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## **Applications Ware Software Release 7.2.R00A Release Notice**

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# 1 Overview

This notice contains update information for Release 7.2.R00A of the operating software for these Vanguard platforms:

- Vanguard 3410, 3460, 3480
- Vanguard 6840, 6841
- Vanguard 7310, 7330
- Vanguard 242D, Vanguard 340 Enhanced, Vanguard 342

Release 7.2.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 311PLUS and 312PLUS (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)
- 6500PLUS (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.

## 2 Applications Ware

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

### 2.1 Applications Ware Licenses and Upgrades

The Release 7.2.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 dependent upon a specific product and its capabilities.

#### 2.1.1 Applications Ware Base Licenses

- IP+ Applications Ware License (242D, 340E, 342, 7310, 7330)
- IP SAFE Applications Ware License (3400 and 6800)
  - Note: Beginning with Release 7.1R00A, the IPSafe Applications Ware license includes SSH Server with external Radius Authentication and software based IPSec VPN
- SNA+ Applications Ware
- Multi-Service Applications Ware

#### 2.1.2 License Upgrades

- Voice Applications Ware License Upgrade
- Security Applications Ware License Upgrade
- AS/400 BSC Applications Ware License Upgrade
- Advance Voice (Premium Services + SIP)

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.

## 2.2 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 Vanguard 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.

### 2.3 Software Upgrade to 7.2.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 7.2.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).

### 2.4 License Upgrades

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.

### 2.4.1 Obsolete Features

Commencing with Release 7.2.R00A, the maintenance and support of the following features is discontinued:

- Stateful ACLs.

## 2.5 Memory Requirements for Applications Ware Release 7.2R00A

In order to support the Vanguard Applications Ware Release 7.2.R00A, some Vanguard products may require memory upgrades. The total memory required for each product at release 7.2.R00A is listed in this table:

| Product   | Total Memory Required at Release 7.2R00A |
|---|--|
| Vanguard 3410/3460/3480 (Ships with 64MB SDRAM) | 64MB SDRAM – 16MB Flash                  |
| Vanguard 340 Enhanced (Ships with 32 MB)        | 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            |

Notes:

- The table above lists the memory that is shipped.
- The Vanguard 6425, 6430, 6450, 6435, 6455, 6520, 6560, 100, 200, 300, 305, 311, 311<sup>PLUS</sup>, 312<sup>PLUS</sup>, 320, and 340 are not supported with Release 7.2.R00A.

### 3 Products Supported

Products supported by Release 7.2R00A

| Product                     | Support                |
|-----------------------------|------------------------|
| Vanguard 242D               | Normal Product Release |
| Vanguard 340 Enhanced       | Normal Product Release |
| Vanguard 342                | Normal Product Release |
| Vanguard 3410, 3460, 3480   | Normal Product Release |
| Vanguard 6840, 6841         | Normal Product Release |
| Vanguard 7310, 7330 (CPU 2) | Normal Product Release |

Release 7.2.R00A is not supported on these discontinued products:

| Product                   | Last Release Supported  |
|---------------------------|---|
| Vanguard 100              | Maintained at 5.3M.   |
| Vanguard 200              | Maintained at 5.1M.   |
| Vanguard 300              | Maintained at 5.4.  |
| Vanguard 305              | Maintained at 5.5.  |
| Vanguard 311              | Maintained at 5.1M.   |
| Vanguard 31x+             | Maintained at 5.3M.   |
| Vanguard 320              | Maintained at 6.4.R10A.   |
| Vanguard 6425, 6430, 6450 | Maintained at 6.0.R00A.   |
| Vanguard 340              | Maintained at 7.0.R00A.   |
| Vanguard 6435, 6455       | Maintained at 7.0.R00A.   |
| 6500+                     | Maintained at 5.1M.   |
| 650-D                     | Product maintained at 5.0c. The battery backup version has been sunset. |
| Vanguard 6520             | Product maintained at 5.5   |
| Vanguard 6560             | Product maintained at 6.0.R00A  |



## 4 New Features

The new features available for Release 7.2.R00A are described briefly below. This section also lists where to find user documentation that contains detailed explanations of these features.

You can find detailed descriptions of the new Release 7.2.R00A features in the referenced documents at the following web site:

<http://www.vanguardnetworks.com/support-documentation-overview.htm>

Instructions for obtaining on-line and CD versions of the documents that contain detailed explanations of these features appear in the "How to Obtain User Documentation" section in this document (Chapter 12).

Release 7.2.R00A extends the multi-service convergence benefits of enterprise access gateways with the following new features.

### 4.1 New Hardware Platform - 3480 Access Services Gateway

The 3480 Access Services Gateway (ASG) is the latest introduction to the 3400 Series. Applications Ware Release 7.2R00A is the first software release for this platform. Key features of the 3480 include:

- Small footprint, modular, branch-in-a-box or retail outlet Access Services Gateway (ASG) solution with two daughter card slots supporting a variety of IP, TDM, Voice, and Serial Interfaces
- Up to five routable Ethernet ports for simultaneous IP WAN access to enterprise access services
- Embedded voice processing for toll-quality analog and digital voice capabilities for connections to centralized SIP server or IP PBX and the public switched telephone network (PSTN)
- Extensive support of transactional applications using protocols like BISYNC and SNA for various serial transaction devices (ATMs, bank controllers, POS devices, etc.)
- Integrated stateful firewall and SSH support for network security standards compliance
- Robust QoS and bandwidth management capabilities enable traffic prioritization for critical applications.

Hardware details can be found in the user manual titled "3400 Installation Guide". Software details can be found in the various software manuals on the Vanguard Networks website at:

<http://www.vanguardnetworks.com/support-documentation-overview.htm>

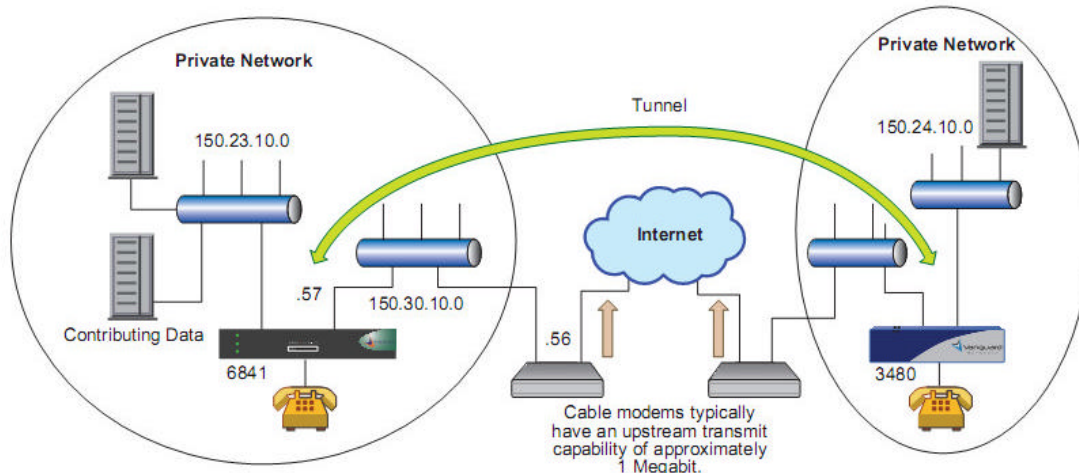
### 4.2 Ethernet Output Rate Limiting

Rate Limit is the ability to control transmit flow out the routers Ethernet interface to a preconfigured value.

Vanguard network products introduced the "Rate Limit" feature in software release 7.1S100 service pack and the 7.2R00A general release. The new "Rate Limit" parameter is configured in the Ethernet port configuration.

The example shown in the figure below illustrates a typical application of two private networks with access to the internet via cable modems. As shown, voice traffic is also traversing the internet via a tunnel between the two private networks. The cable modem typically provides for an upstream capacity of approximately 1Meg, while the router can theoretically transmit out onto the connecting Ethernet at either 10 or 100 Megabits.

While the router can provide QOS prioritization of the RTP (voice) traffic, higher line utilization can potentially feed the cable modem in excess of the 1meg available upstream bandwidth. This can cause the cable modem to drop packets indiscriminately which can cause RTP (voice) traffic to be also dropped.



The rate limit setting allows for the router to throttle the traffic outbound onto the Ethernet (towards the internet) thereby feeding the cable modem at the rate not exceeding its upstream capacity. This provides for an effective operation of the QOS prioritization scheme. Configuration details for the feature can be found in the “Ethernet Basics Guide” within the online product documentation.

## 4.3 Firewall Features

### 4.3.1 Firewall Zones (Trust, Untrust, DMZ)

With the introduction of Release 7.2R00A, a new DMZ capability with three zones, namely Trust, Untrust, and DMZ zones has been introduced to the 3480 platform.

DMZ has the following characteristics:

- Intra-zone routing is disabled by default. It must be enabled to allow traffic to be routed between multiple interfaces in the same zone.
- If the firewall is enabled, all traffic is denied by default. Traffic must be explicitly enabled.
- The recommended practice is to configure policies before enabling the firewall to avoid network disruptions.

Full operational details can be found in the user manual titled “Firewall-DMZ”.

### 4.3.2 Firewall Policies

With the introduction of Release 7.2R00A, significant enhancements have been made to the overall firewall features within Applications Ware. These include the following:

- The new “Firewall” feature replaces the “Firewall Lite” feature.
- Stateful Access Control Lists are replaced by Firewall Policies.
- When the firewall is enabled, the static ACLs are ignored.

Full operational details can be found in the manual titled “Firewall-DMZ”.

## 4.4 ISDN BRI Voice and Data Daughter Cards Support on 3460/3480

Beginning with Release 7.2R00A, ISDN BRI Data and Voice daughter cards are supported on the 3460/3480 platforms. The table below identifies the specific daughter cards and the platforms supported. For completeness, the 3410 is also shown in the table.

| Daughter Card  | Product Code | Platform |        |        |        |        |
|----------------|--------------|----------|--------|--------|--------|--------|
|                |              | 3410     | 3460   |        | 3480   |        |
|                |              | Slot 1   | Slot 1 | Slot 2 | Slot 1 | Slot 2 |
| ISDN BRI Voice | 68525        | No       | Yes    | Yes    | Yes    | Yes    |
| ISDN BRI Data  | 1152-10005   | No       | Yes    | Yes    | Yes    | Yes    |

#### 4.5 New T1/E1 Daughter Cards Support (3400 and 6800 Series Only)

The 3400 and 6800 Series platforms will have support for the new T1 and E1 cards beginning with Release 7.2R00A. Product Bulletin VB\_03\_27\_09 provides additional details.

The table below identifies the specific daughter cards being replaced and their replacements along with the compatible platforms that the new daughter cards will be supported on.

| Daughtercard |             |              | 3400 Series Platform |      |      | 6800 Series Platform |      |
|--------------|-------------|--------------|----------------------|------|------|----------------------|------|
| Description  |             | Product Code | 3410                 | 3460 | 3480 | 6840                 | 6841 |
| Current      | FT1 - 120 ? | 49666        | Yes                  | Yes  | Yes  | Yes                  | Yes  |
| New          | FT1 - 120 ? | 1600-00001   | Yes                  | Yes  | Yes  | Yes                  | Yes  |
| Current      | FE1 - 75 ?  | 49669        | Yes                  | Yes  | Yes  | Yes                  | Yes  |
| New          | FE1 - 75 ?  | 1600-00075   | Yes                  | Yes  | Yes  | Yes                  | Yes  |
| Current      | FE1 - 120 ? | 49716        | Yes                  | Yes  | Yes  | Yes                  | Yes  |
| New          | FE1 - 120 ? | 1600-00120   | Yes                  | Yes  | Yes  | Yes                  | Yes  |

**Note:**

The 34X Series platforms (340E, 342) will not support the new T1 and E1 cards. The 34X platforms have recently been sunset, and hence demand for T1 or E1 daughter card orders on these platforms will be met with 3400 series platforms.

#### 4.6 1-Port (DIM-based) Serial Daughter Cards Support Extended to 3460/3480

The table below shows the 1-Port Serial (DIM-based) daughter cards that will be supported on the 3460 and 3480 platforms beginning with Applications Ware Release 7.2R00A. There is no change to the operational characteristics of these cards from how they operated on the sunset platforms (340E, 342). Up to two 1-port Serial daughter cards can be installed in the 3460/3480 using both slots.

| Product Codes Supported on<br>3460/3480 with R7.2R00A |       |
|---|-------|
| V.24 DCE (Serial)                                     | 49646 |
| V.35 DCE (Serial)                                     | 49647 |
| V.36 DCE (Serial)                                     | 49648 |
| V.11 DCE (Serial)                                     | 49649 |
| V.24 DTE (Serial)                                     | 49658 |
| V.35 DTE (Serial)                                     | 49659 |
| V.36 DTE (Serial)                                     | 49660 |
| V.11 DTE (Serial)                                     | 49661 |

#### 4.7 2-Port FXS Daughter Card Support Extended to 3460/3480

The table below shows the Dual FXS daughter card that will be supported on the 3460 and 3480 platforms beginning with Applications Ware Release 7.2R00A. There is no change to the operational characteristics of these cards from how they operated on the sunset platforms (340E, 342). Up to two 2-Port FXS daughter cards can be installed in the 3460/3480 using both slots.



## 4.8 3-Party Calling for SIP

Beginning in release 7.2R00A the Vanguard Networks product will support 3-way conference calling on its Quad FXS Interface across SIP. To support this new feature it is mandatory that all units, participating in 3-way Calling, be upgraded to Release 7.2R00A or greater.

The 3 party call conferencing feature allows 3 users to participate in a 3-way conference call. In this scenario, user A calls user B and they wish to invite user C to join the call. User A presses Flash Hook to put B on hold, and then calls user C. After talking with C, user A then presses Flash Hook again to take B off hold. All 3 parties are now joined in a conference call.

The 3 party conferencing feature can be invoked from the first three FXS voice ports on each Quad card. The destination device may be either a SIP User Agent or another Vanguard SIP Gateway device.

This scenario requires that user A is capable of mixing the audio streams. The audio mixing will be performed by the DSP. This requires an additional DSP channel for doing the mixing. The current architecture supports 4 DSP channels and each channel is assigned to service a particular FXS port. The DSP channel associated with the last FXS port on the Quad card will be designated as the mixing or resource channel. While a conference call is active, the last FXS port will not be available for making calls. During the conference, if a user picks up the phone connected to the last port, a fast busy tone will be played.

Full operations details can be found in the user manual titled "Vanguard Voice".

## 4.9 Interface Services

"Interface Services" is a new parameter designed to compliment the Firewall/DMZ feature. At each logical IP interface the user now has the ability to allow or reject the following services from entering or passing thru the selected interface. It can also be used independent of the firewall feature.

These are the services controlled by this feature;

TELNET, HTTP, SSH, PING, SNMP, TFTP, SoTCP and None

This new parameter can be found in each IP interface record and also in IP parameters in support of the internal IP address. The default configuration is to allow all services.

