Overview

HPE FlexNetwork MSR95x Router Series

Models

HPE FlexNetwork MSR954 Serial 1GbE Dual 4G LTE (WW) Router	JH373A
HPE MSR954 1GbE SFP 2GbE-WAN 4GbE-LAN CWv7 Router	JH296A
HPE MSR954-W 1GbE SFP (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH297A
HPE MSR954-W 1GbE SFP LTE (AM) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH298A
HPE MSR954-W 1GbE SFP LTE (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH299A
HPE FlexNetwork MSR958 1GbE and Combo 2GbE WAN 8GbE LAN Router	JH300A
HPE FlexNetwork MSR958 1GbE and Combo 2GbE WAN 8GbE LAN PoE Router	JH301A

Key features

- Converged high-performance fiber routing, switching, security, and 300 Kpps performance
- Integrated GbE WAN and 4-port or 8-port LAN, fiber (SFP)
- Dual 4G LTE, 3G as well as IEEE 802.11b/g/n WLAN in one box
- High encryption, stateful firewall, IPS, NAT, DVPN, GDVPN, ADVPN security features
- Unified Comware v7 OS, zero-touch solution, and single-pane-of-glass management

Product overview

The HPE FlexNetwork MSR95x Router Series is a high-performance Comware v7 based small-branch router that delivers integrated routing, 4-port or 8-port switch options, security, SIP, embedded 802.11b/g/n WLAN connectivity, dual 3G/4G LTE, and fiber (SFP) in a single box.

The MSR95x Router Series solutions deliver up to 300 Kpps forwarding with comprehensive IPv4 and IPv6 routing, MPLS, QoS, stateful firewall, network address translation (NAT), VPN, switching, voice, and wireless capabilities in a compact, fixed form factor. Moreover, this router series is based on open standards for seamless integration with existing small-branch deployments.

Features and benefits

Quality of Service (QoS)

Overview

- **Traffic policing**
  supports Committed Access Rate (CAR) and line rate
- **Congestion management**
  supports FIFO, PQ, CQ, WFQ, CBQ, and RTPQ
- **Weighted random early detection (WRED)/random early detection (RED)**
  delivers congestion avoidance capabilities through the use of queue management algorithms
- **Other QoS technologies**
  support traffic shaping, FR QoS, and MP QoS/LFI

Management

- **Industry-standard CLI with a hierarchical structure**
  reduces training time and expenses, and increases productivity in multivendor installations
- **Management security**
  restricts access to critical configuration commands; offers multiple privilege levels with password protection; ACLs provide Telnet and SNMP access; local and remote syslog capabilities allow logging of all access
- **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
- **Remote monitoring (RMON)**
  uses standard SNMP to monitor essential network functions; supports events, alarm, history, and statistics group plus a private alarm extension group
- **FTP, TFTP, and SFTP support**
  offers different mechanisms for configuration updates; FTP allows bidirectional transfers over a TCP/IP network; trivial FTP (TFTP) is a simpler method using User Datagram Protocol (UDP); Secure File Transfer Protocol (SFTP) runs over an SSH tunnel to provide additional security
- **Debug and sampler utility**
  supports ping and traceroute for both IPv4 and IPv6
- **Network Time Protocol (NTP)**
  synchronizes timekeeping among distributed time servers and clients; keeps timekeeping consistent among all clock-dependent devices within the network so that the devices can provide diverse applications based on the consistent time
- **Information center**
  provides a central repository for system and network information; aggregates all logs, traps, and debugging information generated by the system and maintains them in order of severity; outputs the network information to multiple channels based on user-defined rules

Connectivity

- **Multiple Gigabit Ethernet connection options**
  provides 2 GbE WAN and 4 GbE LAN ports onboard
- **Multiple advanced WAN interfaces**
  provide traditional connection options including GbE copper (cat5e/Ethernet) connection but an additional Fiber (SFP) port for a total of 2 WAN Gigabit Ethernet ports; and offer wireless access with 4G LTE, 3G and 802.11n WLAN connectivity
- **4G LTE Verizon/At&t/Sprint and global carrier support**
  delivers embedded 4G LTE wireless WAN backhaul connectivity with three different carrier firmware options and simultaneous 802.11n WLAN connectivity
- **Packet storm protection**
  protects against broadcast, multicast, or unicast storms with user-defined thresholds
- **Loopback**
  supports internal loopback testing for maintenance purposes and an increase in availability; loopback detection protects against incorrect cabling or network configurations and can be enabled on a per-port basis for added flexibility

Overview

- **3G and 4G LTE access**
  supports popular 3G and 4G LTE USB modems; for a list of supported products, contact your local HPE representative

Performance

- **Forwarding performance**
  provides up to 300 Kpps; and meets current and future bandwidth-intensive application demands for enterprise businesses
- **Embedded encryption**
  supports up to 100 VPN tunnels and up to 160 Mb/s encryption throughput
- **Gigabit Ethernet interface**
  provides a connection to the network that eliminates the network as a bottleneck

Resiliency and high availability

- **Backup Center**
  acts as a part of the management and backup function to provide backup for device interfaces; delivers reliability by switching traffic over to a backup interface when the primary one fails
- **Virtual Router Redundancy Protocol (VRRP)**
  allows groups of two routers to dynamically back each other up to create highly available routed environments; and supports VRRP load balancing

Layer 2 switching

- **Spanning Tree Protocol (STP)**
  supports standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- **Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) protocol snooping**
  controls and manages the flooding of multicast packets in a Layer 2 network
- **Port mirroring**
  duplicates port traffic (ingress and egress) to a local or remote monitoring port
- **Port isolation**
  increases security by isolating ports within a VLAN while still allowing them to communicate with other VLANs
- **VLANs**
  supports IEEE 802.1Q-based VLANs
- **sFlow**
  allows traffic sampling

Layer 3 services

- **Address Resolution Protocol (ARP)**
  determines the MAC address of another IP host in the same subnet; supports static ARPs; gratuitous ARP allows detection of duplicate IP addresses; proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network
- **Dynamic Host Configuration Protocol (DHCP)**
  simplifies the management of large IP networks and supports client and server; DHCP Relay enables DHCP operation across subnets
- **Built-in applications support**
  - **Device management controller (DMC)**
    acts as the gateway of a virtual "network training room"
  - **Wisdom Network (WiNet) technology**
    helps manage a large number of scattered network devices centrally

Overview

- **Remote terminal connection (RTC) and true type terminal (TTY) access**
  allows the connection of a terminal to a router through an asynchronous interface for data exchange with a front-end processor (FEP) or another terminal through the router

