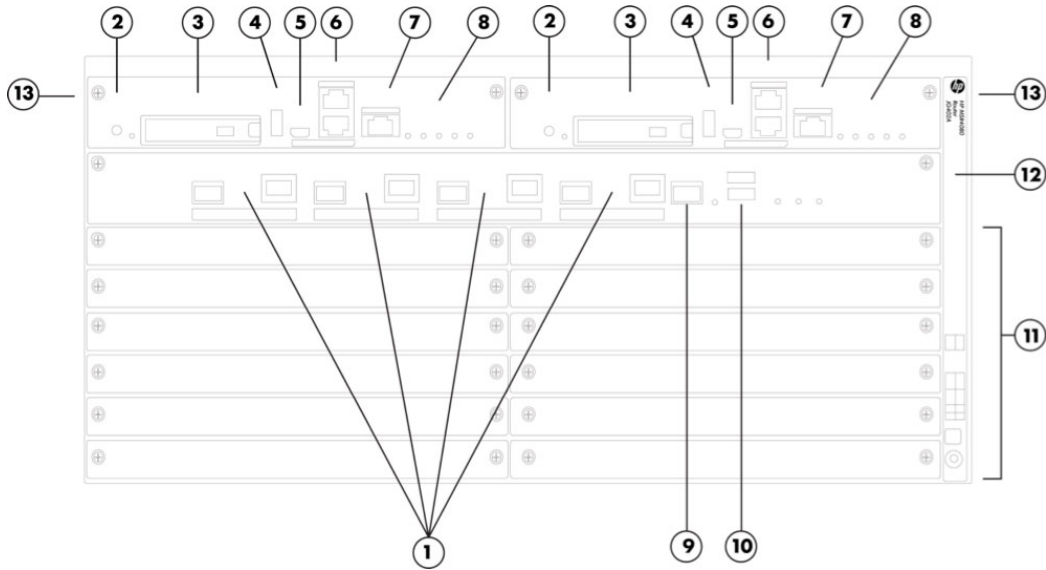


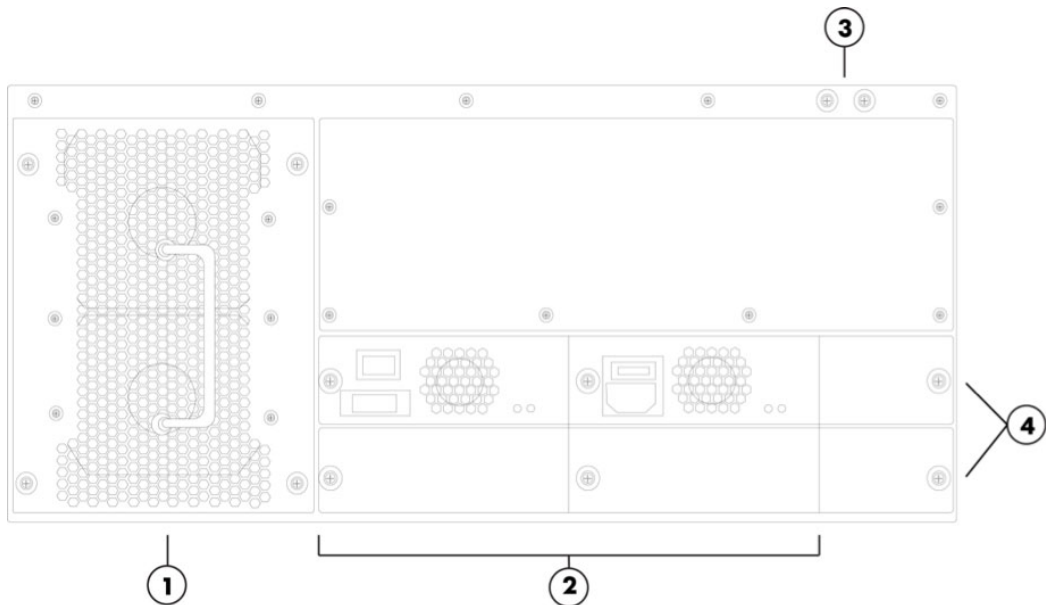
Overview

HPE FlexNetwork MSR4000 Router Series



HPE FlexNetwork MSR4080 Router Chassis (SPU-200) - Front View

- | | |
|---------------------------------------|---|
| 1. 4 Fixed COMBO 1000M RJ45/SFP ports | 8. System Activity LEDs |
| 2. Reset Button | 9. SFP+ port |
| 3. CF Card Slot | 10. 2 USB 2.0 Port for 3G modem and USB disk |
| 4. USB Port | 11. 8-HMIM modules slot (4 Half Height + 4 Full Height Slots) |
