Vanguard

N E T W O R K S

340 Series
Multi-Service
IP Access Routers

Highlights

A flexible and integrated branch office access router solution that allows businesses to quickly and easily adapt to changing requirements.

A high-performance architecture to support processing-intensive applications such as routing and NAT table look-up, advanced QoS, encryption, voice compression, several simultaneous connections, and more.

Multi-service voice, video, and data integration for diverse range of emerging high-speed broadband services like VoIP, video streaming, IP-VPNs, and legacy applications, reducing the cost and complexity of deploying and managing multiple WAN services.

Integrated 10/100Base T Ethernet ports enable easy access to high-speed LANss and broadband WAN services.

Investment protection with features and performance to add new broadband services such as DSL, cable and wireless.

Vanguard 340 Series Multi-Service IP Access Solutions for the Evolving Small Branch Office

As more and more businesses migrate to IP-enabled services, network performance, security, and quality of service (QoS) are areas of major concern. Enterprises are looking for innovative solutions that will enable them to grow in the future while protecting their existing infrastructures.

The Vanguard 340 series of multi-service IP access routers provides a flexible and modular architecture for small branch offices, allowing them to integrate WAN data and voice services, thereby reducing their overall networking costs.

The Vanguard 340 series delivers a cost-effective e-business solution to enterprise customers by supporting applications such as:

- Secure Internet, intranet, and extranet access with VPN and IP QoS
- Multi-service voice, video, and data integration
- Broadband DSL, cable, and wireless connectivity
- Inter-VLAN Routing (IEEE 802.1 P&Q)
- Voice over IP (VoIP) to offer unified messaging and data services

The Vanguard 340 series consists of 2 models: the Vanguard 340E and Vanguard 342. The Vanguard 340E and Vanguard 342 are both standalone 1U units that include a WAN serial port, and two modular slots that accept a wide array of voice and data daughter cards to support numerous applications, an auto-sensing 10/100BaseT Fast Ethernet LAN port, a console port for monitoring and configuration, and a software-selectable serial port. Integrated networking services such as DSL, frame relay, ISDN, and leased line technologies offer a flexible choice for connectivity as well as provide investment protection for network changes. The Vanguard 342 includes additional memory plus a second 10/100BaseT Ethernet port that can be used for LAN/WAN Ethernet applications.

Key Features

Flexible, Modular Platform

- Supports multiple applications within a single platform
- Interchangeable daughter cards
- Field upgradeable product

High Performance Architecture

- Ensures the performance of simultaneous applications such as encryption, compression, voice and data integration, quality of service, etc.

10/1100BaseT Ethernet (Included in Standard Offering)

- Enables migration to high-speed LANs and new broadband services such as DSL or Cable
- Inter-VLAN routing using IEEE standard 802.1 P&Q
- Enables support for differentiated IP services

Investment Protection

- Full range of WAN interfaces and voice and data modules
- Provides customers with a migration path to the future
- Converged voice and data over one transport circuit
- Eliminates forklift upgrades or infrastructure changes

Multi-Service Integration

- Consolidates the amount of equipment used to support voice, video, and data
- Simplifies network administration
- Reduces network costs

Hardware-based Encryption and Compression

- Industry standard IPSec DES, 3DES, and AES encryption and authentication
- Support 56 bit (DES), 128/168 bit (3DES), and 128/192/256 bit
- (AES) encryption key lengths
- Standardized Key Management (IKE)
- Hardware design maintains higher performance

Network Authentication

- PKI and X.509 allow greater use of secure extranets for business-to-business enterprise network transactions

Management via SNMP VanguardMS 9000OMS, Telnet, Console Port

- Provides configuration, monitoring, and diagnostics for all functions

User Authentication

- End user access and authentication
- Support PAP/CHAP and RADIUS

Quality of Service (QoS)