Layer 3 routing

- **Static IPv4 routing**
  provides simple manually configured IPv4 routing
- **Routing Information Protocol (RIP)**
  uses a distance vector algorithm with UDP packets for route determination; supports RIPv1 and RIPv2 routing; includes loop protection
- **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
- **Border Gateway Protocol 4 (BGP-4)**
  delivers an implementation of the Exterior Gateway Protocol (EGP) utilizing path vectors; uses TCP for enhanced reliability for the route discovery process; reduces bandwidth consumption by advertising only incremental updates; supports extensive policies for increased flexibility; scales to very large networks
- **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)
- **Static IPv6 routing**
  provides simple manually configured IPv6 routing
- **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
- **Routing Information Protocol next generation (RIPng)**
  extends RIPv2 to support IPv6 addressing
- **OSPFv3**
  provides OSPF support for IPv6
- **BGP+**
  extends BGP-4 to support Multiprotocol BGP (MBGP), including support for IPv6 addressing
- **IS-IS for IPv6**
  extends IS-IS to support IPv6 addressing
- **IPv6 tunneling**
  allows IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet; supports manually configured, 6to4, and Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) tunnels; is an important element for the transition from IPv4 to IPv6
- **Policy routing**
  allows custom filters for increased performance and security; supports ACLs, IP prefix, AS paths, community lists, and aggregate policies
- **BGP4+ support**
  utilizes the BGP-4 (RFC 4271) exterior routing protocol for routing integrity and reliability between different autonomous systems

Security

- **Intrusion prevention system (IPS) and high encryption (HE)**
  With Comware v7, deploy router-based IPS to help prevent attacks at the perimeter, and high encryption for enhanced traffic security
- **Access control list (ACL)**
  supports powerful ACLs for both IPv4 and IPv6; ACLs are used for filtering traffic to prevent unauthorized users from accessing the network, or for controlling network traffic to save resources; rules can either deny or permit traffic to be forwarded; rules can be based on a Layer 2 header or a Layer 3 protocol header; rules can be set to operate on specific dates or times

Overview

- **Terminal Access Controller Access-Control System (TACACS+)**
  delivers an authentication tool using TCP with encryption of the full authentication request, providing additional security
- **Remote Authentication Dial-in user Service (RADIUS) login**
  eases security access administration by using a password authentication server
- **NAT enablement**
  facilitates one-to-one NAT, many-to-many NAT, and NAT control—enabling NAT-PT to support multiple connections; supports blacklisting in the NAT/NAT-PT; and enables a limit on the number of connections, session logs, and multiple instances
- **SSHv2**
  uses external servers to securely log in to a remote device or MSRs from a remote location; protects against IP spoofing and plain-text password interception, with authentication and encryption; and increases the security of SFTP transfers
- **Unicast Reverse Path Forwarding (URPF)**
  allows normal packets to be forwarded correctly, but discards the attaching packets due to lack of a reverse path route or an incorrect inbound interface; and helps prevents source spoofing and distributed attacks
- **IPSec VPN**
  supports DES, 3DES, and AES 128/192/256 encryption as well as MD5 and SHA-1 authentication
- **DVPN**
  collects, maintains, and distributes dynamic public addresses through the VPN Address Management (VAM) protocol, making the VPN establishment available between enterprise branches that use dynamic addresses to access the public network; compared to traditional VPN technologies, the DVPN technology is more flexible and has richer features, such as NAT traversal of DVPN packets, AAA identity authentication, IPSec protection of data packets, and multiple VPN domains

Convergence

- **Internet Group Management Protocol (IGMP)**
  utilizes Any-Source Multicast (ASM) or Source-Specific Multicast (SSM) to manage IPv4 multicast networks; supports IGMPv1, v2, and v3
- **Protocol Independent Multicast (PIM)**
  defines modes of Internet IPv4 and IPv6 multicasting to allow one-to-many and many-to-many transmission of information; supports PIM Dense Mode (DM), Sparse Mode (SM), and Source-Specific Multicast(SSM)
- **Multicast Source Discovery Protocol (MSDP)**
  allows multiple PIM-SM domains to interoperate; is used for inter-domain multicast applications
- **Multicast Border Gateway Protocol (MBGP)**
  allows multicast traffic to be forwarded across BGP networks and kept separate from unicast traffic
- **Internet Group Management Protocol (IGMP) snooping and proxy**
  - Monitors and observes IGMP network traffic, allowing the network device to listen in on the IGMP conversation between hosts and routers—enabling better IP multicast stream control
  - Allows a multicast router to learn multicast group membership information; and enables it to forward multicast packets
- **Multicast VPN and bidirectional protocol-independent multicasting (PIM)**
  - Allows rich multicast services such as video conferencing and data sharing amongst enterprise VPN-based deployments
  - Improves scalability of various applications through the use of bidirectional PIM

Integration

- **Embedded NetStream**
  improves traffic distribution using powerful scheduling algorithms, including Layer 4 to 7 services; monitors the health status of servers and firewalls
- **Embedded VPN firewall**
  - provides enhanced stateful packet inspection and filtering
  - delivers advanced VPN services with Triple DES (3DES) and Advanced Encryption Standard (AES) encryption at high performance and low latency
  - offers Web content filtering and application prioritization and enhancement

Overview

Additional information

- **Green initiative support**
  provides support for RoHS and WEEE regulations
- **OPEX savings**
  simplifies and streamlines deployment, management, and training through the use of a common operating system, thereby cutting costs as well as reducing the risk of human errors associated with having to manage multiple operating systems across different platforms and network layers
- **Faster time to market**
  allows new and custom features to be brought rapidly to market through engineering efficiencies, delivering better initial and ongoing stability

Warranty and support

- **1-year Warranty 2.0**
  See **http://www.hpe.com/networking/warrantysummary** for warranty and support information included with your product purchase.
- **Software releases**
  to find software for your product, refer to **http://www.hpe.com/networking/support**; for details on the software releases available with your product purchase, refer to **http://www.hpe.com/networking/warrantysummary**

Configuration

Build To Order:

BTO is a standalone unit with no integration. BTO products ship standalone are not part of a CTO or Rack-Shippable solution.