| 5. USB console port | 12. Service Processing Unit (SPU) |
| 6. CON/AUX port | 13. Main Processing Units (MPU) |
| 7. Management Port | |



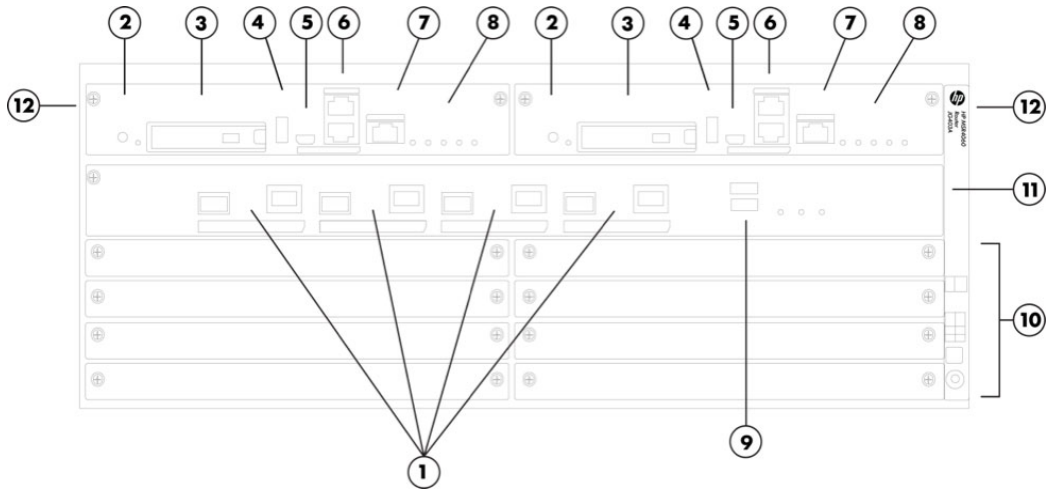
HPE FlexNetwork MSR4080 Router Chassis- Rear View

- | | |
|-------------|-----------------------|
| 1. Fan tray | 3. Grounding Terminal |
|-------------|-----------------------|

Overview

2. Power Supplies

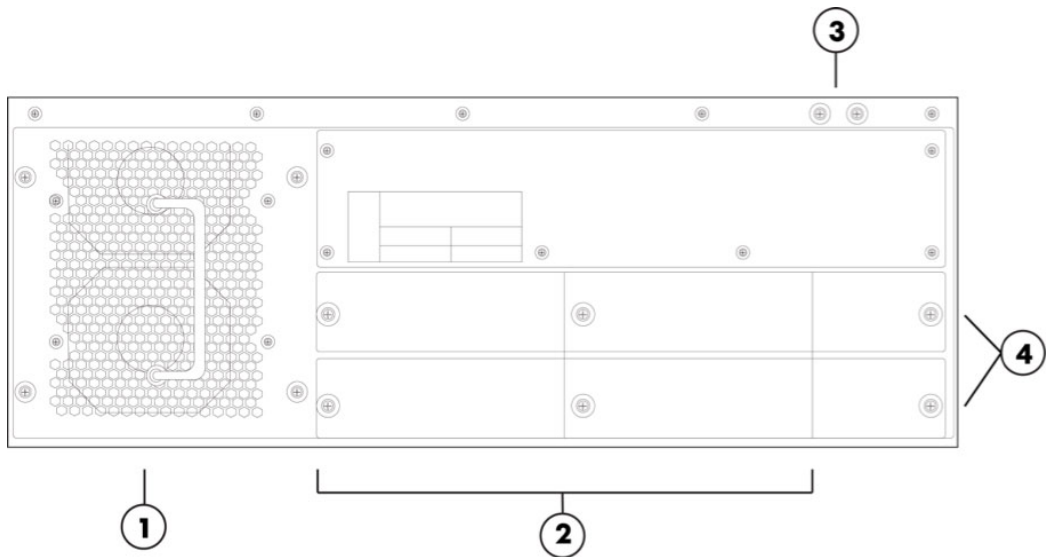
4. Filler panels of the PoE power supply slots