- Improved performance and network optimization through prioritizaion of delay-sensitive applications (e.g., VoIP, video)
- Policy-based routing, traffic, prioritization, diffrentiated services, traffic shaping, and packet classification

Ease of Use and Configuration

- Enables custom image build, software image load, and quick configuration
- Reduces deployment time and costs

Key Benefits

Flexible, Integrated Solution

The Vanguard 340 series provides a flexible, integrated platform that allows businesses to deploy and manage their e-business solutions. With its modular architecture, the Vanguard 340 series can be configured to support a variety of applications for voice and data. Customers can migrate to newer WAN technologies such as IP VPNs without any forklift upgrades or infrastructure changes. The Vanguard 340 series also supports advanced technologies such as encryption, QoS, and bandwidth management, thus providing enterprise customers with a cost effective integrated solution.

High Performance Architecture

The robust PowerPC RISC high performance architecture, combined with Vanguard Networks' hardware-based data compression and encryption, enable the performance and security critical for VPN applications while providing a path to new broadband technologies. The Vanguard 340 series allows customers to efficiently combine various functions such as VPN tunneling, high-speed encryption, IP QoS, digital certificates and key management, policy-based routing and table look-up, voice compression, and video without any degradation in the overall performance of their networks. It provides a reliable and available infrastructure for enterprise customers to conduct their business efficiently.

Cost Effective Broadband Services

10/100BaseT auto-sensing Fast Ethernet ports enable enterprises to use the Vanguard 340 series as a flexible option to connect to broadband services such as xDSL, cable, or wireless. These technologies offer enterprise customers an alternative to existing frame relay and leased line services when price and bandwidth become issues. The Vanguard 340 series includes bandwidth efficient multicast technology enabling simultaneous distribution and delivery of new valueadded streamed media applications such as multiple stock quotes, video transmissions such as news services or video conferencing, training content, software distribution, or data files to multiple branch office or retail store locations.

Virtual Private Networks

One of the key solutions provided by the Vanguard 340 series is IP-based Virtual Private Networks (VPN). With its high performance architecture that supports advanced IP and MPLS BGP VPNs, IPSec, and hardware-based encryption, the Vanguard 340 series is ideally suited for VPN applications by providing reliable and secure connectivity. Customers can securely connect, control, and communicate data traffic between larger office sites, intra-company remote branch sites, and business partners, thus enabling a true e-business environment. By building VPNs using the Vanguard 340 series, customers can reduce their networking costs and obtain a platform on which they can integrate all their voice and data applications securely.

Key Benefits (cont.)

Efficient LAN Routing Services

The Ethernet ports on the Vanguard 340 series can be used for either LAN and/or WAN connectivity. Customers can enhance and improve the administration of their LAN networks by configuring standards-based IEEE 802.1 P&Q Virtual LANs (VLAN). VLANs reduce the management and complexity of enterprise LAN networks while enabling differentiated IP services. The Vanguard routers will prioritize the incoming LAN traffic flows and route them between the respective VLANs, thus ensuring data integrity and availability.

Multi-Service Access Integration

The Vanguard 340 series multi-service IP routers enable the integration of various types of traffic, including voice, video, fax, and data. The integration of these different services provides enterprises with a cost-effective solution and also simplifies the management of their overall network. By consolidating their multiple networks, enterprise customers can gain more efficiency in their spending on equipment and network connections. The small branch office, where resources are scarce, requires a product that can be easily managed and can perform many different functions.

The Vanguard 340 series provides enterprises with a superior architecture and the quality of service needed to maintain various types of traffic flows, differentiating between the higher and lower priority traffic. This is essential to a successful ebusiness infrastructure.