Router Chassis

HPE MSR954 1GbE SFP 2GbE-WAN 4GbE-LAN CWv7 Router — JH296A
- 1 SFP fixed Gigabit Ethernet SFP port (min=0 \ max=1 SFP Transceivers)
- 1 RJ-45 autosensing 10/100/1000 WAN port
- 4 RJ-45 autosensing 10/100/1000 LAN ports

See Configuration
NOTE:1, 2

PDU Cable NA/MEX/TW/JP — JH296A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — JH296A#B2C
- C15 PDU Jumper Cord (ROW)k

High Volt Switch/Router to Wall Power Cord — JH296A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

No Power Cord — JH296A#AC3
- No Localized Power Cord Selected

HPE MSR954-W 1GbE SFP (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router — JH297A
- 1 SFP fixed Gigabit Ethernet SFP port (Min 0 \\ Max 1 SFP Transceivers)
- 1 RJ-45 autosensing 10/100/1000 WAN port
- 4 RJ-45 autosensing 10/100/1000 LAN ports

See Configuration
NOTE:1, 2, 3

PDU Cable NA/MEX/TW/JP — JH297A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — JH297A#B2C
- C15 PDU Jumper Cord (ROW)

No Power Cord — JH297A#AC3
- No Localized Power Cord Selected

HPE MSR954-W 1GbE SFP LTE (AM) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router — JH298A
- 1 SFP fixed Gigabit Ethernet SFP port (Min 0 \\ Max 1 SFP Transceivers)
- 1 RJ-45 autosensing 10/100/1000 WAN port
- 4 RJ-45 autosensing 10/100/1000 LAN ports

See Configuration
NOTE:1, 2

Configuration

PDU Cable NA/MEX/TW/JP • C15 PDU Jumper Cord (NA/MEX/TW/JP)	JH298A#B2B
High Volt Switch to Wall Power Cord • NEMA L6-20P Cord (NA/MEX/JP/TW)	JH298A#B2E
No Power Cord • No Localized Power Cord Selected	JH298A#AC3
HPE MSR954-W 1GbE SFP LTE (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router • 1 SFP fixed Gigabit Ethernet SFP port (Min 0 \\ Max 1 SFP Transceivers) • 1 RJ-45 autosensing 10/100/1000 WAN port • 4 RJ-45 autosensing 10/100/1000 LAN ports	JH299A See Configuration **NOTE:**1, 2, 3
PDU Cable NA/MEX/TW/JP • C15 PDU Jumper Cord (NA/MEX/TW/JP)	JH299A#B2B
PDU Cable ROW • C15 PDU Jumper Cord (ROW)	JH299A#B2C
No Power Cord • No Localized Power Cord Selected	JH299A#AC3
HPE FlexNetwork MSR954 Serial 1GbE Dual 4G LTE (WW) Router • 1 Serial port • 1 RJ-45 autosensing 10/100/1000 WAN port • 4 RJ-45 autosensing 10/100/1000 LAN ports	JH373A See Configuration **NOTE:**1, 4
PDU Cable NA/MEX/TW/JP • C15 PDU Jumper Cord (NA/MEX/TW/JP)	JH373A#B2B
PDU Cable ROW • C15 PDU Jumper Cord (ROW)	JH373A#B2C
High Volt Switch to Wall Power Cord • NEMA L6-20P Cord (NA/MEX/JP/TW)	JH373A#B2E
HPE FlexNetwork MSR958 1GbE and Combo 2GbE WAN 8GbE LAN Router • 1 SFP fixed Gigabit Ethernet SFP port (min=0 \ max=1 SFP Transceivers) • 1 RJ-45 autosensing 10/100/1000 WAN port • 8 RJ-45 autosensing 10/100/1000 LAN ports	JH300A See Configuration **NOTE:**1, 2
PDU Cable NA/MEX/TW/JP • C15 PDU Jumper Cord (NA/MEX/TW/JP)	JH300A#B2B
PDU Cable ROW	JH300A#B2C

Configuration

- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — JH300A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HPE FlexNetwork MSR958 1GbE and Combo 2GbE WAN 8GbE LAN PoE Router — JH301A
- 1 SFP fixed Gigabit Ethernet SFP port (min=0 \ max=1 SFP Transceivers)
- 1 RJ-45 autosensing 10/100/1000 WAN port
- 8 RJ-45 autosensing 10/100/1000 LAN PoE ports

See Configuration
NOTE:1, 2

PDU Cable NA/MEX/TW/JP — JH301A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — JH301A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — JH301A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

Configuration Rules:

NOTE 1 Localization required on orders without #B2B, #B2C or #B2E. (See Localization Menu)

NOTE 2 The following Transceivers install into this Router:

HPE X120 1G SFP LC SX Transceiver	JD118B
HPE X120 1G SFP LC LX Transceiver	JD119B
HPE X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HPE X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HPE X125 1G SFP LC LH70 Transceiver	JD063B
HPE X120 1G SFP LC BX 10-U Transceiver	JD098B
HPE X120 1G SFP LC BX 10-D Transceiver	JD099B
HPE X120 1G SFP LC LH100 Transceiver	JD103A
HPE X120 1G SFP RJ45 T Transceiver	JD089B

NOTE 3 For AMS Region, this switch is available in Brasil only.

NOTE 4 For AMS Region, this switch is available in Brasil, Chile and Colombia only.

Router Options

Mounting Kit

System (std 0 // max 1) User Selection (min 0 // max 1)

HPE MSR954 Chassis Rack Mount Kit — JH316A
NOTE: Only for JH296A, JH297A, JH298A, JH299A

HPE FlexNetwork MSR958 Chassis Rack Mount Kit — JH317A
NOTE: Only for JH300A and JH301A

Configuration

HPE FlexNetwork MSR931/3/5/6 Chassis Rackmount Kit JG853A
NOTE: Only for JH373A

Memory Card

System (std 0 // max 1) User Selection (min 0 // max 1)

HPE MSR950 Series 32GB MicroSD/TF Memory JH318A
NOTE: Only for JH296A, JH297A, JH298A, JH299A, JH373A

HPE FlexNetwork MSR958 64GB Secure Digital Memory Card JH415A
NOTE: Only for JH300A and JH301A

Transceivers

SFP Transceivers

HPE X120 1G SFP LC SX Transceiver	JD118B
HPE X120 1G SFP LC LX Transceiver	JD119B
HPE X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HPE X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HPE X125 1G SFP LC LH70 Transceiver	JD063B
HPE X120 1G SFP LC BX 10-U Transceiver	JD098B
HPE X120 1G SFP LC BX 10-D Transceiver	JD099B
HPE X120 1G SFP LC LH100 Transceiver	JD103A
HPE X120 1G SFP RJ45 T Transceiver	JD089B

