Vanguard Applications Ware Software Release Notice

Release 7.1.R00A

Overview

Introduction

This notice contains update information for Release 7.1.R00A of the operating software for these Vanguard platforms: 7.1

- Vanguard 242D
- Vanguard 340 Enhanced, 342
- Vanguard 3410, 3460
- Vanguard 6840, 6841
- Vanguard 7310, 7330

Release 7.1.R00A 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 6.4R00A)
- Vanguard 340 (supported by Release 7.0.R00A)
- Vanguard 6425/6430/6450 (supported by Release 6.0.R00A)
- Vanguard 6435/6455(supported by Release 7.0.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 7.1.R00A

The memory requirements have changed for some Vanguard products supported by Release 7.1.R00A For more information on the memory changes that affect your Vanguard unit, refer to “Memory Requirements for Vanguard Applications Ware Release 7.1.R00A” section on page 7

In This Notice

Applications Ware

Introduction

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

Applications Ware Licenses and Upgrades

The Rel 7.1.R00A Applications Ware is divided into four base licenses and four to five upgrade licenses (depending on the platform). Customers are required to purchase only one base license and can purchase optional upgrade licenses to add to the base license. Compatibility of upgrade licenses with base licenses and various products is totally dependent upon a specfic product and its capabilities.

Applications Ware Base Licenses

- IP+ Applications Ware License (242D, 340E, 342, 7310, 7330)
- IP SAFE Applications Ware License (3400 and 6800)

Note
The IPSafe Applications Ware license now includes SSH Server with external Radius Authentication.

- 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
- Advance Voice (Premium Services + SIP)
- Premium Voice Services Applications Ware License Upgrade (Note: This option software upgrade license is available in the 340E and 342 models for release 6.5 to 7.0.) For the 340E, 342, 3460, 6840, 6841, 7310, and 7330, these services are included in the Advanced Voice Applications Ware License, starting with Rel 7.1.R00A.

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 to 7.1.R00A Tech Tip

Always save a back-up of CMEM (configuration memory) file before upgrading. This backed-up CMEM File can be used to reload the configuration if you downgrade or lose the configuration.

Be aware that downgrading from 7.1.R00A to 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

Obsolete Features

Commencing with Release 7.0.R00A, the maintenance and support of the following features is discontinued:

- QoS Application Performance Management License Upgrade
- QoS Traffic Reporting Tool
- Voice Network Manager Tool Release 1.0.

Memory Requirements for Vanguard Applications Ware Release 7.1.R00A

Memory Changes for Release 7.1.R00A

In order to support the Vanguard Applications Ware Release 7.1.R00A, some Vanguard products require memory upgrades. The *total memory* required for each product at release 7.1.R00A is listed in this table:

Product	*Total Memory Required at Release 7.1.R00A*
Vanguard 3410/3460 (Ships with 64MB SDRAM)	64MB SDRAM - 16MB Flash
Vanguard 340 Enhanced (Ships with 32MB)	32MB DRAM - 8MB Flash
Vanguard 342 (Ships with 32MB)	32MB DRAM - 8MB Flash
Vanguard 242D (Ships with 32MB)	32MB DRAM - 8MB Flash
Vanguard 6840, 6841	256MB DRAM - 256MB Flash
Vanguard 7310, 7330 (CPU 2)	64MB Compact Flash 512MB DRAM

Note

The table above lists the memory that is shipped.

Note

The Vanguard 6425, 6430, 6450, 6435, 6455, 6520, 6560, 100, 200, 300, 305, 311, 311*PLUS*, 312*PLUS*, 320, and 340 are not supported at Release 7.1.R00A.

Products Supported

Products Supported for Release 7.1.R00A

Products supported by release 7.1.R00A:

Product	*Support*
Vanguard 242D	Normal product release.
Vanguard 3410,3460	Normal product release.
Vanguard 340 Enhanced	Normal product release.
Vanguard 342	Normal product release.
Vanguard 6840 and 6841	Normal Product Release
Vanguard 7310 and 7330 (CPU Version 1 and 2)	Normal product release.

Products Not Supported

Release 7.1.R00A is not supported on these discontinued products:

Product	*Last Release Supported*
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.
Vanguard 340	This product is maintained at 7.0.R00A.
Vanguard 6435, 6455	This product is maintained at 7.0.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 7.1.R00A 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 7.1.R00A features in the referenced documents at the following web site:

http://www.vanguardnetworks.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 47.

Release 7.1.R00A Features

Release 7.1.R00A extends the multi-service convergence benefits of enterprise IP VPNs with the following new features:

VBIP: Vanguard BiSync 3270 to TCP/IP Conversion

This feature will allow a remotely located Vanguard (3400 series) router to connect to an ATM machine over a serial interface in conjunction with the existing BSC3270 TPAD feature. The newly developed TCP/IP feature will take inbound data (between the STX and ETX delimiters) and package the data into an IP data packet. This feature is included in the SNA+ and Multi-Service license of the 3400 series.

IGP to BGP Route Filtering

IGP to BGP route filtering can be used to control which routes from RIP or OSPF are redistributed into BGP. This provides more granular control than in previous releases. These new filtering capabilities are:

1. OSPF to BGP Route Import Filtering
2. RIP to BGP Route Import Filtering

BGP Network Route Tables

The BGP Network Route table provides a mechanism to make BGP initiate the advertisement of a route without the need to import it into BGP from another routing protocol. In conjunction with the IGP Synchronization flag, it can conditionally advertise routes only if they exist in the IGP table. This provides more granular control than in previous releases.

BGP Multi-path Load Balancing

This feature will allow Vanguard Networks customers to support architectures where the customer site is connected to multiple BGP peers. With multipath load balancing, multiple BGP connections can share the packet traffic.

Same AS in AS-Path optional override

The Same AS in AS-Path optional override feature provides better support for MPLS VPNs. Since BGP AS is now geographically dispersed, the BGP AS is no longer contiguous. BGP normally considers an error. Without this feature, the MPLS network must override the BGP AS_PATH in order to create an MPLS VPN.

In-Band DTMF packet signaling RFC 2833

This feature will allow In-Band signaling to be used with Dual-tone multi-frequency (DTMF). This will allow a PBX and/or Switch to send DTMF information to a SIP UA (User Agent) via in-band messages.

DSP Option IV

DSP version IV is a new configuration for the Voice DSP Image selection in which a set of Codec's and T.38 Fax, not previously supported together, will now be supported for analog voice ports.

The Codec's are:

1. G723.1
2. G729A
3. G711 (A-law, u-law)
4. T.38 Fax over IP
5. VAD and Silence suppression will not be supported in this configuration

IPSEC/SSH in Standard Licenses

This feature enables IPSEC Tunneling and SSH (Secure Shell) functionality in the IPSafe, SNA+, and Multi-Service Licenses without the need for a Security License and Encryption Hardware Accelerator. It allows up to two IPSEC tunnels using DES or triple-DES ciphers. (AES Encryption requires the Security License and the Encryption Hardware Accelerator). The feature applies to the 3410, 3460, and 6840 platforms without the installed the Encryption Hardware Accelerator and without the installed Encryption license.

SNMP V3

SNMPv3 is designed to up-grade the network management feature by adding security and remote configuration enhancements to SNMP. SNMPv3 will provide important security features such as:

a. Message integrity to ensure that a packet has not been tampered with in transit.

b. Authentication to verify that the message is from a valid source.

c. Encryption of packets to prevent snooping by an unauthorized source.

IPFlow MLPPP

IPFlow to MLPPP will allow service providers and customers who currently deploy a Frame Relay network seamlessly migrate from FR to MPLS and maintain their

ability to use IPFlow. The transition should be transparent to the SP/customer and keep all of the current features.

3460 E1 Trunking Gateway

In the 3460, for E1 Interfaces only, allow consecutive DS0 switching configuration. This configuration can consist of TDM Voice and Data traffic, from one E1 Interface to the other E1 interface. These consecutive DS0's must start at DS0 number 1. Remaining DS0's are allowed to carry channelized data. This feature will be enabled on the 3460 and be included in the IP+, SNA+, and Multi-Service license.

The feature is not be implemented in the T1 Daughter Card for the 3460.

DHCP Server extended number of clients from 128 to 255 and introduce exception rules

Current DHCP implementation is limited to 16 subnets and 128 clients per subnet, for a maximum of 2,048 clients. Some large customers need more than 2,048 clients, and need to organize their IP addressing into more than 16 subnets. One customer, e.g., has hundreds of institutions: Government departments, schools, hospitals, police, etc., each one of which has hundreds of IP addresses. For example:

0.1.1.0 to 10.1.1.254 - Department of health

10.1.2.0 to 10.1.2.100 - Police

10.1.2.101 to 10.1.2.254 - Secretary of transports

10.1.3.0 to 10.1.3.90 - School A

10.1.3.91 to 10.1.3.127 - School B

In addition, there are blocks of IP addresses that must be excluded.

In this release, to accommodate the needs of such customers, the following changes are being made:

* The number of clients per /24 subnet (mask 255.255.255.0) is being increased to 254. This does not require a configuration change.

* The number of subnets is being increased to 64, which does require a configuration change. This, together with the previous change increases the total number of DHCP clients to 16,256.

* A user will be able to specify a range of IP addresses to be excluded. This requires a configuration change.

