Cisco
VPN Solutions
Agenda

• Introduction to VPNs
• Cisco Remote Access VPN Solutions
• Cisco Site-to-Site VPN Solutions
• Cisco Firewall-Based VPN Solutions
End-to-End Secured VPN

Cisco VPN Solutions Utilize Standards-Based Security

<table>
<thead>
<tr>
<th>Tunneling</th>
<th>Encryption</th>
<th>Authentication</th>
<th>Integrity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• IPSec</td>
<td>• DES</td>
<td>• RSA digital certificates</td>
<td>• HMAC-MD5</td>
</tr>
<tr>
<td>• GRE</td>
<td>• 3DES</td>
<td>• RADIUS</td>
<td>• HMAC-SHA1</td>
</tr>
<tr>
<td>• L2TP/PPTP</td>
<td>• AES (soon)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## VPN Types and Applications

<table>
<thead>
<tr>
<th>Type</th>
<th>Application</th>
<th>As Alternative To</th>
<th>Benefits</th>
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</thead>
<tbody>
<tr>
<td><strong>Remote Access VPN</strong></td>
<td>Remote Dial Connectivity</td>
<td>Dedicated Dial ISDN</td>
<td>Ubiquitous Access, Lower Cost</td>
</tr>
<tr>
<td><strong>Site-to-Site VPN</strong></td>
<td>Site-to-Site Internal Connectivity</td>
<td>Leased Line Frame Relay ATM</td>
<td>Extend Connectivity, Increased Bandwidth, Lower Cost</td>
</tr>
<tr>
<td><strong>Extranet VPN</strong></td>
<td>Biz-to-Biz External Connectivity</td>
<td>Fax Mail EDI</td>
<td>Facilitates E-Commerce</td>
</tr>
</tbody>
</table>

**Remote Access VPN**

- Extend Connectivity
- Lower Cost

**Site-to-Site VPN**

- Facilitates E-Commerce

**Extranet VPN**

- Ubiquitous Access
- Lower Cost

---

VPN Requirements Vary By Application

Remote Access VPN
- Evolution away from dial
- Per-user manageability
- Multi-OS (desktop) support
- Deployment scalability

Site-to-Site VPN
- Extension of classic WAN
- Compatibility with diverse network traffic types
- Integration with routing
- Deployment scalability
Cisco VPN Portfolio

Purpose-Built for Specific VPN Environments

Cisco Provides the Industry’s **Broadest** VPN Solution Set!

<table>
<thead>
<tr>
<th>Remote Access</th>
<th>Large Enterprise</th>
<th>Medium Enterprise</th>
<th>Small Biz/Branch</th>
<th>SOHO</th>
</tr>
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<tbody>
<tr>
<td>Cisco VPN 3000</td>
<td>VPN 3080</td>
<td>VPN 3030</td>
<td>VPN 3015</td>
<td>VPN 3002</td>
</tr>
<tr>
<td>VPN 3060 Concentrators</td>
<td>VPN 3030 Concentrator</td>
<td>VPN 3005 Concentrators</td>
<td>Hardware Client</td>
<td>Software Client</td>
</tr>
<tr>
<td>7200</td>
<td>7100</td>
<td>3600</td>
<td>900</td>
<td></td>
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<tr>
<td>7100</td>
<td>3600</td>
<td>2600</td>
<td>800</td>
<td></td>
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<table>
<thead>
<tr>
<th>Site-to-Site IOS Routers</th>
<th>7200</th>
<th>7100</th>
<th>3600</th>
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<tbody>
<tr>
<td>7100</td>
<td>3600</td>
<td>2600</td>
<td></td>
</tr>
<tr>
<td>3600</td>
<td>1700</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Firewall-Based VPN Pix Firewall</th>
<th>Pix 535</th>
<th>Pix 525</th>
<th>Pix 515</th>
<th>Pix 506</th>
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<tbody>
<tr>
<td>Pix 525</td>
<td>Pix 515</td>
<td></td>
<td></td>
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<tr>
<td>Pix 515</td>
<td>Pix 506</td>
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New
## VPN Product Function Matrix