## 5 Software Improvements

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

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

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 7.2.R00A, and where applicable, interim patch releases have been replaced by Release 7.2.R00A:

| <b>Change Request (CR#)</b> | <b>Interim Patch Release Replaced by Release 7.2.R00A</b> | <b>Problem Description</b>  |
|-----------------------------|---|---|
| 16811                       | N/A   | Increase the NAT table entry to greater than 255 in the 684X  |
| 16861                       | 6.5.T30D  | Node reset and printed PRESERVING DBUFFER alarms  |
| 17196                       | N/A   | Booting an IPSEC tunnel configured as dynamic is not supported  |
| 17352                       | N/A   | DSP Option 4 VAD check function only works on the Master Voice Port.  |
| 17353                       | N/A   | Incorrect Event Message when wrong Fax configuration exists.  |
| 17506                       | 7.0.T16T  | Router stops to export IPflows  |
| 17531                       | N/A   | New support for Voice Band Data (VBD) attribute for SIP   |
| 17570                       | N/A   | QOS statistics need additional QOS classifier statistics.   |
| 17585                       | N/A   | In QOS traffic conditioner configuration, CR may need to support 1024 kb/s.                                   |
| 17591                       | N/A   | FXO Caller ID not functioning   |
| 17614                       | N/A   | BRI Interface Type, DMS1, is not support by 6800/3400.  |
| 17642                       | 7.0.T16Y  | Voice port freezes on answered state with message Send clear connection (See Appendix A for more information) |
| 17643                       | 7.1.T13A  | Voice ports hang when receive calls from remote sites. (See Appendix A for more information)                  |
| 17646                       | 7.1.T01D  | Node reset when an IPSEC tunnel experiences network disruption  |
| 17654                       | N/A   | Refresh of the screen of QOS Stats (Ctrl+r) is not working properly   |
| 17666                       | 7.1.T13A  | 7310 Node crash: Program 750 Exception Encountered  |
| 17702                       | 7.1.T15A  | Node reset when running with LCON Parallel SVCs due to out-of-memory.   |
| 17704                       | N/A   | File created using getscrip cannot be loaded using setscrip.  |
| 17738                       | 7.0.T18A  | 6840 with T1/E1 card reset  |
| 17815                       | N/A   | Create BGP-policy missed at CLI   |
| 17818                       | N/A   | Router does not send ICMP msg when receiving a large pkt with DF bit set                                      |
| 17827                       | N/A   | Memory Leakage problem using SIP  |
| 17846                       | N/A   | Backdoor user name and password do not work.  |
| 17785                       | N/A   | Prevent QOS Profile application to Ingress and Egress Traffic   |

## 6 Known Software Limitations

### 1) GRE Tunnels may activate ISDN (CR16844)

Encryption session keep-alives trigger GRE tunnels and ISDN calls even when there is no data to be sent.

**Workaround:** Increasing the session timeout in the encryption profile will decrease the frequency of the extra ISDN calls.

### 2) Only the first 155 entries in the Virtual Port Mapping Table are valid (CR16941)

The available range in the VPMT is 1-255. If you use entries above 155 the mapped Voice port will become disabled.

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

### 3) Digital Voice Port statistics display DSP Option 4 information (CR17442)

Digital Voice ports should not be displaying DSP Option 4 as a valid coder selection in flash. Digital Voice Ports do not support DSP Option 4.

**Workaround:** None

### 4) Can not make Dual FXS coder configuration change due to DSP Option 4 fax. (CR17500)

With the introduction of DSP Option 4 for the quad FXS it is now not possible to change the coder selection of the dual FXS while the Node Level DSP Image Selection parameter is set to Option 4.

**Workaround:** Set the Node Level DSP Image Selection parameter to Option 1, and boot table and node record. Return to 2 FXS Port and make coder change. Boot 2FXS port. Return to Node Level DSP Image Selection parameter and set back to Option 4.

### 5) BRI: Interface remains "IDLE" after the node is booted. (CR17539)

If the node is booted while an ISDN call is active, the Interface may not recover and continue to pass data.

**Workaround:** After booting the interface, Boot Virtual Port Boot. If unsuccessful, unplug and plug the cable back in.

### 6) Changing the Master Voice Port DSP Image Selection and Booting the Voice Port causes the DSP to reset. (CR17579 and CR17354)

When the master voice port DSP Image selection is changed 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.

### 7) ISDN calls may be initiated with no data incoming. (CR17594)

The node brings up ISDN calls after the previous connections were disconnected even when no data was incoming. It is caused by an inappropriate value configured in Idle Disconnect Timer.

**Workaround:** Configure the Idle Disconnect timer to be at least 3 times as big as Add/Remove Bandwidth Wait Time.

Here are configuration samples:

**The following configuration works:**

Add Bandwidth Wait Time: 10

Remove Bandwidth Wait Time: 10

Idle Disconnect Timer: 30

**But this second example does not work:**

Add Bandwidth Wait Time: 10

Remove Bandwidth Wait Time: 10

Idle Disconnect Timer: 25

**8) Incorrect configuration error messages for DSP option 4 virtual ports (CR17596)**

The error message "CONFIG Warning: DSP Option 1 image replaces DSP Option 4 image on virtual ports". It is incorrectly displayed for SIP and H.323 virtual ports.

**Workaround:** None. This message was intended to be displayed for digital voice ports only.

**9) Incorrect Vanguide Builder Error Message when exceeding available flash size of the 34X. (CR17872)**

In Vanguide Software Builder selecting Products 340E, 342 or 242d, you may receive the following splash messages if the "Selected Option Size" (estimated calculation) exceeds 8,000,000 due to the image size exceeding the on board flash device limitation.

The on-screen message seen is as follows:

*ERROR: No XRC file has been created in the TEMP directory!  
Failed to create an XRC file! Please verify correctness of the settings in the "Settings" dialog. Also ensure that there is at least 30MB available on your hard disk and that available Virtual Memory is at least 16MB.  
You should now review and save to a different location the .LOG files from the installation's TEMP directory. Do you want to review and save the error logs?*

**Workaround:** Deselect Feature/Protocols until the "Selected Option Size" is below 8,000,000. Note that this calculation will be corrected in the next release of Vanguide Software Builder.

**10) IP Parameter Boot may result in a BGP session boot. (CR17677)**

Any changes made to BGP related parameters under IP parameters and an IP parameter boot is performed, all BGP sessions will also be booted (reset). This will interrupt live BGP peer sessions and result in network BGP resynchronization.

**Workaround:** Users should be aware that if a change is made to any of these parameters and a subsequent "IP parameter" boot is performed then all BGP peer sessions will reset to implement the change.

BGP to RIP Enable: Disabled/  
BGP to RIP Default Filter: Deny/  
BGP to RIP Nondefault Route Override: Disable/  
BGP to RIP Default Route Override: Disable/  
BGP to RIP Default Metric: 1/

To minimize the impact on the user, perform the IP parameter boot during a scheduled maintenance window to avoid network disruptions. There is no plan to correct this issue.

## 7 Vanguard Feature Comparison Chart

| <b>Feature</b>                            | <b>Vanguard<br/>3410/3460/3480</b>  | <b>Vanguard 6840/6841</b>   | <b>Vanguard 7300</b>  |
|---|---|---|---|
| <b>T1 Network Interface Specification</b> | Connectors: Dual RJ-45 (100 ohm)<br>Framing: SF and ESF Line<br>Coding: AMI, B8ZS Timing<br>Source: Int, Receive T1<br>CSU: Built In                              | Connectors: Dual RJ-45 (100 ohm)<br>Framing: SF and ESF Line<br>Coding: AMI, B8ZS Timing<br>Source: Int, Receive T1<br>CSU: Built In                              | Two card versions:<br>1. 12 port T1 or E1 (RJ-45 120 ohm)<br>2. 8 port T1 or E1 (RJ-45 120 ohm)<br>E1-75 ohm support Future<br>Node wide CLOCK control  |
| <b>E1 Network Interface Specification</b> | Connectors: Dual RJ-45 (120 ohm) - Dual BNC (75 ohm)<br>Framing: E1_CAS,<br>E1_CAS_CRC, E1_CAS_FEBE<br>Line Coding: HDB3, AMI<br>Timing Source: Int, Receive      | Connectors: Dual RJ-45 (120 ohm) - Dual BNC (75 ohm)<br>Framing: E1_CAS,<br>E1_CAS_CRC, E1_CAS_FEBE<br>Line Coding: HDB3, AMI<br>Timing Source: Int, Receive      | T1<br>Framing: SF & ESF<br>Line Coding: AMI, B8ZS<br>Timing Source: Int, Receive<br>T1 CSU: Built In<br>E1<br>Framing: E1_CAS,<br>E1_CAS_CRC, E1_CAS_FEBE<br>Line Coding: HDB3, AMI   |
| <b>Channelized Data Support</b>           | Protocols Supported: X.25, FR, TBOP, PPP<br>Maximum Number of Channels: 24 (T1)<br>Maximum Number of Channels: 31 (E1)<br>Maximum Aggregated rate: 1.984 Mbps     | Protocols Supported: X.25, FR, TBOP, PPP<br>Maximum Number of Channels: 24 (T1)<br>Maximum Number of Channels: 31 (E1)<br>Maximum Aggregated rate: 1.984 Mbps     | Protocols Supported: X.25, FR, TBOP, PPP<br>Max Number of Channels per T1/E1 port: 24 (T1), 31 (E1)<br>Total No. of channels per card:<br>(T1) $8*24=192$ , $12*24=288$<br>(E1) $8*31=248$ , $12*31=372$<br>Total No. of channels per System:<br>(7310 T1) $192*4=768$ , $288*4=1152$<br>(7310 E1) $248*4=992$ , $372*4=1488$<br>(7330 T1) $192*7=1344$ , $288*7=2016$<br>(7330 E1) $248*7=1736$ , $372*7=2604$<br><u>Note: all numbers subject to processing capabilities of the 7300.</u> |
| <b>ISDN PRI Data Support</b>              | Switch Types (User Side Only):<br>N/A Bundle (T1) NI-1, 4ESS, 5ESS, DMS100<br>European Bundle (E1) ETSI<br>Asia Bundle (T1) NTT<br>Switch Variants: None Required | Switch Types (User Side Only):<br>N/A Bundle (T1) NI-1, 4ESS, 5ESS, DMS100<br>European Bundle (E1) ETSI<br>Asia Bundle (T1) NTT<br>Switch Variants: None Required | Switch Types (User Side Only):<br>N/A Bundle (T1) NI-1, 4ESS, 5ESS, DMS100<br>European Bundle (E1) ETSI<br>Asia Bundle (T1) NTT<br>Switch Variants: None Required   |



|                                     |   |  |  |
|-------------------------------------|---|--|--|
| <b>Voice Signaling Support</b>      | CAS: E&M (Wink, Delay, Immediate Colisee, and Seizure Ack) (3460/3480)<br>FXS (Loopstart) (3460/3480)<br>FXO (Loopstart) (3460/3480)  | CAS: E&M (Wink, Delay, Immediate Colisee, and Seizure Ack)<br>FXS (Loopstart)<br>FXO (Loopstart)<br>CCS (2,3,4):<br><ul style="list-style-type: none"> <li>N/A Bundle (T1) <ul style="list-style-type: none"> <li>Q.Sig (Master/Slave) (5)</li> <li>5ESS (Network/User) (6)</li> <li>NI-1 (Network/User) (6)</li> <li>DMS100 (Network/User) (6)</li> </ul> </li> <li>Euro Bundle (E1) <ul style="list-style-type: none"> <li>ET SI (Network / User)</li> <li>Q.Sig (Master/Slave) (5)</li> </ul> </li> </ul> | CAS: E&M (Wink, Delay, Immediate Colisee, and Seizure Ack)<br>FXS (Loopstart)<br>FXO (Loopstart)<br>CCS (2,3,4):<br><ul style="list-style-type: none"> <li>N/A Bundle (T1) <ul style="list-style-type: none"> <li>Q.Sig (Master/Slave) (5)</li> <li>5ESS (Network/User) (6)</li> <li>NI-1 (Network/User) (6)</li> <li>DMS100 (Network/User) (6)</li> </ul> </li> <li>Euro Bundle (E1) <ul style="list-style-type: none"> <li>ET SI (Network / User)</li> <li>Q.Sig (Master/Slave) (5)</li> </ul> </li> </ul> |
| <b>Proprietary Features</b>         | Trunking Gateway(3460/3480 E1 only)   | Timeslot Bypass  | Timeslot Bypass  |
| <b>Additional Clocking Features</b> | Node Wide Network Clock Source (3460/3480 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<br>Voice & Data Applications: Each card has to be connected to one carrier  |
| <b>SDLC HPAD/TPAD</b>               | Protocols:<br>SDLC<br>Characteristics:<br>HDX, FDX, TWA<br>Network:<br>QLLC/X.25/Frame Relay (Annex G)<br>Host Interface:<br>SDLC PTP, SDLC MP, X.25 (IBM NPSI)<br>Physical Interface:<br>V.21, V.24, V.35  | Protocols:<br>SDLC<br>Characteristics:<br>HDX, FDX, TWA<br>Network:<br>QLLC/X.25/Frame Relay (Annex G)<br>Host Interface:<br>SDLC PTP, SDLC MP, X.25 (IBM NPSI)<br>Physical Interface:<br>V.21, V.24, V.35   | Same as 6840/6841except: Characteristics: no HDX   |
| <b>LLC2 (SNA) Conversion</b>        | Protocols:<br>LLC2, X.25 (QLLC), SDLC, FR (RFC1490)<br>Characteristics:<br>HDX, FDX, TWA<br>Network:<br>QLLC/X.25/Frame Relay (Annex G)<br>Frame Relay (RFC1490)<br>Host Protocols:<br>SDLC PTP, SDLC MP, X.25 (IBM NPSI), LLC2, Frame Relay (RFC1490)<br>LAN:<br>Ethernet 802.3 (10 mbps), Ethernet2.<br>WAN Physical Interface:<br><br>V.21, V.24, V.35 | Protocols:<br>LLC2, X.25 (QLLC), SDLC, FR (RFC1490)<br>Characteristics:<br>HDX, FDX, TWA<br>Network:<br>QLLC/X.25/Frame Relay (Annex G)<br>Frame Relay (RFC1490)<br>Host Protocols:<br>SDLC PTP, SDLC MP, X.25 (IBM NPSI), LLC2, Frame Relay (RFC1490)<br>LAN:<br>Ethernet 802.3 (10 mbps), Ethernet2.<br>WAN Physical Interface:<br><br>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 Signaling Support only at this time.

|   |   |   |   |
|---|---|---|---|
| <b>AS/400 5494 Communications Server</b>  | Protocols:<br>LLC2, X.25 (QLLC),<br>SDLC, FR (RFC1490)<br>Characteristics:<br>HDX, FDX, TWA<br>Network:<br>QLLC/X.25/Frame<br>Relay (Annex G)<br>Frame Relay (RFC1490)<br>Host Protocols:<br>LLC2, Frame Relay<br>(RFC1490)<br>LAN:                 Token Ring<br>(4 or 16 mbps), Ethernet 802.3<br>(10 mbps), Ethernet2.<br>WAN Physical Interface:<br>V.21, V.24,<br>V.35 | Protocols:<br>LLC2, X.25 (QLLC),<br>SDLC, FR (RFC1490)<br>Characteristics:<br>HDX, FDX, TWA<br>Network:<br>QLLC/X.25/Frame<br>Relay (Annex G)<br>Frame Relay (RFC1490)<br>Host Protocols:<br>LLC2, Frame Relay<br>(RFC1490)<br>LAN:                 Token Ring<br>(4 or 16 mbps), Ethernet 802.3<br>(10 mbps), Ethernet2.<br>WAN Physical Interface:<br>V.21, V.24,<br>V.35 | Same as 6840/6841 except:<br>Characteristics: no HDX  |
| <b>Other SNA protocols</b>                | BSC3270 HPAD/TPAD<br>BSC2780/3780<br>IBM 2260 PAD<br>TCOP<br>TBOP<br><br>NCRBSC HPAD/TPAD<br><br>Pad Scope  | BSC3270 HPAD/TPAD<br>BSC2780/3780<br>IBM 2260 PAD<br>TCOP<br>TBOP<br><br>NCRBSC HPAD/TPAD<br><br>Pad Scope  | TBOP<br>All others not supported  |
| <b>BSC3270 -to- SNA Conversion</b>        | 256 Devices Supported   | 256 Devices Supported   | 2,000 Devices Supported   |
| <b>BSC2780/3780-to-SNA/LU0 Conversion</b> | Supported on the 6455<br>256 Devices Supported  | Supported on the 6455<br>256 Devices Supported  | 256 Devices Supported   |
| <b>Frame Relay</b>                        | FRI, FRA, FRF.12 Support  | FRI, FRA, FRF.12 Support  | Same as 6840/6841 except no<br>FRA and FRF.12 support   |
| <b>IP/LAN</b>                             | VPN/IPSEC/3DES/AES  | VPN/IPSEC/3DES/AES  | VPN/IPSEC/3DES/AES.   |
| <b>ATM</b>                                | Not supported   | Not supported.  | ATM supported over T3 or E3.<br>UBR, VBR and CBR<br>4000 VCCs IP over<br>ATM AnnexG over<br>ATM |
| <b>ATM</b>                                | Not supported   | Not supported.  | ATM supported over T3 or E3.<br>UBR, VBR and CBR<br>4000 VCCs IP over<br>ATM AnnexG over<br>ATM |

|  |   |   |  |
|--|---|---|--|
| <b>VBIP (BSC3270 to TCP/IP Conversion)</b>   | Supported.  | Not supported   | Not supported  |
| <b>SNMP</b>  | The following MIB objects are supported only in 3400 platform.<br><br>cdx6500T1E1 VGTable | The following MIB objects are supported only in 6800 platform.<br><br>cdx6500T1E1 VGTable<br>cdx6500TdmClkTable | The following MIB objects are supported only in 7300 platform.<br><br>cdx6500PSTT1E1TGPortTable<br>cdx6500PSTT1E1TGTable<br>cdx6500STTdntgClkGroup |
| <ol style="list-style-type: none"> <li>1) All signaling types/variant combinations support user or Network side and T1 or E1.</li> <li>2) Q.Sig/Euro ISDN support on T1 interfaces is now available in Release 6.5.R000, 7.0.R00A, 7.1.R00A, 7.2.R00A</li> <li>3) NTT Signaling support is currently unavailable and is targeted to be added in a future release.</li> <li>4) Transparent CCS can be supported manually by means of configuring the TBOP data channel for "Signaling" channel and Voice Bearer channels with none for signaling. Virtual port mapping table entries for voice ports must be TDM-VOICE.</li> <li>5) Q.Sig Support now includes Basic Call, Supplementary Services and Segmentation.</li> <li>6) Enblock Signaling Support only at this time.</li> </ol> |   |   |  |

