HP VSR1000 Virtual Services Router Series

Key features

• Virtualized enterprise-class x86 routing software
• Firewall, IPSec, and MPLS VPN security
• Agile deployments across the branch office, data center, and cloud
• Easy to deploy and manage remotely
• VMware and KVM hypervisor support

Product overview

The HP VSR1000 Router Series is a virtualized application that provides functionality similar to a physical router. The VSR1000 series enables significant operational savings as a result of its agility and ease of deployment. Like other virtual applications, the routers run in a virtual machine on an industry-standard x86-based server. Resources on the VSR1000 series can be dynamically allocated and upgraded on demand as performance requirements grow. The VSR1000 series is available in 1, 4, and 8 virtual CPU versions that have no expiration date. Robust routing is provided between networked devices using a number of popular routing protocols. In addition, the series provides critical network services associated with today’s enterprise routers such as VPN gateway, firewall, and other security and traffic management functions. A variety of deployment models are supported, including enterprise branch CPE routing and cloud offloading for small- to medium-sized workloads.
Features and benefits

Virtualization

- **Hypervisor support**
  supports the following industry-standard hypervisors: VMware ESXi versions 4.1, 5.0, and 5.1; Linux KVM (Linux kernel version 2.6.25 or later)

- **Recommended Linux operating systems**
  CentOS 6.3, Fedora 17, Ubuntu 12.10, Red Hat Enterprise Linux (RHEL) 6.3, and SUSE Linux Enterprise Server 11 SP2

- **Recommended vNICs**
  E1000 and VirtIO virtual NICs are recommended

- **Maximum of 16 vNICs supported**
  provides flexible virtual connectivity

Layer 3 routing

- **Static IPv4 routing**
  provides simple manually configured IPv4 routing

- **Static IPv6 routing**
  provides simple manually configured IPv6 routing

- **Routing Information Protocol (RIP)**
  uses a distance vector algorithm with UDP packets for route determination; supports RIPv1 and RIPv2 routing; includes loop protection

- **Routing Information Protocol next generation (RIPvng)**
  extends RIPv2 to support IPv6 addressing

- **Open shortest path first (OSPF)**
  delivers faster convergence; uses this link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery

- **OSPFv3**
  provides OSPF support for IPv6

- **Border Gateway Protocol (BGP)**
  provides IPv4 Border Gateway Protocol routing, which is scalable, robust, and flexible

- **BGP+**
  extends BGP-4 to support Multiprotocol BGP (MBGP), including support for IPv6 addressing

- **Intermediate system to intermediate system (IS-IS)**
  uses a path vector Interior Gateway Protocol (IGP), which is defined by the ISO organization for IS-IS routing and extended by IETF RFC 1195 to operate in both TCP/IP and the OSI reference model (Integrated IS-IS)

- **IS-IS for IPv6**
  extends IS-IS to support IPv6 addressing

- **Dual IP stack**
  maintains separate stacks for IPv4 and IPv6 to ease the transition from an IPv4-only network to an IPv6-only network design

- **IPv6 tunneling**
  allows a smooth transition from IPv4 to IPv6 by encapsulating IPv6 traffic over an existing IPv4 infrastructure

- **MPLS support**
  provides extended support of MPLS, including MPLS VPNs and MPLS Traffic Engineering (MPLS TE)

- **IGMPv1, v2, and v3**
  allow individual hosts to be registered on a particular VLAN

- **Multicast Routing PIM Dense and Sparse modes**
  provides robust support of multicast protocols

- **Policy-based routing**
  makes routing decisions based on policies set by the network administrator

Layer 3 services

- **Dynamic Host Configuration Protocol (DHCP)**
  simplifies the management of large IP networks

- **Domain Name System (DNS)**
  provides a distributed database that translates domain names and IP addresses, which simplifies network design; supports client and server

- **Address Resolution Protocol (ARP)**
  determines the MAC address of another IP host in the same subnet

- **User Datagram Protocol (UDP) helper**
  redirects UDP broadcasts to specific IP subnets to prevent server spoofing

- **Additional IP services**
  delivers forwarding/fast forwarding (unicast/multicast), TCP, FTP server, FTP client, TFTP client, Telnet server, Telnet client, and NTP/SNTP

Quality of Service (QoS)

- **Traffic classification**
  utilizes port, MAC address, IP address, IP priority, DSCP priority, TCP/UDP port number, and protocol type