Software Improvements

Introduction

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

- Customer-initiated Change Requests
- New features to address new applications

Release 7.1.R00A 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 7.1.R00A, and where applicable, interim patch releases have been replaced by Release 7.1.R00A:

Change Request (CR#)	*Interim Patch Release Replaced by Release 7.1.R00A*	*Problem Description*
16792	6.5.T29C	Multiple Dynamic IPSEC Tunnels will not re-establish after outage.
16801	6.5.T23D	QOS allocating bandwidth Improperly.
16803	6.5.T29C	Node crash when booting a dynamic tunnel that is down.
16815	6.5.T30B	Cannot configure Service profile >100 in the QCL menu.
16843	6.5.P20K	Customer cannot transfer calls.
16853	6.5.P20K	Customer is not hearing call back tone.
16859	N/A	BRI voice ports not booting up, node resets due to out of memory.
16866	6.5.T24C	When calling busy number, calls disconnects without giving any busy tone.
16889	6.5.P30D	BGP routes not passing, policy look-up table not working.
16906	6.5.P20M	PBX services Transfer function not working with SIP.
16978	7.0.S100	BSC2780-LLC stats are incorrect once you get to 100 devices.
17002	7.0.T10A	Ethernet Port indicates a Port Up status without a cable.
17012	7.0.T16E	With Encryption and Segmentation enabled, packets larger than 1100 are dropped.
17014/ 17401	7.0.S100	DHCP Server not working properly.
17026	7.0.T16E	Encyption not recovering from SPI errors w IPSEC Tunnels when running MD5.
17038	7.0.T16B	Can not disable IP Source Routing.
17046	N/A	VG S/W Builder requires Security License to allow you to select SSH. It should be included in the base license.

Change Request (CR#)	Interim Patch Release Replaced by Release 7.1.R00A	Problem Description (continued)
17083	7.0.T16A	Buffer Leak if a IPFLOW collector becomes unreachable. Packet buffers are consumed and not released for each IPFLOW update packet sent.
17100	7.0.T16B	IPflow not working when QoS enabled at Ethernet port.
17104	7.0.T10A	Cannot configure NAPT port range.
17105	7.0.T16A	A superfluous packet to satisfy packet to satify an internal data flow function was erroneously sent over the link. The remote end, in this case a Cisco, would discard and note an event that was unnecessary and filled up the event log. The function was changed and unnecessary packets are no longer sent over the link.
17106	7.0.T16A	MLPPP links are now supported by IPFLOW meters. This support required changes to the way meters are configured. NOTE: If you are upgrading from previous releases supporting IPFLOW, then meter entries must be re-entered and saved before operating.
17107	7.0.T11A	V342 crashed with FER. FAULT: invalid semaphore address #2.
17110	7.0.T16B	Interface 2 takes too long to go down when carrier is lost.
17179	7.0.T16C	Unable to perform loopbacks on E1 DS0 channels 25-31.
17182	7.0.T16C	Booting FE1 Int1 causes Int4 and Int5 on optional E1 to go into LOF.
17184	7.0.T16C	VG failure to send release complete on H323 call causes audio path.
17202	7.0.T16A	IPFLOW is not working properly.
17206	7.0.T16F	CLI not support PPP-profile, PPP-parameters, and IP Flow.
17222	7.0.T16B	IPFLOW reported the wrong ifindex on outbound meters when the flow was received on a group LCON
17223	7.0.T16C	R2 ports running on timeslots 17,18,&19 dont send Seize Ack.
17225	none	IPFLOW Active and Inactive timesouts are to be configurable.
17233	7.0.T16D	Memory Leakage impacting Telnet.
17238	7.0.T16C	Async Bypass no longer works in 7.0.
17242	7.0.T16F	Router stops to load balance.
17259	7.0.T16E	Node is reseting when E1 is selected.
17262	7.0.T16F	High CPU utilization when using PBR loadbalancing.
17265	none	CLI now supports IPFLOW.
17266	none	CLI now supports DHCP Server.
17332	7.0.T16H	Node crashing multiple times daily with E&M Voice Card Install

Change Request (CR#)	Interim Patch Release Replaced by Release 7.1.R00A	Problem Description *(continued)*
17339	7.0.T16H	Thousands of Voice Daughtercard Communication Errors on E&M Voice
17363	7.0.T16K	IPFLOW fix to support VLAN ID's. IPFLOW did not understand the VLAN ID in the header of the IP Packet. This would result in not tracking flows identified with a VLAN ID number that did not match the VLAN ID configured in the Router Interface Record for the Ethernet Port.

Known Software Limitations

Introduction

This section lists limitations known to exist in Release 7.1.R00A Applications Ware software.

RTP Header Compression

RTP Header Compression Interoperability Between Cisco and Vanguard Networks 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 Networks 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 Networks 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

Incorrect FXO RX Disconnect Timer can lock FXO port (CR16670)

When the FXO RX Disconnect Timer is shorter than the the PBX power interrupt, then the FXO port can lock up requiring a cold boot to reset.

Workaround: Make the FXO Rx Disconnect Timer greater than the longest PBX power interrupt.

Vanguard Software Builder: Does not show warning when 342 and 342v3 Selected Option Size/Estimated Free Flash Space exceeds 8Mbytes (CR16872)

Workaround: Visually check that Selected Option Flash size does not exceed 8 Mbytes.

Only the first 155 entries in the Virtual Port Mapping Table are usable (CR16941)

Workaround: Limit configuration to the first 155 VPMT table entries.

Booting an IPSEC Tunnel is not supported. (CR17196)

Booting an IPSEC tunnel configured as dynamic is not supported.

Work Around:

If a configuration needs to be booted-in for a dynamic tunnel, then a node boot is required.

Voice ports configured as digital digital voice ports should not be allowed to be set for DSP Option 4 (CR17351).

DSP Option 4 is only supported on the Quad FXS/FXO interfaces. Digital Voice Ports are currently able to be set to DSP Option 4 by both the Node level DSP Image Selection and the DSP Image Selection in the Voice Port Configuration Menu. This setting for the Digital Voice Ports is NOT supported and could cause incorrect behavior.

Work Around:

The user must insure that no Digital Voice Ports are set to DSP Option 4.

The Voice Port Configuration CTP Entry Checking Feature for the DSP Option 4 VAD functions only for the Voice Port Master Port (CR17352).

Currently, there is a checking feature for the VAD CTP setting to insure the user selects VAD Disabled when changing a Master Port to DSP Option 4.

Work Around:

The CTP Entry checking function for Slave Ports currently does not work correctly, therefore the user must then go to each slave port and set VAD to Disabled.

An Incorrect Error Message is Logged when the Wron Fax Configuration Exists(CR17353).

When a users wants to change an existing DSP image selection to Option 4 on the Master Voice Port, they will be prompted to change the VAD and Fax setting to their proper values (disabled&T.38). If the users forgets to make the appropriate changes to the Slave Ports and boots the node, the incorrect event meesage is displayed.

Work Around:

The users needs to be aware that the wrong error message may be displayed.

Changing the Master Voice Port DSP Image Selection and Booting the Voice Port causes the DSP to reset(CR17354).

When the mast voice port DSP Image selection is changed to or from a setting of Option 4 and the port is booted, the DSP associated with the Voice Port will reset requiring a Node Boot.

Work Around:

Boot the node when modifying the DSP image selection.

Vanguard Feature Comparison Chart

Below is the Vanguard Feature Comparison Chart:

Feature	*Vanguard 3410/3460*	*Vanguard 6840/6841*	*Vanguard 7300*
Dual T1 Network Interface Specification	Connectors: Dual RJ-45 (100 ohm) Framing: SF and ESF Line Coding: AMI, B8ZS Timing Source: Int, Receive T1 CSU: Built In	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) - Dual BNC (75 ohm) 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: 24 (T1) Maximum Number of Channels: 31 (E1) Maximum Aggregated rate: 1.984 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 (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	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 3410/3460	Vanguard 6840/6841	Vanguard 7300
Voice Signaling Support	CAS: E&M (Wink, Delay, Immediate Colisee, and Seizure Ack) (3460) FXS (Loopstart) (3460) FXO (Loopstart) (3460)	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	Trunking Gateway(3460 E1 only)	Timeslot Bypass	Timeslot Bypass
Additional Clocking Features	Node Wide Network Clock Source (3460 E1 only)	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 6840/6841except: 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: 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: Ethernet 802.3 (10 mbps), Ethernet2. WAN Physical Interface: V.21, V.24, V.35	Same as 6840/6841except: 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 3410/3460	Vanguard 6840/6841	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 6840/6841except: Characteristics: no HDX
Other SNA protocols	BSC3270 HPAD/TPAD BSC2780/3780 IBM 2260 PAD TCOP TBOP NCRBSC HPAD/TPAD Pad Scope	BSC3270 HPAD/TPAD BSC2780/3780 IBM 2260 PAD TCOP TBOP NCRBSC HPAD/TPAD Pad Scope	TBOP All others not supported
BSC3270 -to-SNA Conversion	256 Devices Supported	256 Devices Supported	2,000 Devices Supported
BSC2780/3780-to-SNA/LU0 Conversion	Supported on the 6455 256 Devices Supported	Supported on the 6455 256 Devices Supported	256 Devices Supported
Frame Relay	FRI, FRA, FRF.12 Support	FRI, FRA, FRF.12 Support	Same as 6840/6841 except no FRA and FRF.12 support
IP/LAN	VPN/IPSEC/3DES/AES	VPN/IPSEC/3DES/AES	VPN/IPSEC/3DES/AES.
ATM	Not supported	Not supported.	ATM supported over T3 or E3. UBR, VBR and CBR 4000 VCCs IP over ATM AnnexG over ATM
ATM	Not supported	Not supported.	ATM supported over T3 or E3. UBR, VBR and CBR 4000 VCCs IP over ATM AnnexG over ATM
VBIP (BSC3270 to TCP/IP Conversion)	Supported.	Not supported	Not supported

Feature	Vanguard 3410/3460	Vanguard 6840/6841	Vanguard 7300
SNMP	The following MIB objects are supported only in 3400 platform. cdx6500T1E1VGTable	The following MIB objects are supported only in 6800 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 6.5.R000, 7.0.R00A, 7.1.R00A

