booted from Alternate. The Alternate image ***does not*** become the Current image, as in the other Vanguard products. (DRCaa22270)

Note

When using the other (non-73xx) Vanguard products, when you boot from Alternate, the Alternate image becomes the Current image.

Workaround: At present, there is no workaround.

Vanguard 7330 Power Supplies

When the Vanguard 7330 Version 1 or a 7310 or 7330 Version 2 is configured with multiple power supplies, each power supply shares the load. If a power supply should enter a failure condition, the second power supply provides power for the entire system. Failure conditions can be determined by viewing the LED on each power supply. Power supply fail conditions are not reported as alarm conditions through the CTP menu or SNMP trap. The only failure indication is the LED associated with the failed power supply. If one of the power supplies fail, you will be operating in a non-redundant mode. (DRCaa22496)

Workaround: None. Periodically check the power supply LEDs.

Vanguard 7300 Series Call Not Transferred with ALT-Dest set in VST

When placing a call from either an FXS, FXO or E&M to H.323 and the destination does not answer the phone (ALT_DEST_NO_ANSER) or the phone is busy (ALT_DEST) and the alternate destination is either an FXS, FXO or E&M, there is no audio. (DRCaa22329)

Workaround: At present, there is no workaround.

Building Older Images

Follow the instructions listed in the workaround to revert back to an older build image (if you have installed the Vanguide Application Release 6.0.R00A from the 6.0.R00A CD). (DRFaa18867)

Workaround: Start Vanguide Software Builder, insert the older Vanguide release CD (A release before 6.0.R00A, example: 5.6.R000 CD) into CD driver. In Vanguide Software Builder, select the "Settings" menu, then change "CD ROM directory:" to say D:\Motorola (if D is the CD driver letter). Then you are able to build an image for a release before 6.0.R00A.

3270 BSC Message Size Limitation - Vanguard 6400 Series

An error may occur when 3270 BSC handles large message sizes. If a host sends a message that is larger then the 254 characters allowed in a block, when transmitted on the TPAD end, the first block ends with the End of Text Block (ETB). Once there is an acknowledgment received for the first block, the TPAD sends a End of Transmission (EOT) before sending the second block, which ends the message, and has the BSC controller write to the device. This causes an error in some applications as it expects the whole message in multiple blocks before the EOT. (DRFaa18075)

Workaround: At present, there is no workaround.

Vanguard 7300 Port Speed

The "Port Speed:" field in the FRI, PPP, X25, SDLC, and TBOP statistics screen is the configured Port Speed for the Vanguard 7300 Serial Port. If the "Clock Source"

parameter in the FRI, PPP, X25, SDLC, or TBOP serial port is set to EXT or EXTLP, the "Port Speed:" field in the FRI, PPP, X25, SDLC, and TBOP statistics screen may not match the speed of the actual clock on the serial line. (DRCaa21740)

Workaround: To determine the actual speed on the serial line, an external datascope or protocol analyzer needs to be attached. The "Clock Speed" parameter in the Port Record needs to be configured to the actual Clock Speed that the port is attached to.

Improper Configuration for LLC-SDLC-Stations - Vanguard 7300, Vanguard 6400 Series

LLC-SDLC-Station Records in the Second Ethernet Station Table become the Records of the First Ethernet Station Table if the First Ethernet port record is deleted. (DRCaa21097) (DRCaa22325)
Workaround: The first work around is not to delete the first Ethernet port. The second work around is to re-configure the LLC-SDLC-Station Records with the Ethernet port that has not been deleted.

Vanguard 7300 Series Large QoS Parameter Values May Disable QoS

Although the QoS Parameter fields can be configured to a maximum of 1000 or 10000 (in case of IP Flow Table Size), this is subject to the node's RAM availability. The software checks the node for sufficient RAM to accommodate a QoS parameter configuration. If the node's memory size is less than the requirement for the configuration, the software disables QoS. (DRCaa22432)
Workaround: Configure the minimum required parameters for QoS.

Incorrect Configuration Can Disable QoS Scheduler Feature Vanguard 7300 Series

The sum of the %BW per custom PHB configured in the custom PHB menu must be the same as the %BW for custom PHB configured in the Queueing and Scheduling Profile Parameter. Failing to do so leads to the disabling of the QoS Scheduler feature. For example, if the %BW for custom PHB in the Queueing and Scheduling Profile parameter is set to zero, the %BW per custom PHB must all be zero to satisfy the above condition. (DRCaa22433)
Workaround: At present, there is no workaround.

Vanguard 7300 Series Using the Same TCP Session for Local and Remote Nodes

If the remote node initiates a call using SoTCP and the local node attempts to make a call in the reverse direction over the same TCP session, a new session might be required to make the call. (DRCaa22437)
Workaround: Include in the Mapping Table, all possible IP addresses that might be used by a remote destination node. For more information, refer to the *Serial Protocol over TCP Manual* (Part number T0100-06).

Vanguard 7300 Series CLI setscript with T1/VPMT does not Download

CLI setscript with T1/VPMT does not download after using the "getscript". CLI errors occur because the VPMT is configured before the voice port or the T1 port. (DRFaa16143)

Workaround: If the CLI set script file includes the “create vpmt” statement, move it behind the create virtual port statement. If the “set minimum-cpu” statement is in the script file, turn on the debug mode.

Vanguard 7300 Series H.323 Limitation on Number of Calls

When a Vanguard 7300 is configured to use H.323, the total number of voice calls over all H.323 ports is limited to 216. (DRCaa23314)

Workaround: Use 6.0S100 or if you require H.323 Supplementary Services Support, a 6.1 based software patch will be available shortly. Please contact your customer service representative.

Large SDLC-to-LLC2 (SLAC) Calling Addresses - All Products

For incoming X.25 calls over Frame Relay SVC, Vanguard network services updates the X.25 table with calling address and station ID, interpreting the calling address as XX...X**. That is, the last two digits are assumed to be sub address and the rest as node address. For calls using large sub addresses, such as SDLC SLAC station calls, this leads to a wrong node address. For example, a calling address of 2000822, where 0822 is the sub address, is interpreted as 20008** with 22 as the sub address. (DRFaa16491)

Workaround: The sub address must be two digits long, or X.25 calls should be made in one direction only.

Vanguard 7330 Data Buffer Performance

When the number of Data Buffers used reaches a level above the configured WAN congestion start blocking threshold (default of 89 percent), the throughput of the node may drop to a very low level until the steady state buffer utilization drops below the configured stop blocking WAN congestion threshold (default of 86 percent). A number of factors effect the number of buffers used, including the number of SVCs used and the rate of data transfer through the node. (DRFaa16497)
Workaround: Reduce number of connections (SVCs) or traffic through node in order to reduce number of buffers used.

V.34 Modem Calls not Connecting - Vanguard 6560, 6400 and 7300

V.34 Modem calls do not consistently connect over Autocall and Transparent connection types. (DRCaa22907)

Workaround: At present, there is no workaround.

Virtual Links between two OSPF Area Border Routers Fail - Vanguard 7300 Series

Virtual links between two OSPF Area Border Routers do not work properly. (DRFaa17076)
Workaround: At present, there is no workaround.

Voice Server Card Removal - Vanguard 7300 Series

If the voice server card is removed from the T1 card and there is a voice configuration in the node, the node will not boot. (DRCaa22978)

Workaround: Delete the voice configuration or default the node before removing the voice server card.

BGP Global TCP Segment Size and Peer TCP Segment Size Vanguard 6560

The Global TCP segment size is overriding peer TCP segment size if any one peer is configured for zero. (DRFaa19391)

Workaround: At present, there is no workaround.

Voice Port Loopback Test Output Level - Vanguard 340 and 6400 Series

The local voice port loopback test does not display the correct output level. (DRCaa23032)

Workaround: At present, there is no workaround.

Vanguard 340 Series Audio on the FXS port

Passing 6.3k audio on three of the four ports on the quad FXS card causes MIPS errors. MIPS errors are causing static on the output audio. (DRCaa23051)

(DRCaa21755 is a duplicate of DRCaa23051).

Workaround: At present, there is no workaround.

Vanguard 6455 Conversion Options in Vanguide Builder

When creating an image for the Vanguard 6455 using the Vanguide builder, the LLC-TR and LLC-FR LLC-to-SDLC Conversion options do not appear under the BSC-to-SNA Conversion option. Only LLC-ETH appears and this is automatically selected. (DRFaa19586)

Workaround: If the user wishes to create a Vanguard 6455 image that supports either BSC 3270 to SNA Conversion or BSC 2780 to SNA Conversion that runs over a LLC Token Ring session or LLC Frame Relay session, the user should:

1) Select BSC 3270-to-SNA Conversion or BSC 2780-to-SNA Conversion from the BSC-to-SNA Conversion Options

2) Select LLC Token Ring Conversion and/or LLC Frame Relay Conversion from the IBM SNA Features list.

Alarms Can Indicate Poor Voice Quality - Vanguard 6400 Series

If you are running G.729 (8kbps), you might see the MED level alarm reported: VOICE-125 DEBUG INFO: OP_ALARM_NFY: Error_indication 0, Error_code c. This could indicate poor voice quality. (DRCaa21755)

(DRCaa21755 is a duplicate of DRCaa23051).

Workaround: If this alarm message appears and you are experiencing voice quality problems, run G.723 (6.3kb).

Vanguard 340 Quad FXS Board Failure

A board failure occurs when you place a call between any voice port and a quad FXS voice port, and then enter the diagnostics menu and initiate a Voice Port Loopback test while the call is up. The quad FXS board fails with a background diagnostics failure. (DRCaa23031, CR 14455)

Workaround: At present, there is no workaround.

Vanguard 340, Vanguard 6400 Series - Rx Offhook/Onhook Filter Timer

The Rx Offhook/Onhook Filter Timer is not working correctly on the Quad FXS card. (DRCaa23046)

Workaround: At present, there is no workaround.

Vanguard V90 Cannot Establish a PPP connection over a V23 Modulation Mode

V23 Modulation Mode is selectable on a PPP modem port, but it is not supported. (DRCaa23442)

Workaround: Select a faster modulation mode for PPP.

Vanguard 7300 NAT Node Reset

If a large number of NAT entries are configured each having multiple interfaces, upon a Boot-Router-NAT-ALL the router could reset (with an FER) instead of just booting the NAT entries. (DRFaa20065)

Workaround: In order to avoid having the router reset, only configure a single interface per NAT entry. If an entry requires to be applied to multiple interfaces, you may configure multiple entries, but depending on the number of entries the node may reset upon boot.

Vanguard 6455 QLLC Stations Link Station Type Support

QLLC Stations in the LLC to SDLC Station Table do not support a Link Station Type of SNABSC. (CR 12900)

Workaround: Use the supported Link Station Type, TN3270.

Vanguard 6455 TN3270 Remote Server Printer Support

At this time, printing is not supported when using the Remote TN3270 Server feature. (CR 12899)

Vanguard 6435, 6455 TN3270 Configuration MIB

The TN3270 Configuration MIB objects tn3270DispLUCfgIPAddress and tn3270PrtrLUCfgIPAddress do not support SET function in SNMP Manager. GET function is supported for these objects. (CR 12971)

Workaround: In Release 6.3.R00A, SNMP SET function is supported for all TN3270 Configuration MIB objects except for tn3270DispLUCfgIPAddress and tn3270PrtrLUCfgIPAddress.

All Vanguards - Proprietary and T.38 Voice Port Configuration

FAX may not work properly for H.323 calls if the “Fax Support” setting is not the same on all voice ports. (CR 12881)

Workaround: All voice ports involved in a H.323 call must be set for either T.38 or Proprietary.

Vanguard 340, 342 T.38 Fax Calling

T.38 Fax does not work properly when calling from Third Party G.711 to a Vanguard G.711. (CR 12937)

Workaround: Call from the Vanguard G.711 to the Third Party C.711 or only use voice ports configured for G.729 or G.723 when using T.38 fax in a mixed Vanguard/Third party environment.

Vanguard 7300, Settings for Fax Calls Using Third Party Vendors

If a Vanguard is set for Proprietary Fax it will not advertise that it supports T.38. When a Third Party’s unit detects fax it will switch to their proprietary fax. Third Party proprietary fax packets can crash the DSP. (CR 13009)

Workaround: All nodes in a mixed Vanguard/Third Party network must have T.38 in the image, and all voice ports which will make or receive calls from a Third Party’s node must be configured for T.38 Fax.

All Vanguards - VRRP Router Throughput

Enabling VRRP on a router may decrease the routers throughput due to the greater processing overhead involved in running VRRP on an interface. (CR 12486)

The impact would vary and is dependent on factors such as:

- Number of VRRP Groups configured on the router
- Number of address configured per group
- Routers ability to support multiple MAC addresses on its interface(s)

Vanguard 320 VRRP Recommendation

It is recommended that the Vanguard 320 not be used as a backup router in VRRP networks that might experience high traffic rates. (CR 12473)

All Vanguards - Encrypted (SAM) Tunnel Limitation

With the ECC Module the maximum number of encrypted (SAM) tunnels is 253.