HPE FlexNetwork MSR4060 Router Chassis (SPU-100) - Front View

- 1. 4 Fixed COMBO 1000M RJ45/SFP ports
- 2. Reset Button
- 3. CF Card Slot
- 4. USB Port
- 5. USB console port
- 6. CON/AUX port

- 7. Management Port
- 8. System Activity LEDs
- 9. 2 USB 2.0 Port for 3G modem and USB disk
- 10. 6-HMIM modules slot (4 Half Height + 2 Full Height Slots)
- 11. Service Processing Unit
- 12. Main Processing Units



HPE FlexNetwork MSR4060 Router Chassis - Rear View

- 1. Fan Tray
- 2. Power Supplies

- 3. Grounding Terminal
- 4. Filler panels of the PoE power supply slots

Models

HPE FlexNetwork MSR4060 Router Chassis

JG403A

HPE FlexNetwork MSR4080 Router Chassis

JG402A

Key features

- Up to 36 Mpps forwarding performance; support for multiple concurrent services
- High reliability with separated hardware data and control planes, and dual MPUs

Overview

- Open Application Platform for HPE AllianceOne applications
- Powerful aggregation capacity; integrated 10GbE; support for up to 64 E1 or eight E3/T3 ports
- Zero-touch solution with single pane-of-glass management

Product overview

The HPE FlexNetwork MSR4000 Router Series, the next generation of router from Hewlett Packard Enterprise (HPE), is a component of the HPE FlexBranch solution, which is a part of the comprehensive HPE FlexNetwork architecture. These routers feature a modular design that delivers unmatched application services for extra large branch offices, headquarters, and campuses. This gives your IT personnel the benefit of reduced complexity, and simplified configuration, deployment, and management. The MSR4000 series leverages separated data and control planes, dual main processing units (MPUs), and support for up to four power supplies, which provides outstanding performance and reliability.

The MSR4000 routers provide a full-featured, resilient routing platform with the latest multicore CPUs, offer 10 Gigabit SFP+ integrated, provide an enhanced PCI bus, and ship with the latest version of HPE Comware software to help ensure high performance with concurrent services. The MSR4000 series provides a full-featured, resilient routing platform, including IPv6 and MPLS, with up to 36 Mpps forwarding capacity and 28 Gbps of IPSec VPN encrypted throughput. These routers also support HPE Open Application Platform (OAP) modules to deliver integrated industry-leading HPE AllianceOne partner applications such as virtualization, unified communications and collaboration (UC&C), and application optimization capabilities.

The MSR4000 series provides an agile, flexible network infrastructure that enables you to quickly adapt to your changing business requirements while delivering integrated concurrent services on a single, easy-to-manage platform.