3G / 4G Antenna's

HPE MSR 4G 5W TNC Antenna JG669A
See Configuration
NOTE:1

Configuration Rules:

NOTE 1 This Antenna is supported on the following Routers:

HPE MSR954-W 1GbE SFP (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH297A
HPE MSR954-W 1GbE SFP LTE (AM) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH298A
HPE MSR954-W 1GbE SFP LTE (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH299A
HPE FlexNetwork MSR954 Serial 1GbE Dual 4G LTE (WW) Router	JH373A

Antenna Cables

System (std 0 // max 1) User Selection (min 0 // max 1) per Antenna (Supported on JG669A)

HPE MSR 3G RF 2.8m Antenna Cable JG522A
See Configuration
NOTE:2

Configuration

HPE MSR 3G RF 6m Antenna Cable	JG666A See Configuration **NOTE:**1
HPE MSR 3G RF 15m Antenna Cable	JG667A See Configuration **NOTE:**1

Configuration Rules:

NOTE 1 This Antenna Cable is supported on the following Routers:

HPE MSR954-W 1GbE SFP (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH297A
HPE MSR954-W 1GbE SFP LTE (AM) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH298A
HPE MSR954-W 1GbE SFP LTE (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH299A
HPE FlexNetwork MSR954 Serial 1GbE Dual 4G LTE (WW) Router	JH373A

NOTE 2 This Antenna Cable is supported on the following Routers:

HPE MSR954-W 1GbE SFP LTE (AM) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH298A
HPE MSR954-W 1GbE SFP LTE (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router	JH299A
HPE FlexNetwork MSR954 Serial 1GbE Dual 4G LTE (WW) Router	JH373A

Technical Specifications

HPE FlexNetwork MSR954 Serial 1GbE Dual 4G LTE (WW) Router (JH373A)

I/O ports and slots	1 RJ-45 autosensing 10/100/1000 WAN port 4 RJ-45 autosensing 10/100/1000 LAN ports 1 Serial port	
Additional ports and slots	1 USB 2.0 1 RJ-45 console port 2 SIM slots	
AP characteristics	**Radios (built-in)**	802.11b/g/n; 3G, 4G LTE
	AP operation modes	Autonomous
	Wi-Fi Alliance Certification	b/g/n Wi-Fi Certified
Physical characteristics	**Dimensions**	10.47(w) x 6.34(d) x 1.72(h) in (26.59 x 16.1 x 4.37 cm) (1U height)
	Weight	2.2 lb (1 kg)
Memory and processor	Marvell A370 @ 800 MHz, 1 GB DDR3 SDRAM; storage: 64GB SD Card, 256MB NAND flash	
Performance	**Throughput**	up to 300 Kpps (64-byte packets)
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	Forwarding table size	10000 entries (IPv4), 5000 entries (IPv6)
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	5% to 92%, noncondensing
	Altitude	up to 5,000 ft (1.5 km)
Electrical characteristics	**Voltage**	100 - 264 VAC, rated
	Maximum power rating	22 W
	NOTES	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1, CAN/CSA 22.2 No. 60950-1, AS/NZS 60950, EN 60825-1 Safety of Laser Products-Part 1, EN 60825-2 Safety of Laser Products-Part 2, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1-03, EN 60950-1/A11, FDA 21 CFR Subchapter J	
Emissions	ANSI C63.4; EN 55022 Class B; ICES-003 Class B; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR 22 Class B; FCC (CFR 47, Part 15) Class B	
Telecom	FCC part 68; TIA-968-B; CS03 Part 8; AS/ACIF S043; G.992.1/2/3/5	
Management	IMC - Intelligent Management Center; Command-line interface; Web browser; SNMP manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.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 Hewlett Packard Enterprise sales office.	

HPE MSR954 1GbE SFP 2GbE-WAN 4GbE-LAN CWv7 Router (JH296A)

I/O ports and slots	1 fixed Gigabit Ethernet SFP port 1 RJ-45 autosensing 10/100/1000 WAN port

Technical Specifications

	4 RJ-45 autosensing 10/100/1000 LAN ports	
Additional ports and slots	2 USB 2.0 1 RJ-45 console port	
Physical characteristics	**Dimensions**	10.47(w) x 6.34(d) x 1.72(h) in (26.6 x 16.1 x 4.36 cm) (1U height)
	Weight	2.2 lb (1 kg)
Memory and processor	Marvell A370 @ 800 MHz, 1 GB DDR3 SDRAM, 256 MB NAND flash, 64 GB SD Card	
Performance	**Throughput**	up to 300 Kpps (64-byte packets)
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	Forwarding table size	10000 entries (IPv4), 5000 entries (IPv6)
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	5% to 92%, noncondensing
	Altitude	up to 5,000 ft (1.5 km)
Electrical characteristics	**Voltage**	100 - 264 VAC, rated
	Maximum power rating	22 W
	NOTES	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	
Emissions	ANSI C63.4; EN 55022 Class B; ICES-003 Class B; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR 22 Class B; FCC (CFR 47, Part 15) Class B	
Telecom	FCC part 68; TIA-968-B; CS03 Part 8; AS/ACIF S043; G.992.1/2/3/5	
Management	IMC - Intelligent Management Center; Command-line interface; Web browser; SNMP manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.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 Hewlett Packard Enterprise sales office.	

HPE MSR954-W 1GbE SFP (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router (JH297A)

I/O ports and slots	1 fixed Gigabit Ethernet SFP port 1 RJ-45 autosensing 10/100/1000 WAN port 4 RJ-45 autosensing 10/100/1000 LAN ports	
Additional ports and slots	1 RJ-45 console port	
AP characteristics	**Radios (built-in)**	802.11b/g/n
Physical characteristics	**Dimensions**	10.47(w) x 6.34(d) x 1.72(h) in (26.6 x 16.1 x 4.36 cm) (1U height)
	Weight	2.2 lb (1 kg)
Memory and processor	Marvell A370 @ 800 MHz, 1 GB DDR3 SDRAM, 256 MB NAND flash, 64 GB SD Card	
Performance	**Throughput**	up to 300 Kpps (64-byte packets)
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	Forwarding table size	10000 entries (IPv4), 5000 entries (IPv6)

Technical Specifications

Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	5% to 92%, noncondensing
	Altitude	up to 5,000 ft (1.5 km)
Electrical characteristics	**Voltage**	100 - 264 VAC, rated
	Maximum power rating	22 W
	NOTES	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	
Emissions	ANSI C63.4; EN 55022 Class B; ICES-003 Class B; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR 22 Class B; FCC (CFR 47, Part 15) Class B	
Telecom	FCC part 68; TIA-968-B; CS03 Part 8; AS/ACIF S043; G.992.1/2/3/5	
Management	IMC - Intelligent Management Center; Command-line interface; Web browser; SNMP manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.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 Hewlett Packard Enterprise sales office.	