Node crashes occur when establishing more than 253 encrypted (SAM) tunnels. (CR 12919)

All Vanguards - Encrypted SAM Tunnels with RUIHC Limitation

Configuring the maximum number of Tunnels (255) with RUIHC on each tunnel, causes the node to not come up or reset continually. (CR 12957) (DRFaa17913)

Workaround: To configure and use the maximum number of tunnels with RUIHC (255) use tunnel boot instead of node boot. In the RUIHC profile configuration of each tunnel have the parameter “Number of sessions to be compressed” configured to less than 100.

All Vanguards - Encryption Sessions Configuration

Encryption sessions are not re-established properly if the Encryption Parameters are changed. Encryption session must be reset at both ends after matching the configuration of the Encryption Parameters. (CR 12859)

Vanguard 340, 342 IPSec Sessions Limitation

With the ECC Module the maximum number of IPsec sessions is 168, the DCE SIMM Module can establish 255. (CR 12759)

Vanguard 6455 BGP Aggregation - Using a Single “Exclude” Map

When you configure a BGP Aggregate profile and define just an “Exclude Network Profile”, all prefixes are considered excluded. An “Include Network Profile” must be used to obtain desired results. (CR 12955)

Workaround: The recommendation is to have the ability to use only an “Exclude Network Profile” with the “Include Network Profile” set to the default value of NONE.

Vanguard 340, 342 BRI ISDN

After configuring D+2B channel on a Vanguard 340 or 342 (when all channels are up and you Disable D Packet Traffic and reboot) the BRI ISDN core hangs up. (CR 12655)

Workaround: Change the “ISDN D Packet parameter” from Enable to Disable and then boot the node.

Vanguard 6455 Dynamic Modem Calls over H323 Running DSP Option 2

Dynamic modem calls do not work properly over H.323 while running DSP Option 2. Modem calls work successfully over H.323 while running DSP Option 1. (CR 12905)

Workaround: At present, there is no workaround.

All Vanguards - All Analog or Digital Voice Ports using Release 6.3.R00A Option 2 - Echo Cancellation Disengagement

In some instances during an active voice call, while using Rel 6.3.R00A Option 2 (G.723.1) Voice DSP Firmware, the DSP based echo canceller will gradually disable operation, resulting in the presence of echo in the conversation. (CR 12934)

Workaround: Utilize either Option 1 or Option 3 DSP Firmware.

Vanguard 6455 DTMF Digits

The Vanguard 6455 does not accurately send DTMF digits after a Voice Call is established. DSP Option 1 runs without missing digits (during the call). DSP Option 3 may miss digits on calls. (CR 12854)

Workaround: At present, there is no workaround.

All Vanguards - Errors Creating Images

When creating an image from a .DES file, the image may contain un-selected options and may also be too large. (CR 13102)

Workaround: If the Des file contains “Voice Relay with CVSELP” and/or “Voice Relay with G723.1” and/or “Voice Relay with G729A”, then you should first un-select and re-select them in the Software Builder and then create an image. These features are available under “Vanguard Voice Relay for 2xFXS/1xFXO/2xE&M” group.

All Vanguard TI DSP Devices Running DSP Option 2

Intermittent one way audio occurs on the Quad FXS running DSP Option 2. When running DSP Option 1, calls work properly with audio in both directions. When running DSP Option 2 with the Quad FXS, calls have one way audio. (CR 12896)

Workaround: At present, there is no workaround.

Vanguard 6435, 6455 DSP Crash

The DSP may crash when the Quad's master port is booted after a configuration change to the “Default TI DSP Image Selection” from DSP Option 1 to DSP Option 2. (CR 12663)

Workaround: Do not use a port boot to activate configuration changes. Use a node boot.

All Vanguards - Re-negotiate IPSec

Vanguard fails to re-negotiate IPSec with Cisco when the Perfect Forward Secrecy (PFS) configuration is different between nodes. (CR 13064)

Workaround: Configure the same PFS Group number to all nodes.

Vanguard 340, 342 Dual ISDN Configuration Steps

With some daughtercard combinations the CTP will be unavailable through port 4. Any daughtercard combination shown in the table below will result in losing Port 4 CTP access. (CR 12848)

Port 1	*Port2*
ISDN BRI Data S/T 72291G01	ISDN BRI Voice
ISDN BRI Voice	ISDN BRI Voice

In order to configure ISDN interface 2, with two ISDN cards installed, as described in the table above, execute the following steps:

1) Ensure alternate CTP access through Port 3 (APAD or PAD port types) or TELNET.

2) Through the alternate CTP configure Port 4 to NULL and save. Next, configure ISDN interface 2.

If this procedure is not followed the operating system will not allow the configuration of ISDN interface 2.

All Vanguards - CTP Encryption Node Key Configuration

When using more than one node key, you must enter in both node key values at the same time. The node keys cannot be the same value. If you need to change only one node key, you must re-enter the other node key. (CR 13061)

Workaround: Both node keys must be entered at the same time.

All Vanguards Aggregate Entries not Removed

If an aggregate entry is created and advertised, and the routes are removed, the aggregate entry continues to remain in the IP Routing Table and is still advertised. (CR 13076)

Workaround: Do not configure the Aggregation Table as the subnet route.

Vanguard 6435/6455 Release 6.2 Configuration Update

When a Vanguard 64xx series is running multiservice image (option 15) from release 6.2 with a Quad FXS/FXO installed and 5.2 bootprom, the Vanguard will not run properly when upgraded to 8 MB flash SIMM. You must coldload the node in order to make it work after the SIMM upgrade. (CR 12979)

Workaround: Configuration Example 1:

Unit works properly upon power up. The OK prompt appears.

Bootcode 5.2

ONS 6.2R000s15 Multiservice

Quad FXS or Quad FXO installed in any Daughtercard slot

8meg Flash SIMM --NOT INSTALLED

Workaround Configuration Example 1

Step	*Procedure*
1	Force a coldload to erase the FLASH.
2	Power down the unit and install the 8 MB SIMM, and the Quad card (if it is not already installed).
3	Power up the unit and coldload the 6.3 image with the new bootprom.

Workaround: Configuration Example 2

Software upgrades from 8MB SIMM when 6.2 software is running in a node with 4MB SIMM, or without flash SIMM (CMEM size is 64KB).

Workaround Configuration Example 2

Step	*Procedure*
1	Remove the Quad Card (if present).
2	Install the 8 MB SIMM.
3	Power up the unit with Release 6.2 Software.
4	Run the software (for CMEM conversion to 128KB) until the CTP displays the OK prompt.
5	Power down the unit.
6	Install the Quad Card back into the unit.

All Vanguards - Resetting “All Statistics” Display

After resetting all statistics the statistics do not show the message "stats reset" instead they show "null". (CR 13980)

Workaround: At present, there is no workaround.

All Vanguards- Voice Port Statistics

Voice Port Statistics may display incorrect status PBX services. (CR 13815)

This is fixed.

Vanguard 7300 IPSec Re-negotiation

IPSec does not re-negotiate after the tunnel counter wraps up, packets are dropped. (CR 14179)

Workaround: Configure IPSec Transform’s SA Life Time to less than 1440 minutes.

All Vanguards - PIM GROUP LCON

PIM-SM will not function over a GROUP LCON. (CR 14321)

Workaround: At present, there is no workaround.

Vanguard 7300 Ethernet QoS Default

Ethernet QoS CS0-CS7 does not function with default in the Service Profile. (CR 13838)

Workaround: If the DSCPs and the PHBs required are other than default values, the specified profile can be configured to override the default values to required PHB mappings. Set this to 0 (no profile), if the feature is not required. All traffic will be mapped to Best Effort.

Vanguard 340 PPP Parameters Profile

When changing configurations in the PPP Profiles you need to complete a node boot for changes to take effect. (CR 13890)

Workaround: At present, there is no workaround.

Vanguard 6455, MLPPP - MLPVC and MLPMC Higher Delay

With MLPMC (Multiclass 4, 8, 16) the delay for all the data queues does not follow the “higher the priority, the lower the delay” rule. The normal delay traffic has lower average delay than most of the low delay traffic flows. Also, the total link bandwidth is lower (even voice cannot get the provisioned bandwidth). The more the number of suspension classes the more the bandwidth is reduced. (CR 13958)

Workaround: Use MLPVC or MLPMC (Multiclass 2).

Vanguard 6455 MLPPP - ISDN Second B-Channel

The ISDN Second B-Channel cannot join the MLPPP bundle.This problem occurs when the second B-Channel is configured with TEI of 255.This causes the channel to have the same TEI as the first channel, causing the PPP port to be called second to not answer the call. Initial call works with both links connected but after they go down, subsequent calls have problems (CR 14044)

Workaround: Problem does not occur if TEI of second channel is NOT configured with value of 255. Booting the ISDN interface will recover from the problem for the next set of incoming calls, but the problem will re-occur.

All Vanguards - Caller ID Display

Caller ID is not displaying for a second incoming call (Call Waiting). (CR 14216) *Workaround:* At present, there is no workaround.

Vanguard 340 and Traffic Monitor

The Vanguard 340 must have 32 DRAM installed to support IP QoS Traffic Monitor. (CR 14288) *Workaround:* At present, there is no workaround.

Vanguard 340, 340 Enhanced CMEM Configurations

Cannot load CMEMs from a Vanguard 340 to a Vanguard 340 Enhanced. (CR 14524) *Workaround:* At present, there is no workaround.

Vanguard 7300 IBM750FX CPU and Ethernet PMC Mezzanine

The new Vanguard 7300 IBM750FX CPU must use the 62877-03 Ethernet PMC mezzanine card only. The old 62877-01 Ethernet PMC mezzanine card is acceptable only if the PCB stencil is marked as 0380-1632C (or a later revision) as it may fail FCC part 15 and EN55022 EMC radiated emissions requirements and may cause

radiated interference with other equipment. Reference the Hardware Advisory Notice (Part Number T0270) for additional information.

http://www.vanguardms.com/support/documentation/vanguard

Vanguard 342, 340 Enhanced - 32 MB SDRAM DIMM, Model PC-68357

If a 32 MB SDRAM DIMM (Model PC-68357) is going to be installed in a Vanguard 342 or Vanguard 340 Enhanced, you may need to download a new Vanguard Boot Prom first. If the SDRAM DIMM is identified with the words "VIKING COMPONENTS" in silk screen on the PCB and a label with the part number "VI8GU083236BTB", then the Boot Prom installed in your Vanguard 342 or 340 Enhanced must be version 2.31 or later. Reference the Hardware Advisory Notice (Part Number T0269) for additional information.

http://www.vanguardms.com/support/documentation/vanguard

Workaround: To install a new Boot Prom, go to the Vanguard Managed Solutions web site and locate the Vanguard Boot Proms page under Software and Tools.

http://www.vanguardms.com/support/software_and_tools/ . Locate the required Boot Prom for your platform, Vanguard 342 or 340 Enhanced and click on the image or file name to download it. You can now install the SDRAM DIMM.

Vanguard 6435/6455 Required Ferrite Bead for G.SHDSL Daughtercard

Installation of a ferrite bead is required when using a G.SHDSL daughtercard on the Vanguard 6435 and 6455. This is to ensure compliance with the European Union (EU) EMC Directive 89/336/EEC and compliance with FCC Part 15, Class A. Reference the Hardware Advisory Notice (Part Number T0271) for additional information. **http://www.vanguardms.com/support/documentation/vanguard**

Vanguard 7300 Series IBM750FX CPU Timeout

The Vanguard 7300 Series IBM750FX CPU may crash when token ring cables are connected to the TR ports. Watchdog Timer Timeout error occurs. (CR 14572)

Workaround: At present, there is no workaround.

All Vanguards - Call Waiting Ring Back

Call Waiting ring back from a PSTN line may not ring across FXO to FXS interface. (CR 14540) *Workaround:* At present, there is no workaround.

All Vanguards - Caller ID Detect

An FXO interface set to autocall or OffHook call control does not pass Caller ID NAME information, just NUMBER. (CR 14529)

Workaround: At present, there is no workaround.

All Vanguards - Deleting a Configured CA

When deleting a configured CA, the CA configuration record is removed from non-volatile memory (CMEM), but not removed from the system database. CA configuration information in CMEM may not the same as the systems memory. The information appears in the "Get CA and ID" enrollment menu. (CR 14687)

Workaround: Modify the CA configuration parameters without changing or deleting the CA Name. A system boot corrects the problem.

Introduction

This section lists limitations known to exist in Release 6.5.S100 Applications Ware software.