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*	*684x*	*3410/3460*
Physical Port	***Maximum Limits***		
Physical ports	VG7330 - 91 VG7310 - 55	22	3410 - 4 3460 - 6
Ethernet ports per node - MPC750 CPU Ethernet ports per node - IBM750FX CPU Ethernet ports per node	5 20	 2	 2
High speed (V.35) serial links per node	56	8	3460 - 4 3410 - 2
PRI span ports (data only) per node	84	4	2
T1/E1/PRI voice span ports per node	14	4	2
Total LAN ports (ETH) per node (not bridged) MPC750 Total LAN ports (ETH) per node (not bridged) IBM750FX	5 20		
Devices supported per Ethernet segment (Relevant to Bridge operation)	255	255	255
PRI ports (data only) per node	84	4	3460 - 2 3410 - 1
T1/E1/PRI voice only ports per node	14	4	0
T3/E3 ATM ports per node	2	0	0
Voice circuits per voice server card	60	60	0
Number voice calls per node (Number shown is E1 max.)	420	60	60 (3460)
Number voice calls per node (Number shown is T1 max.)	336	60	60 (3460)
Frame Relay			
Number of DLCIs per FR Port	820	820	820

Software Configuration *(continued)*	***7300 Series***	***684x***	***3410/3460***
Number of PVCs per FR Annex-G station	128	128	128
Number of SVCs per FR Annex-G station	512	512	512
Number of Voice SVC per Annex-G station	15	15	15
Number of DLCIs per node	8,000	1,024	1,024
Session			
Number of LCON	2,000	2,000	2,000
Number of Virtual Ports (FR, X25, PPP, Voice)	2,000	155	155
Max. Number of Multi-link PPP profiles	1,000	200	200
Max. Number of MLPPP switched links per MLPPP Profile	60	30	30
Number of UDP (SoTCP) sessions terminating in the node	2,000	188	188
Number of TCP (SoTCP) sessions terminating in the node	2,000	500	500
Number of simultaneous calls per node	8,000	2,000	2,000
Network Services			
Number of Network Services Tables Entries	1,000	128	128
Number of PVCs table entries	8,000	2,000	2,000
Number of mnemonic table entries	8,000	2,000	2,000
Number of Switch Service table entries	1,024	1,024	1,024
Number of X25 routing table entries	8,000	2,000	2,000
LAN IP (Specific)			
Routing table size	15,000	8,000	8,000
Routing Cache	8200	8200	8200
Accelerated/ Aggregated Route cache	512	512	512
Number of LCONs	8,000	2,000	2,000
Number of Interfaces	1,000	255	255
Access Control List table size	255	255	255
Policy based routing table size	255	255	255
Static ARP table	255	255	255
Number of static routes	8,000	8,000	8,000
MAC Filter Table Entries	1,200	300	300
RIP Route Control table	255	255	255
NAT table size	1,023	255	255
IP Multicast DVMRP Tables size	4,000	4,000	4,000
Maximum number of Multicast Interfaces supported	1,000	256	256

Software Configuration *(continued)*	***7300 Series***	***684x***	***3410/3460***
CIDR: RIP aggregate table	255	255	255
CIDR: Multihome table size	255	255	255
Voice			
Number of voice switching table entries: ■**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	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	250
Maximum number of SLAC Stations supported for BSC/LU Devices	100	63	63
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 3410/3460- 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, 3410/3460 - 250 per node Vanguard 320 - 64 per node	2,000	500	500
Additional Limits			
Number of bridge links entries (7300 Series original size - 250)	1,000	1,000	1,000
ARP (queue size)	50	50	50
Max. number of IPX interfaces+	1,000	1,000	1,000
Number of OSPF routes	15000(G1) 20000(G2)	4000	4000
Max. SVCs per SoTCP session	64	50	50
Max. Total Data SVCs (SoTCP)	2,000	1,024	1,024
Max. Total Voice SVCs (SoTCP)	2,000	1,024	1,024
IP Broadcast Forwarding Table Size	255	255	255

Software Configuration *(continued)*	***7300 Series***	***684x***	***3410/3460***
UDP Broadcast Forwarding Table Size	255	255	255
Outbound Translation Table Entries (7300 Series original size - 1,600)	16,000	1,600	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	255
Max. number of OSPF interfaces	255	255	255
BGP Policy Table	2,048	768	768
BGP Route Table	15000(G1) 20000(G2)	10000	10000
BGP to OSPF Import Policy Table	1,024	1,024	1,024
BGP Maximum peers	128	16	16
QoS - QCL Profiles	1,000	1,000	1,000
QoS - IP MF Classifiers	10,000	10,000	10,000
VLAN Sessions - 16 per port, 50 per node Vanguard 34x - 20 per node	50 per node	30 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 34.

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

Note

Release 7.1.R000 software loader requires V7300 bootprom be upgraded or downgraded 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 5 on page 35 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.