- **Traffic policing**
  supports committed access rate (CAR) and line rate (LR)

- **Traffic shaping**
  supports generic traffic shaping (GTS)

- **Congestion management**
  supports FIFO, weighted fair queuing (WFQ), and class-based queuing (CBQ)

- **Congestion avoidance**
  supports tail drop and weighted random early detection (WRED)

- **MPLS QoS**
  allows MPLS traffic classification
Virtual private network (VPN)
- **Generic Routing Encapsulation (GRE)**
  transports Layer 2 connectivity over a Layer 3 path in a secured way; enables the segregation of traffic from site to site
- **IPSec**
  provides secure tunneling over an untrusted network such as the Internet or a wireless network; offers data confidentiality, authenticity, and integrity between two network endpoints
- **Site-to-site connectivity**
  configures two IPSec VPN gateways to provide secure site-to-site communication between offices, partners, or suppliers; both IPSec or GRE tunnels are available

Security
- **Access control**
  supports ACL, AAA (local authentication, RADIUS, HWTACACS, LDAP), RBAC, portal, and IP source guard
- **Access control lists (ACLs)**
  provide IP Layer 3 filtering based on source/destination IP address/subnet and source/destination TCP/UDP port number
- **Firewall**
  - **Application specific packet firewall**
    tracks outbound session requests and temporarily enables session control and data exchange across the firewall boundary
  - **Packet filter firewall**
    delivers static ACL firewall policy support
- **Secure management access**
  delivers secure encryption of all access methods (CLI, GUI, or MIB) through SSHv2, SSL, and/or SNMPv3
- **Unicast Reverse Path Forwarding (URPF)**
  limits malicious traffic on a network
- **Network address translation (NAT)**
  provides a method for translating private IP addresses to public IP addresses, reducing the number of IP addresses used, and isolates the enterprise addressing environment
- **Additional security features**
  supports SSH (v1.5 and 2.0), GRE, L2TP, NAT/NAPT, session management, connection limit, and password management

Resiliency and high availability
- **Virtual Router Redundancy Protocol (VRRP)**
  allows a group of routers to dynamically back each other up to create highly available routed environments
- **Bidirectional Forwarding Detection (BFD)**
  supports BFD, enabling link connectivity monitoring and reduces network convergence time

Management
- **Local management**
  supports CLI, automatic configuration, and file system

Network management
- supports HP Intelligent Management Center, SNMPv1/v2c/v3, and NETCONF
- **HP Intelligent Management Center (IMC)**
  integrates fault management, element configuration, and network monitoring from a central vantage point; built-in support for third-party devices enables network administrators to centrally manage all network elements with a variety of automated tasks, including discovery, categorization, baseline configurations, and software images; the software also provides configuration comparison tools, version tracking, change alerts, and more
- **Network monitoring**
  supports SNMPv1/v2c/v3, RMON, Syslog, NQA, sFlow, NetStream, and EAA
- **SNMPv1, v2, and v3**
  provide complete support of SNMP; provide full support of industry-standard Management Information Base (MIB) plus private extensions; SNMPv3 supports increased security using encryption

Warranty and support
- **Software releases**
  to find software for your product, refer to www.hp.com/networking/support; for details on the software releases available with your product purchase, refer to www.hp.com/networking/warrantysummary
- **Electronic and telephone support**
  limited electronic and business-hours telephone support is available from HP for the entire warranty period; to reach our support centers, refer to www.hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, refer to www.hp.com/networking/warrantysummary
# HP VSR1000 Virtual Services Router Series

## Specifications

### Management

<table>
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<th>Model</th>
<th>Features</th>
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<tbody>
<tr>
<td>HP VSR1001</td>
<td>IMC - Intelligent Management Center; command-line interface; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB</td>
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<tr>
<td>HP VSR1004</td>
<td>IMC - Intelligent Management Center; command-line interface; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB</td>
</tr>
<tr>
<td>HP VSR1008</td>
<td>IMC - Intelligent Management Center; command-line interface; SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB</td>
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</tbody>
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### Notes

- IPSec performance: up to 268 Mb/s for 1518 Bytes with VMware hypervisor.
- Number of virtual CPUs supported: 1
- Minimum hardware requirements:
  - CPU: 2.0 GHz
  - Memory: 1 GB
  - Disk space: 8 GB
  - Network interfaces: 2 virtual NICs

### Services

- Refer to the HP website at [www.hp.com/networking/services](http://www.hp.com/networking/services) for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.