Vanguard 340 Enhanced - Invalid Statistics

Vanguard 340 Enhanced does not display accurate Central Processing Unit (CPU) Statistics. (CR 14623)

Workaround: At present, there is no workaround.

Vanguard 73xx IBM750FX Central Processing Unit (CPU)

Booting the CTP port may cause an ATM port to go down. (CR 14685)
Workaround: At present, there is no workaround.

Vanguard 6455 Call Waiting Ring Back

When the originating end of an H.323 voice call is from a Cisco H.323 voice port to our H.323 interface, and its destination is a port which has call waiting in use, there is no audible ring back tone generated. (CR 14962)
Workaround: Do not enable call waiting on the destination voice ports.

Vanguard 73xx PKI ID Certificate

PKI ID certificate format not compatible between 6.4R00A and 6.4iS10F. (CR 14971)
Workaround: At present, there is no workaround.

Vanguard 73xx OSPF 100BT Metric

An OSPF 100BT interface does not calculate the correct metric if the port is configured for AUTO detect. (CR 14977)
Workaround: In order for OSPF to calculate the correct metric for a 100BT port, the port must be configured for 100BT (do not use AUTO detect).

Documentation Supplements

Introduction

This section lists supplemental information to the current set of user documentation.

Documentation Supplements

Fax Over H.323 Backward Compatibility

Fax over H.323 is not backward compatible with pre-5.4 versions of software.

Optimum Operation of Voice over an LCON

For optimum operation of voice over an LCON the Voice SVC parameter within the LAN Connection Table Configuration Menu should be set to enable.

User Documentation

Organization

User documentation supporting the 6.5R00A Applications Ware is organized as:

- Vanguard Applications Ware Basic Protocols
- IP and LAN Feature Protocols
- SNA Feature Protocols
- Serial Feature Protocols
- Multiservice Feature Protocols
- Multimedia Feature Protocols

Each of these sets, which are available on our website, consists of several manuals. The contents of each set and the manual part numbers are described below.

Note

For information about obtaining these documents, refer to the "How to Obtain User Documentation" section on page 78.

Vanguard Applications Ware Basic Protocols

The Vanguard Applications Ware Basic Protocols Manual (Part Number T0106) consists of these manuals:

- Vanguard Configuration Basics (Part Number T0113)
- Frame Relay (Part Number T0106-02)
- Trans Polled Async (Part Number T0106-03)
- SNMP (Part Number T0106-04)
- Async Bypass (Part Number T0106-05)
- SLIP (Part Number T0106-06)
- TELNET (Part Number T0106-07)
- Point to Point PPP & MLPPP (Part Number T0106-08)
- Command Line Interface (Part Number T0106-09)
- X.25 Configuration Basics (Part Number T0107)
- Configuration for APAD/ATPAD (Part Number T0110)
- Bandwidth Management (Part Number T0108)

IP and LAN Feature Protocols

The IP and LAN Feature Protocols Manual (Part Number T0100) consists of these manuals:

- Vanguard Router Basics (Part Number T0100-01)
- Bridging (Part Number T0100-02)
- IP Routing (Part Number T0100-03)
- OSPF (Part Number T0100-04)
- SIP (Part Number T0100-05)
- SoTCP (Part Number T0100-06)
- IPX (Part Number T0100-07)
- AppleTalk (Part Number T0100-08)
- Protocol Priority (Part Number T0100-09)
- Quality of Service (Part Number T0100-10)
- Asynchronous Transfer Mode (Part Number T0100-11)
- 7300 Series T3 ATM (Part Number T0100-12)
- Border Gateway Protocol (BGP-4) (Part Number T0100-13)
- G.SHDSL (Part Number T0100-14)
- Traffic Monitor (Part Number T0100-15)
- Ethernet Basics (Part Number T0109)
- Token Ring Basics (Part Number T0111)

SNA Feature Protocols

The SNA Feature Protocols Manual (T0101) consists of these manuals:

- BSC 2780/3780 (Part Number T0101-02)
- BSC 3270 (Part Number T0101-03)
- IBM 2260 (Part Number T0101-04)
- SDLC (Part Number T0101-05)
- XDLC (Part Number T0101-06)
- AS/400 Communication Server (Part Number T0101-07)
- BSC 3270-to-SNA Conversion (Part Number T0101-08)
- BSC 2780/3780-to-SNA LU0 Conversion (Part Number T0101-09)
- TN3270 Remoter Server (Part Number T0101-10)

Serial Feature Protocols

The Serial Feature Protocols Manual (T0102) consists of these manuals:

- Burroughs Poll/Select (Part Number T0102-02)
- NCR BSC (Part Number T0102-03)
- TBOP (Part Number T0102-04)
- NCCP (Part Number T0102-05)
- TCOP (Part Number T0102-06)
- SHDLC (Part Number T0102-07)
- T3POS (Part Number T0102-08)
- 3201 (Part Number T0102-09)

- X.42 (Part Number T0102-10)
- TNPP (Part Number T0102-11)
- TPDU (Part Number T0102-12)
- SPP (Part Number T0102-13)
- AC100 (Part Number T0102-14)
- ALC (Part Number T0102-15)

Multi-Service Feature Protocols

The Multi-Service Feature Protocols Manual (T0103) consists of these manuals:

- Internal DSD (Part Number T0103-02)
- Multipoint X.25 (Part Number T0103-03)
- Frame Data Compressor (Part Number T0103-04)
- Vanguard 6560/6520 ISDN (Part Number T0103-05)
- Vanguard ISDN (Part Number T0103-06)
- Remote DataScope (Part Number T0103-07)
- SMDS (Part Number T0103-08)
- Data Encryption (Part Number T0103-09)
- Virtual Private Network (Part Number T0103-10)

Multimedia Feature Protocols

The Multimedia Feature Protocols Manual (Part Number T0104) consists of these manuals:

- Voice Technology Reference Guide (Part Number T0104-04)
- Vanguard Voice Manual (Part Number T0104-05)
- Vanguard Voice Hardware Reference Card (Part Number T0104-06)

Alarms and Reports Manual

The Vanguard Applications Ware Alarms and Reports Manual (Part Number T0005) is updated for Release 6.4.R10A. This manual contains a listing of all alarm and report messages generated by the Vanguard Applications Ware. The manual explains the actions you must perform in order to correct unexpected network situations that might arise while using any of the Applications Ware licenses on Vanguard Products. The alarms and traps database is also available on the web:

1) Access the web site: **http://www.vanguardms.com/support/**

2) Select Alarm Search.

How to Obtain User Documentation

Introduction

There are two ways to obtain software documentation:

- Download the most current, up-to-date document files from the On-line Library on our World Wide Web page.
- Use the electronic navigation and search capability provided on the Vanguide 6.5R00A CD-ROM.

World Wide Web

On the Web

The latest Vanguard user documentation, including detailed descriptions of new features and enhancements, is available on the World Wide Web.

Finding New Feature Documentation

Find your information faster and easier when you use the Product Documentation website. Eliminate the need to flip through several documentation updates. For example, suppose feature enhancements are made to ISDN over the course of several software releases. Each release provided a separate document describing the details of those ISDN features. The details of the features are described in the *ISDN Manual* in context with the rest of the feature information.

Getting New Documentation From the Web

The full set of Vanguard Documentation is available for download from the Vanguard Managed Solutions Product Documentation website:

http://www.vanguardms.com/support/documentation

To read the files, you need a copy of Adobe Acrobat Reader with Search. This application is free from many locations on the World Wide Web. You can define how you use Acrobat with your Web browser.

Keeping a Set of Manuals Current

Keep a current set of documentation for Release 6.5R00A. To download a current printed set acquire a:

- Connection to the Vanguard Managed Solutions product documentation website:
  http://www.vanguardms.com/support/documentation
- Printer
- Copy of Adobe Acrobat for your platform

Download manuals from the WWW for the desired features you need. Print the files, and replace the pages in your set of documentation with the new version.

Documentation on the Vanguide 6.5R00A CD-ROM

Using the Vanguide 6.5R00A CD-ROM

The Vanguide 6.5R00A CD-ROM contains:

- All Vanguard Product documentation up to the current shipping release.
- Default Vanguard Applications Ware software images

. The CD-ROM supports Windows and UNIX platforms and includes a free copy of Adobe Acrobat Reader with Search functionality. Acrobat Reader provides a powerful search functionality across the entire volume of titles.

Note

When installing Acrobat (4.0 or greater) Reader, you may be required to accept the Software Licence Agreement. Acrobat Reader is freeware.

Acrobat Reader

Vanguard Managed Solutions supports Acrobat 4.0 and greater. Acrobat Reader 6.0 functions the same way as Reader 4 and 5 but it displays differently because of new features such as a “How to Window” on the right side of the work area. An Acrobat Reader 6.0 users guide can be downloaded from the Adobe website:
http://www.adobe.com

Vanguide CD-ROM with Vanguard Software Builder

Introduction

With Release 5.3, the Vanguide and Vanguide Plus! CD-ROMs are consolidated into one CD-ROM called Vanguide CD-ROM with Software Builder. Vanguard Software Builder is now included on the Vanguide CD-ROM. This software application was previously available as a separate product on the Vanguide Plus! CD-ROM.

Vanguard Software Builder

Vanguard Products come with a factory default Applications Ware software image. However, you can create your own Applications Ware, with a specific mix of features by using Vanguard Software Builder. This application lets you create custom features sets with features and functions suited for your specific needs. The features available for selection depend on the Applications Ware License you purchased.

Vanguard Software Builder operates on Windows XP, Windows NT, Windows 2000, 95 or 98 platform.

What is Vanguard Software Builder?

Vanguard Software Builder is part of the Vanguide Application Set. This set also includes the Vanguide Application Manager which provides access to the Software Loader and Software Builder applications.

Once Software Builder is installed, you can:

- Select a specific software release
- Choose the product which you are loading/configuring
- Create a name and 2-digit number for the Applications Ware Package you want to create
- Follow a series of command prompts to select features/protocols for your Package

Detailed Information

For more information, refer to *Vanguard Software Builder Manual* (Part Number T0030).

Applications Ware for the Vanguard 340, 340 Enhanced and 342

Introduction

Vanguard 340, 340 Enhanced and 342 support Vanguard Managed Solution's broad library of protocols, thereby providing a diverse set of solutions via a single hardware platform. The Vanguard 34x Series offers multiprotocol access, depending on the Applications Ware Package you purchase. Vanguard 340, 340 Enhanced and 342 must be ordered with one of the Applications Ware listed in the tables in this section.

Vanguard 340, 340 Enhanced and 342 Applications Ware

Release 6.5.R000 supports the following Applications Ware for the Vanguard 340, 340 Enhanced and 342. Each Package supports a suite of default features. Other features, however, can be added by using Vanguard Software Builder. For more information, refer to the "Vanguide CD-ROM with Vanguard Software Builder" section on page 80.

Note

When using Vanguard Software Builder, be sure to make note of the warnings regarding memory limitations.

Information regarding the Vanguard Applications Ware is divided into six tables.

- The first three tables list each Applications Ware and its file number.
- The second three tables list each Applications Ware and its features (default features as well as non-default features).