## 7.1 Software Configuration Limits

The following 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

| <b>Software Configuration</b>  | <b>7300 Series</b>    | <b>6840/6841</b> | <b>3410/3460/<br/>3480</b> |
|--|-----------------------|------------------|----------------------------|
| <b>Physical Port</b>   | <b>Maximum Limits</b> |                  |                            |
| Ethernet ports per node - MPC750 CPU                                     | 5                     |                  |                            |
| Ethernet ports per node - IBM750FX CPU                                   | 20                    |                  |                            |
| Ethernet ports per node  |                       | 2                | 2 (3410/3460)<br>5 (3480)  |
| High speed (V.35) serial links per node                                  | 56                    | 8                | 3460/3480 - 4<br>3410 - 2  |
| Total LAN ports (ETH) per node (not bridged) MPC750                      | 5                     |                  |                            |
| Total LAN ports (ETH) per node (not bridged) IBM750FX                    | 20                    |                  |                            |
| Devices supported per Ethernet segment<br>(Relevant to Bridge operation) | 255                   | 255              | 255                        |
| T1/E1/PRI ports (data only) per node                                     | 84                    | 4                | 3460/3480 - 2<br>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    | 0     |
| Number voice calls per node (Number shown is T1 max.)  | 336    | 60    | 0     |
| <b>Frame Relay</b>                                     |        |       |       |
| Number of DLCIs per FR Port                            | 820    | 820   | 820   |
| 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 |
| <b>Session</b>   |        |       |       |
| 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 |
| <b>Network Services</b>                                |        |       |       |
| 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 |
| <b>LAN IP (Specific)</b>                               |        |       |       |
| 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   | 1023   | 1023  | 255   |
| IP Multicast DVMRP Tables size   | 4,000  | 4,000 | 4,000 |
| Maximum number of Multicast Interfaces supported   | 1,000  | 256   | 256   |
| CIDR: RIP aggregate table  | 255    | 255   | 255   |
| CIDR: Multi-home table size  | 255    | 255   | 255   |
| <b>Voice</b>   |        |       |       |
| Number of voice switching table entries:   | 10,000 | 6,000 | 6,000 |
| Save your CMEM before configuring a large number of entries. If your CMEM becomes too large, the node may reset or default its configuration.  |        |       |       |
| <b>SNA/IBM Support</b>   |        |       |       |
| Number of stations per LAN <b>interface</b> (SLAC) - <i>Note: Two LAN interfaces allowed per node -- 1,000 stations per interface,</i>   | 1,000  | 250   | 250   |
| Maximum number of SLAC Stations supported for BSC/LU Devices   | 100    | 63    | 63    |
| Number of stations per <b>Node</b> (SLAC) - <i>Note: Two LAN interfaces allowed per node -- 2,000 max stations per node.</i><br><b>LLC LAN Conversion Stations:</b><br>Vanguard 7300 Series - 1,000 per interface, 2,000 per node (Release 6.0 and greater)<br>Vanguard 3410/3460/3480- 250 per interface, 500 per node<br>Vanguard 34x - 250 stations on one port<br><b>LLC FRI Conversion Stations:</b><br>Vanguard 7300 Series - 2,000 per node (Release 6.1 or greater)<br>Vanguard 7300 Series - 1,000 per node (Prior to Release 6.1)<br>Vanguard 34x, 3410/3460/3480 - 250 per node | 2,000  | 500   | 500   |

| <b><i>Additional Limits</i></b>   |                        |        |        |
|---|------------------------|--------|--------|
| Number of bridge links entries<br>(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)<br>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    |
| UDP Broadcast Forwarding Table Size   | 255                    | 255    | 255    |
| Outbound Translation Table Entries<br>(7300 Series original size - 1,600)       | 16,000                 | 1,600  | 1,600  |
| <b><i>Additional Limits - ATM</i></b>   |                        |        |        |
| ATM Stations  | 4,000                  | *      | *      |
| Maximum FRST Entries  | 4,000                  | *      | *      |
| SAR Profile   | 500                    | *      | *      |
| X25 Profile   | 500                    | *      | *      |
| Maximum Compressed Data Connections   | 500                    |        |        |
| <b><i>Additional Limits - LAN</i></b>   |                        |        |        |
| Transparent Bridge Forwarding Table Size<br>(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)<br>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 | 50 per node | 30 per node | 30 per node |
| Vanguard 34x - 20 per node               |             |             |             |

## 8 Boot Prom Software Updates

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



### 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.

### 8.1 Software Loader

Software Loader automatically upgrades or downgrades the boot prom. When an image is loaded and it requires a version of boot prom different from the one currently loaded, Software Loader changes the boot prom to successfully load the image. For more information on boot prom-image compatibility, refer to the Boot prom Directory table on page 28.

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

### 8.2 Procomm Procedure

Below is a step procedure on how to cold load the Boot prom using Procomm Communication software. This procedure example was documented using a Vanguard 7300 Series router. The figure on page 29 shows the various product directories.

#### Note:

Boot prom revision 3.00 is current for release 6.5.R000 or greater 7300 series routers using the IBM750FX CPU and MPC750 CPU.

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

| <b>Step</b> | <b>Action</b>   |
|-------------|---|
| a)          | Access the Console Terminal Program's (CTP) Main Menu.  |
| b)          | Select Option 5, <b>Status/statistics</b> .   |
| c)          | Select Option 1, <b>Node Stat</b> , from the Status/statistics menu. The Node Stats' displays the Boot prom Revision: 7300 Series Examples:<br>Version 1.10, 1.11, 1.30, 1.40, 1.50, 1.51, Version 2.00, or Version 3.00.<br><b>Note:</b> Refer to the Boot prom Directory table in Step 9. |



```

Node:                Address: 200                Date: 8-MAR-2001  Time: 11:48:08
Detailed Node Statistics                                Page: 1 of 11

Product Type:                VANGUARD 7310
Bootprom Revision:          V1.30 ←
Running Software Image:      V5.4tP08Y4_MS_7310 (6-Mar-2001 15:28:20)
                             Size: 7313580 bytes
Current Software Image:      V5.4tP08Y1_MS_7310 Size: 5393280 bytes
Alternate Software Image:    V5.4tP08Y4_MS_7310 Size: 5391288 bytes
The Software will reboot to alte_img.

Last power up or reset:      07-MAR-2001 17:33:56
Last node boot:              07-MAR-2001 17:42:29
Last watch-dog timeout event: <none>
Last configuration change:    07-MAR-2001 16:20:25

The Running Configuration uses CURRENT. A Reboot will use CURRENT.
Compressed Configuration:    1964800 bytes avail, 4556 bytes (0%) used
Uncompressed Configuration:  4063232 bytes avail, 13018 bytes (0%) used

Press any key to continue ( ESC to exit ) ...

```

- 2) Use the Procomm application to update the Boot prom. 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 cold loader indicated in the current bank column of the table below. Typically the c73cv115.xrc file is used.

| <b>Current Bank</b> | <b>Kbps</b> |
|---------------------|-------------|
| c73cv115.xrc        | 115         |
| c73cv192.xrc        | 19.2        |
| c73cv288.xrc        | 28.8        |
| c73cv384.xrc        | 38.4        |
| c73cv576.xrc        | 57.6        |
| c73cv96.xrc         | 9.6         |

- 5) Download the appropriate cold loader to your PC for the correct Boot prom version, from the following directory example:

C:\Vanguard\SFV\_IMGS\73\*0\COLDLOAD\T300BP1\*\*

**Note:**

You must use the cold loader from the current bank column of the table in step 4 to load the Boot prompts.

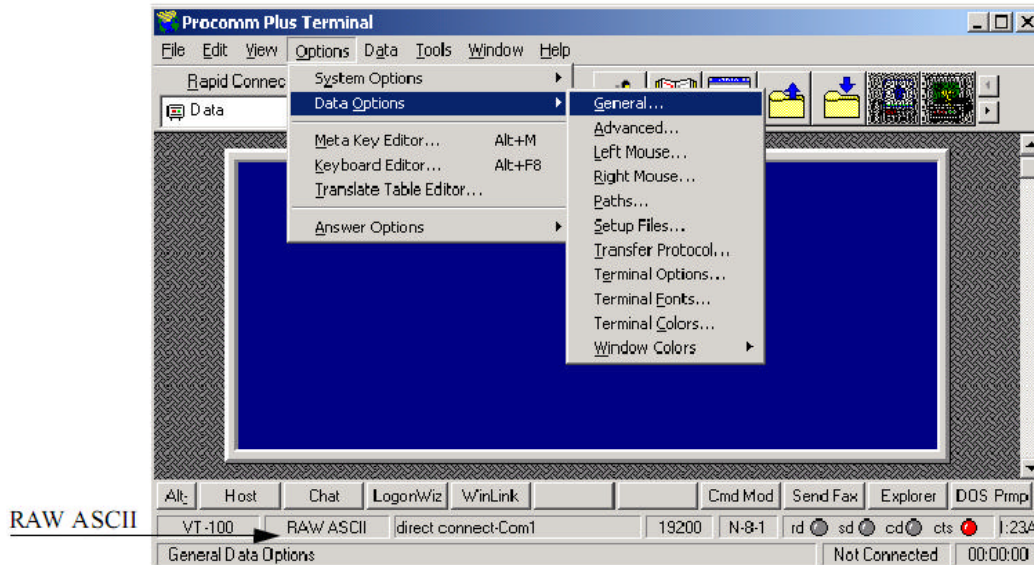
- 6) When using the Procomm application:
  - Select Send File from the Procomm Data Menu
  - Select RAW ASCII transfer mode

- Select 9600 for the Colder loader speed

The following figures show the Procomm application.

**Note:**

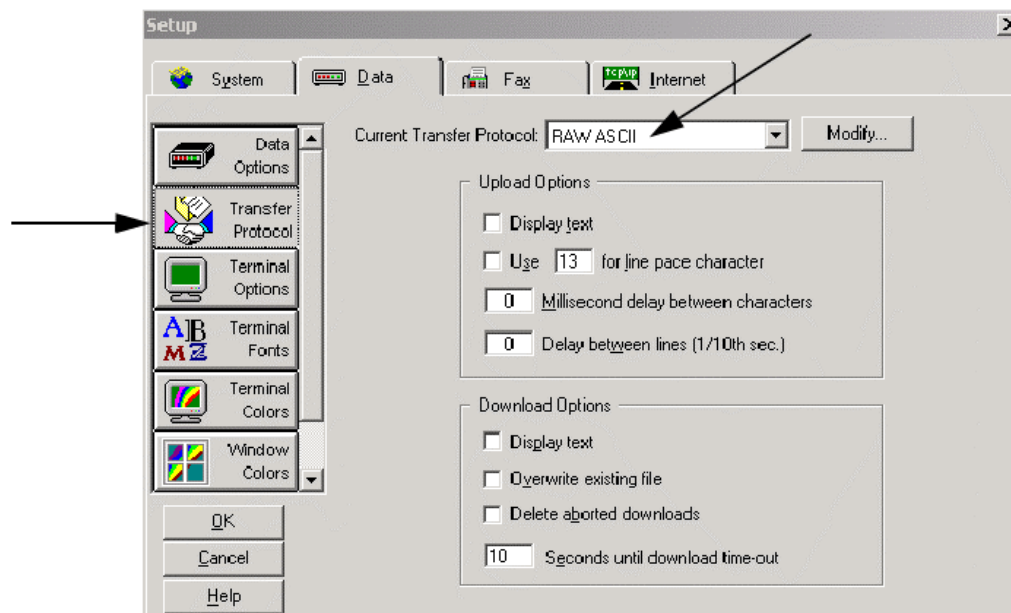
To ensure you are in RAW ASCII transfer mode in Procomm, check the setup file. Options->Data Options



### 8.3 Procomm Setup

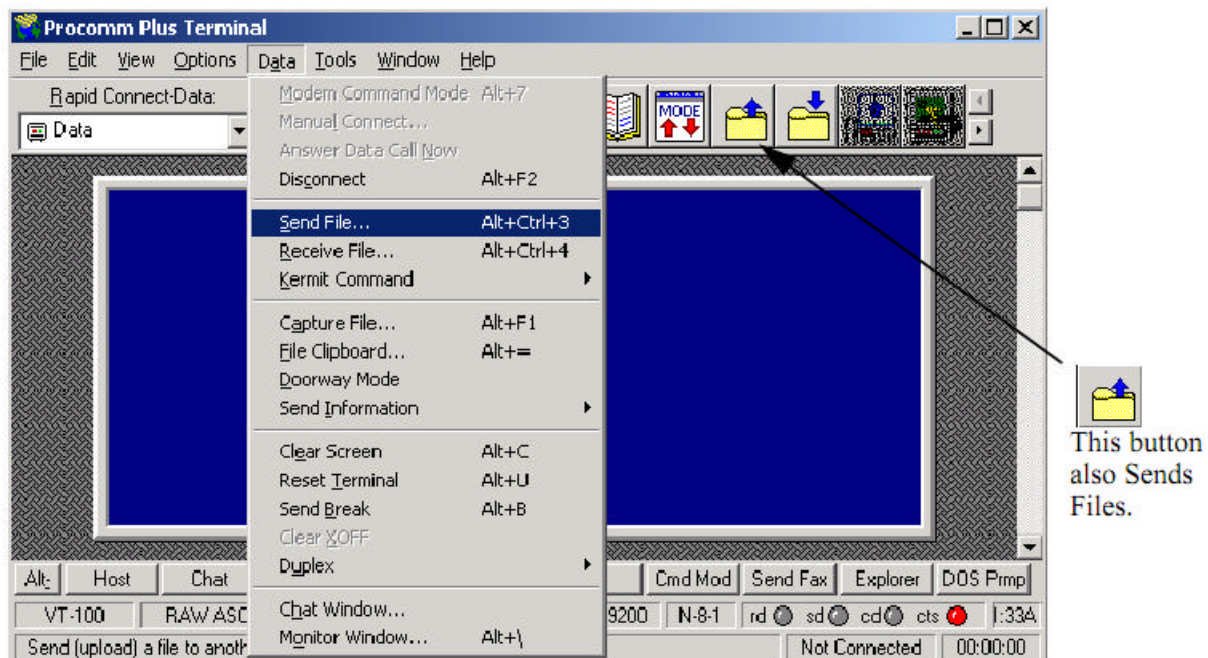
When Options->Data Options->Transfer Protocol is selected, a Setup menu displays.