HPE MSR954-W 1GbE SFP LTE (AM) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router (JH298A)

I/O ports and slots	1 fixed Gigabit Ethernet SFP port 1 RJ-45 autosensing 10/100/1000 WAN port 4 RJ-45 autosensing 10/100/1000 LAN ports	
Additional ports and slots	2 USB 2.0 1 RJ-45 console port 1 SIM slot	
AP characteristics	**Radios (built-in)**	802.11b/g/n; 3G, 4G LTE
	AP operation modes	Autonomous
Physical characteristics	**Dimensions**	10.47(w) x 6.34(d) x 1.72(h) in (26.6 x 16.1 x 4.36 cm) (1U height)
	Weight	2.2 lb (1 kg)
Memory and processor	Marvell A370 @ 800 MHz, 1 GB DDR3 SDRAM, 256 MB NAND flash, 64 GB SD Card	
Performance	**Throughput**	up to 300 Kpps (64-byte packets)
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	Forwarding table size	10000 entries (IPv4), 5000 entries (IPv6)
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	5% to 92%, noncondensing
	Altitude	up to 5,000 ft (1.5 km)
Electrical characteristics	**Voltage**	100 - 264 VAC, rated
	Maximum power rating	22 W
	NOTES	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure

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	with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
Emissions	ANSI C63.4; EN 55022 Class B; ICES-003 Class B; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR 22 Class B; FCC (CFR 47, Part 15) Class B
Telecom	FCC part 68; TIA-968-B; CS03 Part 8; AS/ACIF S043; G.992.1/2/3/5
Management	IMC - Intelligent Management Center; Command-line interface; Web browser; SNMP manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
NOTES	This router has the Sierra Wireless MC7354 AirPrime Series Module embedded: • Air interface: LTE, HSPA+, GSM/GPRS/EDGE, EV-DO Rev A, 1xRTT • Peak download rate (data speed): 100Mbps • Peak upload rate (data speed): 50Mbps • LTE frequencies: B2, B4, B5, B13, B17, B25 • CDMA 1xRTT/EV-DO Rev A: MC7354/50: BC0, BC1, BC10 • Regulatory: FCC, PTCRB, NCC • Carriers: AT&T, Verizon, Sprint This model (JH298A) is certified with Verizon, AT&T and Sprint Wireless 4G LTE networks, firmware must be changed at CLI level for each carrier. Carrier SIM card not included. Default antennas: 2; maximum antennas: 2 Optional antenna cable extensions available: • HPE MSR 3G RF 2.8m Antenna Cable (JG522A) • HPE MSR 3G RF 6m Antenna Cable (JG666A) • HPE MSR 3G RF 15m Antenna Cable (JG667A) Only the HP MSR 4G 5W TNC Antenna (JG669A) is supported. For local 4G LTE/3G carrier certification, please contact your regional sales team.
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.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 Hewlett Packard Enterprise sales office.

HPE MSR954-W 1GbE SFP LTE (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router (JH299A)

I/O ports and slots	1 fixed Gigabit Ethernet SFP port 1 RJ-45 autosensing 10/100/1000 WAN port 4 RJ-45 autosensing 10/100/1000 LAN ports	
Additional ports and slots	2 USB 2.0 1 RJ-45 console port 1 SIM slot	
AP characteristics	**Radios (built-in)**	802.11b/g/n; 3G, 4G LTE
	AP operation modes	Autonomous
Physical characteristics	**Dimensions**	10.47(w) x 6.34(d) x 1.72(h) in (26.6 x 16.1 x 4.36 cm) (1U height)
	Weight	2.2 lb (1 kg)
Memory and processor	Marvell A370 @ 800 MHz, 1 GB DDR3 SDRAM, 256 MB NAND flash, 64 GB SD Card	
Performance	**Throughput**	up to 300 Kpps (64-byte packets)
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	Forwarding table size	10000 entries (IPv4), 5000 entries (IPv6)

Technical Specifications

Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	5% to 92%, noncondensing
	Altitude	up to 5,000 ft (1.5 km)
Electrical characteristics	**Voltage**	100 - 264 VAC, rated
	Maximum power rating	22 W
	NOTES	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	
Emissions	ANSI C63.4; EN 55022 Class B; ICES-003 Class B; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR 22 Class B; FCC (CFR 47, Part 15) Class B	
Telecom	FCC part 68; TIA-968-B; CS03 Part 8; AS/ACIF S043; G.992.1/2/3/5	
Management	IMC - Intelligent Management Center; Command-line interface; Web browser; SNMP manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	
NOTES	This router has the Sierra Wireless MC7304 AirPrime Series Module embedded: • Air interface: LTE,HSPA+,GSM/GPRS/EDGE, EV-DO Rev A, 1xRTT • Peak download rate (data speed): 100Mbps • Peak upload rate (data speed): 50Mbps • LTE frequency bands: B1, B3, B7, B8,B20 • UMTS (WCDMA)/HSDPA/HSUPA/HSPA+ bands: B1,B2,B5,B8 • CDMA 1xRTT/EV-DO Rev A: MC7354/50: BC0, BC1, BC10 • Regulatory: CE, GCF, NCC, FCC • Carriers: Telstra, Vodafone This model (JH299A) is pre-certified with various international 4G LTE networks, firmware must be changed at CLI level for each carrier. Carrier SIM card not included. Default antennas: 2; maximum antennas: 2 Optional antenna cable extensions available: • HPE MSR 3G RF 2.8m Antenna Cable (JG522A) • HPE MSR 3G RF 6m Antenna Cable (JG666A) • HPE MSR 3G RF 15m Antenna Cable (JG667A) Only the HP MSR 4G 5W TNC Antenna (JG669A) is supported. For local 4G LTE/3G carrier certification, please contact your regional sales team.	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.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 Hewlett Packard Enterprise sales office.	