Vanguard 340:

Vanguard 340 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+ Applications Ware	65R000p11.xrc	6.5.R000_@IP+_340	65R000p11.des
SNA+ Applications Ware	65R000p12.xrc	6.5.R000_@SNA+_340	65R000p12.des
Multiservice Applications Ware	65R000p15.xrc	6.5.R000_@MS_340	65R000p15.des

Vanguard 340 Enhanced:

Vanguard 340 Enhanced Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+ Applications Ware	65R000y11.xrc	6.5.R000_@IP+_340E	65R000y11.des
SNA+ Applications Ware	65R000y12.xrc	6.5.R000_@SNA+_340E	65R000y12.des
Multiservice Applications Ware	65R000y15.xrc	6.5.R000_@MS_340E	65R000y15.des

Vanguard 342:

Vanguard 342 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+ Applications Ware	65R000w11.xrc	6.5.R000_@IP+_342	65R000w11.des
SNA+ Applications Ware	65R000w12.xrc	6.5.R000_@SNA+_342	65R000w12.des
Multiservice Applications Ware	65R000w15.xrc	6.5.R000_@MS_342	65R000w15.des

Vanguard 340 Features	*IP+*	*SNA+*	*Multi-Service*	*Voice*	*Security*	*Prem. Voice*	*QoS App Mgt*	*Special*
Network Management								
SNMP	**D**	**D**	**D**					
TELNET	**D**	**D**	**D**					
TFTP	**D**	**D**	**D**					
CLI	**D**	**D**	**D**					
Embedded Web HTTPD	**L**	**L**	**L**					
Async								
ATPAD	**D**	**D**	**D**					
APAD	**L**	**L**	**L**					
ISDN								
SoftSCC	**L**	**L**	**L**					
ISDN-NOAM	**L**	**L**	**L**					
ISDN-EURO	**L**	**L**	**L**					
ISDN-ASIA	**L**	**L**	**L**					
Vanguard Analog Voice - DSPs Prior to 6.3- 2xFX/1xFXO/2xE&M								
G.723			**D**	**A**				
G.729			**L**	**A**				
CVSELP			**L**	**A**				
Vanguard Analog Voice - Quad Cards								
G.723/G.729/G.711 (Cannot Add Fax)**			**D**	**A**				
G.723/G.711 (Can add Fax)**			**L**	**A**				
G.729/G.711 (Can add Fax)**			**L**	**A**				
FAX								
Standard Fax T.38			**L**	**A**				
Voice Options (All Products)								
Centralized Voice Switch			**D**	**A**				
VOICE-IP-ENCAPSULATION			**L**	**A**				
H.323			**L**	**A**				
Premium Voice Services								
Caller ID						**A**		
Call Hold						**A**		
Call Waiting						**A**		

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 340 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
Call Transfer						**A**		
Call Forward						**A**		
LAN								
Router IP	**D**	**D**	**D**					
Router IPX	**L**	**L**	**L**					
LAN Option Protocols								
LLC-Eth		**D**	**D**					
LLC-TR								
IPXWAN	**L**	**L**	**L**					
Appletalk	**L**	**L**	**L**					
Bandwidth on Demand (LD-Bal)	**L**	**L**	**L**					
Router Proxy	**D**	**D**	**D**					
Router Discovery	**L**	**L**	**L**					
Network Address Transl	**L**	**L**	**L**					
Policy Based Routing	**L**	**L**	**L**					
RTP Header Compression	**L**	**L**	**L**					
TR-Bridge								
ETH-Bridge	**D**	**D**	**D**					
XLB-Bridge								
Tunnel	**L**	**L**	**L**					
IPSEC DES/3DES					**A**			
DHCP Client	**L**	**L**	**L**					
Radius	**L**	**L**	**L**					
VRRP	**L**	**L**	**L**					
Network Protocols								
OSPF	**D**	**L**	**L**					
BGP4	**L**	**L**	**L**					
FRF12	**L**	**L**	**L**					
FRA *(only for backward compatibility)*		**L**	**L**					
FRI *(includes FRA)*	**D**	**D**	**D**					
FR SVC								**A**
X.25	**D**	**D**	**D**					
SMDS			**L**					

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Vanguard 340 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
MX25			**L**					
PPP	**D**	**D**	**D**					
PPPoE	**L**	**L**	**L**					
SoTCP (=Voice Relay Enc. In IP)	**L**	**L**	**L**					
Fractional T1/E1	**L**	**L**	**L**					
G.SHDSL	**L**	**L**	**L**					
IP Multicast Protocols								
DVMRP Multicast	**D**	**D**	**D**					
PIM Sparse Multicast	**L**	**L**	**L**					
ATM Protocols								
All Supported ATM Protocols								
Serial Asynchronous Protocols								
ASYNC-BYPASS	**D**	**D**	**D**					
IBM2260								**A**
SLIP	**D**	**D**	**D**					
TNPP								**A**
TNPP-ROUT			**L**					
X.42 (GSC)								**A**
T3POS		**L**	**L**					
T3POS over TCP		**L**	**L**					
DATAPAC	**L**	**L**	**L**					
SPP-PAD								**A**
AC100								**A**
Serial Synchronous Protocols								
SDLC		**D**	**L**					
TN3270 Server		**L**	**L**					
XDLC		**L**	**L**					
TBOP		**D**	**D**	**A**				
LLC-FR		**D**	**D**					
SHDLC		**L**	**L**					
TBOP-BYPASS		**D**	**D**					
X32	**L**	**L**	**L**					
Serial Character-Oriented Protocols								

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Vanguard 340 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
BSC3270		**L**	**L**					
BSC2780		**L**	**L**					
BSTD								**A**
TCOP		**D**	**D**					
TCOP-BYPASS		**D**	**D**					
NCRBSC								**A**
RS366		**L**	**L**					
TPDU Adaptors								
TPA-TPDU		**L**	**L**					
TPA-SDLC								**A**
TPA-3270		**L**	**L**					
TPA-2780		**L**	**L**					
TPA-TCP		**L**	**L**					
TPA-UDP		**L**	**L**					
Node Features								
ATCIF (AT Dial/Telnet)	**L**	**L**	**L**					
LBU	**D**	**D**	**D**					
DCP		**D**	**L**					
DSCOPE		**L**	**L**					
DSD			**L**					
NCCP		**L**	**L**					
BCST								**A**
NUI	**L**	**L**	**L**					
QOS Features								
TOW	**D**	**D**	**D**					
QoS - Protocol Priority (5.3M)	**L**	**L**	**L**					
QoS - Diff Serv (5.4)	**D**	**D**	**D**					
Ethernet DiffServ QoS (WAN)	**D**	**D**	**D**					
MLPPP LFI			**L**					
FRAME Data Comp	**L**	**L**	**D**					
BSC3270-to-SNA Conversion								
BSC2780/3780-to-SNA/LU0 Conv.								
AS/400 5494 Comm. Server								

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Vanguard 340 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
QoS App Management								
Application Performance and Bandwidth Prioritization **■Note** The Vanguard 340 must have 32 DRAM installed to support Traffic Monitor.							**A**	
Frame Relay FRF.13/FRF.19							**A**	
Security and VPN								
Encryption DES & 3DES (non-standard)					**A**			
Encryption 3DES & AES (standard)								
PKI and X.509 Digital Certificates								
*OST ISDN is included in IP+ License								
** G.723, G.729 and T.38 Fax cannot fit in one DSP.								

D: Default License Feature.
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Vanguard 340 Enhanced Features	*IP+*	*SNA+*	*Multi-Service*	*Voice*	*Security*	*Prem. Voice*	*QoS App Mgt*	*Special*
Network Management								
SNMP	**D**	**D**	**D**					
TELNET	**D**	**D**	**D**					
TFTP	**D**	**D**	**D**					
CLI	**D**	**D**	**D**					
Embedded Web HTTPD	**L**	**L**	**L**					
Async								
ATPAD	**D**	**D**	**D**					
APAD	**L**	**L**	**L**					
ISDN								
SoftSCC	**L**	**L**	**L**					
ISDN-NOAM	**L**	**L**	**L**					
ISDN-EURO	**L**	**L**	**L**					
ISDN-ASIA	**L**	**L**	**L**					
Vanguard Analog Voice - DSPs Prior to 6.3- 2xFX/1xFXO/2xE&M								
G.723			**D**	**A**				
G.729			**L**	**A**				
CVSELP			**L**	**A**				
Vanguard Analog Voice - Quad Cards								
G.723/G.729/G.711 (Cannot Add Fax)**			**D**	**A**				
G.723/G.711 (Can add Fax)**			**L**	**A**				
G.729/G.711 (Can add Fax)**			**L**	**A**				
FAX								
Standard Fax T.38			**L**	**A**				
Voice Options (All Products)								
Centralized Voice Switch			**D**	**A**				
VOICE-IP-ENCAPSULATION			**L**	**A**				
H.323			**L**	**A**				
Premium Voice Services								
Caller ID						**A**		
Call Hold						**A**		
Call Waiting						**A**		

D: Default License Feature.
L: In License; add with Software Builder.
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Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 340 Enhanced Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
Call Transfer						**A**		
Call Forward						**A**		
LAN								
Router IP	**D**	**D**	**D**					
Router IPX	**L**	**L**	**L**					
LAN Option Protocols								
LLC-Eth		**D**	**D**					
LLC-TR								
IPXWAN	**L**	**L**	**L**					
Appletalk	**L**	**L**	**L**					
Bandwidth on Demand (LD-Bal)	**L**	**L**	**L**					
Router Proxy	**D**	**D**	**D**					
Router Discovery	**L**	**L**	**L**					
Network Address Transl	**L**	**L**	**L**					
Policy Based Routing	**L**	**L**	**L**					
RTP Header Compression	**L**	**L**	**L**					
TR-Bridge								
ETH-Bridge	**D**	**D**	**D**					
XLB-Bridge								
Tunnel	**L**	**L**	**L**					
IPSEC DES/3DES					**A**			
DHCP Client	**L**	**L**	**L**					
Radius	**L**	**L**	**L**					
VRRP	**L**	**L**	**L**					
Network Protocols								
OSPF	**D**	**L**	**L**					
BGP4	**L**	**L**	**L**					
FRF12	**L**	**L**	**L**					
FRA *(only for backward compatibility)*		**L**	**L**					
FRI *(includes FRA)*	**D**	**D**	**D**					
FR SVC								**A**
X.25	**D**	**D**	**D**					
SMDS			**L**					

D: Default License Feature.
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A: Add-on Upgrade License Feature
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Vanguard 340 Enhanced Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
MX25			**L**					
PPP	**D**	**D**	**D**					
PPPoE	**L**	**L**	**L**					
SoTCP (=Voice Relay Enc. In IP)	**L**	**L**	**L**					
Fractional T1/E1	**L**	**L**	**L**					
G.SHDSL	**L**	**L**	**L**					
IP Multicast Protocols								
DVMRP Multicast	**D**	**D**	**D**					
PIM Sparse Multicast	**L**	**L**	**L**					
ATM Protocols								
All Supported ATM Protocols								
Serial Asynchronous Protocols								
ASYNC-BYPASS	**D**	**D**	**D**					
IBM2260								**A**
SLIP	**D**	**D**	**D**					
TNPP								**A**
TNPP-ROUT			**L**					
X.42 (GSC)								**A**
T3POS		**L**	**L**					
T3POS over TCP		**L**	**L**					
DATAPAC	**L**	**L**	**L**					
SPP-PAD								**A**
AC100								**A**
Serial Synchronous Protocols								
SDLC		**D**	**L**					
TN3270 Server		**L**	**L**					
XDLC		**L**	**L**					
TBOP		**D**	**D**	**A**				
LLC-FR		**D**	**D**					
SHDLC		**L**	**L**					
TBOP-BYPASS		**D**	**D**					
X32	**L**	**L**	**L**					
Serial Character-Oriented Protocols								

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L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 340 Enhanced Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
BSC3270		**L**	**L**					
BSC2780		**L**	**L**					
BSTD								**A**
TCOP		**D**	**D**					
TCOP-BYPASS		**D**	**D**					
NCRBSC								**A**
RS366		**L**	**L**					
TPDU Adaptors								
TPA-TPDU		**L**	**L**					
TPA-SDLC								**A**
TPA-3270		**L**	**L**					
TPA-2780		**L**	**L**					
TPA-TCP		**L**	**L**					
TPA-UDP		**L**	**L**					
Node Features								
ATCIF (AT Dial/Telnet)	**L**	**L**	**L**					
LBU	**D**	**D**	**D**					
DCP		**D**	**L**					
DSCOPE		**L**	**L**					
DSD			**L**					
NCCP		**L**	**L**					
BCST								**A**
NUI	**L**	**L**	**L**					
QOS Features								
TOW	**D**	**D**	**D**					
QoS - Protocol Priority (5.3M)	**L**	**L**	**L**					
QoS - Diff Serv (5.4)	**D**	**D**	**D**					
Ethernet DiffServ QoS (WAN)	**D**	**D**	**D**					
MLPPP LFI			**L**					
FRAME Data Comp	**L**	**L**	**D**					
BSC3270-to-SNA Conversion								
BSC2780/3780-to-SNA/LU0 Conv.								
AS/400 5494 Comm. Server								

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 340 Enhanced Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
QoS App Management								
Application Performance and Band-width Prioritization							**A**	
Frame Relay FRF.13/FRF.19							**A**	
Security and VPN								
Encryption DES & 3DES (non-standard)					**A**			
Encryption 3DES & AES (standard)					**A**			
PKI and X.509 Digital Certificates					**A**			
*OST ISDN is included in IP+ License								
** G.723, G.729 and T.38 Fax cannot fit in one DSP.								