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



## 8.4 Send File

To send a file, open the Procomm application. Under the Data Menu select 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 Kbps | 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 cold loader speed chosen in step 4. Download the Bootprom.xrc file. The required Boot prom version (such as T10BP111.xrc) can be acquired from the directory containing the same name:

C:\Vanguard\SWF\_IMGS\73\*0\COLDLOAD\T10BP1\*\*

- 8) Open the Procomm Plus Terminal Manual application:
  - a. Select Send File, under the Procomm Data Menu
  - b. Select the correct boot prom version
- 9) Choose the correct boot prom directory that includes the cold loaders. The example below shows the 7300 Series Boot prom Directories.

\T10BP1\*\* refers to:  
T10BP110 T10BP150  
T10BP111 T10BP151  
T10BP130 T20BP200  
T10BP140 T30BP300

| <b>Boot<br/>prom<br/>Directory</b> | <b>ONS Image Compatibility</b>   | <b>Boot<br/>prom<br/>Version</b> |
|------------------------------------|--|----------------------------------|
| T10BP110                           | 5.4.P08A<br>5.4.P08B   | 1.10                             |
| T10BP111                           | 5.4.P08#<br>The pound sign “#” represents a letter from C to Z.  | 1.11                             |
| T10BP130                           | 5.4.P0LA, 5.4.P0KA, and 5.4.P0JA<br>Boot prom version 1.30 is required to run the 5.4 Point Release L software. The 1.30 version of the boot prom does not work with any earlier 5.4.P08* software. <b>If you have a new CPU card, use boot prom 1.40 or 1.50.</b> The asterisk “*” represents a letter from A to Z. | 1.30 or greater                  |
| T10BP140                           | 5.4.P0LB<br> <b>Warning</b><br>Boot prom 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<br>Boot prom 1.51 is the latest for the MCP750 CPU.<br><b>Do not</b> use boot prom 2.00 on the MCP750 CPU.  | 1.51                             |
| T20BP200                           | 6.4.R00A and 6.4.R10A<br>The IBM750 CPU must use boot prom 2.00  | 2.00                             |
| T30BP300                           | 6.5.R000 or greater<br>Boot prom revision 3.00 supports IBM750 and MPC750 CPUs.<br>Boot prom 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.

**8.5 Directory Example**

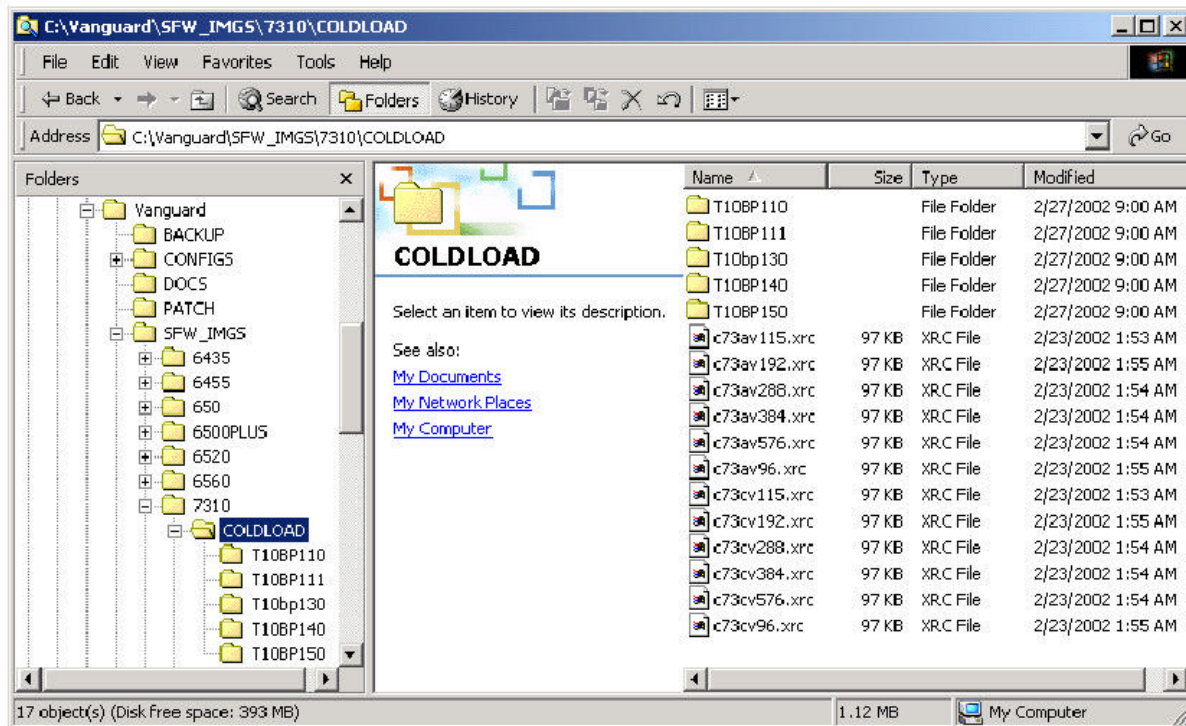
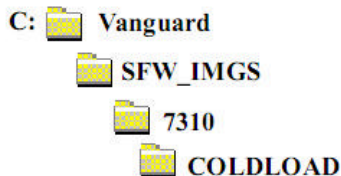
The figure below shows a Vanguard 7310 Directory selected.

C:\Vanguard\SFW\_IMGS\7310\COLDLOAD

**Note:**

Under the SFW\_IMGS directory all the Vanguard products are listed. To select a Vanguard 7310 the path would be:

C:\Vanguard\SFW\_IMGS\7310\COLDLOAD



- 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 boot prom 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 cold loader" 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 boot prom image instruction in step 8.

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

## 8.6 Boot Prom Information for the MPC750 Controller Card

Any MPC750 CPU controller card (numbered 75836G01) with revision D or greater REQUIRES the new boot prom 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 Vanguard CD prior to release 5.4.POLB. This card is functionally equivalent to the original card, but does require new boot prom code and cold loaders 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.vanguardnetworks.com/support-documentation-overview.htm>

Also refer to the "Boot Prom Software Updates" section (Chapter 8) of this Software Release Notice.

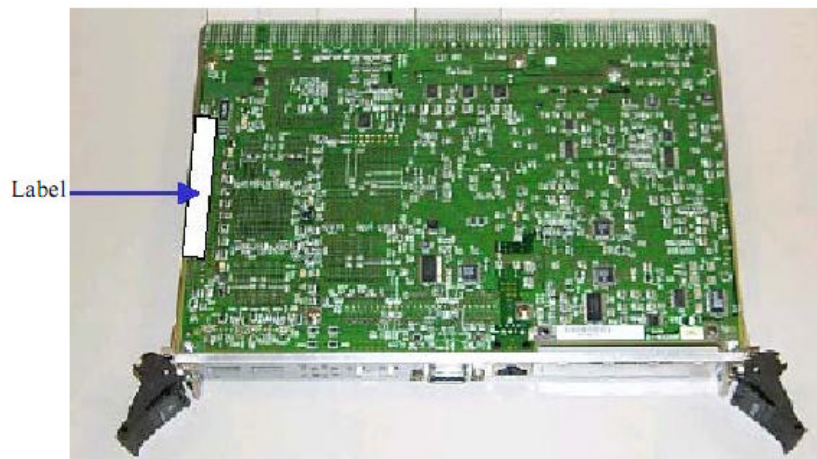
**Note s:**

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

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

## 8.7 Controller Card Board Assembly Number Location

Refer to the figure below to locate your board assembly number:



## 8.8 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).

## 9 Boot Prom and Cold loader Matrix Upgrade

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 Boot prom, Coldloader and Image Matrix

| <i>No.</i> | <i>Release</i>      | <i>Boot Code Version</i> | <i>Cold-loader from Release</i> | <i>On-Board Flash</i> | <i>Flash SIMM</i> | <i>Status</i> | <i>Comment</i>             |
|------------|---------------------|--------------------------|---------------------------------|-----------------------|-------------------|---------------|----------------------------|
| 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 |
| 3          | 7.2.R00A            | 1.05                     | 7.2.R00A                        | 16M                   | None              | Valid         | 64k CMEM, 4M image maximum |
| 4          | Factory/Dec 2009    | 1.06                     | 7.2.R00A                        | 16M                   | None              | Valid         | None                       |

**Note s:**

3400 Series Platform

1) The installed 3400 SDRAM is 64Mbytes.

### Vanguard 242 Boot prom, Coldloader and Image Matrix

| <i>No.</i> | <i>Release</i>    | <i>Boot Code Version</i> | <i>Cold-loader from Release</i> | <i>On-Board Flash</i> | <i>Flash SIMM</i> | <i>Status</i> | <i>Comment</i>              |
|------------|-------------------|--------------------------|---------------------------------|-----------------------|-------------------|---------------|-----------------------------|
| 1          | 6.5.P02A or later | 2.31                     | 7.2                             | 8M                    | 8M or none        | Valid         | 128K CMEM, 8M image maximum |

### Vanguard 340 Enhanced Boot prom, Coldloader and Image Matrix

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

**Note s:**

Vanguard 340 Enhanced platform:

1) ECC is supported.

### Vanguard 342 Boot prom, Coldloader, Image, ECC and FLASH SIMM Matrix

| <b>No.</b> | <b>Rel.</b>  | <b>DRAM<br/>DIMM</b> | <b>Boot<br/>Code<br/>Versio<br/>n</b> | <b>Cold-<br/>loader<br/>from<br/>Release</b> | <b>On-<br/>Board<br/>Flash</b> | <b>Physi<br/>cal<br/>Flash<br/>SIMM</b> | <b>Status</b> | <b>Comment</b>                                      |
|------------|--------------|----------------------|---------------------------------------|--|--------------------------------|---|---------------|---|
| 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 boot code |
| 8          | 6.2          | 32M from Viking      | 2.31                                  | 6.2  | 8M                             | 8M or None                              | Valid         | Viking 32M DRAM DIMM works only with 2.31 boot code |
| 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 boot code |
| 10         | 6.3 or later | 32M from Micron      | 2.1                                   | 6.2  | 8M                             | 8M or none                              | Valid         | 128k CMEM, 8M image maximum. ECC not supported.     |
| 11         | 6.3 or later | 32M from Micron      | 2.1                                   | 6.3 or later                                 | 8M                             | 8M or none                              | Valid         | 128k CMEM, 8M image maximum. ECC not supported      |
| 12         | 6.3 or later | 32M from Micron      | 2.30                                  | 6.2  | 8M                             | 8M or none                              | Valid         | 128k CMEM, 8M image maximum                         |
| 13         | 6.3 or later | 32M from Micron      | 2.30                                  | 6.3 or later                                 | 8M                             | 8M or none                              | Valid         | 128k CMEM, 8M image maximum                         |
| 14         | 6.3 or later | 32M from Micron      | 2.31                                  | 6.2  | 8M                             | 8M or none                              | Valid         | 128k CMEM, 8M image maximum                         |



|    |              |                 |             |              |    |            |         |   |
|----|--------------|-----------------|-------------|--------------|----|------------|---------|---|
| 15 | 6.3 or later | 32M from Micron | 2.31        | 6.3 or later | 8M | 8M or none | VR      | 128k CMEM, 8M image maximum                         |
| 16 | 6.3 or later | 32M from Viking | 2.1 to 2.30 | 6.2 or later | 8M | 8M or none | Invalid | Viking 32M DRAM DIMM works only with 2.31 boot code |
| 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 boot code |
| 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 boot code |

**Notes:**

Vanguard 342 platform:

- 1) The Vanguard 342 uses 32Mbyte DRAM. If the DRAM DIMM's vendor is Viking (Viking Part Number VI8GU083236B TB) 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 6800 Series Boot prom, Coldloader, Image Matrix**

| <b>No.</b> | <b>Release</b> | <b>Boot Code Version</b> | <b>Cold-loader from Release</b> | <b>On-Board Flash</b> | <b>SAN-DISK</b> | <b>Status</b> | <b>Comment</b>   |
|------------|----------------|--------------------------|---------------------------------|-----------------------|-----------------|---------------|--|
| 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 boot prom is mandatory           |
| 3          | 7.2.R00A       | 1.07                     | 7.2.R00A                        | 4M                    | 256M            | Valid         | For 7.0.R00A, 7.1.R00A, and 7.2.R00A 1.07 boot prom is mandatory |

**Vanguard 7300 Series Boot prom, Coldloader, Image Matrix**

| <b>No.</b> | <b>Rel.</b> | <b>Sys. Module</b> | <b>Boot Code Version</b> | <b>Cold-loader from Release</b> | <b>Compact Flash</b> | <b>On board flash</b> | <b>Status</b> | <b>Comment</b>     |
|------------|-------------|--------------------|--------------------------|---------------------------------|----------------------|-----------------------|---------------|--------------------|
| 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 boot code 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 cold loader not working with IBM750FX CPU card |
| 10 | 6.4        | IBM750 FX CPU | 2.00          | 6.4        | 32M        | 16M (curr) + 16M (alt) | Valid   | 2M CMEM Compressed  |
| 11 | 6.4        | IBM750 FX CPU | 2.00          | 6.4        | 64M        | 16M (curr) + 16M (alt) | VR      | 2M CMEM Compressed  |
| 12 | 6.5 to 7.2 | IBM750 FX CPU | 3.00          | 6.5        | 64M        | 16M (curr) + 16M (alt) | VR      | 2M CMEM Compressed  |
| 13 | 6.5 to 7.2 | MPC750        | 3.00          | 6.5        | 32M        | 1M                     | VR      | 2M CMEM Compressed  |

**Notes:**

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, boot code 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 boot code.
- 7) For Release 6.5, boot code 3.00 is mandatory.

## 10 User Documentation

User documentation supporting the 7.2.R00A Applications Ware is organized as:

- Basic Protocols
- IP and LAN Feature Protocols
- SNA Feature Protocols
- Serial Feature Protocols
- Multi-service 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 in this document (Chapter 12).

### 10.1 Applications Ware Basic Protocols Manual

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)

### 10.2 Applications Ware IP and LAN Feature Protocols Manual

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)
- Traffic Monitor (Part Number T0100-15)
- Ethernet Basics (Part Number T0109)
- Token Ring Basics (Part Number T0111)
- Firewall-DMZ (Part Number T0293)

### 10.3 Applications Ware SNA Feature Protocols Manual

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)

### 10.4 Applications Ware Serial Feature Protocols Manual

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)

### 10.5 Applications Ware Multi-Service Feature Protocols Manual

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)

### 10.6 Applications Ware Multimedia Feature Protocols Manual

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)

## 10.7 Applications Ware 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 by doing the following:

- 1) Access the web site: <http://www.vanguardnetworks.com/support-alarm-search.htm>
- 2) Search the alarms by alarm, text or SNMP trap number.

## 11 How to Obtain User Documentation

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.
- Keep a current set of documentation for Release 7.2.R00A.

### 11.1 Download from the World Wide Web

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

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.

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

<http://www.vanguardnetworks.com/support-documentation-overview.htm>

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.

### 11.2 Keep a Current Set of Manuals

Keep a current set of documentation for Release 7.2.R00A. To download a current printed set you will need access to a:

- Internet connection to the Vanguard Networks product documentation website:  
<http://www.vanguardnetworks.com/support-documentation-overview.htm>
- 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.

## 12 Vanguide CD-ROM with Vanguard Software Builder

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.

### 12.1 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 let's 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 platforms.