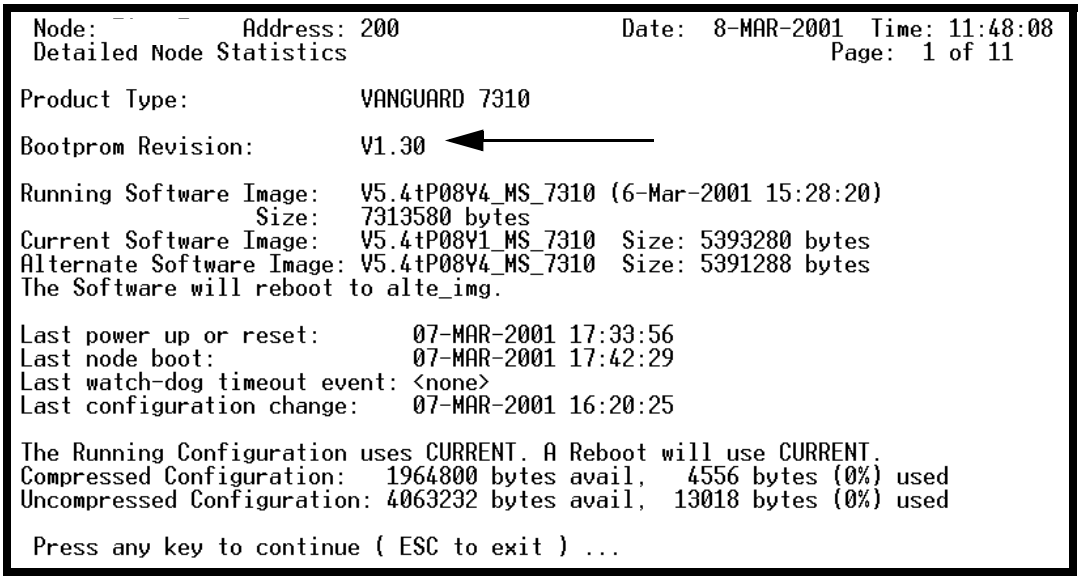

Figure 1. Bootprom Revision Example

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**

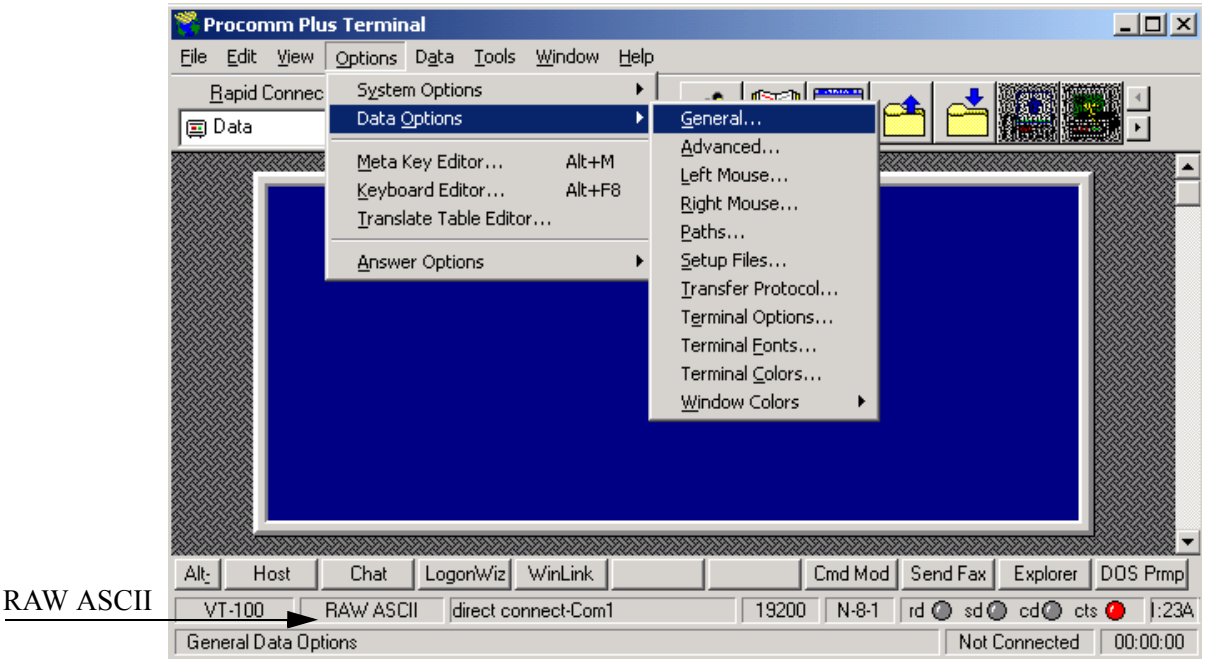

Figure 2. Procomm Plus Terminal

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

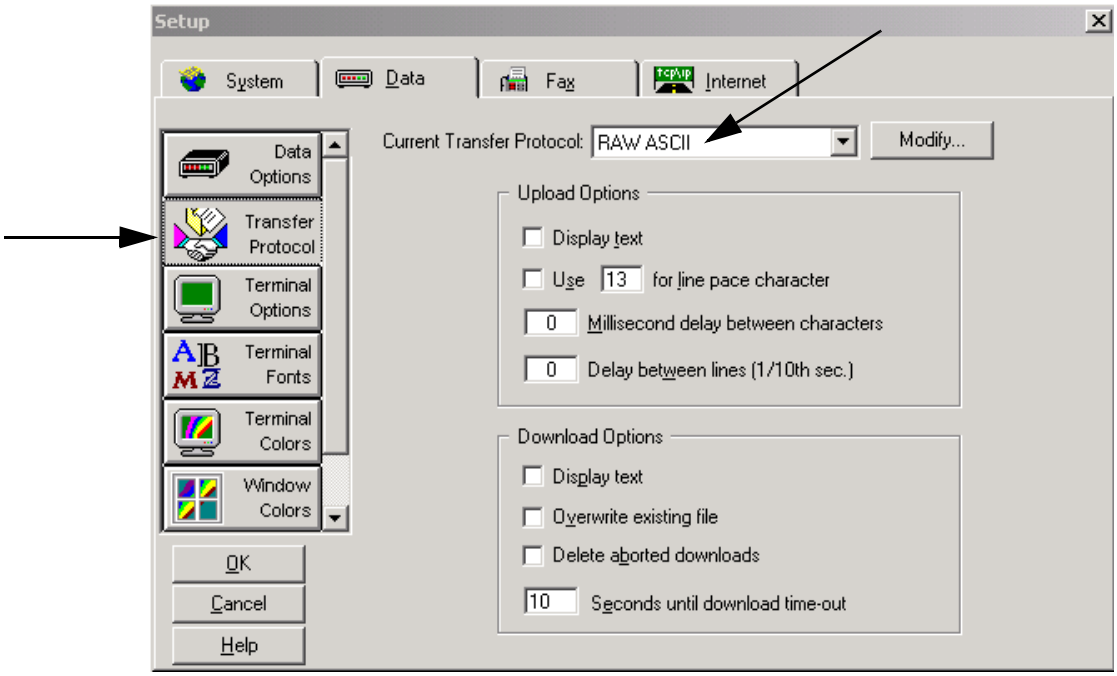

Figure 3. Procomm Setup Menu

Send File

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

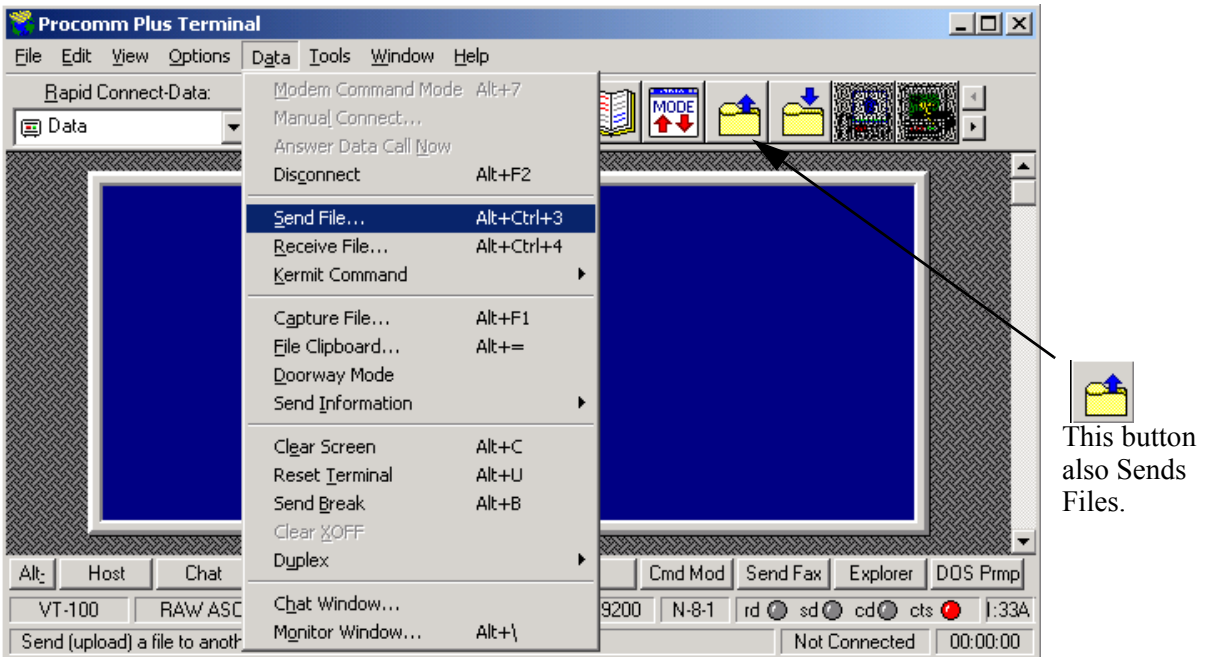

Figure 4. Procomm Plus Terminal Send File

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 Networks 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 and 7.1.R00A **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 5 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

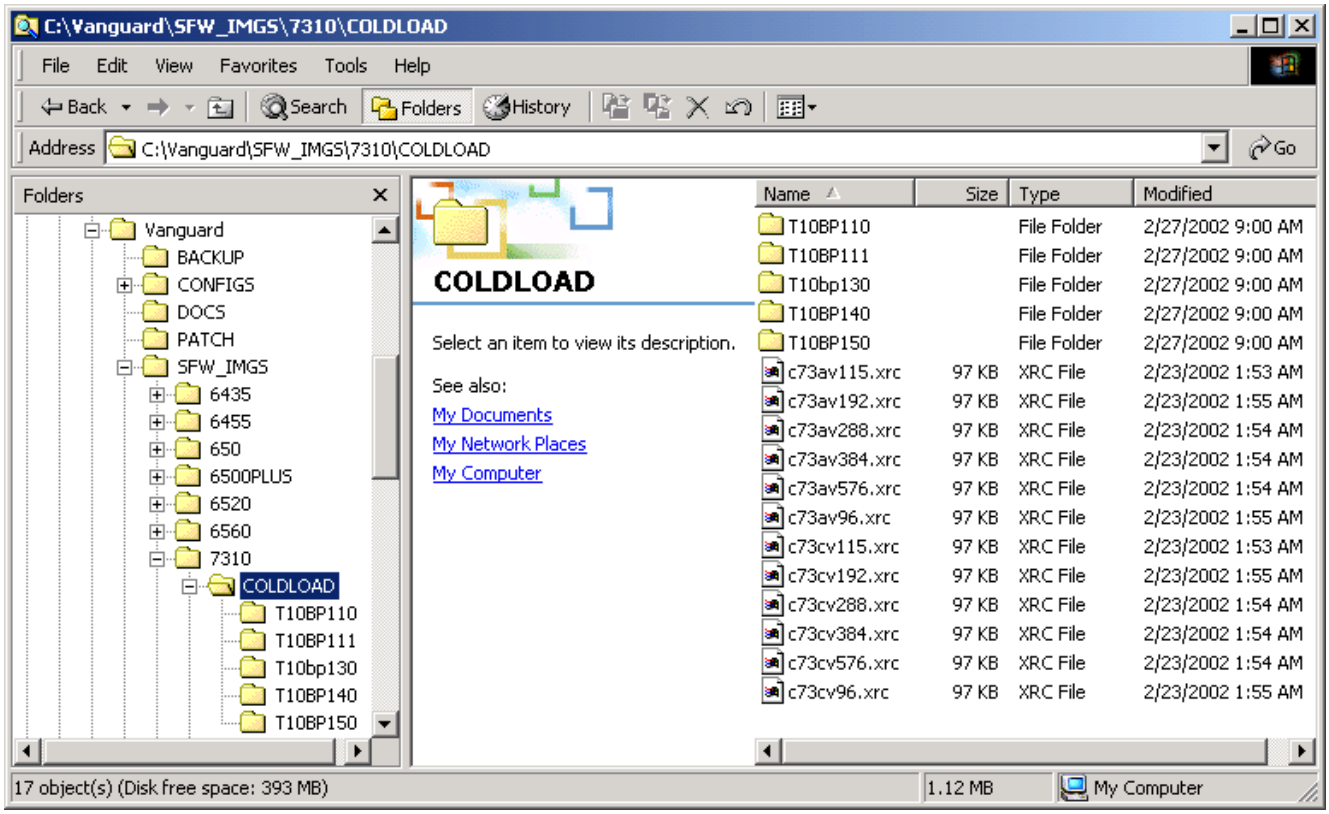

Figure 5. COLDLOAD Directory

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 28 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 Figure 6 to locate your board assembly number:

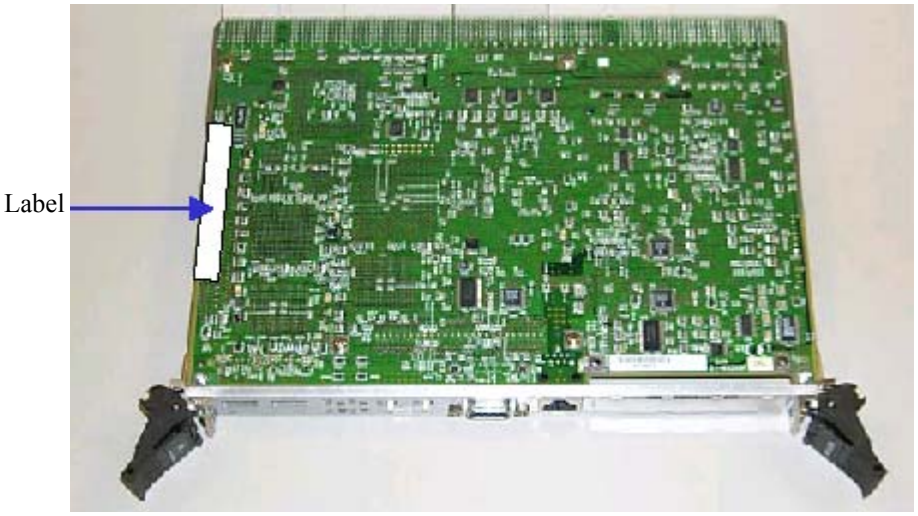

Figure 6. Board Assembly Number Label

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

Introduction

The following tables describe the valid combinations of released flash image, boot code, on-board flash, flash SIMM and DRAM for the Vanguard 34xx, 34x, 68xx, 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 3400 Bootprom, Coldloader and Image Matrix

No.	*Release*	*Boot Code Version*	*Cold-loader from Release*	*On-Board Flash*	*Flash SIMM*	*Status*	*Comment*
1	7.0.P12A or earlier	1.04	7.0.P12A	16M	None	Valid	None
2	7.1.R00A	1.05	7.1.R00A	16M	None	Valid	64k CMEM, 4M image maximum

Note

The installed 3400 SDRAM is 64Mbytes.