D: Default License Feature.
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A: Add-on Upgrade License Feature
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 342 Features	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
Network Management								
SNMP	**D**	**D**	**D**					
TELNET	**D**	**D**	**D**					
TFTP	**D**	**D**	**D**					
CLI	**D**	**D**	**D**					
Embedded Web HTTPD	**L**	**L**	**L**					
Async								
ATPAD	**D**	**D**	**D**					
APAD	**L**	**L**	**L**					
ISDN								
SoftSCC	**L**	**L**	**L**					
ISDN-NOAM	**L**	**L**	**L**					
ISDN-EURO	**L**	**L**	**L**					

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 342 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
ISDN-ASIA	**L**	**L**	**L**					
Vanguard Analog Voice - DSPs Prior to 6.3- 2xFX/1xFXO/2xE&M								
G.723			**D**	**A**				
G.729			**L**	**A**				
CVSELP			**L**	**A**				
Vanguard Analog Voice - Quad Cards								
G.723/G.729/G.711 (Cannot Add Fax)**			**D**	**A**				
G.723/G.711 (Can add Fax)**			**L**	**A**				
G.729/G.711 (Can add Fax)**			**L**	**A**				
FAX								
Standard Fax T.38			**L**	**A**				
Voice Options (All Products)								
Centralized Voice Switch			**D**	**A**				
VOICE-IP-ENCAPSULATION			**L**	**A**				
H.323			**L**	**A**				
Premium Voice Services								
Caller ID						**A**		
Call Hold						**A**		
Call Waiting						**A**		
Call Transfer						**A**		
Call Forward						**A**		
LAN								
Router IP	**D**	**D**	**D**					
Router IPX	**L**	**L**	**L**					
LAN Option Protocols								
LLC-Eth		**D**	**D**					
LLC-TR								
IPXWAN	**L**	**L**	**L**					
Appletalk	**L**	**L**	**L**					
Bandwidth on Demand (LD-Bal)	**L**	**L**	**L**					
Router Proxy	**D**	**D**	**D**					
Router Discovery	**L**	**L**	**L**					
Network Address Transl	**L**	**L**	**L**					
Policy Based Routing	**L**	**L**	**L**					

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Vanguard 342 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
RTP Header Compression	**L**	**L**	**L**					
TR-Bridge								
ETH-Bridge	**D**	**D**	**D**					
XLB-Bridge								
Tunnel	**L**	**L**	**L**					
IPSEC DES/3DES					**A**			
DHCP Client	**L**	**L**	**L**					
Radius	**L**	**L**	**L**					
VRRP	**L**	**L**	**L**					
Network Protocols								
OSPF	**D**	**L**	**L**					
BGP4	**L**	**L**	**L**					
FRF12	**L**	**L**	**L**					
FRA *(only for backward compatibility)*		**L**	**L**					
FRI *(includes FRA)*	**D**	**D**	**D**					
FR SVC								**A**
X.25	**D**	**D**	**D**					
SMDS			**L**					
MX25			**L**					
PPP	**D**	**D**	**D**					
PPPoE	**L**	**L**	**L**					
SoTCP (=Voice Relay Enc. In IP)	**L**	**L**	**L**					
Fractional T1/E1	**L**	**L**	**L**					
G.SHDSL	**L**	**L**	**L**					
IP Multicast Protocols								
DVMRP Multicast	**D**	**D**	**D**					
PIM Sparse Multicast	**L**	**L**	**L**					
ATM Protocols								
All Supported ATM Protocols								
Serial Asynchronous Protocols								
ASYNC-BYPASS	**D**	**D**	**D**					
IBM2260								**A**
SLIP	**D**	**D**	**D**					

D: Default License Feature.
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Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 342 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
TNPP								**A**
TNPP-ROUT			**L**					
X.42 (GSC)								**A**
T3POS		**L**	**L**					
T3POS over TCP		**L**	**L**					
DATAPAC	**L**	**L**	**L**					
SPP-PAD								**A**
AC100								**A**
Serial Synchronous Protocols								
SDLC		**D**	**L**					
TN3270 Server		**L**	**L**					
XDLC		**L**	**L**					
TBOP		**D**	**D**	**A**				
LLC-FR		**D**	**D**					
SHDLC		**L**	**L**					
TBOP-BYPASS		**D**	**D**					
X32	**L**	**L**	**L**					
Serial Character-Oriented Protocols								
BSC3270		**L**	**L**					
BSC2780		**L**	**L**					
BSTD								**A**
TCOP		**D**	**D**					
TCOP-BYPASS		**D**	**D**					
NCRBSC								**A**
RS366		**L**	**L**					
TPDU Adaptors								
TPA-TPDU		**L**	**L**					
TPA-SDLC								**A**
TPA-3270		**L**	**L**					
TPA-2780		**L**	**L**					
TPA-TCP		**L**	**L**					
TPA-UDP		**L**	**L**					
Node Features								

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 342 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***QoS App Mgt***	***Special***
ATCIF (AT Dial/Telnet)	**L**	**L**	**L**					
LBU	**D**	**D**	**D**					
DCP		**D**	**L**					
DSCOPE		**L**	**L**					
DSD			**L**					
NCCP		**L**	**L**					
BCST								**A**
NUI	**L**	**L**	**L**					
QOS Features								
TOW	**D**	**D**	**D**					
QoS - Protocol Priority (5.3M)	**L**	**L**	**L**					
QoS - Diff Serv (5.4)	**D**	**D**	**D**					
Ethernet DiffServ QoS (WAN)	**D**	**D**	**D**					
MLPPP LFI			**L**					
FRAME Data Comp	**L**	**L**	**D**					
BSC3270-to-SNA Conversion								
BSC2780/3780-to-SNA/LU0 Conv.								
AS/400 5494 Comm. Server								
QoS App Management								
Application Performance and Band-width Prioritization							**A**	
Frame Relay FRF.13/FRF.19							**A**	
Security and VPN								
Encryption DES & 3DES (non-standard)					**A**			
Encryption 3DES & AES (standard)					**A**			
PKI and X.509 Digital Certificates					**A**			
*OST ISDN is included in IP+ License								
** G.723, G.729 and T.38 Fax cannot fit in one DSP.								

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Applications Ware for the Vanguard 6435/6455

Introduction

This section provides detailed information about the Applications Ware available for Vanguard 6435 and the Vanguard 6455.

Vanguard 6345/ 6455 Applications Ware

Release 6.5.R000 supports the following Applications Ware for the Vanguard 6435/6455. Each Applications Ware supports a suite of default features. Other features, however, can be added by using Vanguard Software Builder. For more information, refer to the "Vanguide CD-ROM with Vanguard Software Builder" section on page 80.

Note

When using Vanguard Software Builder, be sure to make note of the warnings regarding memory limitations.

Information about the Applications Ware is divided into four tables.

- The first two tables list each model's Applications Ware and file information.
- The last two tables list each model's Applications Ware and its default, optional, and add-on features.

Vanguard 6435:

6435 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+ Applications Ware	65R000q11.xrc	6.5.R000_@IP+_6435	65R000q11.des
SNA+ Applications Ware	65R000q12.xrc	6.5.R000_@SNA+_6435	65R000q12.des
Multiservice Applications Ware	65R000q15.xrc	6.5.R000_@MS_6435	65R000q15.des

Vanguard 6455:

6455 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+ Applications Ware	65R000s11.xrc	6.5.R000_@IP+_6455	65R000s11.des
SNA+ Applications Ware	65R000As12.xrc	6.5.R000_@SNA+_6455	65R000s12.des
Multiservice Applications Ware	65R000s15.xrc	6.5.R000_@MS_6455	65R000s15.des

Vanguard 6435 Features	*IP+*	*SNA+*	*Multi-Service*	*Voice*	*Sec-urity*	** AS/400 BSC*	*Prem. Voice*	*QoS Appl*	*Speci al*
Network Management									
SNMP	**D**	**D**	**D**						
TELNET	**D**	**D**	**D**						
TFTP	**D**	**D**	**D**						
CLI	**D**	**D**	**D**						
Embedded Web (HTTPD)	**L**	**L**	**L**						
Async									
ATPAD	**D**	**D**	**D**						
APAD	**L**	**L**	**L**						
ISDN									
SoftSCC									
ISDN-NOAM	**L**	**L**	**L**						
ISDN-EURO	**L**	**L**	**L**						
ISDN-ASIA	**L**	**L**	**L**						
Vanguard Analog Voice - DSPs Prior to 6.3- 2xFX/1xFXO/2xE&M									
G.723			**D**	**A**					
G.729			**L**	**A**					
CVSELP			**L**	**A**					
Vanguard Analog Voice - Quad Cards									
G.723/G.729/G.711 (Cannot Add Fax)			**D**	**A**					
G.723/G.711 (Can add Fax)			**L**	**A**					
G.729/G.711 (Can add Fax)			**L**	**A**					
Digital Voice - 6450/6455									
Vanguard T1/E1 Digital Voice Server									
FAX									
Standard Fax T.38			**L**	**A**					

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6435 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
Voice Options (All Products)									
Centralized Voice Switch			**D**	**A**					
VOICE-IP-Encapsulation			**L**	**A**					
H.323			**L**	**A**					
Premium Voice Services									
Caller ID							**A**		
Call Hold							**A**		
Call Waiting							**A**		
Call Transfer							**A**		
Call Forward							**A**		
LAN									
Router IP	**D**	**D**	**D**						
Router IPX	**L**	**L**	**L**						
LAN Option Protocols									
LLC-Eth		**D**	**D**						
LLC-TR		**L**	**L**						
IPXWAN	**L**	**L**	**L**						
Appletalk	**L**	**L**	**L**						
Bandwidth on Demand (LD-Bal)	**L**	**L**	**L**						
IP-Multicast	**D**	**D**	**D**						
Router Proxy	**D**	**D**	**D**						
Router Discovery	**L**	**L**	**L**						
Network Address Transl	**L**	**L**	**L**						
Policy Based Routing	**L**	**L**	**L**						
RTP Header Compression	**L**	**L**	**L**						
TR-Bridge									
Token Ring									

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6435 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
ETH-Bridge	**D**	**D**	**D**						
XLB-Bridge	**L**	**L**	**L**						
Tunnel	**L**	**L**	**L**						
IPSEC - DES/3DES					**A**				
DHCP Client	**L**	**L**	**L**						
Radius	**L**	**L**	**L**						
VRRP	**L**	**L**	**L**						
Network Protocols									
OSPF	**L**	**L**	**L**						
BGP4	**L**	**L**	**L**						
FRF12	**L**	**L**	**L**						
FRA *(only for backward compatibility)*		**L**	**L**						
FRI *(includes FRI)*	**D**	**D**	**D**						
FR SVC									**A**
X.25	**D**	**D**	**D**						
SMDS			**L**						
MX25			**L**						
PPP	**D**	**D**	**D**						
PPPoE	**L**	**L**	**L**						
SoTCP *(=Voice Relay Enc. In IP)*	**L**	**L**	**L**						
Fractional T1/E1	**L**	**L**	**L**						
G.SHDSL	**L**	**L**	**L**						
IP Multicast Protocols									
DVMRP Multicast	**D**	**D**	**D**						
PIM Sparse Multicast	**L**	**L**	**L**						
ATM Protocols									
ATM Protocols			**L**						

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6435 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
Serial Asynchronous Protocols									
ASYNC-BYPASS	**D**	**D**	**D**						
IBM2260									**A**
SLIP	**D**	**D**	**D**						
TNPP									**A**
TNPP-ROUT			**L**						
X.42 (GSC)									**A**
T3POS		**L**	**L**						
T3POS over TCP		**L**	**L**						
DATAPAC	**L**	**L**	**L**						
SPP-PAD									**A**
AC100									**A**
Serial Synchronous Protocols									
SDLC		**D**	**L**						
TN3270 Sever		**L**	**L**						
XDLC		**L**	**L**						
TBOP		**D**	**D**	**A**					
LLC-FR		**D**	**D**						
SHDLC		**L**	**L**						
TBOP-BYPASS		**D**	**D**						
X32	**L**	**L**	**L**						
Serial Character-Oriented Protocols									
BSC3270		**L**	**L**						
BSC2780		**L**	**L**						
BSTD									**A**
TCOP		**D**	**D**						

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6435 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
TCOP-BYPASS		**D**	**D**						
NCRBSC									**A**
RS366		**L**	**L**						
TPDU Adaptors									
TPA-TPDU		**L**	**L**						
TPA-SDLC									**A**
TPA-3270		**L**	**L**						
TPA-2780		**L**	**L**						
TPA-TCP		**L**	**L**						
TPA-UDP		**L**	**L**						
Node Features									
ATCIF (AT Dial/Telnet)	**L**	**L**	**L**						
LBU	**D**	**D**	**D**						
DCP		**D**	**L**						
DSCOPE		**L**	**L**						
DSD			**L**						
NCCP		**L**	**L**						
BCST									**A**
NUI	**L**	**L**	**L**						
QOS Features									
TOW	**D**	**D**	**D**						
QoS - Protocol Priority (5.3M)	**L**	**L**	**L**						
QoS - Diff Serv (5.4)	**D**	**D**	**D**						
Ethernet DiffServ QoS (WAN)	**D**	**D**	**D**						
MLPPP LFI			**L**						
FRAME Data Comp	**L**	**L**	**D**						
BSC 3270-to-SNA Conversion									

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6435 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
BSC 2780/3780-to-SNA LU0 Conversion									
AS/400 5494 Comm. Server						**A**			
QoS App Management									
Application Performance and Bandwidth Prioritization								**A**	
Frame Relay FRF.13/FRF.19								**A**	
Security and VPN									
Encryption DES & 3DES (non-standard)					**A**				
Encryption 3DES &AES (standard)									
PKI & X.509 Digital Certificates									
*OST ISDN is included in IP+ License									
** G.723, G.729 and T.38 Fax cannot fit in one DSP									