HPE FlexNetwork MSR958 1GbE and Combo 2GbE WAN 8GbE LAN Router (JH300A)

I/O ports and slots	1 fixed Gigabit Ethernet SFP port 1 RJ-45 autosensing 10/100/1000 WAN port 8 RJ-45 autosensing 10/100/1000 LAN ports	
Additional ports and slots	2 USB 2.0 1 RJ-45 console port	
Physical characteristics	**Dimensions**	10.47(w) x 6.34(d) x 1.72(h) in (26.6 x 16.1 x 4.36 cm) (1U height)
	Weight	2.2 lb (1 kg)

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Memory and processor	Marvell A370 @ 800 MHz, 1 GB DDR3 SDRAM, 256 MB NAND flash, 64 GB SD Card	
Performance	**Throughput**	up to 300 Kpps (64-byte packets)
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	Forwarding table size	10000 entries (IPv4), 5000 entries (IPv6)
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	5% to 92%, noncondensing
	Altitude	up to 5,000 ft (1.5 km)
Electrical characteristics	**Voltage**	100 - 264 VAC, rated
	Maximum power rating	22 W
	NOTES	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	
Emissions	ANSI C63.4; EN 55022 Class B; ICES-003 Class B; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR 22 Class B; FCC (CFR 47, Part 15) Class B	
Telecom	FCC part 68; TIA-968-B; CS03 Part 8; AS/ACIF S043; G.992.1/2/3/5	
Management	IMC - Intelligent Management Center; Command-line interface; Web browser; SNMP manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.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 Hewlett Packard Enterprise sales office.	

HPE FlexNetwork MSR958 1GbE and Combo 2GbE WAN 8GbE LAN PoE Router (JH301A)

I/O ports and slots	1 fixed Gigabit Ethernet SFP port 1 RJ-45 autosensing 10/100/1000 WAN port 8 RJ-45 autosensing 10/100/1000 LAN ports	
Additional ports and slots	2 USB 2.0 1 RJ-45 console port	
Physical characteristics	**Dimensions**	10.47(w) x 6.34(d) x 1.72(h) in (26.6 x 16.1 x 4.36 cm) (1U height)
	Weight	2.2 lb (1 kg)
Memory and processor	Marvell A370 @ 800 MHz, 1 GB DDR3 SDRAM, 256 MB NAND flash, 64 GB SD Card	
Performance	**Throughput**	up to 300 Kpps (64-byte packets)
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	Forwarding table size	10000 entries (IPv4), 5000 entries (IPv6)
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	5% to 92%, noncondensing
	Altitude	up to 5,000 ft (1.5 km)
Electrical characteristics	**Voltage**	100 - 264 VAC, rated
	Maximum power rating	22 W

Technical Specifications

	NOTES	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	
Emissions	ANSI C63.4; EN 55022 Class B; ICES-003 Class B; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR 22 Class B; FCC (CFR 47, Part 15) Class B	
Telecom	FCC part 68; TIA-968-B; CS03 Part 8; AS/ACIF S043; G.992.1/2/3/5	
Management	IMC - Intelligent Management Center; Command-line interface; Web browser; SNMP manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.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 Hewlett Packard Enterprise sales office.	

Standards and protocols (applies to all products in series)

BGP	RFC 1163 Border Gateway Protocol (BGP) RFC 1267 Border Gateway Protocol 3 (BGP-3) RFC 1657 Definitions of Managed Objects for BGPv4 RFC 1771 BGPv4 RFC 1772 Application of the BGP RFC 1773 Experience with the BGP-4 Protocol RFC 1774 BGP-4 Protocol Analysis RFC 1997 BGP Communities Attribute RFC 1998 An Application of the BGP Community Attribute in Multi-home Routing RFC 2385 BGP Session Protection via TCP MD5 RFC 2439 BGP Route Flap Damping
Denial of service protection	CPU DoS Protection Rate Limiting by ACLs
Device Management	RFC 1305 NTPv3 RFC 1945 Hypertext Transfer Protocol -- HTTP/1.0 RFC 2452 MIB for TCP6 RFC 2454 MIB for UDP6
General Protocols	IEEE 802.1: LAN/MAN Bridge and Management IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.1X: Authenticated VLAN (multiple MAC, multiple VLANs per port) IEEE 802.2: Logical Link Control IEEE 802.3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) access method and physical layer specifications IEEE 802.3ad Link Aggregation (LAG)

Technical Specifications

RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 791 IP
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 855 Telnet Option Specification
RFC 856 TELNET
RFC 858 Telnet Suppress Go Ahead Option
RFC 894 IP over Ethernet
RFC 925 Multi-LAN Address Resolution
RFC 950 Internet Standard Subnetting Procedure
RFC 959 File Transfer Protocol (FTP)
RFC 1006 ISO transport services on top of the TCP: Version 3
RFC 1027 Proxy ARP
RFC 1034 Domain Concepts and Facilities
RFC 1035 Domain Implementation and Specification
RFC 1042 IP Datagrams
RFC 1058 RIPv1
RFC 1071 Computing the Internet Checksum
RFC 1091 Telnet Terminal-Type Option
RFC 1122 Host Requirements
RFC 1141 Incremental updating of the Internet checksum
RFC 1142 OSI IS-IS Intra-domain Routing Protocol
RFC 1144 Compressing TCP/IP headers for low-speed serial links
RFC 1195 OSI ISIS for IP and Dual Environments
RFC 1256 ICMP Router Discovery Protocol (IRDP)
RFC 1293 Inverse Address Resolution Protocol
RFC 1315 Management Information Base for Frame Relay DTEs
RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)
RFC 1333 PPP Link Quality Monitoring
RFC 1334 PPP Authentication Protocols (PAP)
RFC 1349 Type of Service
RFC 1350 TFTP Protocol (revision 2)
RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP)
RFC 1381 SNMP MIB Extension for X.25 LAPB
RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol
RFC 1472 The Definitions of Managed Objects for the Security Protocols of the Point-to-Point Protocol
RFC 1490 Multiprotocol Interconnect over Frame Relay
RFC 1519 CIDR
RFC 1534 DHCP/BOOTP Interoperation
RFC 1542 Clarifications and Extensions for the Bootstrap Protocol
RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP)
RFC 1577 Classical IP and ARP over ATM
RFC 1613 Cisco Systems X.25 over TCP (XOT)
RFC 1624 Incremental Internet Checksum
RFC 1631 NAT
RFC 1638 PPP Bridging Control Protocol (BCP)
RFC 1661 The Point-to-Point Protocol (PPP)
RFC 1662 PPP in HDLC-like Framing
RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2
RFC 1701 Generic Routing Encapsulation