Features and benefits

Performance

- **Excellent forwarding performance**
excellent full service performance (NAT + QoS + ACL Performance by Platform, IMIX Traffic), 1Gbps for SPU-100, 3Gbps for SPU-200, 8Gbps for SPU-300.
- **Powerful security capacity**
The MSR4000 series is available with standard or high encryption, an embedded hardware encryption accelerator to improve encryption performance; IPSec encryption throughput can be up to 28 Gb/s with a maximum of 10,000 IPSec VPN tunnels

Product architecture

- **SDN/OpenFlow**
OpenFlow is the communications interface defined between the control and forwarding layers of a SDN (Software-Defined Networking) architecture. OpenFlow separates the data forwarding and routing decision functions. It keeps the flow-based forwarding function and employs a separate controller to make routing decisions. OpenFlow matches packets against one or more flow tables. MSR support OpenFlow 1.3.1
- **Ideal multiservice platform**
provides WAN router, Ethernet switch, stateful firewall, VPN, and SIP/voice gateway all in one device
- **Advanced hardware architecture**
provides multicore processors, gigabit switching, and PCIE bus; dual Main Processing Units, four internal power supplies (N+1 configuration), and internal and external CF cards are offered; new high-performance MIM modules (HMIM) supported
- **New operation system version**
ships with new Comware v7 operating system delivering the latest in virtualization and routing
- **Open Application Platform architecture**
provides unmatched application and services flexibility, with the potential to deliver the functionality of multiple devices, creating capital and operational expense savings and lasting investment protection
- **Distributed architecture with separation of data and control planes**
delivers enhanced fault tolerance and facilitates near continuous operation and zero service disruption during planned or

Overview

unplanned control-plane events; service processing units (SPUs) perform data forwarding, encryption/decryption, and analyzing/filtering of data packets; main processing units perform route calculation, forward table maintenance, and configure and monitor the SPU

- **Field-programmable gate array (FPGA)**
improves the bandwidth of I/O module slots from 100 Mb/s to 1000 Mb/s, and improves uplink performance from 1 Gb/s to 10 Gb/s
- **Multi Gigabit Fabric (MGF)**
eases utilization of the main processor by transmitting Layer 2 packets directly via the MGF
- **Main processing unit (MPU)**
provides 1 GbE management port; has default of 512 MB internal flash and 2 GB DDR3 memory
- **Service processing units (SPU)**
includes four 1000BASE-T and four SFP (Combo) slots, two voice processing module slots, and 2 GB DDR3 memory; SPU 200/300 also has one 10GbE SFP+ slot; Forwarding performance: 10Mpps (SPU-100), 20Mpps (SPU-200), 36Mpps (SPU-300)

Connectivity

- **Powerful aggregation capacity**
supports integrated 10GbE LAN, and up to 64 E1 or eight T3 ports, and up to 148 Giga ports on one chassis.
- **High-density port connectivity**
provides up to eight interface module slots and up to four on-board Gigabit Ethernet and one 10GbE ports
- **Multiple WAN interfaces**
provides traditional links with E1, T1, Serial, ATM and ISDN; high-density Ethernet access with WAN Fast Ethernet and Gigabit Ethernet with POE/POE+; and high-speed T3, 155 Mb/s OC3 access options
- **Ethernet Virtual Interconnect (EVI)**
EVI is a MAC-in-IP technology that provides Layer 2 connectivity between distant Layer 2 network sites across an IP routed network. It is used for connecting geographically dispersed sites of a virtualized large-scale data center that requires Layer 2 adjacency.
- **VXLAN (Virtual eXtensible LAN)**
VXLAN (Virtual eXtensible LAN, scalable virtual local area network) is an IP-based network, using the "MAC in UDP" package of Layer VPN technology. VXLAN can be based on an existing ISP or enterprise IP networks for decentralized physical site provides Layer 2 communication, and can provide service isolation for different tenants.
- **Virtual Private LAN Service (VPLS)**
Virtual Private LAN Service (VPLS) delivers a point-to-multipoint L2VPN service over an MPLS or IP backbone. The backbone is transparent to the customer sites, which can communicate with each other as if they were on the same LAN. The following protocols support on MSRs, RFC4447, RFC4761 and RFC4762, BFD detection in VPLS, Support hierarchical HOPE(H-VPLS), MAC address recovery in H-VPLS to speed up convergence.
- **NEMO (Network Mobility)**
Network mobility (NEMO) enables a node to retain the same IP address and maintain application connectivity when the node travels across networks. It allows location-independent routing of IP datagrams on the Internet
- **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 or per-VLAN basis for added flexibility
- **USB interface**
uses USB memory disk to download and upload configuration/OS image files; supports an external USB 3G/4G modem for a 3G/4G WAN uplink
- **Flexible port selection**
provides a combination of fiber and copper interface modules, 100/1000BASE-X support, and 10/100/1000BASE-T auto-speed detection plus auto duplex and MDI/MDI-X