Enhanced Voice Support

The Vanguard 340 series is a full-featured Voice over IP (VoIP) or Voice over Frame Relay (VoFR) gateway. Furthermore, the Vanguard 340 series is H.323 compliant, thus allowing standards-based interoperability with next-generation IP voiceenabled networks. By migrating to packet voice technologies, customers can reduce their overall network costs and save on long distance inter-office charges. The Vanguard 340 series provides connectivity to the traditional circuit switched network (PSTN) and can also support voice in a pure IP environment with quality of service to ensure the proper prioritization and integrity of the voice traffic flow. With the optional G.SHDSL support available, smaller offices can also connect existing voice services via the Vanguard 340 series over DSL. The Vanguard 340 series supports a wide range of analog voice daughter cards as well as digital ISDN voice and fax connections. Customers can support applications such as integrated messaging services, web-based call centers and calling features— Caller ID and Call Hold—without requiring a PBX at the branch.

Investment Protection

The Vanguard 340 series' modular architecture ensures growth capability for the evolving enterprise customer environment. By integrating functions such as VPN, DSU/CSU, ISDN, xDSL, and a voice gateway, the Vanguard 340 series eliminates the need to install and maintain a large number of separate devices or networks. The interchangeable WAN interface cards ensure migration to new technologies without costly upgrades. The WAN interfaces are field upgradeable and span across nearly all models of the Vanguard product family to ensure investment protection. Vanguard QoS application performance and bandwidth prioritization software provide predictable traffic management with the ability to proactively monitor more than 250 software applications, eliminating the requirement for external packet sniffers, QoS appliances, or other devices. Remote monitoring of QoS can also reduce operational costs and help anticipate future bandwidth requirements.
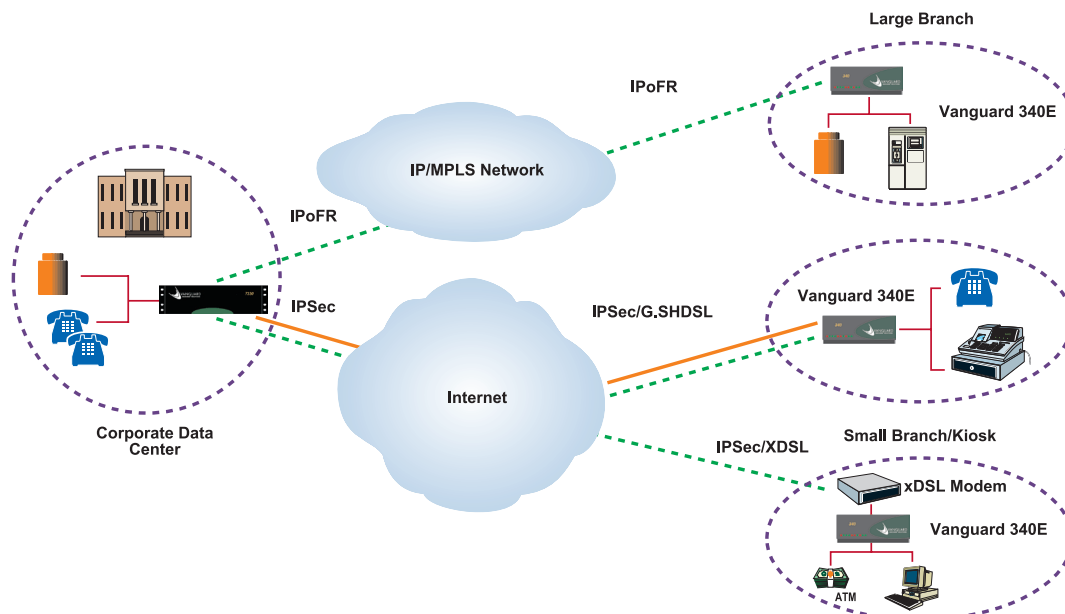

Figure 1:

The Vanguard 340 series is well-suited for many industry applications. In this example, the 340E is used for larger remote branch office locations utilizing direct frame relay, and smaller branch office locations that can use direct G.SHDSL Internet connectivity, where this service is available. Alternatively, the Vanguard 342's dual 10/100BaseT Ethernet ports allow simultaneous access to the corporate LAN and to an external xDSL device for Internet access.