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6455 Features	*IP+*	*SNA +*	*Multi-Service*	*Voice*	*Sec-urity*	** AS/400 BSC*	*Prem. Voice*	*QoS Appl*	*Speci al*
Network Management									
SNMP	**D**	**D**	**D**						
TELNET	**D**	**D**	**D**						
TFTP	**D**	**D**	**D**						
CLI	**D**	**D**	**D**						
Embedded Web (HTTPD)	**L**	**L**	**L**						
Async									
ATPAD	**D**	**D**	**D**						
APAD	**L**	**L**	**L**						
ISDN									
SoftSCC									
ISDN-NOAM	**L**	**L**	**L**						
ISDN-EURO	**L**	**L**	**L**						
ISDN-ASIA	**L**	**L**	**L**						
Vanguard Analog Voice - DSPs Prior to 6.3- 2xFX/1xFXO/2xE&M									
G.723			**D**	**A**					
G.729			**L**	**A**					
CVSELP			**L**	**A**					
Vanguard Analog Voice - Quad Cards									
G.723/G.729/G.711 (Cannot Add Fax)			**D**	**A**					
G.723/G.711 (Can add Fax)			**L**	**A**					
G.729/G.711 (Can add Fax)			**L**	**A**					
Digital Voice - 6450/6455									
Vanguard T1/E1 Digital Voice Server			**D**	**A**					
FAX									
Standard Fax T.38			**L**	**A**					

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6455 Features *(continued)*	***IP+***	***SNA +***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
Voice Options (All Products)									
Centralized Voice Switch			**D**	**A**					
VOICE-IP-Encapsulation			**L**	**A**					
H.323			**L**	**A**					
Premium Voice Services									
Caller ID							**A**		
Call Hold							**A**		
Call Waiting							**A**		
Call Transfer							**A**		
Call Forward							**A**		
LAN									
Router IP	**D**	**D**	**D**						
Router IPX	**L**	**L**	**L**						
LAN Option Protocols									
LLC-Eth		**D**	**D**						
LLC-TR		**L**	**L**						
IPXWAN	**L**	**L**	**L**						
Appletalk	**L**	**L**	**L**						
Bandwidth on Demand (LD-Bal)	**L**	**L**	**L**						
IP-Multicast	**D**	**D**	**D**						
Router Proxy	**D**	**D**	**D**						
Router Discovery	**L**	**L**	**L**						
Network Address Transl	**L**	**L**	**L**						
Policy Based Routing	**L**	**L**	**L**						
RTP Header Compression	**L**	**L**	**L**						
TR-Bridge									
Token Ring	**L**	**L**	**L**						

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6455 Features *(continued)*	***IP+***	***SNA +***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
ETH-Bridge	**D**	**D**	**D**						
XLB-Bridge	**L**	**L**	**L**						
Tunnel	**L**	**L**	**L**						
IPSEC - DES/3DES					**A**				
DHCP Client	**L**	**L**	**L**						
Radius	**L**	**L**	**L**						
VRRP	**L**	**L**	**L**						
Network Protocols									
OSPF	**L**	**L**	**L**						
BGP4	**L**	**L**	**L**						
FRF12	**L**	**L**	**L**						
FRA *(only for backward compatibility)*		**L**	**L**						
FRI *(includes FRI)*	**D**	**D**	**D**						
FR SVC									**A**
X.25	**D**	**D**	**D**						
SMDS			**L**						
MX25			**L**						
PPP	**D**	**D**	**D**						
PPPoE	**L**	**L**	**L**						
SoTCP *(=Voice Relay Enc. In IP)*	**L**	**L**	**L**						
Fractional T1/E1	**L**	**L**	**L**						
G.SHDSL	**L**	**L**	**L**						
IP Multicast Protocols									
DVMRP Multicast	**D**	**D**	**D**						
PIM Sparse Multicast	**L**	**L**	**L**						
ATM Protocols									
ATM Protocols			**L**						

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6455 Features *(continued)*	***IP+***	***SNA +***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
Serial Asynchronous Protocols									
ASYNC-BYPASS	**D**	**D**	**D**						
IBM2260									**A**
SLIP	**D**	**D**	**D**						
TNPP									**A**
TNPP-ROUT			**L**						
X.42 (GSC)									**A**
T3POS		**L**	**L**						
T3POS over TCP		**L**	**L**						
DATAPAC	**L**	**L**	**L**						
SPP-PAD									**A**
AC100									**A**
Serial Synchronous Protocols									
SDLC		**D**	**L**						
TN3270 Sever		**L**	**L**						
XDLC		**L**	**L**						
TBOP		**D**	**D**	**A**					
LLC-FR		**D**	**D**						
SHDLC		**L**	**L**						
TBOP-BYPASS		**D**	**D**						
X32	**L**	**L**	**L**						
Serial Character-Oriented Protocols									
BSC3270		**L**	**L**						
BSC2780		**L**	**L**						
BSTD									**A**
TCOP		**D**	**D**						

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6455 Features *(continued)*	***IP+***	***SNA +***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
TCOP-BYPASS		**D**	**D**						
NCRBSC									**A**
RS366		**L**	**L**						
TPDU Adaptors									
TPA-TPDU		**L**	**L**						
TPA-SDLC									**A**
TPA-3270		**L**	**L**						
TPA-2780		**L**	**L**						
TPA-TCP		**L**	**L**						
TPA-UDP		**L**	**L**						
Node Features									
ATCIF (AT Dial/Telnet)	**L**	**L**	**L**						
LBU	**D**	**D**	**D**						
DCP		**D**	**L**						
DSCOPE		**L**	**L**						
DSD			**L**						
NCCP		**L**	**L**						
BCST									**A**
NUI	**L**	**L**	**L**						
QOS Features									
TOW	**D**	**D**	**D**						
QoS - Protocol Priority (5.3M)	**L**	**L**	**L**						
QoS - Diff Serv (5.4)	**D**	**D**	**D**						
Ethernet DiffServ QoS (WAN)	**D**	**D**	**D**						
MLPPP LFI			**L**						
FRAME Data Comp	**L**	**L**	**D**						
BSC 3270-to-SNA Conversion						**A**			

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Vanguard 6455 Features *(continued)*	***IP+***	***SNA +***	***Multi-Service***	***Voice***	***Sec-urity***	**** AS/400 BSC***	***Prem. Voice***	***QoS Appl***	***Special***
BSC 2780/3780-to-SNA LU0 Conversion						**A**			
AS/400 5494 Comm. Server						**A**			
QoS App Management									
Application Performance and Bandwidth Prioritization								**A**	
Frame Relay FRF.13/FRF.19								**A**	
Security and VPN									
Encryption DES & 3DES (non-standard)					**A**				
Encryption 3DES &AES (standard)									
PKI & X.509 Digital Certificates									
*OST ISDN is included in IP+ License									
** G.723, G.729 and T.38 Fax cannot fit in one DSP									

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
***Note for the 6400 Series: AS/400 BSC - BSC support is available for the Vanguard 6455 only.**
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Applications Ware for the Vanguard 7300 Series Products

Introduction

This section provides detailed information about the Applications Ware available for Vanguard 7300.

Vanguard 7300 Applications Ware

Release 6.4.R10A makes available the following Applications Ware for the Vanguard 7300. Each Applications Ware package supports a suite of default features. Other features, however, can be added by using Vanguard Software Builder.

Vanguard 7310:

Vanguard 7310 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+	65R000t11.xrc	6.5.R000_@IP+_7310	65R000t11.des
SNA+	65R000t12.xrc	6.5.R000_@SNA+_7310	65R000t12.des
Multi-Service	65R000t15.xrc	6.5.R000_@MS_7310	65R000t15.des

Vanguard 7330:

Vanguard 7330 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+	65R000u11.xrc	6.5.R000_@IP+_7330	65R000u11.des
SNA+	65R000u12.xrc	6.5.R000_@SNA+_7330	65R000u12.des
Multi-Service	65R000Au15.xrc	6.5.R000A_@MS_7330	65R000u15.des

Applications Ware Features

Introduction This table lists each Applications Ware license and the features it offers:

Vanguard 7300 Features	*IP+*	*SNA+*	*Multi-Service*	*AS/400*	*Voice*	*Prem Voice*	*Security*	*QoS Appl*	*Special*
Network Management									
SNMP	**D**	**D**	**D**						
TELNET	**D**	**D**	**D**						
TFTP	**D**	**D**	**D**						
CLI	**D**	**D**	**D**						
Embedded Web (HTTPD)	**D**	**D**	**D**						
Async									
ATPAD	**D**	**D**	**D**						
ISDN									
T1/E1/PRI Data (North American in Default)	**D**	**D**	**D**						
T1/E1/PRI Data (European)	**L**	**L**	**L**						
T1/E1/PRI Data (Asia)	**L**	**L**	**L**						
T1/E1/PRI Voice (includes all voice signaling, NA in Default)	**D**	**D**	**D**						
T1/E1/PRI Voice (includes all voice signaling, Europe)	**L**	**L**	**L**						
Vanguard Analog Voice - DSPs Prior to 6.3- 2xFX/1xFXO/2xE&M									
G.723									
G.729									
CVSELP									
Vanguard Analog Voice - Quad Cards									
G.723/G.729/G.711 (Cannot Add Fax)									
G.723/G.711 (Can add Fax)									
G.729/G.711 (Can add Fax)									
FAX									
Standard Fax T.38	**D**	**D**	**D**						
Digital Voice									
Voice Relay with G.723.1 and G.729a	**D**	**D**	**D**						

Vanguard 7300 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***AS/400***	***Voice***	***Prem Voice***	***Security***	***QoS Appl***	***Special***
Voice Relay Encapsulated in IP (SoTCP)	**D**	**D**	**D**						
H.323 v.2 Standards Based Voice	**D**	**D**	**D**						
Voice Options (All Products)									
Centralized Voice Switch	**D**	**D**	**D**						
VOICE-IP-ENCAPSULATION	**D**	**D**	**D**						
H.323	**D**	**D**	**D**						
Premium Voice Services									
Caller ID						**A**			
Call Hold						**A**			
Call Waiting						**A**			
Call Transfer						**A**			
Call Forward						**A**			
LAN									
Router IP	**D**	**D**	**D**						
Router IPX	**D**	**D**	**D**						
LAN Option Protocols									
LLC-Eth		**D**	**D**						
IPXWAN	**D**	**D**	**D**						
Bandwidth on Demand (LD-Bal)	**D**	**D**	**D**						
Router Proxy	**D**	**D**	**D**						
Router Discovery	**D**	**D**	**D**						
Network Address Translation	**D**	**D**	**D**						
Policy-Based Routing	**D**	**D**	**D**						
RTP Header Compression	**D**	**D**	**D**						
Token Ring	**D**	**D**	**D**						
Eth-Bridge	**D**	**D**	**D**						
DHCP Client	**D**	**D**	**D**						
Radius	**D**	**D**	**D**						
VRRP	**L**	**L**	**L**						
Network Protocols									
OSPF	**D**	**D**	**D**						
BGP4	**D**	**D**	**D**						

Vanguard 7300 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***AS/400***	***Voice***	***Prem Voice***	***Security***	***QoS Appl***	***Special***
FRF.12	**D**	**D**	**D**						
FRI *(includes FRA)*	**D**	**D**	**D**						
FR SVC									**A**
X25	**D**	**D**	**D**						
PPP	**D**	**D**	**D**						
PPPoE	**L**	**L**	**L**						
SoTCP *(Voice Relay Encl. in IP)*	**D**	**D**	**D**						
T1/E1 Interface	**D**	**D**	**D**						
T3/E3 ATM	**D**	**D**	**D**						
IP Multicast Protocols									
DVMRP Multicast	**D**	**D**	**D**						
PIM Sparse Multicast	**L**	**L**	**L**						
Serial Synchronous Protocols									
SDLC		**D**	**D**						
TN3270 Server		**L**	**L**						
TBOP		**D**	**D**						
LLC-FR		**D**	**D**						
X32									
Node Features									
ATCIF (AT Dial/Telnet)	**D**	**D**	**D**						
LBU	**D**	**D**	**D**						
DCP		**D**	**D**						
QOS Features									
TOW	**D**	**D**	**D**						
QoS - Diff Serv (5.4)	**D**	**D**	**D**						
Ethernet DiffServ QoS (WAN)	**D**	**D**	**D**						
MLPPP LFI			**L**						
Data Compression	**D**	**D**	**D**						
SNA Features									
BSC 3270-to-SNA Conversion		**D**	**D**						
BSC 2780/3780-to-SNA LU0 Conversion		**D**	**D**						
AS/400 5494 Comm. Server				**A**					

Vanguard 7300 Features *(continued)*	*IP+*	*SNA+*	*Multi-Service*	*AS/400*	*Voice*	*Prem Voice*	*Security*	*QoS Appl*	*Special*
QoS App Management									
Application Performance and Bandwidth Prioritization								**A**	
Frame Relay FRF.13/FRF.19								**A**	
Security and VPN									
Encryption DES & 3DES (non-standard)									
Encryption 3DES &AES (standard)							**A**		
PKI & X.509 Digital Certificates							**A**		

D = in default image for particular license
A = add-on feature (part of upgrade license)
L = in license
Specials - license available from service only - submit end user customer info (including all contact info), unit type and count to: karengarcia@vanguardms.com

Note

Token Ring for the Vanguard 7300 Series is available in 6.0 Point Release 01A or greater.