<table>
<thead>
<tr>
<th></th>
<th>Site-to-Site VPN</th>
<th>Remote Access VPN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IOS VPN Routers</strong></td>
<td>• Primary role</td>
<td>• Basic remote access functionality</td>
</tr>
<tr>
<td></td>
<td>• All encompassing site-to-site connectivity features</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provides routing, QoS, WAN interfaces, multicast and multiprotocol support</td>
<td></td>
</tr>
<tr>
<td><strong>PIX Firewalls</strong></td>
<td>• Solution for security organizations that prefer operating firewalls</td>
<td>• Provides most remote access features</td>
</tr>
<tr>
<td></td>
<td>• Provides full firewall features</td>
<td>• Solution for security organizations that prefer operating firewalls</td>
</tr>
<tr>
<td></td>
<td>• Basic site-to-site functionality</td>
<td>• Provides full firewall features</td>
</tr>
<tr>
<td><strong>VPN 3000 Concentrators</strong></td>
<td>• Basic site-to-site functionality</td>
<td>• Primary role</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Full featured remote access solution</td>
</tr>
</tbody>
</table>
Agenda

- Introduction to VPNs
- Cisco Remote Access VPN Solutions
- Cisco Site-to-Site VPN Solutions
- Cisco Firewall-Based VPN Solutions
Cisco Remote Access VPN

Cisco VPN 3000
Concentrator Series

Cisco 3000
VPN Client

HTML-Based Management
Remote Access VPNs
Cisco VPN 3000

- Connection of remote sites, users and partners across VPN
- High density, low bandwidth connections

**Cisco VPN Clients**
- Microsoft Win 2000 (IPSec)
- Microsoft Win 9x/NT (PPTP)

**WAN Router**
- PIX Firewall
- Cisco VPN 3000 Concentrator
- Cisco Secure ACS (AAA)
Cisco VPN 3000 Client

- Single-click installation
- Easy to manage
  - User-transparent configuration
  - Centralized policy management
- Easy to operate
- Supports “split tunneling”
- For Windows 95, 98, 2000 or NT environments
VPN 3000 Client

Connect!

- Dial into ISP / IP network provider
  - Dial-up number local to user
  - Standard Windows DUN / works with all dialers
- Start VPN 3000 Client
  - Respond to authentication request when prompted
- Link is now secure!
Cisco VPN Device Manager for 3000 Series

- **Embedded Web Management**
  - Per VPN 3000 Concentrator
  - Easy client management
  - Secure browser interface (SSL)
  - Quick-start installation
  - Extensive usage statistics
  - Multi-level administration
# Cisco VPN 3000 Concentrators

## Table of Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>3005</th>
<th>3015</th>
<th>3030</th>
<th>3060</th>
<th>3080</th>
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<tbody>
<tr>
<td>Simultaneous Users</td>
<td>100</td>
<td>100</td>
<td>1,500</td>
<td>5,000</td>
<td>10,000</td>
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<tr>
<td>Performance (Mbps)</td>
<td>4</td>
<td>4</td>
<td>50</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Encryption Cards</td>
<td>-</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
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<tr>
<td>Upgradeable</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Dual Power Supply</td>
<td>No</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional</td>
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<tr>
<td>Redundancy</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Site-to-Site Tunnels</td>
<td>100</td>
<td>100</td>
<td>500</td>
<td>1,000</td>
<td>1,000</td>
</tr>
</tbody>
</table>
Platform Highlights
Models 3015, 3030, 3060, 3080

- Modular
- Expandable
- Redundant / VRRP
- Hardware Encryption

- Extensive Instrumentation
- 2U Form Factor

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Cisco VPN 3000
High Availability

- 200,000+ hrs. calculated MTBF
- Redundant Power Supplies
- Hot Swap & Redundant Encryption Modules
- Redundant Fans with tachometers
- Two temperature sensors--CPU and ambient
- Dual Image Flash Memory
Platform Highlights

Model 3005

- Fixed Configuration
- Software Encryption
- 1U Form Factor
- Limited Instrumentation

- Best Choice for:
  - Managed Service
  - Branch Office
  - Medium Business
Cisco VPN 3002
Hardware VPN Client

- Easy Deployment
- Centralized Policy Push
- Two 10/100, 8 Port Hub Version
- DHCP Client & Server
- PAT (External & Tunnel)
- Client & Network Extension modes
Cisco VPN 3002
Hardware VPN Client

Basic 3002 w/o Hub
3002 unit with 8 Port 10/100 Hub

- External 6 foot power with country specific pigtail cord
- Console uses RS-232 signaling and RJ-45 connector
- Ethernet ports are 10/100 Mbps
- Hub supports Auto-MDIX eliminating x-over cables
- Recessed reset switch returns unit to default configuration
- 6x8x2" size with flat top and wall mount key holes
- Silent, convection cooled operation
- FCC Class B Certification, CISPR, CUL, others
VPN Goes Mobile

Coming later...