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
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.

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*
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 68xx Bootprom, Coldloader, Image and FLASH SIMM Matrix

No.	Release	Boot Code Version	Cold-loader from Release	On-Board Flash	SAN-DISK	Status	Comment
1	6.5.P30A	1.06	7.0.R00A	4M	256M	Valid	None
2	7.1.R00A	1.07	7.1.R00A	4M	256M	Valid	For 7.0.R00A and 7.1.R00A, 1.07 botprom is mandatory

Note

Vanguard 68xx platform:

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
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

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
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.

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 7.1.R00A 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 47.

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)
- VBIP BSC3270 to TCP/IP Conversion (Part Number T0290)

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

This Alarms and Reports Manual (Part Number T0005) 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.vanguardnetworks.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.

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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 Networks Product Documentation website:

http://www.vanguardnetworks.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 7.1.R00A. To download a current printed set acquire a:

- Connection to the Vanguard Networks product documentation website:
  http://www.vanguardnetworks.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.

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 242D, 340 Enhanced, and 342

Introduction

Vanguard 242D, 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 Enhanced and 342 must be ordered with one of the Applications Ware listed in the tables in this section.

Vanguard 242D, 340 Enhanced, and 342 Applications Ware

Release 7.1.R00A supports the following Applications Ware for the Vanguard 242D, 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 49.

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 242D

Vanguard 242d Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+ Applications Ware	7.1.R00Az11.xrc	7.1.R00A_@IP+_242d	7.1.R00Az11.des
SNA+ Applications Ware	7.1.R00Az12.xrc	7.1.R00A_@SNA+_242d	7.1.R00Az12.des
Multiservice Applications Ware	7.1.R00Az15.xrc	7.1.R00A_@MS_242d	7.1.R00Az15.des

Vanguard 340 Enhanced:

Vanguard 340 Enhanced Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+ Applications Ware	7.1.R00Ay11.xrc	7.1.R00A_@IP+_340E	7.1.R00Ay11.des
SNA+ Applications Ware	7.1.R00Ay12.xrc	7.1.R00A_@SNA+_340E	7.1.R00Ay12.des
Multiservice Applications Ware	7.1.R00Ay15.xrc	7.1.R00A_@MS_340E	7.1.R00Ay15.des

Vanguard 342:

Vanguard 342 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+ Applications Ware	71R00Aw11.xrc	7.1.R00A_@IP+_342	71R00Aw11.des
SNA+ Applications Ware	71R00Aw12.xrc	7.1.R00A_@SNA+_342	71R00Aw12.des
Multiservice Applications Ware	71R00Aw15.xrc	7.1.R00A_@MS_342	71R00Aw15.des

Vanguard 242d Features	*IP+*	*SNA+*	*Multi-Service*	*Security*	*Special*
Network Management					
SNMP v3	**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 BRI-NOAM					
ISDN BRI-EURO					
ISDN BRI-ASIA					
ISDN (T1/E1/PRI) Data (NA Default)					
ISDN (T1/E1/PRI) Data (European)					
ISDN (T1/E1/PRI) Data (Asia)					
ISDN (T1/E1/PRI) Voice (Incl sign. NA)					
ISDN (T1/E1/PRI) Voice (incl sign Euro)					
Vanguard Voice Relay (2 x E & M)					
G.723.1					
G.729A					
CVSELP					

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 242d Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Security***	***Special***
Centralized Voice Switching					
Voice Routing Services			**L**		
Vanguard Voice Relay (Quad FXS/FXO)					
G.723.1/G.729A/G.711 (Cannot Add T.38)			**D**		
G.723.1/G.711 (can add T.38)			**L**		
G.729AB/G711 (Can add T.38)			**L**		
G.723.1/G729A/G711(can add T.38, no VAD)			**L**		
Centralized Voice Switch			**D**		
Voice Routing Services			**L**		
Fax ITU T.38			**L**		
Digital Voice 68XX and 73XX					
Vanguard T1/E1/PRI Digital Voice Server			**L**		
Digital Voice -73XX					
T.38 w/G.723&G.711 for T1/E1			**L**		
T.38 w/G.729a&G.711 for T1/E1			**L**		
Voice Relay with G.723.1 and G.729a			**L**		
Voice Relay Encapsulated in IP (SoTCP)			**L**		
H.323 v.2 Standards Based Voice			**L**		
Voice Over IP (All Products)					
H.323			**L**		
VOICE-IP-ENCAPSULATION			**L**		
SIP					
Premium Voice Services					
Caller ID					
Call Hold					
Call Waiting					
Call Transfer					
Call Forward					
Voice Mail					
LAN					
Router IP	**D**	**D**	**D**		
Router IPX	**L**	**L**	**L**		
LAN Option Protocols					

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 242d Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Security***	***Special***
LLC-Eth		**D**	**D**		
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 Translation	**L**	**L**	**L**		
Policy Based Routing	**L**	**L**	**L**		
VRRP	**L**	**L**	**L**		
RTP/UDP/IP Header Compression	**L**	**L**	**L**		
ETH-Bridge	**D**	**D**	**D**		
XLB-Bridge					
IP Tunnel	**L**	**L**	**L**		
DHCP Server & Client	**L**	**L**	**L**		
UDP/Radius Client	**L**	**L**	**L**		
Dynamic IP Address (VPN)	**L**	**L**	**L**		
IP Multicast Protocols					
PIM Sparse Multicast	**L**	**L**	**L**		
DVMRP Multicast	**D**	**D**	**D**		
Network Protocols					
OSPF	**D**	**L**	**L**		
BGP4	**L**	**L**	**L**		
BGP IGP to BGP Route Filtering	**L**	**L**	**L**		
BGP Multipath Load Balancing	**L**	**L**	**L**		
BGP Same AS as in ASPath	**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**		
PPP Auto-Dialer	**L**	**L**	**L**		
PPP	**D**	**D**	**D**		

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 242d Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Security***	***Special***
PPP IP Header Compression	**L**	**L**	**L**		
PPPoE	**L**	**L**	**L**		
SoTCP (=Voice Relay Enc. In IP)	**L**	**L**	**L**		
Fractional T1/E1	**L**	**L**	**L**		
Trunking Gateway-E1 only					
IBM Networking					
AS/400 5494 Comm. Server					
BSC2780 (HPAD/TPAD)		**L**	**L**		
BSC2780/3780 to SNA Conversion					
BSC3270 (HPAD/TPAD)		**L**	**L**		
VBIP (BSC to IP Conversion)					
BSC3270 to SNA Conversion					
IBM2260					
TN3270 Remote Server Conversion		**L**	**L**		
LLC-ETH		**D**	**D**		
LLC-FR		**D**	**D**		
SDLC		**D**	**L**		
Serial Asynchronous Protocols					
ASYNC-BYPASS	**D**	**D**	**D**		
ADSPAD	**L**	**L**	**L**		
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					
SHDLC		**L**	**L**		
TBOP		**D**	**D**		
TBOP-BYPASS		**D**	**D**		

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 242d Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Security***	***Special***
X32	**L**	**L**	**L**		
XDLC		**L**	**L**		
Serial Character-Oriented Protocols (non-IBM)					
BSTD (Burroughs Poll Select)					**A**
TCOP		**D**	**D**		
TCOP-BYPASS		**D**	**D**		
NCRBSC					**A**
RS366 (801 Autodialer Protocol)		**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**		
IP-FLOW o/MLPPP (NetFlow 5)	**D**	**D**	**D**		
Security and VPN					

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 242d Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Security***	***Special***
Statefull Firewall	**D**	**D**	**D**		
Software IPSEC & 3 DES Encryption				**A**	
Hardware Accelerated Encryption & VPN DES & 3DES				**A**	
Hardware Accelerated Encryption & VPN 3 DES & AES				**A**	
PKI and X.509 Digital Certificates				**A**	
SSH	**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.
***SIP requires an additional Advance Voice license.**

Vanguard 340E & 342 Features	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***Advanc-ed Voice***	***Special***
Network Management								
SNMP v3	**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 BRI-NOAM	**L**	**L**	**L**					
ISDN BRI-EURO	**L**	**L**	**L**					
ISDN BRI-ASIA	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Data (NA Default)								
ISDN (T1/E1/PRI) Data (European)								
ISDN (T1/E1/PRI) Data (Asia)								
ISDN (T1/E1/PRI) Voice (Incl sign. NA)								

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 340E & 342 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***Advanc-ed Voice***	***Special***
ISDN (T1/E1/PRI) Voice (incl sign Euro)								
Vanguard Voice Relay (2 x E & M)								
G.723.1				**A**				
G.729A				**A**				
CVSELP				**A**				
Centralized Voice Switching				**A**				
Voice Routing Services			**L**	**A**				
Vanguard Voice Relay (Quad FXS/FXO)								
G.723.1/G.729A/G.711 (Cannot Add T.38)			**D**	**A**				
G.723.1/G.711 (can add T.38)			**L**	**A**				
G.729AB/G711 (Can add T.38)			**L**	**A**				
G.723.1/G729A/G711(can add T.38, no VAD)			**L**	**A**				
Centralized Voice Switch			**D**	**A**				
Voice Routing Services			**L**	**A**				
Fax ITU T.38			**L**	**A**				
Digital Voice 68XX and 73XX								
Vanguard T1/E1/PRI Digital Voice Server								
Digital Voice -73XX								
T.38 w/G.723&G.711 for T1/E1								
T.38 w/G.729a&G.711 for T1/E1								
Voice Relay with G.723.1 and G.729a								
Voice Relay Encapsulated in IP (SoTCP)								
H.323 v.2 Standards Based Voice								
Voice Over IP (All Products)								
H.323								
VOICE-IP-ENCAPSULATION			**L**	**A**				
SIP							**A**	
Premium Voice Services								
Caller ID						**A**		
Call Hold						**A**		
Call Waiting						**A**		
Call Transfer						**A**		
Call Forward						**A**		