Technical Specifications

RFC 1702 Generic Routing Encapsulation over IPv4 networks
RFC 1721 RIP-2 Analysis
RFC 1722 RIP-2 Applicability
RFC 1723 RIP v2
RFC 1795 Data Link Switching: Switch-to-Switch Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1
RFC 1812 IPv4 Routing
RFC 1829 The ESP DES-CBC Transform
RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses
RFC 1944 Benchmarking Methodology for Network Interconnect Devices
RFC 1973 PPP in Frame Relay
RFC 1974 PPP Stac LZS Compression Protocol
RFC 1990 The PPP Multilink Protocol (MP)
RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)
RFC 2091 Trigger RIP
RFC 2131 DHCP
RFC 2132 DHCP Options and BOOTP Vendor Extensions
RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements
RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification
RFC 2280 Routing Policy Specification Language (RPSL)
RFC 2284 EAP over LAN
RFC 2338 VRRP
RFC 2364 PPP Over AAL5
RFC 2374 An Aggregatable Global Unicast Address Format
RFC 2451 The ESP CBC-Mode Cipher Algorithms
RFC 2453 RIPv2
RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols
RFC 2511 Internet X.509 Certificate Request Message Format
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)
RFC 2644 Directed Broadcast Control
RFC 2661 L2TP
RFC 2663 NAT Terminology and Considerations
RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5
RFC 2694 DNS extensions to Network Address Translators (DNS_ALG)
RFC 2747 RSVP Cryptographic Authentication
RFC 2763 Dynamic Name-to-System ID mapping support
RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)
RFC 2766 Network Address Translation - Protocol Translation (NAT-PT)
RFC 2784 Generic Routing Encapsulation (GRE)
RFC 2787 Definitions of Managed Objects for VRRP
RFC 2961 RSVP Refresh Overhead Reduction Extensions
RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS
RFC 2973 IS-IS Mesh Groups
RFC 2993 Architectural Implications of NAT
RFC 3022 Traditional IP Network Address Translator (Traditional NAT)
RFC 3027 Protocol Complications with the IP Network Address Translator
RFC 3031 Multiprotocol Label Switching Architecture
RFC 3036 LDP Specification
RFC 3046 DHCP Relay Agent Information Option
RFC 3065 Support AS confederation
RFC 3137 OSPF Stub Router Advertisement
RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels
RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels
RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP)
RFC 3214 LSP Modification Using CR-LDP

Technical Specifications

RFC 3215 LDP State Machine
RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS)
RFC 3277 IS-IS Transient Blackhole Avoidance
RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
RFC 3392 Support BGP capabilities advertisement
RFC 3526 More Modular Exponential (MODP) Diffie-Hellman groups for Internet Key Exchange (IKE)
RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPSec
RFC 3706 A Traffic-Based Method of Detecting Dead Internet Key Exchange (IKE) Peers
RFC 3784 ISIS TE support
RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit
RFC 3847 Restart signaling for IS-IS
FRF.1.2 PVC User-to-Network Interface (UNI) Implementation Agreement - July 2000
FRF.10.1: Network-to-Network Frame Relay/ATM SVC Service Interworking Implementation Agreement
FRF.11.1 Voice over Frame Relay Implementation Agreement - May 1997 - Annex J added March 1999
FRF.15: End-to-End Multilink Frame Relay Implementation Agreement
FRF.16: Multilink Frame Relay UNI/NNI Implementation Agreement
FRF.17: Frame Relay Privacy Implementation Agreement
FRF.18: Network-to-Network Frame Relay/ATM SVC Service Interworking Implementation Agreement
FRF.19: Frame Relay Operations, Administration and Maintenance Implementation
FRF.2.1: Frame Relay Network-to-Network (NNI) Implementation Agreement Version 2.1
FRF.20 Frame Relay IP Header Compression Implementation Agreement - June 2001
FRF.3.2 Frame Relay Multiprotocol Encapsulation Implementation Agreement - April 2000
FRF.4.1: SVC User-to-Network Interface (UNI) Implementation Agreement
FRF.5: Frame Relay/ATM Network Internetworking Implementation Agreement
FRF.6: Frame Relay Service Customer Network Management Implementation
FRF.7 Frame Relay PVC Multicast Service and Protocol Description - October 1994
FRF.8.1: Frame Relay/ATM PVC Service Internetworking Implementation Agreement
FRF.9 Data Compression Over Frame Relay Implementation Agreement - January 1996
ITU-T Recommendation X.29: Public Data Networks: Procedures for the Exchange of Control Information and User Data
Q.921: ISDN user network interface-Data Link Layer specification
Q.922 Annex A: Core aspects of Q.922 for use with frame relaying bearer service
Q.931: ISDN user network interface-Layer 3 specification for basic call control
Q.933 Annex A: Additional procedures for Permanent Virtual Connection (PVC) status management (using Unnumbered Information frames)
X.25 : Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE)

IP Multicast

RFC 1112 IGMP
RFC 2236 IGMPv2
RFC 2283 Multiprotocol Extensions for BGP-4
RFC 2362 PIM Sparse Mode
RFC 2934 Protocol Independent Multicast MIB for IPv4
RFC 3376 IGMPv3

IPv6

RFC 1981 IPv6 Path MTU Discovery
RFC 2080 RIPng for IPv6
RFC 2292 Advanced Sockets API for IPv6
RFC 2373 IPv6 Addressing Architecture
RFC 2460 IPv6 Specification

Technical Specifications

RFC 2461 IPv6 Neighbor Discovery
RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 2463 ICMPv6
RFC 2464 Transmission of IPv6 over Ethernet Networks
RFC 2472 IP Version 6 over PPP
RFC 2473 Generic Packet Tunneling in IPv6
RFC 2529 Transmission of IPv6 Packets over IPv4
RFC 2545 Use of MP-BGP-4 for IPv6
RFC 2553 Basic Socket Interface Extensions for IPv6
RFC 2740 OSPFv3 for IPv6
RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
RFC 3513 IPv6 Addressing Architecture
RFC 3596 DNS Extension for IPv6

MIBs

RFC 1213 MIB II
RFC 1229 Interface MIB Extensions
RFC 1286 Bridge MIB
RFC 1493 Bridge MIB
RFC 1573 SNMP MIB II
RFC 1724 RIPv2 MIB
RFC 1757 Remote Network Monitoring MIB
RFC 1850 OSPFv2 MIB
RFC 2011 SNMPv2 MIB for IP
RFC 2012 SNMPv2 MIB for TCP
RFC 2013 SNMPv2 MIB for UDP
RFC 2233 Interfaces MIB
RFC 2454 IPV6-UDP-MIB
RFC 2465 IPv6 MIB
RFC 2466 ICMPv6 MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2863 The Interfaces Group MIB
RFC 2933 IGMP MIB