Handheld Computing Devices

Corporate Application

Web Content

On-line Merchant

Personal Computer

Handheld Computing Devices
Agenda

• Introduction to VPNs
• Cisco Remote Access VPN Solutions
• Cisco Site-to-Site VPN Solutions
• Cisco Firewall-Based VPN Solutions
Cisco’s Site-to-Site VPN

Outlook

- **VPNs are an alternative WAN infrastructure**
  - Offer significant cost benefits
  - Enables new infrastructure applications (Extranets, etc.)
  - Extends and enhances network connectivity

- **Still an end-to-end network**
  - Scalability, reliability, multi-protocol, multi-service, management, security, QoS, etc.

- **Have specific additional requirements**
  - Heightened security
  - New Quality of Service capabilities
  - Policy management
# Cisco VPN Routers

Delivering Comprehensive Site-to-Site VPN Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco VPN Routers</th>
<th>VPN Appliances</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPSec &amp; PKI Support</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Routing Across VPN</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Multicast Across VPN</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Multiprotocol Support</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Voice-Ready VPN</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Application-Aware QoS</td>
<td>✓</td>
<td>Limited</td>
</tr>
<tr>
<td>Integrated Firewall</td>
<td>✓</td>
<td>Some</td>
</tr>
<tr>
<td>Integrated WAN Connectivity</td>
<td>✓</td>
<td>Limited</td>
</tr>
<tr>
<td>Single-Box Solution for Remote Office Deployments</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Device Infrastructure Management</td>
<td>✓</td>
<td>×</td>
</tr>
</tbody>
</table>
Cisco IOS Software
Enhanced VPN Software Features

- **Quality of Service**
  - Application-aware packet classification
  - Congestion management and packet queuing
  - Traffic shaping and policing

- **Stateful IOS Firewall**
  - Per application content filtering and Java blocking
  - Denial of service protection and intrusion detection
  - Time-based ACLs

- **VPN Resiliency**
  - Dynamic Route Recovery - using routing protocols through IPSec secured GRE tunnel
  - Dynamic Tunnel Recovery - IPSec Keep-Alives

- **Automated Tunnel Provisioning**
  - Using IPSec Tunnel Endpoint Discovery for large mesh network deployments

- **Full Layer 3 Routing and Broad Interface Support**
  - EIGRP, BGP, OSPF, and others
  - Numerous LAN and WAN interfaces
Cisco Site-to-Site VPN Solutions
Scalability for Every Site

Cisco 1700 Series
- VPN-optimized router connecting remote offices at T1/E1 speeds

Cisco 2600 & 3600 Series
- VPN-optimized routers connecting branch and regional offices at n×T1/E1 speeds

Cisco 7100 & 7200 Series
- 7100 for dedicated VPN head-end
- 7200 for hybrid private WAN + VPN connectivity

Cisco 800 & 900 Series
- VPN-optimized routers for ISDN, DSL, and cable connectivity
### VPN-Enabled Broadband Routers

<table>
<thead>
<tr>
<th>Feature</th>
<th>806</th>
<th>827/804</th>
<th>905</th>
</tr>
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<tbody>
<tr>
<td>Simultaneous Tunnels</td>
<td>50</td>
<td>50</td>
<td>50</td>
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<tr>
<td>Performance</td>
<td>384 kbps</td>
<td>384 kbps</td>
<td>6 Mbps</td>
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<tr>
<td>Hardware Acceleration</td>
<td>None</td>
<td>None</td>
<td>(built-in)</td>
</tr>
<tr>
<td>WAN Interfaces</td>
<td>Ethernet</td>
<td>DSL/ISDN</td>
<td>Cable</td>
</tr>
<tr>
<td>LAN Interfaces</td>
<td>4xEthernet</td>
<td>1xEthernet</td>
<td>4xEthernet</td>
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</table>
### VPN-Enabled Routers