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

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



## 13 Release 7.2R00A for the Vanguard 242D, 340E, 342

Vanguard 242D, 340 Enhanced and 342 support Vanguard Network's broad library of protocols, thereby providing a diverse set of solutions via a single hardware platform. The Vanguard 34x Series offers multi-protocol 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.

Release 7.2.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 in this document (Chapter 13).

### Note s:

- 1) When using Vanguard Software Builder, be sure to make note of the warnings regarding memory limitations.
- 2) Information regarding the Vanguard Applications Ware is divided into six tables.
  - a. The first three tables list each Applications Ware and its file number.
  - b. The second three tables list each Applications Ware and its features (default features as well as non-default features).

| <b><i>Vanguard 242d Applications Ware Name</i></b> | <b><i>Source Filename</i></b> | <b><i>Version String</i></b> | <b><i>Description Filename</i></b> |
|--|-------------------------------|------------------------------|------------------------------------|
| IP+ Applications Ware                              | 72R00A z11.xrc                | 7.2.R00A_IP+_242d            | 72R00A z11.des                     |
| SNA+ Applications Ware                             | 72R00A z12.xrc                | 7.2.R00A_SNA+_242d           | 72R00A z12.des                     |
| Multi-service Applications Ware                    | 72R00A z15.xrc                | 7.2.R00A_@MS_242d            | 72R00A z15.des                     |

| <b><i>Vanguard 340 Enhanced Applications Ware Name</i></b> | <b><i>Source Filename</i></b> | <b><i>Version String</i></b> | <b><i>Description Filename</i></b> |
|--|-------------------------------|------------------------------|------------------------------------|
| IP+ Applications Ware                                      | 72R00Ay11.xrc                 | 7.2.R00A_@IP+_340E           | 72R00Ay11.des                      |
| SNA+ Applications Ware                                     | 72R00Ay12.xrc                 | 7.2.R00A_@SNA+_340E          | 72R00Ay12.des                      |
| Multi-service Applications Ware                            | 72R00Ay15.xrc                 | 7.2.R00A_@MS_340E            | 72R00Ay15.des                      |

| <b><i>Vanguard 342 Applications Ware Name</i></b> | <b><i>Source Filename</i></b> | <b><i>Version String</i></b> | <b><i>Description Filename</i></b> |
|---|-------------------------------|------------------------------|------------------------------------|
| IP+ Applications Ware                             | 72R00Aw11.xrc                 | 7..2R00A_@IP+_342            | 72R00Aw11.des                      |
| SNA+ Applications Ware                            | 72R00Aw12.xrc                 | 7..2.R00A_@SNA+_342          | 72R00Aw12.des                      |
| Multi-service Applications Ware                   | 72R00Aw15.xrc                 | 7.2.R00A_@MS_342             | 72R00Aw15.des                      |

| <b><i>Vanguard 242d Features</i></b> | <b><i>IP+</i></b> | <b><i>SNA+</i></b> | <b><i>Multi-Service</i></b> | <b><i>Security</i></b> | <b><i>Special</i></b> |
|--------------------------------------|-------------------|--------------------|-----------------------------|------------------------|-----------------------|
| 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 |  |  |
| <b>Async</b>                                |   |   |   |  |  |
| ATPAD                                       | D | D | D |  |  |
| APAD  | L | L | L |  |  |
| <b>ISDN</b>                                 |   |   |   |  |  |
| 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)     |   |   |   |  |  |
| <b>Vanguard Voice Relay (2 x E &amp; M)</b> |   |   |   |  |  |
| G.723.1                                     |   |   |   |  |  |
| G.729A                                      |   |   |   |  |  |
| CVSELP                                      |   |   |   |  |  |
| Centralized Voice Switching                 |   |   |   |  |  |
| Voice Routing Services                      |   |   | L |  |  |
| <b>Vanguard Voice Relay (Quad FXS/FXO)</b>  |   |   |   |  |  |
| 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 |  |  |
| <b>Digital Voice 68XX and 73XX</b>      |   |   |   |  |  |
| Vanguard T1/E1/PRI Digital Voice Server |   |   | L |  |  |
| <b>Digital Voice -73XX</b>              |   |   |   |  |  |
| 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 |  |  |
| <b>Voice Over IP (All Products)</b>     |   |   |   |  |  |
| H.323                                   |   |   | L |  |  |
| VOICE-IP-ENCAPSULATION                  |   |   | L |  |  |
| SIP                                     |   |   |   |  |  |
| <b>Premium Voice Services</b>           |   |   |   |  |  |
| Caller ID                               |   |   |   |  |  |
| Call Hold                               |   |   |   |  |  |
| Call Waiting                            |   |   |   |  |  |
| Call Transfer                           |   |   |   |  |  |
| Call Forward                            |   |   |   |  |  |
| Voice Mail                              |   |   |   |  |  |
| <b>LAN</b>                              |   |   |   |  |  |
| Router IP                               | D | D | D |  |  |
| Router IPX                              | L | L | L |  |  |
| <b>LAN Option Protocols</b>             |   |   |   |  |  |
| 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 |  |   |
| <b>IP Multicast Protocols</b>                  |   |   |   |  |   |
| PIM Sparse Multicast                           | L | L | L |  |   |
| DVMRP Multicast                                | D | D | D |  |   |
| <b>Network Protocols</b>                       |   |   |   |  |   |
| OSPF   | D | L | L |  |   |
| BGP4   | L | L | L |  |   |
| BGP IGP to BGP Route Filtering                 | L | L | L |  |   |
| BGP Multi-path Load Balancing                  | L | L | L |  |   |
| BGP Same AS as in ASPath                       | L | L | L |  |   |
| FRF12  | L | L | L |  |   |
| FRA ( <i>only for backward compatibility</i> ) |   | L | L |  |   |
| FRI ( <i>includes FRA</i> )                    | D | D | D |  |   |
| 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             |   |   |   |  |   |
| <b>IBM Networking</b>                |   |   |   |  |   |
| 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 |  |   |
| <b>Serial Asynchronous Protocols</b> |   |   |   |  |   |
| 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 |
| <b>Serial Synchronous Protocols</b>  |   |   |   |  |   |
| SHDLC                                |   | L | L |  |   |
| TBOP                                 |   | D | D |  |   |
| TBOP-BYPASS                          |   | D | D |  |   |
| X32                                  | L | L | L |  |   |

|   |   |   |   |  |   |
|---|---|---|---|--|---|
| XDLC  |   | L | L |  |   |
| <b>Serial Character-Oriented Pro-tocols (non-IBM)</b> |   |   |   |  |   |
| BSTD (Burroughs Poll Select)                          |   |   |   |  | A |
| TCOP  |   | D | D |  |   |
| TCOP-BYPASS   |   | D | D |  |   |
| NCRBSC  |   |   |   |  | A |
| RS366 (801 Autodialer Protocol)                       |   | L | L |  |   |
| <b>TPDU Adaptors</b>                                  |   |   |   |  |   |
| TPA-TPDU  |   | L | L |  |   |
| TPA-SDLC  |   |   |   |  | A |
| TPA-3270  |   | L | L |  |   |
| TPA-2780  |   | L | L |  |   |
| TPA-TCP   |   | L | L |  |   |
| TPA-UDP   |   | L | L |  |   |
| <b>Node Features</b>                                  |   |   |   |  |   |
| 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 |  |   |
| <b>QOS Features</b>                                   |   |   |   |  |   |
| 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)   | <b>D</b> | <b>D</b> | <b>D</b> |          |  |
| <b>Security and VPN</b>   |          |          |          |          |  |
| Statefull Firewall  | <b>D</b> | <b>D</b> | <b>D</b> |          |  |
| Software IPSEC & 3 DES Encryption   |          |          |          | <b>A</b> |  |
| Hardware Accelerated Encryption & VPN<br>DES & 3DES   |          |          |          | <b>A</b> |  |
| Hardware Accelerated Encryption & VPN<br>3 DES & AES  |          |          |          | <b>A</b> |  |
| PKI and X.509 Digital Certificates  |          |          |          | <b>A</b> |  |
| SSH   | <b>L</b> | <b>L</b> | <b>L</b> |          |  |
| <b>D: Default License Feature.</b><br><b>L: In License; add with Software Builder.</b><br><b>A: Add-on Upgrade License Feature</b><br><b>Specials - license available from service only.</b><br><b>*SIP requires an additional Advance Voice license.</b> |          |          |          |          |  |

| <b>Vanguard 340E &amp; 342 Features</b> | <b>IP+</b> | <b>SNA+</b> | <b>Multi-Service</b> | <b>Voice</b> | <b>Security</b> | <b>Prem. Voice</b> | <b>Advanced Voice</b> | <b>Special</b> |
|---|------------|-------------|----------------------|--------------|-----------------|--------------------|-----------------------|----------------|
| <b>Network Management</b>               |            |             |                      |              |                 |                    |                       |                |
| SNMP v3                                 | <b>D</b>   | <b>D</b>    | <b>D</b>             |              |                 |                    |                       |                |
| TELNET                                  | <b>D</b>   | <b>D</b>    | <b>D</b>             |              |                 |                    |                       |                |
| TFTP                                    | <b>D</b>   | <b>D</b>    | <b>D</b>             |              |                 |                    |                       |                |
| CLI                                     | <b>D</b>   | <b>D</b>    | <b>D</b>             |              |                 |                    |                       |                |
| Embedded Web HTTPD                      | <b>L</b>   | <b>L</b>    | <b>L</b>             |              |                 |                    |                       |                |
| <b>Async</b>                            |            |             |                      |              |                 |                    |                       |                |
| ATPAD                                   | <b>D</b>   | <b>D</b>    | <b>D</b>             |              |                 |                    |                       |                |
| APAD                                    | <b>L</b>   | <b>L</b>    | <b>L</b>             |              |                 |                    |                       |                |
| <b>ISDN</b>                             |            |             |                      |              |                 |                    |                       |                |
| SoftSCC                                 | <b>L</b>   | <b>L</b>    | <b>L</b>             |              |                 |                    |                       |                |
| ISDN BRI-NOAM                           | <b>L</b>   | <b>L</b>    | <b>L</b>             |              |                 |                    |                       |                |
| ISDN BRI-EURO                           | <b>L</b>   | <b>L</b>    | <b>L</b>             |              |                 |                    |                       |                |
| ISDN BRI-ASIA                           | <b>L</b>   | <b>L</b>    | <b>L</b>             |              |                 |                    |                       |                |
| 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)     |  |  |   |   |  |  |   |  |
| <b>Vanguard Voice Relay (2 x E &amp; M)</b> |  |  |   |   |  |  |   |  |
| G.723.1                                     |  |  |   | A |  |  |   |  |
| G.729A                                      |  |  |   | A |  |  |   |  |
| CVSELP                                      |  |  |   | A |  |  |   |  |
| Centralized Voice Switching                 |  |  |   | A |  |  |   |  |
| Voice Routing Services                      |  |  | L | A |  |  |   |  |
| <b>Vanguard Voice Relay (Quad FXS/FXO)</b>  |  |  |   |   |  |  |   |  |
| 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 |  |  |   |  |
| <b>Digital Voice 68XX and 73XX</b>          |  |  |   |   |  |  |   |  |
| Vanguard T1/E1/PRI Digital Voice Server     |  |  |   |   |  |  |   |  |
| <b>Digital Voice -73XX</b>                  |  |  |   |   |  |  |   |  |
| 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             |  |  |   |   |  |  |   |  |
| <b>Voice Over IP (All Products)</b>         |  |  |   |   |  |  |   |  |
| H.323                                       |  |  |   |   |  |  |   |  |
| VOICE-IP-ENCAPSULATION                      |  |  | L | A |  |  |   |  |
| SIP   |  |  |   |   |  |  | A |  |



|                               |   |   |   |  |  |   |  |  |
|-------------------------------|---|---|---|--|--|---|--|--|
| <b>Premium Voice Services</b> |   |   |   |  |  |   |  |  |
| Caller ID                     |   |   |   |  |  | A |  |  |
| Call Hold                     |   |   |   |  |  | A |  |  |
| Call Waiting                  |   |   |   |  |  | A |  |  |
| Call Transfer                 |   |   |   |  |  | A |  |  |
| Call Forward                  |   |   |   |  |  | A |  |  |
| Voice Mail                    |   |   |   |  |  | A |  |  |
| <b>LAN</b>                    |   |   |   |  |  |   |  |  |
| Router IP                     | D | D | D |  |  |   |  |  |
| Router IPX                    | L | L | L |  |  |   |  |  |
| <b>LAN Option Protocols</b>   |   |   |   |  |  |   |  |  |
| 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 |  |  |   |  |  |
| <b>IP Multicast Protocols</b> |   |   |   |  |  |   |  |  |
| PIM Sparse Multicast          | L | L | L |  |  |   |  |  |
| DVMRP Multicast               | D | D | D |  |  |   |  |  |
| <b>Network Protocols</b>      |   |   |   |  |  |   |  |  |

|   |   |   |   |  |  |  |  |   |
|---|---|---|---|--|--|--|--|---|
| 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 ( <i>only for backward comp-atibility</i> ) |   | L | L |  |  |  |  |   |
| FRI ( <i>includes FRA</i> )                     | D | D | D |  |  |  |  |   |
| 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                        |   |   |   |  |  |  |  |   |
| <b>IBM Networking</b>                           |   |   |   |  |  |  |  |   |
| 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 |  |  |  |  |   |
| <b>Serial Asynchronous Protocols</b>            |   |   |   |  |  |  |  |   |

|   |   |   |   |   |  |  |  |   |
|---|---|---|---|---|--|--|--|---|
| 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 |
| <b>Serial Synchronous Protocols</b>                   |   |   |   |   |  |  |  |   |
| SHDLC   |   | L | L |   |  |  |  |   |
| TBOP  |   | D | D | A |  |  |  |   |
| TBOP-BYPASS   |   | D | D |   |  |  |  |   |
| X32   | L | L | L |   |  |  |  |   |
| XDLC  |   | L | L |   |  |  |  |   |
| <b>Serial Character-Oriented Pro-tocols (non-IBM)</b> |   |   |   |   |  |  |  |   |
| BSTD (Burroughs Poll Select)                          |   |   |   |   |  |  |  | A |
| TCOP  |   | D | D |   |  |  |  |   |
| TCOP-BYPASS   |   | D | D |   |  |  |  |   |
| NCRBSC  |   |   |   |   |  |  |  | A |
| RS366 (801 Autodialer Protocol)                       |   | L | L |   |  |  |  |   |
| <b>TPDU Adaptors</b>                                  |   |   |   |   |  |  |  |   |
| TPA-TPDU  |   | L | L |   |  |  |  |   |
| TPA-SDLC  |   |   |   |   |  |  |  | A |
| TPA-3270  |   | L | L |   |  |  |  |   |
| TPA-2780  |   | L | L |   |  |  |  |   |
| TPA-TCP   |   | L | L |   |  |  |  |   |
| TPA-UDP   |   | L | L |   |  |  |  |   |

| <b>Node Features</b>  |   |   |   |  |   |  |  |   |
|---|---|---|---|--|---|--|--|---|
| 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 |  |   |  |  |   |
| <b>QoS Features</b>   |   |   |   |  |   |  |  |   |
| 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 |  |   |  |  |   |
| <b>Security and VPN</b>   |   |   |   |  |   |  |  |   |
| Stateful Firewall   | D | D | D |  |   |  |  |   |
| Software IPSEC & 3 DES Encryption   |   |   |   |  | A |  |  |   |
| Hardware Accelerated Encryption & VPN<br>DES & 3DES   |   |   |   |  | A |  |  |   |
| Hardware Accelerated Encryption & VPN<br>3 DES & AES  |   |   |   |  | A |  |  |   |
| PKI and X.509 Digital Certificates  |   |   |   |  | A |  |  |   |
| SSH   | L | L | L |  |   |  |  |   |
| <b>D: Default License Feature.</b><br><b>L: In License; add with Software Builder.</b><br><b>A: Add-on Upgrade License Feature</b><br><b>Specials - license available from service only.</b><br><b>*SIP requires an additional Advance Voice license.</b> |   |   |   |  |   |  |  |   |

## 14 Release 7.2R00A for the Vanguard 3410/3460/3480

Release 7.2.R00A supports the following Applications Ware for the Vanguard 3410, 3460, and 3480. 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 in this document (Chapter 13).