MIB Downloading Instructions for Non-Vanguard Managed Solutions SNMP Managers

Introduction

This section lists Vanguard MIB files needed for SNMP management of Vanguard devices when using a non-Vanguard Managed Solutions SNMP Network Management System (NMS).

Obtaining MIB Files

Vanguard MIB files for your non-Vanguard Managed Solutions NMS are available from the Vanguide 6.5R00A CD-ROM. Refer to your Vanguide 6.5R00A CD-ROM user documentation for the directory location of the MIB files.

You can also download MIB files from the internet. The address for the server is:

http://www.vanguardms.com/support/software_and_tools/vanguard/mibs

On the internet, there is one ZIP file for the PC and one ZIP file for UNIX. You must unzip the ZIP file to get the MIB files. The contents of these two ZIP files are identical. However, the formats of the files in these two ZIP files are slightly different due to the way PCs and UNIX systems handle text files.Depending on the protocols and options provided by the Applications Ware image installed in your node, you might not need all the MIB files.See the Required Files and Loading section below for details on the files you should have to support SNMP management for Vanguard products.

Required Files and Loading

The following MIB files are required by your NMS to perform SNMP management of Vanguard products:

- rfc1213.mib
- cdx_6500.mib

These files must be loaded first and in the order shown.

After you load these required files onto your NMS, you can load the MIB files for the options and protocols installed on your Vanguard hardware. See the MIB Files for Options/Protocols section below.

MIB Files for Options/Protocols

This table lists the contents of options and protocol MIB files for Vanguard products. Use this table to determine which MIB files you need to download.

Download This MIB File	*If you want this option, protocol, or base MIB software*
alc.mib	ALC protocol
atm.mib	Asynchronous Transfer Mode

Download This MIB File	***If you want this option, protocol, or base MIB software*** *(continued)*
bcst.mib	Broadcast
bgp4.mib	Border Gateway Protocol 4
bri.mib	ISDN BRI protocol
bridge.mib	Bridging option
bsc2780.mib	BSC2780 protocol
bsc3270.mib	BSC3270 protocol
bstd.mib	Burroughs Poll/Select protocol
cdx_6500.mib	Required base MIB for Vanguard Products MIBs
de.mib	Data Encryption option
dc.mib	Data Compression option
dcp.mib	Data Connection Protection option
dsd.mib	Digital Sharing Device Option
e1.mib	Physical E1 port
eia.mib	EIA protocol (required file for serial protocol support)
eth.mib	Ethernet option
frdce.mib	Frame Relay DCE option
frdte.mib	Frame Relay DTE option
fri.mib	Frame Relay option
gcs.mib	GSC protocol
hub.mib	Ethernet Hub option
ibm2260.mib	IBM2260 protocol
ipsec.mib	IP Security
isdn.mib	ISDN protocol
iso3201.mib	3201 protocol
mx25.mib	MX.25 protocol
ncrbsc.mib	NCR Binary Synchronous protocol
ns.mib	Network Service (required file)
pad.mib	PAD protocol
ping_opt.mib	Remote Ping Option
pim.mib	Protocol Independent Multicast
ppp.mib	Point-to-Point protocol
pppoe.mib	Point-to-Point over Ethernet

Download This MIB File	***If you want this option, protocol, or base MIB software*** *(continued)*
qos.mib	Quality of Service option - QoS-Kit- includes: QoS_CORE, QoS_CLSSIFIER and QoS_SCHEDULER
qos_pp.mib	Quality of Service option - QoS-PP (Protocol Priority) includes: QoS_CCM, PACKET_CLASSIFIER and PACKET SCHEDULER
radius.mib	RADIUS
rfc.1155.smi	Structure and identification of management information
rfc1212.smi	Concise MIB definitions
rfc1213.mib	MIB-II for managing TCP/IP -based internets
rfc1231.mib	IEEE 802.5 Token Ring MIB
rfc1286.mib	Definitions of managed objects for bridges
rfc1315.mib	Management Information Base for Frame Relay DTEs
rfc1398.mib	Managed objects for Ethernet-type interfaces
rfc1657a.mib	BGP4 MIB (Converted to SNMP version 1 from the original rfc1657 mib).
rfc1850.mib	OSPF MIB (Requires rfc1903.mib and is converted from rfc1850.mi2 to version 1 of SNMP).
rfc1850a.mi2	OSPF Version 2 MIB
rfc1850b.mi2	OSPF Version 2 MIB (Trap definitions)
rfc1903.mib	Textual conventions for version 2 of SNMP (Converted from rfc1903.mi2 to version 1 of SNMP).
rfc1903.mi2	Textual conventions for version 2 of SNMP
rfc2496a.mib	DS3/E3 Interface Type MIB (Converted to SNMP version 1 from the original rfc2496 mib).
rfc2618a.mib	RADIUS Authentication Client MIB
rfc2620a.mib	RADIUS Accounting Client MIB
router.mib	Routing option (required file)
rs366.mib	EIA RS366 support
sdlc.mib	SDLC protocol
shdsl.mib	Symmetric High Speed DSL
slac.mib	LLC Ethernet/Frame Relay/Token Ring Conversion option
snabsc.mib	System Network Architecture binary synchronous
spp.mib	SPP protocol
ss.mib	Switched Services (required file)

Download This MIB File	***If you want this option, protocol, or base MIB software*** *(continued)*
t1e1vg.mib	Fractional T1E1 Interface option
t1.mib	Physical T1 port
t1e1.mib	Virtual T1/E1 port mapping table
t1e1tg.mib	T1/E1 for the 7300 Series
tbop.mib	TBOP protocol
tcop.mib	TCOP protocol
tdlc.mib	TDLC protocol
tftp.mib	TFTP option
tdmclk.mib	TDM Network Clock option
tdmtgclk.mib	TDM Network Clock option for the 7300
tn3270.mib	TN3270 Remote Server
tnpp.mib	Telocator Network Paging Protocol (TNPP)
tow.mib	TOW option
tr.mib	Token Ring option
traffic_monitor.mib	Traffic Monitor
v.mib	Voice Relay option
vpmt.mib	Virtual Port Mapping Table option
vrrp.mib	Virtual Router Redundancy Protocol
wan.mib	WAN support (required file)
x25.mib	X.25 option
xdlc.mib	XDLC protocol

Applications Ware RFC Compliance

Listing

This table identifies the RFCs (Request for Comments) with which Vanguard Applications Ware software is compliant.

RFC	*Description*
768	User Datagram Protocol. J. Postel. Aug-28-1980.
791	Internet Protocol. J. Postel. Sep-01-1981.
792	Internet Control Message Protocol. J. Postel. Sep-01-1981. Not all messages covered by RFC 792 are supported by Vanguard Applications Ware.
793	Transmission Control Protocol. J. Postel. Sep-01-1981.
826	An Ethernet Address Resolution Protocol-or-Converting network protocol addresses to 48.bit Ethernet Address for Transmission on Ethernet hardware. D.C. Plummer. Nov-01-1982.
854	Telnet Protocol Specification. J. Postel, J.k. Reynolds. May-01-1983.
858	Telnet Suppress Go Ahead Option. J. Postel, J.K. Reynolds. May-01-1983.
877	Standard For The Transmission Of IP Datagrams Over Public Data Networks. J.T. Korb. Sep-01-1983.
894	Standard for the Transmission of IP data grams over Ethernet networks. C. Hornig. Apr-01-1984.
919	Broadcasting Internet Datagrams. J.C. Mogul. Oct-01-1984.
922	Broadcasting Internet datagrams in the presence of subnets. J.C. Mogul. Oct-01-1984.
950	Internet Standard Subnetting Procedure. J.C. Mogul, J. Postel. Aug-01-1985.
951	Proposed Bootstrap protocol (BOOTP) for ARPA-Internet W. Croft, J. Gilmore. Sept-01-1985.

RFC	***Description*** *(continued)*
1009	Requirements for Internet Gateways R.Braden, J. Postel. Jun-01-1987.
1042	Standard For The Transmission Of IP Datagrams Over IEEE 802 Networks. J. Postel, J.k. Reynolds. Feb-01-1988.
1055	Nonstandard For Transmission Of IP Datagrams Over Serial Lines: SLIP. J.l. Romkey. Jun-01-1988.
1058	RIP Version 2 Carrying Additional Information. G. Malkin. January 1993.
1060	Assigned values used in network protocol implementations. J. Reynolds, J. Postel. Mar-01-1990.
1075	Distance Vector Multicast Routing Protocol. D. Waitzman, C Partridge, S. Deering. Nov-010-1988.
1091	Telnet Terminal-type Option. J. Vanbokkelen. Feb-01-1989.
1112	Host Extensions for IP Multicasting S. Deering. Aug-01-1989.
1122	Requirements for Internet hosts - communication layers. R.T. Braden. Oct-01-1989.
1123	Requirements for Internet hosts - application and support. R.T. Braden. Oct-01-1989.
1144	Compressing TCP/IP headers for low-speed serial links. V.Jacobson. Feb-01-1990.
1155	Structure And Identification Of Management Information For TCP/IP-based Internets. M.t. Rose, K. Mccloghrie. May-01-1990.
1156	MIB for Network Management of TCP/IP based Internets.
1157	Simple Network Management Protocol (SNMP). J.D. Case, M. Fedor, M.L. Schoffstall, C. Davin. May-01-1990.
1209	Transmission Of IP Datagrams Over The SMDS Service. D.m. Piscitello, J. Lawrence. Mar-01-1991.
1212	Concise MIB Definitions. M.t. Rose, K. Mccloghrie. Mar-01-1991.

RFC	***Description*** *(continued)*
1213	Management Information Base For Network Management Of TCP/IP-based Internets:MIB-II. K. Mccloghrie, M.t. Rose. Mar-01-1991.
1215	A Convention for Defining Traps for use with the SNMP. M. Rose, Editor, Performance Systems International. March 1991.
1231	IEEE 802.5 Token Ring MIB. K. Mccloghrie, R. Fox, E. Decker. May-01-1991.
1250	IAB Official Protocol Standards. J. Postel. Aug-01-1991.
1256	ICMP Router Discovery Messages. S. Deering. September 1991.
1286	Definitions Of Managed Objects For Bridges. E. Decker, P. Langille, A. Rijsinghani, K. Mccloghrie. December, 1991.
1293	Inverse Address Resolution Protocol. T. Bradley, C. Brown. Jan-01-1992.
1294	Multiprotocol Interconnect Over Frame Relay. T. Bradley, C. Brown, A. Malis. January 1992.
1315	Management Information Base for Frame Relay DTEs. C. Brown, F. Baker, C. Carvalho. April 9, 1992.
1332	PPP Internet Protocol Control Protocol (IPCP). G. McGregor. May 1992.
1334	PPPAuthentication Protocols B. Lloyd, W. Simpson. Oct-01-1992.
1340	Status of Assigned Numbers J. Reynolds, J. Postel. July-01-1992.
1349	Type of Service in the Internet Protocol Suite P. Almquist. Jul-01-1992.
1356	Multiprotocol Interconnect On X.25 And ISDN In The Packet Mode. A. Malis, D. Robinson, R. Ullmann. August 1992.
1362	Novell IPX over Various WAN Media (IPXWAN). M. Allen. Sept-01-1992.
1398	Definitions Of Managed Objects For The Ethernet-like Interface Types. F. Kastenholz. January 1993.
1483*	Multiprotocol Encapsulation over ATM Adaptation Layer 5 Juha Heinanen, July 1993. *** See RFC 2684. RFC 2684 obsoletes RFC 1483**

RFC	***Description*** *(continued)*
1490	Multiprotocol Interconnect Over Frame Relay. T. Bradley, C. Brown, & A. Malis. July 1993.
1517	Applicability Statement For The Implementation Of Classless Inter-Domain Routing (CIDR). Internet Engineering Steering Group, R. Hinden. September 1993.
1518	An Architecture For IP Address Allocation With CIDR. Y. Rekhter & T. Li. September 1993.
1519	Classless Inter-Domain Routing (CIDR): an Address Assignment and Aggregation Strategy. V. Fuller, T. Li, J. Yu, & K. Varadhan. September 1993.
1520	Exchanging Routing Information Across Provider Boundaries in the CIDR Environment. Y. Rekhter & C. Topolcic. September 1993.
1534	Interoperation between DHCP and BOOTP. R. Droms. Oct-01-1993.
1542	Clarifications and Extensions for the Bootstrap Protocol. W. Wimer. Oct-01-1993.
1576	TN3270 Current Practices. J. Penner. DCA, Inc. January 1994.
1577	Classical IP and ARP over ATM M. Laubach, January 1994.
1583	OSPF Version 2. J. Moy. Mar-01-1994.
1631	The Network Address Translator (NAT). K. Egevang, P. Francis. May 1994.
1634	The text/enriched MIME Content-type. N. Borenstein. Jan-01-1994.
1647	TN3270 Enhancements. B. Kelly. Auburn University. July 1994.
1661	The Point-to-Point Protocol (PPP). W. Simpson, Editor. July 1994.
1694	Definitions of Managed Objects for SMDS Interfaces Using SMIv2. T. Brown & K. Tesink, Editors. August 1994.
1700	Assigned Numbers. J. Reynolds, J. Postel. October, 1994.