Network Management

IEEE 802.1D (STP)
RFC 1155 Structure of Management Information
RFC 1157 SNMPv1
RFC 1905 SNMPv2 Protocol Operations
RFC 2272 SNMPv3 Management Protocol
RFC 2273 SNMPv3 Applications
RFC 2274 USM for SNMPv3
RFC 2275 VACM for SNMPv3
RFC 2575 SNMPv3 View-based Access Control Model (VACM)
RFC 3164 BSD syslog Protocol

OSPF

RFC 1245 OSPF protocol analysis
RFC 1246 Experience with OSPF
RFC 1587 OSPF NSSA
RFC 1765 OSPF Database Overflow
RFC 1850 OSPFv2 Management Information Base (MIB), traps
RFC 2328 OSPFv2

Technical Specifications

RFC 2370 OSPF Opaque LSA Option
RFC 3101 OSPF NSSA

QoS/CoS

IEEE 802.1p (CoS)
RFC 2474 DS Field in the IPv4 and IPv6 Headers
RFC 2475 DiffServ Architecture
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)
RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP

Security

IEEE 802.1X Port Based Network Access Control
RFC 1321 The MD5 Message-Digest Algorithm
RFC 2082 RIP-2 MD5 Authentication
RFC 2104 Keyed-Hashing for Message Authentication
RFC 2138 RADIUS Authentication
RFC 2209 RSVP-Message Processing
RFC 2246 Transport Layer Security (TLS)
RFC 2716 PPP EAP TLS Authentication Protocol
RFC 2865 RADIUS Authentication
RFC 2866 RADIUS Accounting
RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication

VPN

RFC 2403 - HMAC-MD5-96
RFC 2404 - HMAC-SHA1-96
RFC 2405 - DES-CBC Cipher algorithm
RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP
RFC 2842 Capabilities Advertisement with BGP-4
RFC 2858 Multiprotocol Extensions for BGP-4
RFC 2918 Route Refresh Capability for BGP-4
RFC 3107 Carrying Label Information in BGP-4

IPSec

RFC 1828 IP Authentication using Keyed MD5
RFC 2401 IP Security Architecture
RFC 2402 IP Authentication Header
RFC 2406 IP Encapsulating Security Payload
RFC 2407 - Domain of interpretation
RFC 2410 - The NULL Encryption Algorithm and its use with IPSec
RFC 2411 IP Security Document Roadmap
RFC 2412 – OAKLEY
RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

IKEv1

RFC 2865 - Remote Authentication Dial In User Service (RADIUS)
RFC 3748 - Extensible Authentication Protocol (EAP)

Accessories

HPE MSR95x Router Series accessories

Transceivers

HPE X121 1G SFP LC SX Transceiver	J4858C
HPE X121 1G SFP LC LX Transceiver	J4859C
HPE X121 1G SFP LC LH Transceiver	J4860C
HPE X121 1G SFP RJ45 T Transceiver	J8177C
HPE X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HPE X125 1G SFP LC LH70 Transceiver	JD063B
HPE X120 1G SFP LC BX 10-U Transceiver	JD098B
HPE X120 1G SFP LC BX 10-D Transceiver	JD099B
HPE X120 1G SFP LC LH100 Transceiver	JD103A

Mounting Kit

HPE FlexNetwork MSR958 Chassis Rack Mount Kit	JH317A

HPE MSR954 1GbE SFP 2GbE-WAN 4GbE-LAN CWv7 Router (JH296A)

HPE FlexNetwork MSR958 64GB Secure Digital Memory Card	JH415A

HPE MSR954-W 1GbE SFP (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router (JH297A)

HPE MSR 3G RF 6m Antenna Cable	JG666A
HPE MSR 3G RF 15m Antenna Cable	JG667A
HPE MSR 4G 5W TNC Antenna	JG669A
HPE FlexNetwork MSR958 64GB Secure Digital Memory Card	JH415A

HPE MSR954-W 1GbE SFP LTE (AM) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router (JH298A)

HPE MSR 3G RF 2.8m Antenna Cable	JG522A
HPE MSR 3G RF 6m Antenna Cable	JG666A
HPE MSR 3G RF 15m Antenna Cable	JG667A
HPE MSR 4G 5W TNC Antenna	JG669A
HPE FlexNetwork MSR958 64GB Secure Digital Memory Card	JH415A

HPE MSR954-W 1GbE SFP LTE (WW) 2GbE-WAN 4GbE-LAN Wireless 802.11n CWv7 Router (JH299A)

HPE MSR 3G RF 2.8m Antenna Cable	JG522A
HPE MSR 3G RF 6m Antenna Cable	JG666A
HPE MSR 3G RF 15m Antenna Cable	JG667A
HPE MSR 4G 5W TNC Antenna	JG669A
HPE FlexNetwork MSR958 64GB Secure Digital Memory Card	JH415A

HPE FlexNetwork MSR958 1GbE and Combo 2GbE WAN 8GbE LAN Router (JH300A)

HPE FlexNetwork MSR958 64GB Secure Digital Memory Card	JH415A

HPE FlexNetwork MSR958 1GbE and Combo 2GbE WAN 8GbE LAN PoE Router (JH301A)

HPE FlexNetwork MSR958 64GB Secure Digital Memory Card	JH415A

Summary of Changes

Date	Version History	Action	Description of Change
04-Sep-2017	From Version 10 to 11	Changed	Configuration section updated
07-Apr-2017	From Version 9 to 10	Changed	Configuration section updated
10-Mar-2017	From Version 8 to 9	Changed	Configuration section updated
17-Feb-2017	From Version 7 to 8	Changed	Configuration section updated: Enabling AMS Region and restricting to Brasil for SKU JH297A
30-Sep-2016	From Version 6 to 7	Changed	Configuration section updated
01-Aug-2016	From Version 5 to 6	Changed	Adding #AC3 Option on Configuration section
06-June-2016	From Version 4 to 5	Added	Models added: JH300A, JH301A, JH373A Accessories added: JH317A, JH415A
		Changed	Document name changed to HPE FlexNetwork MSR95x Router Series. Overview, Features and Benefits, Technical Specifications and Accessories updated.
22-Apr-2016	From Version 3 to 4	Changed	SKU descriptions updated on all document, minor changes on Overview
05-Feb-2016	From Version 2 to 3	Changed	Configuration section updated
08-Jan-2016	From Version 1 to 2	Changed	Warranty and support updated

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c04843038 - 15443 - Worldwide - V11 - 04-September-2017