### Notes:

- 1) When using Vanguard Software Builder, be sure to make note of the warnings regarding memory limitations.
- 2) Information about the Applications Ware is divided into four tables.
  - a) The first two tables list each model's Applications Ware and file information.
  - b) The last two tables list each model's Applications Ware and its default, optional, and add-on features.

| <b>3400 Applications Ware Name</b> | <b>Source Filename</b> | <b>Version String</b> | <b>Description Filename</b> |
|------------------------------------|------------------------|-----------------------|-----------------------------|
| IPSAFE Applications Ware           | 72R00Abb11.xrc         | 7.2.R00A_@IPSAFE_3400 | 72R00Abb11.des              |
| SNA+ Applications Ware             | 72R00Abb12.xrc         | 7.2.R00A_@SNA+_3400   | 72R00Abb12.des              |
| Multi-service Applications Ware    | 72R00Abb15.xrc         | 7.2.R00A_@MS_3400     | 72R00Abb15.des              |

| <b>Vanguard 3400 Features</b>      | <b>IPSafe</b> | <b>SNA+</b> | <b>Multi-Service</b> | <b>Voice</b> | <b>Security</b> | <b>AS400/B SC</b> | <b>Advanced Voice</b> | <b>Special</b> |
|------------------------------------|---------------|-------------|----------------------|--------------|-----------------|-------------------|-----------------------|----------------|
| <b>Network Management</b>          |               |             |                      |              |                 |                   |                       |                |
| SNMP v3                            | D             | D           | D                    |              |                 |                   |                       |                |
| TELNET                             | D             | D           | D                    |              |                 |                   |                       |                |
| TFTP                               | D             | D           | D                    |              |                 |                   |                       |                |
| CLI                                | D             | D           | D                    |              |                 |                   |                       |                |
| Embedded Web HTTPD                 | L             | L           | L                    |              |                 |                   |                       |                |
| <b>Async</b>                       |               |             |                      |              |                 |                   |                       |                |
| ATPAD                              | D             | D           | D                    |              |                 |                   |                       |                |
| APAD                               | L             | L           | L                    |              |                 |                   |                       |                |
| <b>ISDN</b>                        |               |             |                      |              |                 |                   |                       |                |
| 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)                     |   |   |   |   |  |  |  |  |
| <b>Vanguard Voice Relay (2 x E &amp; M)(3460/3480 only)</b> |   |   |   |   |  |  |  |  |
| G.723.1   |   |   | D | A |  |  |  |  |
| G.729A  |   |   | D | A |  |  |  |  |
| CVSELP  |   |   | L | A |  |  |  |  |
| Centralized Voice Switching                                 |   |   | D | A |  |  |  |  |
| Voice Routing Services                                      |   |   |   | A |  |  |  |  |
| <b>Vanguard Voice Relay (Quad FXS/FXO) (3460/3480 only)</b> |   |   |   |   |  |  |  |  |
| 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 |  |  |  |  |
| <b>Digital Voice 68XX and 73XX</b>                          |   |   |   |   |  |  |  |  |
| Vanguard T1/E1/PRI Digital Voice Server                     |   |   |   |   |  |  |  |  |
| <b>Digital Voice -73XX</b>                                  |   |   |   |   |  |  |  |  |
| 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 |  |  |  |  |
| <b>Voice Over IP (3460/3480 Only)</b>                       |   |   |   |   |  |  |  |  |
| H.323   |   |   | L | A |  |  |  |  |
| VOICE-IP-ENCAPSULATION                                      | L | L | L |   |  |  |  |  |

|   |   |   |   |  |  |  |   |  |
|---|---|---|---|--|--|--|---|--|
| SIP   |   |   |   |  |  |  | A |  |
| <b>Premium Voice Services(3460/3480 Only)</b> |   |   |   |  |  |  |   |  |
| Caller ID                                     |   |   |   |  |  |  | A |  |
| Call Hold                                     |   |   |   |  |  |  | A |  |
| Call Waiting                                  |   |   |   |  |  |  | A |  |
| Call Transfer                                 |   |   |   |  |  |  | A |  |
| Call Forward                                  |   |   |   |  |  |  | A |  |
| Voice Mail                                    |   |   |   |  |  |  | A |  |
| <b>LAN</b>                                    |   |   |   |  |  |  |   |  |
| Router IP                                     | D | D | D |  |  |  |   |  |
| Router IPX                                    | L | L | L |  |  |  |   |  |
| <b>LAN Option Protocols</b>                   |   |   |   |  |  |  |   |  |
| 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 |  |  |  |   |  |
| <b>IP Multicast Protocols</b>                 |   |   |   |  |  |  |   |  |
| PIM Sparse Multicast                          | L | L | L |  |  |  |   |  |

|  |          |          |          |  |  |          |  |          |
|--|----------|----------|----------|--|--|----------|--|----------|
| DVMRP Multicast                                      | <b>D</b> | <b>D</b> | <b>D</b> |  |  |          |  |          |
| <b>Network Protocols</b>                             |          |          |          |  |  |          |  |          |
| OSPF   | <b>D</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| BGP4   | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| BGP IGP to BGP Route Filtering                       | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| BGP Multipath Load Balancing                         | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| BGP Same AS as in ASPath                             | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| FRF12  | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| FRA ( <i>only for backward comp-<br/>atibility</i> ) |          | <b>L</b> | <b>L</b> |  |  |          |  |          |
| FRI ( <i>includes FRA</i> )                          | <b>D</b> | <b>D</b> | <b>D</b> |  |  |          |  |          |
| FR SVC   |          |          |          |  |  |          |  | <b>A</b> |
| X.25   | <b>D</b> | <b>D</b> | <b>D</b> |  |  |          |  |          |
| SMDS   |          |          | <b>L</b> |  |  |          |  |          |
| PPP Auto-Dialer                                      | <b>D</b> | <b>D</b> | <b>D</b> |  |  |          |  |          |
| PPP  | <b>D</b> | <b>D</b> | <b>D</b> |  |  |          |  |          |
| PPP IP Header Compression                            | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| PPPoE  | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| SoTCP (=Voice Relay Enc. In IP)                      | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| Fractional T1/E1                                     | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| Trunking Gateway - E1 only                           | <b>L</b> | <b>L</b> | <b>L</b> |  |  |          |  |          |
| <b>IBM Networking</b>                                |          |          |          |  |  |          |  |          |
| AS/400 5494 Comm. Server                             |          |          |          |  |  | <b>A</b> |  |          |
| BSC2780 (HPAD/TPAD)                                  |          | <b>L</b> | <b>L</b> |  |  |          |  |          |
| BSC2780/3780 to SNA Conversion                       |          |          |          |  |  | <b>A</b> |  |          |
| BSC3270 (HPAD/TPAD)                                  |          | <b>D</b> | <b>L</b> |  |  |          |  |          |
| VBIP (BSC to IP Conversion)                          |          | <b>D</b> | <b>L</b> |  |  |          |  |          |
| BSC3270 to SNA Conversion                            |          |          |          |  |  | <b>A</b> |  |          |
| IBM2260  |          |          |          |  |  |          |  | <b>A</b> |
| TN3270 Remote Server Conversion                      |          | <b>L</b> | <b>L</b> |  |  |          |  |          |
| LLC-ETH  |          | <b>D</b> | <b>D</b> |  |  |          |  |          |



|   |   |   |   |   |  |  |  |   |
|---|---|---|---|---|--|--|--|---|
| LLC-FR  |   | D | D |   |  |  |  |   |
| SDLC  |   | L | L |   |  |  |  |   |
| <b>Serial Asynchronous Protocols</b>                  |   |   |   |   |  |  |  |   |
| ASYN-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 |
| <b>Serial Synchronous Protocols</b>                   |   |   |   |   |  |  |  |   |
| SHDLC   |   |   |   |   |  |  |  | A |
| TBOP  |   | D | D | A |  |  |  |   |
| TBOP-BYPASS   |   | D | D |   |  |  |  |   |
| X32   |   |   |   |   |  |  |  | A |
| XDLC  |   |   |   |   |  |  |  |   |
| <b>Serial Character-Oriented Pro-tocols (non-IBM)</b> |   |   |   |   |  |  |  |   |
| BSTD (Burroughs Poll Select)                          |   |   |   |   |  |  |  | A |
| TCOP  |   | D | D |   |  |  |  |   |
| TCOP-BYPASS   |   | D | D |   |  |  |  |   |
| NCRBSC  |   |   |   |   |  |  |  | A |
| RS366 (801 Autodialer Protocol)                       |   | L | L |   |  |  |  |   |
| <b>TPDU Adaptors</b>                                  |   |   |   |   |  |  |  |   |
| TPA-TPDU  |   | L | L |   |  |  |  |   |
| TPA-SDLC  |   |   |   |   |  |  |  | A |
| TPA-3270  |   |   |   |   |  |  |  | A |

|  |   |   |   |  |   |  |  |   |
|--|---|---|---|--|---|--|--|---|
| TPA-2780   |   |   |   |  |   |  |  | A |
| TPA-TCP  |   | L | L |  |   |  |  |   |
| TPA-UDP  |   | L | L |  |   |  |  |   |
| <b>Node Features</b>   |   |   |   |  |   |  |  |   |
| 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 |
| <b>QOS Features</b>  |   |   |   |  |   |  |  |   |
| 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 |  |   |  |  |   |
| <b>Security and VPN</b>  |   |   |   |  |   |  |  |   |
| 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 |  |  |   |
| <b>D: Default License Feature.</b><br><b>L: In License; add with Software Builder.</b><br><b>A: Add-on Upgrade License Feature</b><br><b>Specials - license available from service only.</b> |   |   |   |  |   |  |  |   |

## 15 Release 7.2R00A for the Vanguard 6840/6841

Release 7.2.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 in this document (Chapter 13).

### Notes:

- 1) When using Vanguard Software Builder, be sure to make note of the warnings regarding memory limitations.
- 2) Information about the Applications Ware is divided into four tables.
  - a. The first two tables list each model's Applications Ware and file information.
  - b. The last two tables list each model's Applications Ware and its default, optional, and add-on features.

| <b>6840 Applications Ware Name</b> | <b>Source Filename</b> | <b>Version String</b> | <b>Description Filename</b> |
|------------------------------------|------------------------|-----------------------|-----------------------------|
| IPSAFE Applications Ware           | 72R00Aba11.xrc         | 7.2.R00A_@IPSAFE_6840 | 72R00Aba11.des              |
| SNA+ Applications Ware             | 72R00Aba12.xrc         | 7.2.R00A_@SNA+_6840   | 72R00Aba12.des              |
| Multi-service Applications Ware    | 72R00Aba15.xrc         | 7.2.R00A_@MS_6840     | 72R00Aba15.des              |

| <b>6841 Applications Ware Name</b> | <b>Source Filename</b> | <b>Version String</b> | <b>Description Filename</b> |
|------------------------------------|------------------------|-----------------------|-----------------------------|
| IPSAFE Applications Ware           | 72R00Aba11.xrc         | 7.2.R00A_@IPSAFE_6840 | 72R00Aba11.des              |
| SNA+ Applications Ware             | 72R00Aba12.xrc         | 7.2.R00A_@SNA+_6840   | 72R00Aba12.des              |
| Multi-service Applications Ware    | 72R00Aba15.xrc         | 7.2.R00A_@MS_6840     | 72R00Aba15.des              |

| <b>Vanguard 684X Features</b> | <b>IPSafe</b> | <b>SNA+</b> | <b>Multi-Servic<br/>e</b> | <b>Voice</b> | <b>Security</b> | <b>AS400/<br/>BSC</b> | <b>Advanc-<br/>ed Voice</b> | <b>Specia<br/>l</b> |
|-------------------------------|---------------|-------------|---------------------------|--------------|-----------------|-----------------------|-----------------------------|---------------------|
| <b>Network Management</b>     |               |             |                           |              |                 |                       |                             |                     |
| SNMP v3                       | D             | D           | D                         |              |                 |                       |                             |                     |
| TELNET                        | D             | D           | D                         |              |                 |                       |                             |                     |
| TFTP                          | D             | D           | D                         |              |                 |                       |                             |                     |
| CLI                           | D             | D           | D                         |              |                 |                       |                             |                     |
| Embedded Web HTTPD            | L             | L           | L                         |              |                 |                       |                             |                     |
| <b>Async</b>                  |               |             |                           |              |                 |                       |                             |                     |
| ATPAD                         | D             | D           | D                         |              |                 |                       |                             |                     |
| APAD                          | L             | L           | L                         |              |                 |                       |                             |                     |
| <b>ISDN</b>                   |               |             |                           |              |                 |                       |                             |                     |

|   |   |   |   |   |  |  |  |  |
|---|---|---|---|---|--|--|--|--|
| 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 |  |  |  |  |
| <b>Vanguard Voice Relay (2 x E &amp; M)</b> |   |   |   |   |  |  |  |  |
| G.723.1                                     |   |   | D | A |  |  |  |  |
| G.729A                                      |   |   | L | A |  |  |  |  |
| CVSELP                                      |   |   | L | A |  |  |  |  |
| Centralized Voice Switching                 |   |   | L | A |  |  |  |  |
| Voice Routing Services                      |   |   | L | A |  |  |  |  |
| <b>Vanguard Voice Relay (Quad FXS/FXO)</b>  |   |   |   |   |  |  |  |  |
| 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 |  |  |  |  |
| Voice Routing Services                      |   |   | L | A |  |  |  |  |
| Fax ITU T.38                                |   |   | L | A |  |  |  |  |
| <b>Digital Voice 68XX and 73XX</b>          |   |   |   |   |  |  |  |  |
| Vanguard T1/E1/PRI Digital Voice Server     |   |   | D | A |  |  |  |  |
| <b>Digital Voice -73XX</b>                  |   |   |   |   |  |  |  |  |
| 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     |   |   |   |   |  |  |   |  |
| <b>Voice Over IP (All Products)</b> |   |   |   |   |  |  |   |  |
| H.323                               |   |   | L | A |  |  |   |  |
| VOICE-IP-ENCAPSULATION              | L | L | L |   |  |  |   |  |
| SIP                                 |   |   |   |   |  |  | A |  |
| <b>Premium Voice Services</b>       |   |   |   |   |  |  |   |  |
| Caller ID                           |   |   |   |   |  |  | A |  |
| Call Hold                           |   |   |   |   |  |  | A |  |
| Call Waiting                        |   |   |   |   |  |  | A |  |
| Call Transfer                       |   |   |   |   |  |  | A |  |
| Call Forward                        |   |   |   |   |  |  | A |  |
| Voice Mail                          |   |   |   |   |  |  | A |  |
| <b>LAN</b>                          |   |   |   |   |  |  |   |  |
| Router IP                           | D | D | D |   |  |  |   |  |
| Router IPX                          | L | L | L |   |  |  |   |  |
| <b>LAN Option Protocols</b>         |   |   |   |   |  |  |   |  |
| 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 |  |  |   |  |   |
| <b>IP Multicast Protocols</b>                   |   |   |   |  |  |   |  |   |
| PIM Sparse Multicast                            | L | L | L |  |  |   |  |   |
| DVMRP Multicast                                 | D | D | D |  |  |   |  |   |
| <b>Network Protocols</b>                        |   |   |   |  |  |   |  |   |
| 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 ( <i>only for backward comp-atibility</i> ) |   | L | L |  |  |   |  |   |
| FRI ( <i>includes FRA</i> )                     | 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 |  |  |   |  |   |
| <b>IBM Networking</b>                           |   |   |   |  |  |   |  |   |
| AS/400 5494 Comm. Server                        |   |   |   |  |  | A |  |   |
| BSC2780 (HPAD/TPAD)                             |   | L | L |  |  |   |  |   |
| 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 |   |  |  |  |   |
| <b>Serial Asynchronous Protocols</b>                  |   |   |   |   |  |  |  |   |
| ASYN-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 |
| <b>Serial Synchronous Protocols</b>                   |   |   |   |   |  |  |  |   |
| SHDLC   |   |   |   |   |  |  |  |   |
| TBOP  |   | D | D | A |  |  |  |   |
| TBOP-BYPASS   |   | D | D |   |  |  |  |   |
| X32   | L | L | L |   |  |  |  |   |
| XDLC  |   | L | L |   |  |  |  |   |
| <b>Serial Character-Oriented Pro-tocols (non-IBM)</b> |   |   |   |   |  |  |  |   |
| BSTD (Burroughs Poll Select)                          |   |   |   |   |  |  |  | A |
| TCOP  |   | D | D |   |  |  |  |   |
| TCOP-BYPASS   |   | D | D |   |  |  |  |   |
| NCRBSC  |   |   |   |   |  |  |  | A |
| RS366 (801 Autodialer Protocol)                       |   | L | L |   |  |  |  |   |
| <b>TPDU Adaptors</b>                                  |   |   |   |   |  |  |  |   |
| TPA-TPDU  |   | L | L |   |  |  |  |   |