Layer 2 switching

Overview

- **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
- **VLANs**
supports up to 4,094 VLANs or IEEE 802.1Q-based VLANs
- **sFlow**
allows traffic sampling

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
- **Multiprotocol Label Switching (MPLS)**
uses BGP to advertise routes across Label Switched Paths (LSPs), but uses simple labels to forward packets from any Layer 2 or Layer 3 protocol, which reduces complexity and increases performance; supports graceful restart for reduced failure impact; supports LSP tunneling and multilevel stacks
- **Multiprotocol Label Switching (MPLS) Layer 3 VPN**
allows Layer 3 VPNs across a provider network; uses Multiprotocol BGP (MP-BGP) to establish private routes for increased security; supports RFC 2547bis multiple autonomous system VPNs for added flexibility; supports IPv6 MPLS VPN
- **Multiprotocol Label Switching (MPLS) Layer 2 VPN**

Overview

establishes simple Layer 2 point-to-point VPNs across a provider network using only MPLS Label Distribution Protocol (LDP); requires no routing and therefore decreases complexity, increases performance, and allows VPNs of non-routable protocols; uses no routing information for increased security; supports Circuit Cross Connect (CCC), Static Virtual Circuits (SVCs), Martini draft, and Kompella-draft technologies

- **Routing policy**

allows custom filters for increased performance and security; supports ACLs, IP prefix, AS paths, community lists, and aggregate policies

Layer 3 services

- **WAN Optimization**

MSR performs optimization using TFO and a combination of DRE, Lempel-Ziv (LZ) compression to provide the bandwidth optimization for file service and web applications. The policy engine module determines which traffic can be optimized and which optimization action should be taken. A pair of WAN optimization equipment can discover each other automatically and complete the negotiation to establish a TCP optimization session.

- **NAT-PT**

Network Address Translation – Protocol Translation (NAT-PT) enables communication between IPv4 and IPv6 nodes by translating between IPv4 and IPv6 packets. It performs IP address translation, and according to different protocols, performs semantic translation for packets. This technology is only suitable for communication between a pure IPv4 node and a pure IPv6 node.

- **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

- **User Datagram Protocol (UDP) helper**

redirects UDP broadcasts to specific IP subnets to prevent server spoofing

- **Dynamic Host Configuration Protocol (DHCP)**

simplifies the management of large IP networks and supports client and server; DHCP Relay enables DHCP operation across subnets

Quality of Service (QoS)

- **Hierarchical quality of service (HQoS)/Nested QoS**

manages traffic uniformly, and hierarchically schedules traffic by user, network service, and application; provides more granular traffic control and quality assurance services than traditional QoS

- **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**

supports traffic shaping, MPLS QoS, MP QoS/LFI and Control Plane Policing (CoPP)

Security

- **IPS**

Built-in Intrusion Prevention System (IPS) detects and protects the branch office from security threats. Optional HPE integration filters for client-side, branch protection from exploits and vulnerabilities

- **Enhanced stateful firewall**

Application layer protocol inspection, Transport layer protocol inspection, ICMP error message check, and TCP SYN check. Support more L4 and L7 protocols like TCP, UDP, UDP-Lite, ICMPv4/ICMPv6, SCTP, DCCP, RAWIP, HTTP, FTP, SMTP, DNS, SIP, H.323, SCCP.

- **Zone based firewall**

Overview

Zone-Based Policy Firewall changes the firewall configuration from the older interface-based model to a more flexible, more easily understood zone-based model. Interfaces are assigned to zones, and inspection policy is applied to traffic moving between the zones. Inter-zone policies offer considerable flexibility and granularity, so different inspection policies can be applied to multiple host groups connected to the same router interface.