Product Specifications - *Vanguard Application Ware*

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IP Routing & Protocols

IPv4, RIP/RIP2, OSPF, BGP4, DVMRP, PIM-SM (IP Multicast)
BGP Communities (RFC 1997 & 1998)
BGP Multipath
Inter-VLAN routing (802.1Q)
Classless Inter-Domain Routing (CIDR)
Network Address Translation (NAT)
Port Address Translation (PAT)
Real-Time Transport Protocol (RTP)
Header Compression (RFC 2508)
IP Payload Compression Protocol (IPPCP)
Virtual Router Redundancy Protocol (VRRP)
OnNet Proxy (Router Standby Protocol)
Multiple IP Addresses per Physical Interface
DHCP Client
Multi-Link PPP
PPPoE (RFC 2516)
PPPoA (RFC 1483)

User Authentication

RADIUS
PAP/CHAP

Voice Compression

G.711 (A-law, -law)
G.723.1
G.729A
T.38 Fax over IP
Automatic fax/modem detection
Voice Activity Detection (VAD)
Silence Suppression
RTP voice packet encapsulation

Packet Voice

Voice over Frame Relay
Analog Private Branch eXchange (PBX) and Public Switched Telephone Network
(PSTN) connections
8 analog voice channels (maximum of 4 on Vanguard 340E)
Fax over Frame Relay
H.323 Gateway
H.323 Gatekeeper Interoperable
Premium voice features (Caller ID, Transfer, Hold, Waiting, Fowarding)

QoS:Optimization of Data, Voice, and Video

Bandwidth on Demand (BOD)
Dial on Demand (DOD)
Link Backup (V.25bis and ISDN)
Data Connection Protection (DCP) (X.25, SDLC, LLC2)
IP Type of Service (IP TOS)
Priority Queuing
Class Based Queuing (CBQ)
Weighted Fair Queuing (WFQ)
Weighted Random Early Discard (WRED)
Differentiated Service (DiffServ)
Packet Classification
Policy Based Routing
Fast Path Switching for Voice
Multi-Link PPP (MLPP)
Generic Traffic Shaping (GTS)
Compressed Real-Time Protocol (cRTP)
MLPPP Link Fragmentation and Inter-leaving Segmentation
(RFC 1990 & 2686)
Support 802.1P for VLANs

Virtual LAN (VLAN) Routing

Support 802.1Q & 802.1P

Serial

Transparent COP (TCOP)
Transparent BOP (TBOP)
ATPAD (Port 3 and 4 only)
TPDU (for e.g ASYNC to IP conversion)

Frame Relay

Frame Relay DTE with Traffic Fairness
Frame Relay Switching (DCE)
Frame Relay Annex G (AN SI T1.617)
Frame Relay Annex D (AN SI T1.617)
Frame Relay Annex A (ITU-T Q.933)
Frame Relay RFC 1490 (IP/IPX/AppleTalk)
Local Management Interface (LMI)
Support BECN, CIR, Bc
End-to-End Delay
Frame Relay Auto Learn
Frame Relay Traffic Shaping (FRTS)
FRF.8 & FRF.12

X.25

X.25 DTE
X.25 Switching (DCE)
RFC 877/1356 (IP)
X.25 Translation, CUG, NUI Support
X.25 on "D" Channel Support

IBM Networking

SNA/SDLC for serial Connections
BSC 2780, 3780, 3270
QLLC X.25 (IBM NSPI) Point-to-Point or Multi-Drop (up to 64 PUs)
Conversion SDLC to RFC 1490
Conversion SDLC to LLC2
Conversion LLC2 to RFC 1490
BSC to LLC2 Conversion

ISDN

U interface : ANSI T1.601 1992 (2B1Q)
S/T interface : ITU I.430
LAPD:ITU Q9.21 Compliant
Integral X.31 Support