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 340E & 342 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***Advanc-ed Voice***	***Special***
Voice Mail						**A**		
LAN								
Router IP	**D**	**D**	**D**					
Router IPX	**L**	**L**	**L**					
LAN Option Protocols								
LLC-Eth		**D**	**D**					
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 Translation	**L**	**L**	**L**					
Policy Based Routing	**L**	**L**	**L**					
VRRP	**L**	**L**	**L**					
RTP/UDP/IP Header Compression	**L**	**L**	**L**					
ETH-Bridge	**D**	**D**	**D**					
XLB-Bridge								
IP Tunnel	**L**	**L**	**L**					
DHCP Server & Client	**L**	**L**	**L**					
UDP/Radius Client	**L**	**L**	**L**					
Dynamic IP Address (VPN)	**L**	**L**	**L**					
IP Multicast Protocols								
PIM Sparse Multicast	**L**	**L**	**L**					
DVMRP Multicast	**D**	**D**	**D**					
Network Protocols								
OSPF	**D**	**L**	**L**					
BGP4	**L**	**L**	**L**					
BGP IGP to BGP Route Filtering	**L**	**L**	**L**					
BGP Multipath Load Balancing	**L**	**L**	**L**					
BGP Same AS as in ASPath	**L**	**L**	**L**					
FRF12	**L**	**L**	**L**					
FRA *(only for backward compatibility)*		**L**	**L**					
FRI *(includes FRA)*	**D**	**D**	**D**					

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 340E & 342 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***Advanc-ed Voice***	***Special***
FR SVC								**A**
X.25	**D**	**D**	**D**					
SMDS			**L**					
PPP Auto-Dialer	**L**	**L**	**L**					
PPP	**D**	**D**	**D**					
PPP IP Header Compression	**L**	**L**	**L**					
PPPoE	**L**	**L**	**L**					
SoTCP (=Voice Relay Enc. In IP)	**L**	**L**	**L**					
Fractional T1/E1	**L**	**L**	**L**					
Trunking Gateway-E1 only								
IBM Networking								
AS/400 5494 Comm. Server								
BSC2780 (HPAD/TPAD)		**L**	**L**					
BSC2780/3780 to SNA Conversion								
BSC3270 (HPAD/TPAD)		**L**	**L**					
VBIP (BSC to IP Conversion)								
BSC3270 to SNA Conversion								
IBM2260								**A**
TN3270 Remote Server Conversion		**L**	**L**					
LLC-ETH		**L**	**L**					
LLC-FR		**L**	**L**					
SDLC		**L**	**L**					
Serial Asynchronous Protocols								
ASYNC-BYPASS	**D**	**D**	**D**					
ADSPAD	**L**	**L**	**L**					
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**

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 340E & 342 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***Advanc-ed Voice***	***Special***
AC100								**A**
Serial Synchronous Protocols								
SHDLC		**L**	**L**					
TBOP		**D**	**D**	**A**				
TBOP-BYPASS		**D**	**D**					
X32	**L**	**L**	**L**					
XDLC		**L**	**L**					
Serial Character-Oriented Protocols (non-IBM)								
BSTD (Burroughs Poll Select)								**A**
TCOP		**D**	**D**					
TCOP-BYPASS		**D**	**D**					
NCRBSC								**A**
RS366 (801 Autodialer Protocol)		**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**					

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.
***SIP requires an additional Advance Voice license.**

Vanguard 340E & 342 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***Prem. Voice***	***Advanc-ed Voice***	***Special***
Ethernet DiffServ QoS (WAN)	**D**	**D**	**D**					
MLPPP LFI			**L**					
FRAME Data Comp	**L**	**L**	**D**					
IP-FLOW o/MLPPP (NetFlow 5)	**D**	**D**	**D**					
Security and VPN								
Statefull Firewall	**D**	**D**	**D**					
Software IPSEC & 3 DES Encryption					**A**			
Hardware Accelerated Encryption & VPN DES & 3DES					**A**			
Hardware Accelerated Encryption & VPN 3 DES & AES					**A**			
PKI and X.509 Digital Certificates					**A**			
SSH	**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.
***SIP requires an additional Advance Voice license.**

Applications Ware for the Vanguard 3410 and 3460

Introduction

This section provides detailed information about the Applications Ware available for Vanguard 3410 and 3460.

Vanguard 3410/ 3460 Applications Ware

Release 7.1.R00A supports the following Applications Ware for the Vanguard 3410 and 3460. 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 49.

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 3410/60:

3400 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IPSAFE Applications Ware	71R00Abb11.xrc	7.1.R00A_@IP+_3400	71R00Abb11.des
SNA+ Applications Ware	71R00Abb12.xrc	7.1.R00A_@SNA+_3400	71R00Abb12.des
Multiservice Applications Ware	71R00Abb15.xrc	7.1.R00A_@MS_3400	71R00Abb15.des

Vanguard 3400 Features	*IPSafe*	*SNA+*	*Multi-Service*	*Voice*	*Security*	*AS400/ BSC*	*Advanc-ed Voice*	*Special*
Network Management								
SNMP v3	**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 BRI-NOAM								
ISDN BRI-EURO								
ISDN BRI-ASIA								
ISDN (T1/E1/PRI) Data (NA Default)	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Data (European)	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Data (Asia)	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Voice (Incl sign. NA)								
ISDN (T1/E1/PRI) Voice (incl sign Euro)								
Vanguard Voice Relay (2 x E & M)(3460 only)								
G.723.1			**D**	**A**				
G.729A			**D**	**A**				
CVSELP			**L**	**A**				
Centralized Voice Switching			**D**	**A**				
Voice Routing Services				**A**				
Vanguard Voice Relay (Quad FXS/FXO) (3460 only)								
G.723.1/G.729A/G.711 (Cannot Add T.38)			**D**	**A**				
G.723.1/G.711 (can add T.38)			**L**	**A**				
G.729AB/G711 (Can add T.38)			**L**	**A**				
G.723.1/G729A/G711(can add T.38, no VAD)			**L**	**A**				
Centralized Voice Switch			**D**	**A**				
Voice Routing Services			**L**	**A**				

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.

Vanguard 3400 Features *(continued)*	***IPSafe***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
Fax ITU T.38			**L**	**A**				
Digital Voice 68XX and 73XX								
Vanguard T1/E1/PRI Digital Voice Server								
Digital Voice -73XX								
T.38 w/G.723&G.711 for T1/E1								
T.38 w/G.729a&G.711 for T1/E1								
Voice Relay with G.723.1 and G.729a								
Voice Relay Encapsulated in IP (SoTCP)			**L**	**A**				
H.323 v.2 Standards Based Voice			**L**	**A**				
Voice Over IP (3460 Only)								
H.323			**L**	**A**				
VOICE-IP-ENCAPSULATION	**L**	**L**	**L**					
SIP							**A**	
Premium Voice Services(3460 Only)								
Caller ID							**A**	
Call Hold							**A**	
Call Waiting							**A**	
Call Transfer							**A**	
Call Forward							**A**	
Voice Mail							**A**	
LAN								
Router IP	**D**	**D**	**D**					
Router IPX	**L**	**L**	**L**					
LAN Option Protocols								
LLC-Eth		**D**	**D**					
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 Translation	**L**	**L**	**L**					
Policy Based Routing	**L**	**L**	**L**					
VRRP	**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.

Vanguard 3400 Features *(continued)*	***IPSafe***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
RTP/UDP/IP Header Compression	**L**	**L**	**L**					
ETH-Bridge	**D**	**D**	**D**					
XLB-Bridge								
IP Tunnel	**L**	**L**	**L**					
DHCP Server & Client	**L**	**L**	**L**					
UDP/Radius Client	**L**	**L**	**L**					
Dynamic IP Address (VPN)	**L**	**L**	**L**					
IP Multicast Protocols								
PIM Sparse Multicast	**L**	**L**	**L**					
DVMRP Multicast	**D**	**D**	**D**					
Network Protocols								
OSPF	**D**	**L**	**L**					
BGP4	**L**	**L**	**L**					
BGP IGP to BGP Route Filtering	**L**	**L**	**L**					
BGP Multipath Load Balancing	**L**	**L**	**L**					
BGP Same AS as in ASPath	**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**					
PPP Auto-Dialer	**D**	**D**	**D**					
PPP	**D**	**D**	**D**					
PPP IP Header Compression	**L**	**L**	**L**					
PPPoE	**L**	**L**	**L**					
SoTCP (=Voice Relay Enc. In IP)	**L**	**L**	**L**					
Fractional T1/E1	**L**	**L**	**L**					
Trunking Gateway - E1 only	**L**	**L**	**L**					
IBM Networking								
AS/400 5494 Comm. Server						**A**		
BSC2780 (HPAD/TPAD)		**L**	**L**					
BSC2780/3780 to SNA Conversion						**A**		

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.