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

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

Integration

- **Embedded VPN and 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, URL filtering, and application prioritization and enhancement
- **Embedded NetStream**
improves traffic distribution using powerful scheduling algorithms, including Layer 4 to 7 services; monitors the health status of servers and firewalls

Overview

- **SIP trunking**
delivers multiple concurrent calls on one link; the carrier authenticates only the link, rather than carrying each SIP call on the link

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; supports VRRP load balancing
- **In-Service Software Upgrade (ISSU)**
lowers downtime caused by planned maintenance and software upgrades
- **Embedded Automation Architecture (EAA)**
monitors the internal event and status of system hardware and software, identifying potential problems as early as possible; collects field information and attempts to automatically repair the issues; based on the user configuration, onsite information will be sent to technical support
- **Multiple internal power supply slots**
delivers higher reliability with a maximum of four internal power supplies, which can be installed
- **Bidirectional Forwarding Detection (BFD)**
detects quickly the failures of the bidirectional forwarding paths between two devices for upper-layer protocols such as routing protocols and MPLS.
- **Intelligent Resilient Fabric (IRF)**
Intelligent Resilient Fabric (IRF), allows the customer build an IRF stack, namely a logical device, by interconnecting multiple devices through stack ports. The customer can manage all the devices in the IRF stack by managing the logical device, which is cost-effective like a box-type device, and scalable and highly reliable like a chassis-type distributed device.

Management

- **HPE 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
- **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

Overview

- **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
- **Management interface control**
provides management access through modem port and terminal interface; provides access through terminal interface, telnet, or SSH
- **Network Quality Analyzer (NQA)**
analyzes network performance and service quality by sending test packets, and provides network performance and service quality parameters such as jitter, TCP, or FTP connection delays; allows network manager to determine overall network performance and diagnose and locate network congestion points or failures
- **Role-based security**
delivers role-based access control (RBAC); supports 16 user levels (0~15)
- **Standards-based authentication support for LDAP**
integrates seamlessly into existing authentication services

Ease of deployment

- **Zero-touch deployment**
supports TR069, both USB disk auto deployment and 3G SMS auto deployment

Additional information

- **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
- **Green initiative support**
provides support for RoHS and WEEE regulations

Warranty and support

- **1-year Warranty**
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 FlexNetwork MSR4080 Router Chassis JG402A

- Must select 1 Main Processing Unit
- Must select 1 Service Processing Unit
- Must select 1 Power Supply
- 8-HMIM modules slot (4 Half Height + 4 Full Height Slots)
- 5U - Height

HPE FlexNetwork MSR4060 Router Chassis JG403A

- Must select 1 Main Processing Unit
- Must select 1 Service Processing Unit
- Must select 1 Power Supply
- 6-HMIM modules slot (4 Half Height + 2 Full Height Slots)
- 4U - Height

Box Level Integration CTO Models

CTO Router Chassis

HP MSR CTO Router Solution JG500A

- SSP trigger sku

HPE FlexNetwork MSR4080 Router Chassis JG402A
See Configuration **NOTE:1**

- Must select 1 Main Processing Unit
- Must select 1 Service Processing Unit
- Must select 1 Power Supply
- 8-HMIM modules slot (4 Half Height + 4 Full Height Slots)
- 5U - Height

HPE FlexNetwork MSR4060 Router Chassis JG403A
See Configuration **NOTE:1**

- Must select 1 Main Processing Unit
- Must select 1 Service Processing Unit
- Must select 1 Power Supply
- 6-HMIM modules slot (4 Half Height + 2 Full Height Slots)
- 4U - Height

Configuration Rules:

Configuration

Note 1 If the Router Chassis is to be Box Level Factory Integrated (CTO), Then the #0D1 is required on the Router Chassis and integrated to the JG500A - HPE MSR CTO Enablement. (Min 1/Max 1 Router per SSP)