|  |                     |                     |                     |  |                |  |  |          |
|--|---------------------|---------------------|---------------------|--|----------------|--|--|----------|
| TPA-SDLC   |                     |                     |                     |  |                |  |  | <b>A</b> |
| TPA-3270   |                     | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| TPA-2780   |                     | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| TPA-TCP  |                     | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| TPA-UDP  |                     | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| <b>Node Features</b>                                 |                     |                     |                     |  |                |  |  |          |
| ATCIF (AT Dial/Telnet)                               | <b>L</b>            | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| LBU  | <b>D</b>            | <b>D</b>            | <b>D</b>            |  |                |  |  |          |
| DCP  |                     | <b>D</b>            | <b>L</b>            |  |                |  |  |          |
| DSCOPE   |                     | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| DSD  |                     |                     | <b>L</b>            |  |                |  |  |          |
| NCCP   |                     | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| BCST   |                     |                     |                     |  |                |  |  | <b>A</b> |
| NUI  | <b>L</b>            | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| <b>QOS Features</b>                                  |                     |                     |                     |  |                |  |  |          |
| TOW  | <b>D</b>            | <b>D</b>            | <b>D</b>            |  |                |  |  |          |
| QoS - Protocol Priority (5.3M)                       | <b>L</b>            | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| QoS - Diff Serv (5.4)                                | <b>D</b>            | <b>D</b>            | <b>D</b>            |  |                |  |  |          |
| Ethernet DiffServ QoS (WAN)                          | <b>D</b>            | <b>D</b>            | <b>D</b>            |  |                |  |  |          |
| MLPPP LFI  |                     |                     | <b>L</b>            |  |                |  |  |          |
| FRAME Data Comp                                      |                     |                     |                     |  |                |  |  |          |
| IP-FLOW o/MLPPP (NetFlow 5)                          | <b>D</b>            | <b>D</b>            | <b>D</b>            |  |                |  |  |          |
| <b>Security and VPN</b>                              |                     |                     |                     |  |                |  |  |          |
| Statefull Firewall                                   | <b>D</b>            | <b>D</b>            | <b>D</b>            |  |                |  |  |          |
| Software IPSEC & 3 DES Encryption                    | <b>L</b>            | <b>L</b>            | <b>L</b>            |  |                |  |  |          |
| Hardware Accelerated Encryption & VPN<br>DES & 3DES  |                     |                     |                     |  | <b>A(6841)</b> |  |  |          |
| Hardware Accelerated Encryption & VPN<br>3 DES & AES |                     |                     |                     |  | <b>A(6841)</b> |  |  |          |
| PKI and X.509 Digital Certificates                   |                     |                     |                     |  | <b>A(6841)</b> |  |  |          |
| SSH  | <b>L<br/>(6840)</b> | <b>L<br/>(6840)</b> | <b>L<br/>(6840)</b> |  | <b>A(6841)</b> |  |  |          |



**D: Default License Feature.**

**L: In License; add with Software Builder.**

**A: Add-on Upgrade License Feature**

**Specials - license available from service only.**

## 16 Release 7.2R00A for the Vanguard 7310/7330

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

Release 7.2.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.

| <b><i>Vanguard 7310 Applications Ware Name</i></b> | <b><i>Source Filename</i></b> | <b><i>Version String</i></b> | <b><i>Description Filename</i></b> |
|--|-------------------------------|------------------------------|------------------------------------|
| IP+  | 7.2.R00At11.xrc               | 7.2.R00A_@IP+_7310           | 7.2.R00At11.des                    |
| SNA+   | 7.2.R00At12.xrc               | 7.2.R00A_@SNA+_7310          | 7.2.R00At12.des                    |
| Multi-Service                                      | 7.2.R00At15.xrc               | 7.2.R00A_@MS_7310            | 7.2.R00At15.des                    |

| <b><i>Vanguard 7330 Applications Ware Name</i></b> | <b><i>Source Filename</i></b> | <b><i>Version String</i></b> | <b><i>Description Filename</i></b> |
|--|-------------------------------|------------------------------|------------------------------------|
| IP+  | 72R00Au11.xrc                 | 7.2.R00A_@IP+_7330           | 72R00Au11.des                      |
| SNA+   | 72R00Au12.xrc                 | 7.2.R00A_@SNA+_7330          | 72R00Au12.des                      |
| Multi-Service                                      | 72R00AAu15.xrc                | 7.2.R00A_@MS_7330            | 72R00Au15.des                      |

| <b><i>Vanguard 7300 Features</i></b> | <b><i>IP+</i></b> | <b><i>SNA+</i></b> | <b><i>Multi-Service</i></b> | <b><i>Voice</i></b> | <b><i>Security</i></b> | <b><i>AS400/BSC</i></b> | <b><i>Advanced Voice</i></b> | <b><i>Special</i></b> |
|--------------------------------------|-------------------|--------------------|-----------------------------|---------------------|------------------------|-------------------------|------------------------------|-----------------------|
| <b>Network Management</b>            |                   |                    |                             |                     |                        |                         |                              |                       |
| SNMP v3                              | D                 | D                  | D                           |                     |                        |                         |                              |                       |
| TELNET                               | D                 | D                  | D                           |                     |                        |                         |                              |                       |
| TFTP                                 | D                 | D                  | D                           |                     |                        |                         |                              |                       |
| CLI                                  | D                 | D                  | D                           |                     |                        |                         |                              |                       |
| Embedded Web HTTPD                   | L                 | L                  | L                           |                     |                        |                         |                              |                       |
| <b>Async</b>                         |                   |                    |                             |                     |                        |                         |                              |                       |
| ATPAD                                | D                 | D                  | D                           |                     |                        |                         |                              |                       |
| APAD                                 |                   |                    |                             |                     |                        |                         |                              |                       |
| <b>ISDN</b>                          |                   |                    |                             |                     |                        |                         |                              |                       |
| SoftSCC                              |                   |                    |                             |                     |                        |                         |                              |                       |
| ISDN BRI-NOAM                        |                   |                    |                             |                     |                        |                         |                              |                       |
| ISDN BRI-EURO                        |                   |                    |                             |                     |                        |                         |                              |                       |

|   |          |          |          |  |  |  |  |  |
|---|----------|----------|----------|--|--|--|--|--|
| ISDN BRI-ASIA                               |          |          |          |  |  |  |  |  |
| ISDN (T1/E1/PRI) Data (NA Default)          | <b>D</b> | <b>D</b> | <b>D</b> |  |  |  |  |  |
| ISDN (T1/E1/PRI) Data (European)            | <b>L</b> | <b>L</b> | <b>L</b> |  |  |  |  |  |
| ISDN (T1/E1/PRI) Data (Asia)                | <b>L</b> | <b>L</b> | <b>L</b> |  |  |  |  |  |
| ISDN (T1/E1/PRI) Voice (Incl sign. NA)      | <b>D</b> | <b>D</b> | <b>D</b> |  |  |  |  |  |
| ISDN (T1/E1/PRI) Voice (incl sign Euro)     | <b>L</b> | <b>L</b> | <b>L</b> |  |  |  |  |  |
| <b>Vanguard Voice Relay (2 x E &amp; M)</b> |          |          |          |  |  |  |  |  |
| G.723.1                                     |          |          |          |  |  |  |  |  |
| G.729A                                      |          |          |          |  |  |  |  |  |
| CVSELP                                      |          |          |          |  |  |  |  |  |
| Centralized Voice Switching                 |          |          |          |  |  |  |  |  |
| Voice Routing Services                      |          |          |          |  |  |  |  |  |
| <b>Vanguard Voice Relay (Quad FXS/FXO)</b>  |          |          |          |  |  |  |  |  |
| 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                                |          |          |          |  |  |  |  |  |
| <b>Digital Voice 68XX and 73XX</b>          |          |          |          |  |  |  |  |  |
| Vanguard T1/E1/PRI Digital Voice Server     | <b>D</b> | <b>D</b> | <b>D</b> |  |  |  |  |  |
| <b>Digital Voice -73XX</b>                  |          |          |          |  |  |  |  |  |
| T.38 w/G.723&G.711 for T1/E1                | <b>L</b> | <b>L</b> | <b>L</b> |  |  |  |  |  |
| T.38 w/G.729a&G.711 for T1/E1               | <b>L</b> | <b>L</b> | <b>L</b> |  |  |  |  |  |
| Voice Relay with G.723.1 and G.729a         | <b>D</b> | <b>D</b> | <b>D</b> |  |  |  |  |  |
| Voice Relay Encapsulated in IP (SoTCP)      | <b>D</b> | <b>D</b> | <b>D</b> |  |  |  |  |  |
| H.323 v.2 Standards Based Voice             | <b>D</b> | <b>D</b> | <b>D</b> |  |  |  |  |  |
| <b>Voice Over IP (All Products)</b>         |          |          |          |  |  |  |  |  |
| H.323                                       |          |          |          |  |  |  |  |  |

|                               |   |   |   |  |  |  |   |  |
|-------------------------------|---|---|---|--|--|--|---|--|
| VOICE-IP-ENCAPSULATION        | L | L | L |  |  |  |   |  |
| SIP                           |   |   |   |  |  |  | A |  |
| <b>Premium Voice Services</b> |   |   |   |  |  |  |   |  |
| Caller ID                     |   |   |   |  |  |  | A |  |
| Call Hold                     |   |   |   |  |  |  | A |  |
| Call Waiting                  |   |   |   |  |  |  | A |  |
| Call Transfer                 |   |   |   |  |  |  | A |  |
| Call Forward                  |   |   |   |  |  |  | A |  |
| Voice Mail                    |   |   |   |  |  |  | A |  |
| <b>LAN</b>                    |   |   |   |  |  |  |   |  |
| Router IP                     | D | D | D |  |  |  |   |  |
| Router IPX                    | D | D | D |  |  |  |   |  |
| <b>LAN Option Protocols</b>   |   |   |   |  |  |  |   |  |
| 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 |  |  |  |   |  |
| <b>IP Multicast Protocols</b> |   |   |   |  |  |  |   |  |
| PIM Sparse Multicast          | L | L | L |  |  |  |   |  |

|   |   |   |   |  |  |   |  |   |
|---|---|---|---|--|--|---|--|---|
| DVMRP Multicast                               | D | D | D |  |  |   |  |   |
| <b>Network Protocols</b>                      |   |   |   |  |  |   |  |   |
| 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 ( <i>only for backward comp-ability</i> ) |   |   |   |  |  |   |  |   |
| FRI ( <i>includes FRA</i> )                   | 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 |  |  |   |  |   |
| <b>ATM Protocols</b>                          |   |   |   |  |  |   |  |   |
| ATM   |   |   | D |  |  |   |  |   |
| ATM Congestion Control                        |   |   | D |  |  |   |  |   |
| <b>IBM Networking</b>                         |   |   |   |  |  |   |  |   |
| 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                       |   |   |   |  |  |  |  |   |
| LLC-ETH   |   | D | D |  |  |  |  |   |
| LLC-FR  |   | D | D |  |  |  |  |   |
| SDLC  |   | D | D |  |  |  |  |   |
| <b>Serial Asynchronous Protocols</b>                  |   |   |   |  |  |  |  |   |
| ASYN-BYPASS   |   |   |   |  |  |  |  |   |
| ADSPAD  |   |   |   |  |  |  |  |   |
| SLIP  |   |   |   |  |  |  |  |   |
| TNPP  |   |   |   |  |  |  |  |   |
| TNPP-ROUT   |   |   |   |  |  |  |  |   |
| X.42 (GSC)  |   |   |   |  |  |  |  |   |
| T3POS   |   |   |   |  |  |  |  |   |
| T3POS over TCP  |   |   |   |  |  |  |  |   |
| DATAPAC   |   |   |   |  |  |  |  |   |
| SPP-PAD   |   |   |   |  |  |  |  |   |
| AC100   |   |   |   |  |  |  |  |   |
| <b>Serial Synchronous Protocols</b>                   |   |   |   |  |  |  |  |   |
| SHDLC   |   |   |   |  |  |  |  |   |
| TBOP  | D | D | D |  |  |  |  |   |
| TBOP-BYPASS   |   |   |   |  |  |  |  |   |
| X32   |   |   |   |  |  |  |  |   |
| XDLC  |   |   |   |  |  |  |  |   |
| <b>Serial Character-Oriented Pro-tocols (non-IBM)</b> |   |   |   |  |  |  |  |   |
| BSTD (Burroughs Poll Select)                          |   |   |   |  |  |  |  | A |
| TCOP  |   |   |   |  |  |  |  |   |
| TCOP-BYPASS   |   |   |   |  |  |  |  |   |
| NCRBSC  |   |   |   |  |  |  |  | A |
| RS366 (801 Autodialer Protocol)                       |   |   |   |  |  |  |  |   |
| <b>TPDU Adaptors</b>                                  |   |   |   |  |  |  |  |   |
| TPA-TPDU  |   | L | L |  |  |  |  |   |

|  |   |   |   |  |   |  |  |   |
|--|---|---|---|--|---|--|--|---|
| TPA-SDLC   |   |   |   |  |   |  |  |   |
| TPA-3270   |   |   |   |  |   |  |  |   |
| TPA-2780   |   |   |   |  |   |  |  |   |
| TPA-TCP  |   | L | L |  |   |  |  |   |
| TPA-UDP  |   |   |   |  |   |  |  |   |
| <b>Node Features</b>                                 |   |   |   |  |   |  |  |   |
| ATCIF (AT Dial/Telnet)                               | D | D | D |  |   |  |  |   |
| LBU  | D | D | D |  |   |  |  |   |
| DCP  |   | D | D |  |   |  |  |   |
| DSCOPE   |   |   |   |  |   |  |  |   |
| DSD  |   |   | L |  |   |  |  |   |
| NCCP   |   |   |   |  |   |  |  |   |
| BCST   |   |   |   |  |   |  |  | A |
| NUI  |   |   |   |  |   |  |  |   |
| <b>QOS Features</b>                                  |   |   |   |  |   |  |  |   |
| 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 |  |   |  |  |   |
| <b>Security and VPN</b>                              |   |   |   |  |   |  |  |   |
| Statefull Firewall                                   | D | D | D |  |   |  |  |   |
| Software IPSEC & 3 DES Encryption                    |   |   |   |  |   |  |  |   |
| Hardware Accelerated Encryption & VPN<br>DES & 3DES  |   |   |   |  | A |  |  |   |
| Hardware Accelerated Encryption & VPN<br>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.**



## 17 MIB Download Steps for Third-Party SNMP Managers

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

### 17.1 Obtaining MIB Files

Vanguard MIB files for your third-party NMS are available from the Vanguard 7.2.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.htm>

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.