<table>
<thead>
<tr>
<th></th>
<th>1710</th>
<th>1720/1750</th>
<th>2611/2621</th>
<th>2651</th>
<th>3620/3640</th>
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</thead>
<tbody>
<tr>
<td>Simultaneous Tunnels</td>
<td>100</td>
<td>100</td>
<td>300</td>
<td>800</td>
<td>800</td>
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<tr>
<td>Performance (Mbps)</td>
<td>4</td>
<td>4</td>
<td>10/12</td>
<td>14</td>
<td>10/19</td>
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<tr>
<td>Hardware Acceleration</td>
<td>(built-in)</td>
<td>VPN Module</td>
<td>AIM-VPN/BP</td>
<td>AIM-VPN/EP</td>
<td>NM-VPN/MP</td>
</tr>
<tr>
<td>WAN Interfaces</td>
<td>1xEthernet</td>
<td>(varies)</td>
<td>(varies)</td>
<td>(varies)</td>
<td>(varies)</td>
</tr>
<tr>
<td>LAN Interfaces</td>
<td>1xFE</td>
<td>1xFE</td>
<td>2xFE</td>
<td>2xFE</td>
<td>(varies)</td>
</tr>
</tbody>
</table>
## 28VPN Overview

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www.cisco.com/go/vpn

### VPN-Enabled Routers

<table>
<thead>
<tr>
<th>Feature</th>
<th>3660</th>
<th>7120</th>
<th>7140</th>
<th>7140</th>
<th>7200</th>
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<tbody>
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<td>Simultaneous Tunnels</td>
<td>1,300</td>
<td>2,000</td>
<td>2,000</td>
<td>3,000</td>
<td>5,000</td>
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<tr>
<td>Performance (Mbps)</td>
<td>40</td>
<td>50</td>
<td>90</td>
<td>140</td>
<td>145</td>
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<tr>
<td>Hardware Acceleration</td>
<td>AIM-VPN/HP</td>
<td>ISM</td>
<td>ISM</td>
<td>ISM &amp; ISA</td>
<td>SA-VAM</td>
</tr>
<tr>
<td>WAN Interfaces</td>
<td>(varies)</td>
<td>(varies)</td>
<td>(varies)</td>
<td>None</td>
<td>(varies)</td>
</tr>
<tr>
<td>LAN Interfaces</td>
<td>1xFE</td>
<td>2xFE</td>
<td>2xFE</td>
<td>2xFE</td>
<td>(varies)</td>
</tr>
</tbody>
</table>
Cisco 806 Broadband Gateway Router

Provides shared, secure access for small businesses, small offices and telecommuters from a single broadband connection

- Ethernet-to-Ethernet connectivity for use behind-broadband devices
- Multi-User access
- Business-class security
- Manageability, reliability and scalability
- QoS for voice and video applications

New!
Cisco 1710
Security Access Router

Ethernet-to-Ethernet Connectivity

Comprehensive Security
– VPN Encryption and Tunneling
– Stateful Inspection Firewall
– Intrusion Detection

High-Performance VPN
– T1 Wire Speed 3DES Hardware Encryption

Advanced QoS Features
– Bandwidth Optimization
– Traffic Prioritization

Remote Manageability

New!
• **AIM-VPN/EP Enhanced Performance Module**

  Delivers 14 Mbps 3DES performance

  New AIM-VPN/EP is specially designed to take advantage of the 2650 High Performance Router

  This VPN Module is being offered in addition to our present AIM-VPN/BP (Base Performance Module)

  Supported on all 2600 platforms
New 2600/3600 VPN Bundles:

- Chassis / processor
- System memory (64Mbps)
- Packet memory
- Flash memory (16 Mbps)
- Power supply
- VPN accelerator card
- IOS Plus IPSec/FW/IDS 3DES K9 or DES bundle available K8

C2611-2FE/VPN
- Cisco 2611 Router, Dual 10/100, AC, AIM-VPN/BP, IOS Plus Firewall/IPSec

C2651-2FE/VPN
- Cisco 2651 Router, Dual 10/100, AC, AIM-VPN/EP, IOS Plus Firewall/IPSec

C3640-2FE/VPN
- Cisco 3640 Router, Dual 10/100, AC, NM-VPN/MP, IOS Plus Firewall/IPSec

C3662-2FE/VPN
- Cisco 3662 Router, Dual 10/100, AC, AIM-VPN/HP, IOS Plus Firewall/IPSec
Greater than DS3 encryption performance

145 Mbps 3DES IPSec performance for scalable site-to-site encryption

Allows large number of VPN Tunnels

5000 simultaneous IPSec sessions

Fast VPN tunnel setup time

Hardware acceleration for RSA: Tunnel setup & key generation

Compression for bandwidth conservation

Hardware acceleration for IPPCP LZS compression
New 7200 VPN Bundles

New 7200 VPN bundles:

- Chassis / processor
- I/O board
- Packet memory
- Flash memory
- Power supply
- VAM VPN accelerator card
- IOS IPSec 3DES software
- DES bundles also available