Vanguard 3400 Features *(continued)*	***IPSafe***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
BSC3270 (HPAD/TPAD)		**D**	**L**					
VBIP (BSC to IP Conversion)		**D**	**L**					
BSC3270 to SNA Conversion						**A**		
IBM2260								**A**
TN3270 Remote Server Conversion		**L**	**L**					
LLC-ETH		**D**	**D**					
LLC-FR		**D**	**D**					
SDLC		**L**	**L**					
Serial Asynchronous Protocols								
ASYNC-BYPASS	**D**	**D**	**D**					
ADSPAD	**L**	**L**	**L**					
SLIP	**D**	**D**	**D**					
TNPP								
TNPP-ROUT								
X.42 (GSC)								**A**
T3POS		**L**	**L**					**A**
T3POS over TCP		**L**	**L**					**A**
DATAPAC	**L**	**L**	**L**					**A**
SPP-PAD								**A**
AC100								**A**
Serial Synchronous Protocols								
SHDLC								**A**
TBOP		**D**	**D**	**A**				
TBOP-BYPASS		**D**	**D**					
X32								**A**
XDLC								
Serial Character-Oriented Protocols (non-IBM)								
BSTD (Burroughs Poll Select)								**A**
TCOP		**D**	**D**					
TCOP-BYPASS		**D**	**D**					
NCRBSC								**A**
RS366 (801 Autodialer Protocol)		**L**	**L**					
TPDU Adaptors								

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.

Vanguard 3400 Features *(continued)*	***IPSafe***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
TPA-TPDU		**L**	**L**					
TPA-SDLC								**A**
TPA-3270								**A**
TPA-2780								**A**
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								**A**
BCST								**A**
NUI								**A**
QOS Features								
TOW								
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								
IP-FLOW o/MLPPP (NetFlow 5)	**D**	**D**	**D**					
Security and VPN								
Statefull Firewall	**D**	**D**	**D**					
Software IPSEC & 3 DES Encryption	**L**	**L**	**L**					
Hardware Accelerated Encryption & VPN DES & 3DES					**A**			
Hardware Accelerated Encryption & VPN 3 DES & AES					**A**			
PKI and X.509 Digital Certificates					**A**			
SSH	**L**	**L**	**L**		**A**			

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.

Applications Ware for the Vanguard 6840/6841

Introduction

This section provides detailed information about the Applications Ware available for Vanguard 6840 and the Vanguard 6841.

Vanguard 6840/ 6841 Applications Ware

Release 7.1.R00A supports the following Applications Ware for the Vanguard 6840/6841. 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 49.

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 6840:

6840 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IPSAFE Applications Ware	71R00Aba11.xrc	7.1.R00A_@IP+_6840	71R00Aba11.des
SNA+ Applications Ware	71R00Aba12.xrc	7.1.R00A_@SNA+_684	71R00Aba12.des
Multiservice Applications Ware	71R00Aba15.xrc	7.1.R00A_@MS_6840	71R00Aba15.des

Vanguard 6841:

6841 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IPSAFE Applications Ware	71R00Aba11.xrc	7.1.R00A_@IP+_6840	71R00Aba11.des
SNA+ Applications Ware	71R00Aba12.xrc	7.1.R00A_@SNA+_6840	71R00Aba12.des
Multiservice Applications Ware	71R00Aba15.xrc	7.1.R00A_@MS_6840	71R00Aba15.des

Vanguard 684X Features	*IPSafe*	*SNA+*	*Multi-Service*	*Voice*	*Security*	*AS400/ BSC*	*Advanc-ed Voice*	*Special*
Network Management								
SNMP v3	**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 BRI-NOAM	**L**	**L**	**L**					
ISDN BRI-EURO	**L**	**L**	**L**					
ISDN BRI-ASIA	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Data (NA Default)	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Data (European)	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Data (Asia)	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Voice (Incl sign. NA)			**L**	**A**				
ISDN (T1/E1/PRI) Voice (incl sign Euro)			**L**	**A**				
Vanguard Voice Relay (2 x E & M)								
G.723.1			**D**	**A**				
G.729A			**L**	**A**				
CVSELP			**L**	**A**				
Centralized Voice Switching			**L**	**A**				
Voice Routing Services			**L**	**A**				
Vanguard Voice Relay (Quad FXS/FXO)								
G.723.1/G.729A/G.711 (Cannot Add T.38)			**D**	**A**				
G.723.1/G.711 (can add T.38)			**L**	**A**				
G.729AB/G711 (Can add T.38)			**L**	**A**				
G.723.1/G729A/G711(can add T.38, no VAD)			**L**	**A**				
Centralized Voice Switch			**L**	**A**				

D: Default License Feature.
L: In License; add with Software Builder.
A: Add-on Upgrade License Feature
Specials - license available from service only.

Vanguard 684X Features *(continued)*	***IPSafe***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
Voice Routing Services			**L**	**A**				
Fax ITU T.38			**L**	**A**				
Digital Voice 68XX and 73XX								
Vanguard T1/E1/PRI Digital Voice Server			**D**	**A**				
Digital Voice -73XX								
T.38 w/G.723&G.711 for T1/E1								
T.38 w/G.729a&G.711 for T1/E1								
Voice Relay with G.723.1 and G.729a								
Voice Relay Encapsulated in IP (SoTCP)								
H.323 v.2 Standards Based Voice								
Voice Over IP (All Products)								
H.323			**L**	**A**				
VOICE-IP-ENCAPSULATION	**L**	**L**	**L**					
SIP							**A**	
Premium Voice Services								
Caller ID							**A**	
Call Hold							**A**	
Call Waiting							**A**	
Call Transfer							**A**	
Call Forward							**A**	
Voice Mail							**A**	
LAN								
Router IP	**D**	**D**	**D**					
Router IPX	**L**	**L**	**L**					
LAN Option Protocols								
LLC-Eth		**D**	**D**					
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 Translation	**L**	**L**	**L**					
Policy Based Routing	**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.

Vanguard 684X Features *(continued)*	***IPSafe***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
VRRP	**L**	**L**	**L**					
RTP/UDP/IP Header Compression	**L**	**L**	**L**					
ETH-Bridge	**D**	**D**	**D**					
XLB-Bridge								
IP Tunnel	**L**	**L**	**L**					
DHCP Server & Client	**L**	**L**	**L**					
UDP/Radius Client	**L**	**L**	**L**					
Dynamic IP Address (VPN)	**L**	**L**	**L**					
IP Multicast Protocols								
PIM Sparse Multicast	**L**	**L**	**L**					
DVMRP Multicast	**D**	**D**	**D**					
Network Protocols								
OSPF	**D**	**L**	**L**					
BGP4	**L**	**L**	**L**					
BGP IGP to BGP Route Filtering	**L**	**L**	**L**					
BGP Multipath Load Balancing	**L**	**L**	**L**					
BGP Same AS as in ASPath	**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**					
PPP Auto-Dialer	**D**	**D**	**D**					
PPP	**D**	**D**	**D**					
PPP IP Header Compression	**L**	**L**	**L**					
PPPoE	**L**	**L**	**L**					
SoTCP (=Voice Relay Enc. In IP)	**L**	**L**	**L**					
Fractional T1/E1	**L**	**L**	**L**					
Trunking Gateway-E1 only	**D**	**D**	**D**					
IBM Networking								
AS/400 5494 Comm. Server						**A**		
BSC2780 (HPAD/TPAD)		**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.

Vanguard 684X Features *(continued)*	***IPSafe***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
BSC2780/3780 to SNA Conversion						**A**		
BSC3270 (HPAD/TPAD)		**L**	**L**					
VBIP (BSC to IP Conversion)		**L**	**L**					
BSC3270 to SNA Conversion						**A**		
IBM2260								**A**
TN3270 Remote Server Conversion		**L**	**L**					
LLC-ETH		**D**	**D**					
LLC-FR		**D**	**D**					
SDLC		**D**	**L**					
Serial Asynchronous Protocols								
ASYNC-BYPASS	**D**	**D**	**D**					
ADSPAD	**L**	**L**	**L**					
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								
SHDLC								
TBOP		**D**	**D**	**A**				
TBOP-BYPASS		**D**	**D**					
X32	**L**	**L**	**L**					
XDLC		**L**	**L**					
Serial Character-Oriented Protocols (non-IBM)								
BSTD (Burroughs Poll Select)								**A**
TCOP		**D**	**D**					
TCOP-BYPASS		**D**	**D**					
NCRBSC								**A**
RS366 (801 Autodialer Protocol)		**L**	**L**					

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Vanguard 684X Features *(continued)*	***IPSafe***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
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								
IP-FLOW o/MLPPP (NetFlow 5)	**D**	**D**	**D**					
Security and VPN								
Statefull Firewall	**D**	**D**	**D**					
Software IPSEC & 3 DES Encryption	**L**	**L**	**L**					
Hardware Accelerated Encryption & VPN DES & 3DES					**A(6841)**			
Hardware Accelerated Encryption & VPN 3 DES & AES					**A(6841)**			
PKI and X.509 Digital Certificates					**A(6841)**			
SSH	**L (6840)**	**L (6840)**	**L (6840)**		**A(6841)**			

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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 7.1.R00A 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+	7.1.R00At11.xrc	7.1.R00A_@IP+_7310	7.1.R00At11.des
SNA+	7.1.R00At12.xrc	7.1.R00A_@SNA+_7310	7.1.R00At12.des
Multi-Service	7.1.R00At15.xrc	7.1.R00A_@MS_7310	7.1.R00At15.des

Vanguard 7330:

Vanguard 7330 Applications Ware Name	*Source Filename*	*Version String*	*Description Filename*
IP+	71R00Au11.xrc	7.1.R00A_@IP+_7330	71R00Au11.des
SNA+	71R00Au12.xrc	7.1.R00A_@SNA+_7330	71R00Au12.des
Multi-Service	71R00Au15.xrc	7.1.R00A_@MS_7330	71R00Au15.des

Vanguard 7300 Features	*IP+*	*SNA+*	*Multi-Service*	*Voice*	*Security*	*AS400/ BSC*	*Advanc-ed Voice*	*Special*
Network Management								
SNMP v3	**D**	**D**	**D**					
TELNET	**D**	**D**	**D**					
TFTP	**D**	**D**	**D**					
CLI	**D**	**D**	**D**					
Embedded Web HTTPD	**L**	**L**	**L**					
Async								