### 17.2 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.

### 17.3 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 |
|------------------------|---|
| adspad_opt.mib         | ADS Protocol  |
| alc_opt.mib            | ALC protocol  |
| atm_opt.mib            | Asynchronous Transfer Mode                              |
| bcst_opt.mib           | Broadcast   |
| bgp4_opt.mib           | Border Gateway Protocol 4                               |
| bri_opt.mib            | ISDN BRI protocol                                       |
| bridge_opt.mib         | Bridging option   |
| bsc2780_opt.mib        | BSC2780 protocol  |
| bsc3270_opt.mib        | BSC3270 protocol  |
| bstd_opt.mib           | Burroughs Poll/Select protocol                          |
| cdx_6500.mib           | Required base MIB for Vanguard Products MIBs            |
| dc_opt.mib             | Data Compression option                                 |
| dcp_opt.mib            | Data Connection Protection option                       |
| de_opt.mib             | Data Encryption option                                  |
| dsd_opt.mib            | Digital Sharing Device Option                           |

|                 |   |
|-----------------|---|
| e1_opt.mib      | Physical E1 port  |
| eia_opt.mib     | EIA protocol (required file for serial protocol support)  |
| eth_opt.mib     | Ethernet option   |
| eth_sw_opt.mib  | Ethernet Switch Option  |
| frdce_opt.mib   | Frame Relay DCE option  |
| frdte_opt.mib   | Frame Relay DTE option  |
| fri_opt.mib     | Frame Relay option  |
| fwall_opt.mib   | Firewall Option   |
| gsc_opt.mib     | GSC protocol  |
| hub_opt.mib     | Ethernet Hub option   |
| ibm2260_opt.mib | IBM2260 protocol  |
| ipsec_opt.mib   | IP Security   |
| isdn_opt.mib    | ISDN protocol   |
| iso3201_opt.mib | 3201 protocol   |
| mx25_opt.mib    | MX.25 protocol  |
| ncrbse_opt.mib  | NCR Binary Synchronous protocol   |
| ns_opt.mib      | Network Service (required file)   |
| pad_opt.mib     | PAD protocol  |
| pim_opt.mib     | Protocol Independent Multicast  |
| ping_opt.mib    | Remote Ping Option  |
| ppp_opt.mib     | Point-to-Point protocol   |
| pppoe_opt.mib   | Point-to-Point protocol over Ethernet   |
| qos_opt.mib     | Quality of Service option - QoS-Kit- includes: QoS_CORE, QoS_CLSSIFIER and QoS_SCHEDULER                          |
| qos_pp_opt.mib  | Quality of Service option - QoS-PP (Protocol Priority) includes: QoS_CCM, PACKET_CLASSIFIER and PACKET SCH-EDULER |
| radius_opt.mib  | RADIUS  |
| 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).   |
| rfc1850av.mib   | OSPF Version 2 MIB  |
| rfc1903v.mib    | 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_opt.mib          | Routing option (required file)                        |
| rs366_opt.mib           | EIA RS366 support                                     |
| sdlc_opt.mib            | SDLC protocol   |
| shdsl_opt.mib           | Symmetric High Speed DSL                              |
| slac_opt.mib            | LLC Ethernet/Frame Relay/Token Ring Conversion option |
| snabsc_opt.mib          | SNA to BSC3270 Conversion                             |
| spp_opt.mib             | SPP protocol  |
| ss_opt.mib              | Switched Services (required file)                     |
| t1_opt.mib              | Physical T1 port                                      |
| t1e1_opt.mib            | Virtual T1/E1 port mapping table                      |
| t1eltg_opt.mib          | T1/E1 for the 7300 Series                             |
| t1elvg_opt.mib          | T1/E1 for the 6840/3400/34X Series                    |
| tbop_opt.mib            | TBOP protocol   |
| tcop_opt.mib            | TCOP protocol   |
| tcpbse_opt.mib          | BSC3270 to TCP/IP Conversion                          |
| tdlc_opt.mib            | TDLC protocol   |
| tdmclk_opt.mib          | TDM Network Clock option                              |
| tdmtgclk_opt.mib        | TDM Network Clock option for the 7300                 |
| tftp_opt.mib            | TFTP option   |
| tn3270_opt.mib          | TN3270 Remote Server                                  |
| tnpp_opt.mib            | Telocator Network Paging Protocol (TNPP)              |
| tow_opt.mib             | TOW option  |
| tr_opt.mib              | Token Ring option                                     |
| traffic_monitor_opt.mib | Traffic Monitor                                       |
| trap.mib                | trap mib  |
| v_opt.mib               | Voice Relay option                                    |
| vpmt_opt.mib            | Virtual Port Mapping Table option                     |
| vrp_opt.mib             | Virtual Router Redundancy Protocol                    |
| wan_opt.mib             | WAN support (required file)                           |
| x25_opt.mib             | X.25 option   |
| xdlc_opt.mib            | XDLC protocol   |

## 18 Applications Ware RFC Compliance

| RFC  | Description  |
|------|--|
| 768  | User Datagram Protocol.<br>J. Postel. Aug-28-1980.   |
| 791  | Internet Protocol.<br>J. Postel. Sep-01-1981.  |
| 792  | Internet Control Message Protocol.<br>J. Postel. Sep-01-1981.<br>Not all messages covered by RFC 792 are supported by Vanguard Applications Ware.                                |
| 793  | Transmission Control Protocol.<br>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.<br>D.C. Plummer. Nov-01-1982. |
| 854  | Telnet Protocol Specification.<br>J. Postel, J.k. Reynolds. May-01-1983.   |
| 858  | Telnet Suppress Go Ahead Option.<br>J. Postel, J.K. Reynolds. May-01-1983.   |
| 877  | Standard For The Transmission Of IP Datagrams Over Public Data Networks.<br>J.T. Korb. Sep-01-1983.  |
| 894  | Standard for the Transmission of IP data grams over Ethernet networks.<br>C. Hornig. Apr-01-1984.  |
| 919  | Broadcasting Internet Datagrams.<br>J.C. Mogul. Oct-01-1984.   |
| 922  | Broadcasting Internet datagrams in the presence of subnets.<br>J.C. Mogul. Oct-01-1984.  |
| 950  | Internet Standard Subneting Procedure.<br>J.C. Mogul, J. Postel. Aug-01-1985.  |
| 951  | Proposed Bootstrap protocol (BOOTP) for ARPA-Internet<br>W. Croft, J. Gilmore. Sept-01-1985.   |
| 1009 | Requirements for Internet Gateways<br>R.Braden, J. Postel. Jun-01-1987.  |

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|------|--|
| 1042 | Standard For The Transmission Of IP Datagrams Over IEEE 802 Networks.<br>J. Postel, J.k. Reynolds. Feb-01-1988.                    |
| 1055 | Nonstandard For Transmission Of IP Datagrams Over Serial Lines: SLIP.<br>J.I. Romkey. Jun-01-1988.                                 |
| 1058 | RIP Version 2 Carrying Additional Information.<br>G. Malkin. January 1993.   |
| 1060 | Assigned values used in network protocol implementations.<br>J. Reynolds, J. Postel. Mar-01-1990.                                  |
| 1075 | Distance Vector Multicast Routing Protocol.<br>D. Waitzman, C Partridge, S. Deering. Nov-010-1988.                                 |
| 1091 | Telnet Terminal-type Option.<br>J. Vanbokkelen. Feb-01-1989.   |
| 1112 | Host Extensions for IP Multicasting<br>S. Deering. Aug-01-1989.  |
| 1122 | Requirements for Internet hosts - communication layers.<br>R.T. Braden. Oct-01-1989.   |
| 1123 | Requirements for Internet hosts - application and support.<br>R.T. Braden. Oct-01-1989.  |
| 1144 | Compressing TCP/IP headers for low-speed serial links.<br>V.Jacobson. Feb-01-1990.   |
| 1155 | Structure And Identification Of Management Information For<br>TCP/IP-based Internets.<br>M.t. Rose, K. Mccloghrie. May-01-1990.    |
| 1156 | MIB for Network Management of TCP/IP based Internets.  |
| 1157 | Simple Network Management Protocol (SNMP).<br>J.D. Case, M. Fedor, M.L. Schoffstall, C. Davin. May-01-1990.                        |
| 1209 | Transmission Of IP Datagrams Over The SMDS Service.<br>D.m. Piscitello, J. Lawrence. Mar-01-1991.                                  |
| 1212 | Concise MIB Definitions.<br>M.t. Rose, K. Mccloghrie. Mar-01-1991.   |
| 1213 | Management Information Base For Network Management Of<br>TCP/IP-based Internets: MIB-II.<br>K. Mccloghrie, M.t. Rose. Mar-01-1991. |
| 1215 | A Convention for Defining Traps for use with the SNMP.<br>M. Rose, Editor, Performance Systems International. March 1991.          |

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|-------|---|
| 1231  | IEEE 802.5 Token Ring MIB.<br>K. Mccloghrie, R. Fox, E. Decker. May-01-1991.  |
| 1250  | IAB Official Protocol Standards.<br>J. Postel. Aug-01-1991.   |
| 1256  | ICMP Router Discovery Messages.<br>S. Deering. September 1991.  |
| 1286  | Definitions Of Managed Objects For Bridges.<br>E. Decker, P. Langille, A. Rijsinghani, K. Mccloghrie. December, 1991.                                       |
| 1293  | Inverse Address Resolution Protocol.<br>T. Bradley, C. Brown. Jan-01-1992.  |
| 1294  | Multi-protocol Interconnect Over Frame Relay.<br>T. Bradley, C. Brown, A. Malis. January 1992.  |
| 1315  | Management Information Base for Frame Relay DTEs.<br>C. Brown, F. Baker, C. Carvalho. April 9, 1992.  |
| 1332  | PPP Internet Protocol Control Protocol (IPCP).<br>G. McGregor. May 1992.  |
| 1334  | PPP Authentication Protocols<br>B. Lloyd, W. Simpson. Oct-01-1992.  |
| 1340  | Status of Assigned Numbers<br>J. Reynolds, J. Postel. July-01-1992.   |
| 1349  | Type of Service in the Internet Protocol Suite<br>P. Almquist. Jul-01-1992.   |
| 1356  | Multiprotocol Interconnect On X.25 And ISDN In The Packet Mode.<br>A. Malis, D. Robinson, R. Ullmann. August 1992.  |
| 1362  | Novell IPX over Various WAN Media (IPXWAN).<br>M. Allen. Sept-01-1992.  |
| 1398  | Definitions Of Managed Objects For The Ethernet-like Interface Types.<br>F. Kastenholz. January 1993.   |
| 1483* | Multiprotocol Encapsulation over ATM Adaptation Layer 5<br>Juha Heinanen, July 1993.<br><b>* See RFC 2684. RFC 2684 obsoletes RFC 1483</b>                  |
| 1490  | Multiprotocol Interconnect Over Frame Relay.<br>T. Bradley, C. Brown, & A. Malis. July 1993.  |
| 1517  | Applicability Statement For The Implementation Of Classless Inter-Domain Routing (CIDR).<br>Internet Engineering Steering Group, R. Hinden. September 1993. |

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|------|--|
| 1518 | An Architecture For IP Address Allocation With CIDR.<br>Y. Rekhter & T. Li. September 1993.  |
| 1519 | Classless Inter-Domain Routing (CIDR): an Address Assignment and Aggregation Strategy.<br>V. Fuller, T. Li, J. Yu, & K. Varadhan. September 1993.          |
| 1520 | Exchanging Routing Information Across Provider Boundaries in the CIDR Environment.<br>Y. Rekhter & C. Topolcic. September 1993.                            |
| 1534 | Interoperation between DHCP and BOOTP.<br>R. Droms. Oct-01-1993.   |
| 1542 | Clarifications and Extensions for the Bootstrap Protocol.<br>W. Wimer. Oct-01-1993.  |
| 1576 | TN3270 Current Practices.<br>J. Penner. DCA, Inc. January 1994.  |
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## 19 Appendix

### 19.1 Special Upgrade Information for Software improvements: CR17642 & CR17643

Prior to Release 7.0R00A the 7300 Platform used the "Group Subaddress (Hunt Group)" parameter to replace the four digit Virtual Port Number with a usable 3 digit Port Subaddress for connecting voice calls. This 3 digit Port Subaddress could also be used for a Hunt Group application. In Release 7.0R00A the PBX Services functionality was enhanced to include the ISDN Voice Interfaces and to enable PBX Services by default. This change created a conflict between the operation of Hunt Groups and PBX Services (Call Transfer) on the 7300 Platform.

Beginning in Release 7.2R00A, for the 7300 Platform only, there is a new parameter introduced into the Virtual Voice Port Record. The new parameter is called "Port Subaddress". This new parameter can now be used in place of the "Group Subaddress (Hunt Group)" parameter for connecting voice calls on the 7300 Platform. This will restore the ability to use Hunt Groups and PBX Services together on the 7300 Platform.

The upgrade from any prior release to release 7.2R00A will be handled in the following manner. The populated "Group Subaddress (Hunt Group)" field will be brought forward. The new "Port Subaddress" field will be left blank. This will insure backward compatibility without requiring reconfiguration for Hunt Group or Individual Group Subaddress functionality.

For customers that are not running with Hunt Group functionality and are using PBX Services (Call Hold/Transfer) or are installing a 7300 for the first time, it will now be required to utilize the new "Port Subaddress" parameter. This parameter will be used to represent the 3 digit port subaddress required for connecting voice calls on the 7300 Platform only. Like all subaddress values care must be taken not to create address conflicts by creating duplicate addresses.

#### **IMPORTANT:**

For PBX Services (Call Hold/Transfer) to function properly on the 7300 Platform, in Release 7.2R00A or later, it is required to configure the "Port Subaddress" parameter.

The following change will be made to the Vanguard Applications Ware Multimedia Feature Protocols Vanguard Voice Manual.

#### **Port Subaddress (73xx Platform Only)**

|             |   |
|-------------|---|
| Range:      | 0-3 digits  |
| Default:    | Blank   |
| Description | <p>Specifies a Port Subaddress to uniquely identify this port. This parameter must be configured in order to use PBX services on the port. The Port Subaddress must not conflict with any other Port Subaddress or Group Subaddress configured in the node.</p> <p>* Note: For PBX Services (Call Hold/Transfer) to function properly on the 7300 Platform, in Release 7.2R00A or later, it is required to configure the "Port Subaddress" parameter. Also, to use the Group Subaddress for it's intended purpose (Hunt Group).</p> |

## 20 Product Declarations and Regulatory Information

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

### 20.1 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.

Anschlüsse, die mit anderen Geräten verbunden werden können, sind als SELV beschrieben. Um Konformität mit EN 60950 zu versichern, sichern Sie es, daß diese Anschlüsse nur mit den des selben Type auf anderen Geräten verbunden werden.

### 20.2 CE Marking

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



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

### 20.3 Declarations of Conformity

#### English

Declaration of Conformity:

Hereby, Vanguard Networks 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 Networks, 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 Networks dat diens Vanguard Router voldoet aan de basisvereisten en andere relevante voorwaarden van EG-richtlijn 1999/5/EG.

**Finnish**

Vaatimustenmukaisuusvakuutus:

Vanguard Networks 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 Networks 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 Networks dass der Vanguard Router die grundlegenden Anforderungen und sonstige maßgebliche Bestimmungen der Richtlinie 1999/5/EG erfüllt.

**Greek**

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**Italian**

Dichiarazione di conformità:

Con la presente Vanguard Networks dichiara che il router Vanguard soddisfa i requisiti essenziali e le altre disposizioni pertinenti della direttiva 1999/5/CE.

**Portuguese**

Declaração de Conformidade:

Através da presente, a Vanguard Networks 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 Networks declara que este encaminador Vanguard cumple los requisitos esenciales y otras cláusulas importantes de la directiva 1999/5/CE.

**Swedish**

Överensstämmelseförklaring:

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