7204VXR400/VPNK9

- Base VPN Bundle for adding WAN or behind WAN-edge
- Cisco 7204 Router, NPE-400, I/O Board w/ Dual 10/100, AC power, SA-VAM, IOS IPSec 3DES software

7204VXR400/T3VPNK9

- For High Bandwidth VPN Head-end
- Cisco 7204 Router, NPE-400, I/O Board w/ Dual 10/100, PA-T3+, SA-VAM, AC power, IOS IPSec 3DES software
VPN Management

- **VPN Device Manager**
  Embedded web single device policy manager

- **VPN Management Solutions**
  Enterprise VPN monitoring & policy manager

- **Cisco Secure Policy Manager**
  Centralized, intelligent security policy management for firewall and VPN

- **Telnet/SSH/rlogin/rsh/rcp CLI, tftp, MIBs**
Infrastructure Management

- **Cisco Works 2000**
  - Device and software inventory
  - Configuration change management
  - Network response time analysis

- **QoS Policy Manager**
  - Control bandwidth management features at VPN edge
  - Centralized bandwidth management policy control for multiple sites
### Site-to-Site VPN Interoperability

<table>
<thead>
<tr>
<th></th>
<th>IOS</th>
<th>PIX</th>
<th>3000</th>
<th>5000</th>
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<tbody>
<tr>
<td>IOS Required Release</td>
<td>-</td>
<td>12.1</td>
<td>12.1</td>
<td>12.1</td>
</tr>
<tr>
<td>PIX Required Release</td>
<td>5.2</td>
<td>-</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>3000 Required Release</td>
<td>2.5(2)</td>
<td>2.5(2)</td>
<td>-</td>
<td>n/a</td>
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<td>5000 Required Release</td>
<td>5.2</td>
<td>5.2</td>
<td>n/a</td>
<td>-</td>
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</table>
Site-to-Site VPN Platform
Summary

- **Comprehensive Suite of Site-to-Site VPN Features**
  - Supports the most diverse VPN environments

- **High Performance VPN**
  - Up to 145 Mbps 3DES/HMAC-SHA1 IPSec
  - Up to 5,000 simultaneous tunnels

- **Site Specific VPN Scalability**
  - DSL, Cable, & ISDN VPN routers
  - Ethernet-to-Ethernet broadband routers

- **Network Management Tailored for Site-to-Site Applications**
Agenda

- Introduction to VPNs
- Cisco Remote Access VPN Solutions
- Cisco Site-to-Site VPN Solutions
- Cisco Firewall-Based VPN Solutions
Firewall-Based VPN Scenarios

- Security organization owns the VPN implementation
- Customers want to enhance their existing firewall systems to support VPN services
## PIX Product Line Overview

### Table of Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>506</th>
<th>515</th>
<th>525</th>
<th>535</th>
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<tbody>
<tr>
<td><strong>Simultaneous Tunnels</strong></td>
<td>4</td>
<td>400</td>
<td>1,000</td>
<td>2,000</td>
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<tr>
<td><strong>Performance (Mbps)</strong></td>
<td>6</td>
<td>11</td>
<td>35</td>
<td>55</td>
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<tr>
<td><strong>VAC Simultaneous Tunnels</strong></td>
<td>-</td>
<td>-</td>
<td>2,000</td>
<td>2,000</td>
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<tr>
<td><strong>VAC Performance (Mbps)</strong></td>
<td>-</td>
<td>-</td>
<td>70</td>
<td>100</td>
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<tr>
<td><strong>Firewall Sessions</strong></td>
<td>400</td>
<td>125,000</td>
<td>280,000</td>
<td>500,000</td>
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<tr>
<td><strong>Firewall Performance (Mbps)</strong></td>
<td>10</td>
<td>170</td>
<td>370</td>
<td>1,000</td>
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<tr>
<td><strong>LAN Interfaces</strong></td>
<td>2xEthernet</td>
<td>6xFE</td>
<td>8xFE/GE</td>
<td>8xFE/GE</td>
</tr>
</tbody>
</table>

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Cisco VPN Market Position

- **Infonetics - May, 2001**
  - #1 in VPN market with 67%
  - #1 in VPN Router market with 92%
  - #1 in Dedicated VPN (3000 and 7100) with 12%

- **Synergy - May, 2001**
  - #1 in VPN Gateways with 32%
For More Information...

http://www.cisco.com/GO/VPN