IP Virtual Private Networks (VPN)

VPN Tunneling: IPSec (IP traffic) and GRE (non-IP traffic) G.723.1
Support IPSec Authentication Header (AH) and IPSec Encapsulating Security
Payload (ESP)
IPSec Encryption : IPSec DES (56 bit), 3DES (128 bit) and 3DES (168 bit)
Advanced Encryption Services (AES): 128, 192, and 256 bit key lengths
Device Authentication and Key Management:
Internet Key Exchange (IKE) and X.509v3 Digital Certificates
Dead Peer Detection
Message Authentication through Complex Hashing Algorithms (MD5/SHA-1)

System Management

SNMP Management
Configuration Management
OS Image Management
Telnet
CLI
Embedded Web HTTPD
SSH2 Server

Other Bridging/Routing Protocols

IPX/Novell IPX WAN,Appletalk
Transparent Bridging (Spanning Tree IEEE 802.1d)
SLIP
SoTCP
Async and Sync PPP Network Interface

Vanguard
N E T W O R K S

Hardware Specifications

Hardware

Compact desktop design with 2 expansion slots

1 x 10/100BaseT auto sensing Ethernet port on Vanguard 340E motherboard

2 x 10/100 BaseT auto-sensing Ethernet ports on Vanguard 342 motherboard

860P PowerPC RISC processor

1 x Universal serial port on motherboard
(software selectable: V.24, V.35, V.36, V.11)

1RS-232 management port with easy-to-use menu
16 MB S-DRAM on Vanguard 340E (upgradeable to 32 MB)
32 MB S-DRAM on Vanguard 342
8 MB of non-volatile flash, with upgradeable 8 MB alternate bank
Rear removabnle/loadable motherboard
High MTBF external power supply
Auxiliary cooling fan
Optional data compression and encryption SIMM

Physical Dimensions

Height: 2.6 in (6.6 cm)

Width: 7.7 in (19.6)

Depth: 12.3 in (31.3 mm)

Weight: 7.05. unloaded, 7.65 lbs fully loaded

Power Supply : 100- 240 VAC, 60/50Hz, 1.1-0.6 Amps, 50 watts external

Environmental

Operating Temperature: 32 °to 104 °F (0 °to 40 °C)

Storage Temperature: 40 to 158 °F (-40 °to 70 °C)

Relative Humidity: 5% to 90%, non-condensing

Regulatory Compliance

Safety Certifications: UL1950 3rd Edition, CAN/CSA C22.2 No.950-95, EN6095

A11: 1997, IEC60950 2nd Edition Amendment 4

EMC Certifications: FCC Part 15 Class A, CISPR 22 Class A, AS/NZS 3548 Class A EN55022:1997, Class A, EN50082-1 (EN55024)

Telecom Certifications: FCC Part 68, Industry Canada CS-03, CTR-2, CTR-4, CTR-12, CTR-13, JATE, TS-014, TS-016, TSO-38, Country Specific

Need more info?

Vanguard Networks offers a full range of network lifecycle services. Services may differ from country to country. Contact your local Vanguard Networks representative for details or access our web site at: www.vanguardnetworks.com.
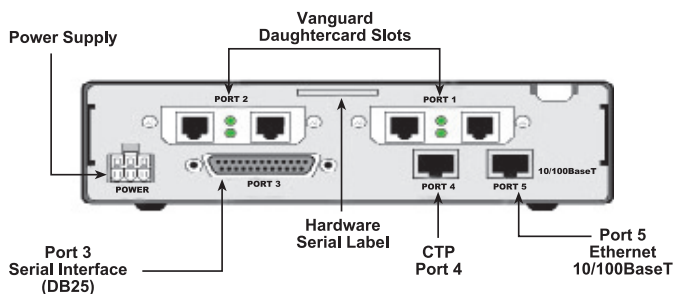
Figure 2:

340E Backside

Figure 3:

342 Backside