RFC	***Description*** *(continued)*
1745	BGP/IDRP of IP - OSPF Interaction K. Varadhan, OARnet & ISI, S. Hares, NSFnet/Merit, Y. Rekhter, T.J. Watson Research Center, IBM Corp., December 1994.
1771	A Border Gateway Protocol 4 (BGP-4) Y. Rekhter, T.J. Watson Research Center, IBM Corp., T. Li, Cisco Systems, Editors. March 1995.
1793	Extending OSPF to Support Demand Circuits. J. Moy, Cascade. April 1995.
1812	Requirements for IP Version 4 Routers. F. Baker. June 1995.
1828	IP Authentication using Keyed MD5 P. Metzger, Piermont, W. Simpson, Daydreamer. August 1995.
1852	IP Authentication using Keyed SHA P. Metzger, Piermont, W. Simpson, Daydreamer. September 1995.
1903	Textual Conventions for Version 2 of the Simple Network Management Protocol (SNMPv2). J. Case, K. McCloghrie, M. Rose, S. Walbusser. January 1996.
1918	Address Allocation for Private Internets. Y. Rekhter, B. Moskowitz, D. Karrenberg, G. J. de Groot & E. Lear. February 1996.
1990	The PPP Multilink Protocol (MP). K. Sklower, B. Lloyd, G. McGregor, D. Carr, T. Caradetti. August 1996.
1997	BGP Communities Attribute. R. Chandra, P. Traina, Cisco Systems, T. Li. August 1996.
1998	Application of the BGP Community Attribute in Multi-home Routing. E. Chen, MCI, T. Bates, Cisco Systems. August 1996.
2131	Dynamic Host Configuration Protocol (DHCP). R. Droms, Bucknell University, March, 1997.
2132	DHCP Options and BOOTP Vendor Extensions. S. Alexander, Silicon Graphics, Inc., R. Droms, Bucknell University. March 1997.
2236	Internet Group Management Protocol (IGMP), Version 2 W. Fenner-Xerox PARC. November, 1997.

RFC	Description *(continued)*
2338	Virtual Router Redundancy Protocol (VRRP). S. Knight, D. Weaver, Ascend Communications, D. Whipple, Microsoft, Inc., R. Hinden, D. Mitzel, P. Hunt, Nokia, P. Higginson, M. Shand, Digital Equipment Corp., A. Lindem, IBM Corporation. April 1998.
2362	Protocol Independent Multicast-Sparse Mode (PIM-SM). D. Estrin, D.Farinacci, A. Helmy, D. Thaler, S. Deering, M. Handley, V. Jacobson, C. Liu, P. Sharma, L. Wei, CISCO, UCL, USC, LBL, XEROX and UMICH. June 1998.
2364	PPP Over AAL5. G. Gross, Lucent Technologies, M. Kaycee, Paradyne, A. Lin, Shasta Networks, A. Malis, Ascend Communications, J. Stephens, Cayman Systems. July 1998.
2393	IP Payload Compression Protocol (IPComp). A. Shacham, Cisco, R. Monsour, Hi/fn, Inc., R. Pereira, TimeStep, M. Thomas, AltaVista Internet. December 1998.
2395	IP Payload Compression using LZS. R. Friend, R. Monsour, Hi/fn, Inc. December 1998.
2401	Security Architecture for the Internet Protocol. S. Kent, BBN Corp., R. Atkinson, @Home Network. November 1998.
2402	IP Authentication Header. S. Kent, BBN Corp., R. Atkinson, @Home Network. November 1998.
2403	The Use of HMAC-MD5-96 within ESP and AH. C. Madson, Cisco System Inc., R. Glenn, NIST. November 1998.
2404	The Use of HMAC-SHA-1-96 within ESP and AH. C. Madson, Cisco System Inc., R. Glenn, NIST. November 1998.
2405	The ESP DES-CBC Cipher Algorithm with Explicit IV. C. Madson, Cisco System Inc.,N. Doraswamy, Bay Networks, Inc. November 1998.
2406	IP Encapsulating Security Payload (ESP). S. Kent, BBN Corp., R. Atkinson, @Home Network. November 1998.
2407	The Internet IP Security Domain of Interpretation for ISAKMP. D. Piper, Network Alchemy. November 1998.
2408	Internet Security Association and Key Management Protocol (ISAKMP) D. Maughan, National Security Agency, M. Schertler, Security, Inc., M. Schneider, National Security Agency, J. Turner, RABA Technologies, Inc. November 1998.

RFC	***Description*** *(continued)*
2409	The Internet Key Exchange (IKE). D. Harkins, D. Carrel, Cisco Systems. November 1998.
2410	The NULL Encryption Algorithm and Its Use with IPSEC. R. Glenn, NIST, S. Kent, BBN Corp. November 1998.
2411	IP Security. Working Group R. Thayer, Sable Technology Corp., N. Doraswamy, Bay Networks, R. Glenn, NIST. November 1998.
2451	The ESP CBC-Mode Cipher Algorithms. R. Pereira, TimeStep Corporation, R. Adams, Cisco Systems. November 1998.
2453	RIP Version 2. G. Malkin, Bay Networks. November 1998.
2474	Definition: Differentiated Services Field (DS Field) in IPv4/IPv6 Headers. K. Nichols, S. Blake, F. Baker, D. Black. December, 1998.
2475	An Architecture for Differentiated Services. S. Blake, D. Black, M. Carlson, E. Davies, Z. Wang, W. Weiss. Dec. 1998.
2508	Compressing IP/UDP/RTP Headers for Low-Speed Serial Links. S. Casner, V. Jacobson. Cisco Systems. February 1999.
2516	The Method for Transmitting PPP over Ethernet (PPPoE). L. Mamakos, K. Lidl, J. Evarts, UNET Technologies Inc., D. Carrel, D. Simone, RedBack Networks Inc., R. Wheeler, RouterWare Incorporated. February 1999.
2519	A Framework for Inter-Domain Route Aggregation. E. Chen, Cisco, J. Stewart, Juniper. February 1999.
2597	Assured Forwarding PHB Group. J. Heinanen, F. Baker, W. Weiss, J. Wroclawski. June, 1999.
2598	An Expedited Forwarding PHB. V. Jacobson, K. Nichols, K. Poduri. June, 1999.
2618	RADIUS Authentication Client MIB B. Aboba, G. Zorn, Microsoft. June, 1999.
2620	RADIUS Accounting Client MIB B. Aboba, G. Zorn, Microsoft. June 1999.
2684*	Multiprotocol Encapsulation over ATM Adaptation Layer 5. D. Grossman, Motorola, Inc., J. Heinanen, Telia. September 1999. *** RFC 2684 replaces RFC 1483**

RFC	***Description*** *(continued)*
2686	The Multi-Class Extension to Multi-Link PPP. C. Bormann, Universitaet Bremen TZI. September 1999.
2715	Interoperability Rules for Multicast Routing Protocols. D.Thaler, Microsoft. October 1999.
2865	Remote Authentication Dial In User Service (RADIUS). C. Rigney, S. Willens, Livingston, A. Rubens, Merit W. Simpson, Daydreamer. June, 2000.
2866	RADIUS Accounting. C. Rigney, Livingston. June, 2000.
3276	Definitions of Managed Objects for High Bit Rate DSL - 2nd Generation (HDSL2) and Single Pair High Speed Digital Subscriber Line (SHDSL) Lines Processing. B. Ray, PESA Switching Systems, R. Abbi, Alcatel. May 2002.
3376	Internet Group Management Protocol (IGMP), Version 3 B. Cain-Cereva Networks, S. Deering, I. Kouvelas-CISCO Systems, B. Fenner-AT&T Labs, A. Thyagarajan-Ericsson. October, 2002.

Product Declarations and Regulatory Information

The following sections provide information about standards compliance, safety statements, and Type Approvals.

Warnings And Cautions

The following special notices apply to all equipment handling procedures in this installation guide.

Warning

Ports capable of connecting to ports on other apparatus are defined as Safety Extra Low Voltage (SELV). To conform with EN60950, ensure that these ports are only connected to ports of the same type on other apparatus.

Les ports qui sont susceptibles d'être connectés à des équipements sont désignés comme TBTS. Pour garantir la conformité à la norme EN 60950, n'interconnecte ces ports qu'avec des ports du même type sur des autres matériels.

Anschlusse, die mit anderen Geraten verbindet werden konnen, sind als SELV beschrieben. Um Konformitat mit EN 60950 zu versichern, sichern Sie es, daß diese Anschlusse nur mit den des selben Type auf anderen Geraten verbindet werden.

CE Marking

The mark in the following diagram appears on each Vanguard Series product, and the statement that follows explains its significance.

CE

This product is CE marked to indicate compliance with the following European Directives:

- 1999/5/EC Radio & Telecom Terminal Equipment (R&TTE)
- 73/23/EEC Low Voltage Directive (Safety)
- 89/336/EEC EMC Directive

Declarations of Conformity

English

Declaration of Conformity:

Hereby, Vanguard Managed Solutions declares that this Vanguard Router is in compliance with the requirement and other relevant provisions of Directive 1999/5/EC.

Danish

Konformitetserklæring:
Hermed erklærer Vanguard Managed Solutions, at indestående Vanguard Router er i overensstemmelse med de grundlæggende krav og de relevante punkter i direktiv 1999/5/EF.

Dutch

Verklaring van overeenstemming:

Hierbij verklaart Vanguard Managed Solutions dat diens Vanguard Router voldoet aan de basisvereisten en andere relevante voorwaarden van EG-richtlijn 1999/5/EG.

Finnish

Vaatimustenmukaisuusvakuutus:

Vanguard Managed Solutions vakuuttaa täten, että Vanguard Router on direktiivin 1999/5/EC keskeisten vaatimusten ja sen muiden tätä koskevien säännösten mukainen

French

Déclaration de conformité :

Par la présente, Vanguard Managed Solutions déclare que ce routeur Vanguard est conforme aux conditions essentielles et à toute autre modalité pertinente de la Directive 1999/5/CE.

German

Konformitätserklärung:

Hiermit erklärt Vanguard Managed Solutions dass der Vanguard Router die grundlegenden Anforderungen und sonstige maßgebliche Bestimmungen der Richtlinie 1999/5/EG erfüllt.

Greek

? ? ? ? s ? S ? µ µ ? ? f ? s ? ?:
? ?a t?? pa???t??, ? eta??e?a Vanguard Managed Solutions d????e? ?t? ? pa???sa s?s?e?? (d??µ?????t??) Vanguard Router p????? t?? ßas???? apa?t?se?? ?a? ???e? ßas???? p???p???se?? t?? ? d???a? 1999/5/?K.

Italian

Dichiarazione di conformità:
Con la presente Vanguard Managed Solutions dichiara che il router Vanguard soddisfa i requisiti essenziali e le altre disposizioni pertinenti della direttiva 1999/5/CE.

Portugese

Declaração de Conformidade:
Através da presente, a Vanguard Managed Solutions declara que este encaminhador Vanguard se encontra em conformidade com os requisitos essenciais e outras disposições relevantes da Directiva 1999/5/CE.

Spanish

Declaración de conformidad:
Por la presente declaración, Vanguard Managed Solutions declara que este encaminador Vanguard cumple los requisitos esenciales y otras cláusulas importantes de la directiva 1999/5/CE.

Swedish

Överensstämmelseförklaring:
Vanguard Managed Solutions förklarar härmed att denna Vanguardrouter överensstämmer med de väsentliga kraven och övriga relevanta stadganden i direktiv 1999/5/EG.