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Vanguard 7300 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
ATPAD	**D**	**D**	**D**					
APAD								
ISDN								
SoftSCC								
ISDN BRI-NOAM								
ISDN BRI-EURO								
ISDN BRI-ASIA								
ISDN (T1/E1/PRI) Data (NA Default)	**D**	**D**	**D**					
ISDN (T1/E1/PRI) Data (European)	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Data (Asia)	**L**	**L**	**L**					
ISDN (T1/E1/PRI) Voice (Incl sign. NA)	**D**	**D**	**D**					
ISDN (T1/E1/PRI) Voice (incl sign Euro)	**L**	**L**	**L**					
Vanguard Voice Relay (2 x E & M)								
G.723.1								
G.729A								
CVSELP								
Centralized Voice Switching								
Voice Routing Services								
Vanguard Voice Relay (Quad FXS/FXO)								
G.723.1/G.729A/G.711 (Cannot Add T.38)								
G.723.1/G.711 (can add T.38)								
G.729AB/G711 (Can add T.38)								
G.723.1/G729A/G711(can add T.38, no VAD)								
Centralized Voice Switch								
Voice Routing Services								
Fax ITU T.38								
Digital Voice 68XX and 73XX								
Vanguard T1/E1/PRI Digital Voice Server	**D**	**D**	**D**					
Digital Voice -73XX								
T.38 w/G.723&G.711 for T1/E1	**L**	**L**	**L**					
T.38 w/G.729a&G.711 for T1/E1	**L**	**L**	**L**					
Voice Relay with G.723.1 and G.729a	**D**	**D**	**D**					
Voice Relay Encapsulated in IP (SoTCP)	**D**	**D**	**D**					

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Vanguard 7300 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
H.323 v.2 Standards Based Voice	**D**	**D**	**D**					
Voice Over IP (All Products)								
H.323								
VOICE-IP-ENCAPSULATION	**L**	**L**	**L**					
SIP							**A**	
Premium Voice Services								
Caller ID							**A**	
Call Hold							**A**	
Call Waiting							**A**	
Call Transfer							**A**	
Call Forward							**A**	
Voice Mail							**A**	
LAN								
Router IP	**D**	**D**	**D**					
Router IPX	**D**	**D**	**D**					
LAN Option Protocols								
LLC-Eth		**D**	**D**					
IPXWAN	**D**	**D**	**D**					
Appletalk								
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**					
VRRP	**L**	**L**	**L**					
RTP/UDP/IP Header Compression	**D**	**D**	**D**					
ETH-Bridge	**D**	**D**	**D**					
XLB-Bridge	**L**	**L**	**L**					
IP Tunnel	**L**	**L**	**L**					
DHCP Server & Client	**D**	**D**	**D**					
UDP/Radius Client	**D**	**D**	**D**					
Dynamic IP Address (VPN)	**L**	**L**	**L**					
IP Multicast Protocols								

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Vanguard 7300 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
PIM Sparse Multicast	**L**	**L**	**L**					
DVMRP Multicast	**D**	**D**	**D**					
Network Protocols								
OSPF	**D**	**D**	**D**					
BGP4	**D**	**D**	**D**					
BGP IGP to BGP Route Filtering	**L**	**L**	**L**					
BGP Multipath Load Balancing	**L**	**L**	**L**					
BGP Same AS as in ASPath	**L**	**L**	**L**					
FRF12	**D**	**D**	**D**					
FRA *(only for backward compatibility)*								
FRI *(includes FRA)*	**D**	**D**	**D**					
FR SVC								**A**
X.25	**D**	**D**	**D**					
SMDS								
PPP Auto-Dialer	**L**	**L**	**L**					
PPP	**D**	**D**	**D**					
PPP IP Header Compression	**D**	**D**	**D**					
PPPoE	**L**	**L**	**L**					
SoTCP (=Voice Relay Enc. In IP)	**L**	**L**	**L**					
Fractional T1/E1	**L**	**L**	**L**					
Trunking Gateway-E1 only	**D**	**D**	**D**					
ATM Protocols								
ATM			**D**					
ATM Congestion Control			**D**					
IBM Networking								
AS/400 5494 Comm. Server						**A**		
BSC2780 (HPAD/TPAD)								
BSC2780/3780 to SNA Conversion		**D**	**D**					
BSC3270 (HPAD/TPAD)								
VBIP (BSC to IP Conversion)								
BSC3270 to SNA Conversion		**D**	**D**					
IBM2260								
TN3270 Remote Server Conversion								

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Vanguard 7300 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
LLC-ETH		**D**	**D**					
LLC-FR		**D**	**D**					
SDLC		**D**	**D**					
Serial Asynchronous Protocols								
ASYNC-BYPASS								
ADSPAD								
SLIP								
TNPP								
TNPP-ROUT								
X.42 (GSC)								
T3POS								
T3POS over TCP								
DATAPAC								
SPP-PAD								
AC100								
Serial Synchronous Protocols								
SHDLC								
TBOP	**D**	**D**	**D**					
TBOP-BYPASS								
X32								
XDLC								
Serial Character-Oriented Protocols (non-IBM)								
BSTD (Burroughs Poll Select)								**A**
TCOP								
TCOP-BYPASS								
NCRBSC								**A**
RS366 (801 Autodialer Protocol)								
TPDU Adaptors								
TPA-TPDU		**L**	**L**					
TPA-SDLC								
TPA-3270								
TPA-2780								
TPA-TCP		**L**	**L**					

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Vanguard 7300 Features *(continued)*	***IP+***	***SNA+***	***Multi-Service***	***Voice***	***Security***	***AS400/ BSC***	***Advanc-ed Voice***	***Special***
TPA-UDP								
Node Features								
ATCIF (AT Dial/Telnet)	**D**	**D**	**D**					
LBU	**D**	**D**	**D**					
DCP		**D**	**D**					
DSCOPE								
DSD			**L**					
NCCP								
BCST								**A**
NUI								
QOS Features								
TOW	**D**	**D**	**D**					
QoS - Protocol Priority (5.3M)								
QoS - Diff Serv (5.4)	**D**	**D**	**D**					
Ethernet DiffServ QoS (WAN)	**D**	**D**	**D**					
MLPPP LFI			**L**					
FRAME Data Comp	**D**	**D**	**D**					
IP-FLOW o/MLPPP (NetFlow 5)	**D**	**D**	**D**					
Security and VPN								
Statefull Firewall	**D**	**D**	**D**					
Software IPSEC & 3 DES Encryption								
Hardware Accelerated Encryption & VPN DES & 3DES					**A**			
Hardware Accelerated Encryption & VPN 3 DES & AES					**A**			
PKI and X.509 Digital Certificates					**A**			
SSH	**L**	**L**	**L**					

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MIB Downloading Instructions for Non-Vanguard Networks SNMP Managers

Introduction

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

Obtaining MIB Files

Vanguard MIB files for your non-Vanguard Networks NMS are available from the Vanguide 7.1.R00A CD-ROM.

.

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

http://www.vanguardnetworks.com/support/downloads/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
bcst.mib	Broadcast

Download This MIB File	***If you want this option, protocol, or base MIB software*** *(continued)*
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
tcpbsc_opt.mib	BSC3270 to TCP/IP Conversion
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.
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Release 7.1 Preliminary Technical Information

Introduction

This section provides some preliminary user documentation for Release 7.1 Vanguard Networks Application Ware.

For a full manual set, please see http://www.vanguardnetworks.com/support/documentation

BGP Feature Enhancements

BGP Multipath (Load balancing) is now supported.
A new parameter is located in BGP Global Parameters. BGP Multipath allows for load balancing across up to four route paths that (must) have equal value:

Enhanced BGP Route Redistribution
Three new BGP menu items are now available in release 7.1

```
      8.  BGP Network Route Table
      9.  RIP -> BGP Import Policies
      10.  OSPF -> BGP Import Policies

These enhancments to BGP allow for more specific control
over the routes allowed into the BGP route table.

The Network route table provides for a Static route type
 of function for BGP.

The RIP -> BGP import policy table allows the user to
permit or deny specific (or range of) routes imported
into the BGP route table. Prior to this enhancment,
the ability to control (filter) routes was only available
 for routes that were already in the BGP route table.

The OSPF -> BGP Import Policy Table likewise allows
control of routes from OSPF into the BGP route table.


Allow own AS in AS Path.

This parameter accommodates the situation when multiple
BGP peer links from the same AS are connected to the router.
```

IPFLOW

IPFLOW now supports MLPPP and T3/E3 ATM Links (7300).

This was accomplished by changing the way that meters are configured. Meters are now configured by referencing an LCON only.

***NOTE**: If upgrading from previous releases supporting IPFLOW then meter entries must be re-entered and saved before operation.

Here is an example of the configurable parameter for IPFLOW meters:

Meter Type

Range	None, Ethernet, LCON
Default	None
Description	This parameter specifies the meter type for this record entry. None - No outbound meter. Ethernet - Outbound metering is performed on an ethernet port. LCON - Outbound metering is performed on an LCON. Use LCON for a Frame Relay link or an MLPPP link.
Boot Type	

Note: Originally released in Patch **7.0T16A**

DHCP Server

DHCP Server Enhancments

1.) Number of subnets supported in the DHCP Server has been increased to 64 from 16.
2.) Number of DHCP clients supported per subnet has been increased to 254 from 128.
3.) The ability to set an exclude range. This allows for more flexibility of configuring excluded IP addresses across the client pool of available addresses.

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

Δήλωση Συμμόρφωσης:
Δια του παρόντος, η εταιρεία Vanguard Managed Solutions δηλώνει ότι η παρούσα συσκευή (δρομολογητής) Vanguard Router πληροί τις βασικές απαιτήσεις και άλλες βασικές προϋποθέσεις της Οδηγίας 1999/5/ΕΚ.

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.