Rack Level Integration CTO Models

Router Chassis

HPE FlexNetwork MSR4080 Router Chassis

- Must select 1 Main Processing Unit
- Must select 1 Service Processing Unit
- Must select 1 Power Supply
- 8-HMIM modules slot (4 Half Height + 4 Full Height Slots)
- 5U - Height

JG402A
See Configuration
NOTE:1

HPE FlexNetwork MSR4060 Router Chassis

- Must select 1 Main Processing Unit
- Must select 1 Service Processing Unit
- Must select 1 Power Supply
- 6-HMIM modules slot (4 Half Height + 2 Full Height Slots)
- 4U - Height

JG403A
See Configuration
NOTE:1

Configuration Rules:

Note 1 If the CTO Router Chassis needs to be racked, Then the CTO Base Model needs to integrate (with #0D1) to the HPE Networking Rack.

Power Supplies

System (std 0// max 4) User Selection (min 1 // max 2 or max 4) per MSR4000 Router Chassis

HPE FlexNetwork X351 300W 48-60VDC to 12VDC Power Supply

JG528A
See Configuration
NOTE:4, 6

HPE FlexNetwork X351 300W 100-240VDC to 12VDC Power Supply

JG527A
See Configuration
NOTE:1, 2, 4, 6

PDU Cable NA/MEX/TW/JP

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

JG527A#B2B

PDU Cable ROW

- C15 PDU Jumper Cord (ROW)

JG527A#B2C

High Volt Switch to Wall Power Cord

JG527A#B2E

Configuration

- NEMA L6-20P Cord (NA/MEX/JP/TW)

HPE 5800 750W AC Power Supply

JC089A
See Configuration
NOTE:1, 5, 6

PDU Cable NA/MEX/TW/JP

JC089A#B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW

JC089A#B2C

- C15 PDU Jumper Cord (ROW)

Configuration Rules:

Note 1 Localization required on orders without #B2B, #B2C or #B2E options.

Note 2 If #B2E is selected Then replace Localized option with #B2E for power supply and with #B2E for switch .
(Offered only in NA, Mexico,, Taiwan, and Japan)

Note 4 Maximum of 4 of this Power Supply for MSR4080 - JG402A and MSR4060 - JG403A.
min=0\ max=4

Note 5 Maximum of 2 of this Power Supply for MSR4080 - JG402A and MSR4060 - JG403A
min=0\ max=2

Note 6 Power Supplies cannot be mixed in the same Router enclosure

Remarks:

Drop down under power supply should offer the following options and results:

Switch/Router/Power Supply to PDU Power Cord - #B2B in North America, Mexico, Taiwan, and Japan or #B2C ROW. (Watson Default B2B or B2C for Rack Level CTO)

Switch/Router/Power Supply to Wall Power Cord - Localized Option (Watson Default for BTO and Box Level CTO)

High Volt Switch/Router/Power Supply to Wall Power Cord - #B2E Option. (Offered only in North America, Mexico, Taiwan, and Japan)

Configurator Blue Text:

HPE 5800 750W AC PoE Power Supply (JC089A) is only supported in slot 1 and slot 3 in the MSR4000 Router Chassis.

Enter the following menu selections as integrated to the CTO Model X server above if order is factory built.

Main Processing Units

HPE FlexNetwork MSR4000 MPU-100 Main Processing Unit

JG412A

- default=2GB \ max=4GB DDR SDRAM (4GB Max, by replacing existing single 2GB SDRAM)

See Configuration
NOTE:1, 2, 3, 5, 6

Configuration

- External CF Card slot - Default 0 // max 1 CF Card

Russian Reduced Encryption

JG412A#A59

Configuration Rules:

- Note 1** Service Processing Units (JG670A, JG413A or JG414A) must be selected with the Main Processing Unit (JG412A/JG869A)
- Note 2** The following DDR SDRAM install into this Module:
HPE FlexNetwork X610 4GB DDR3 SDRAM UDIMM Memory JG530A
- Note 3** The following CF Card install into this Module:
HPE X600 256M Compact Flash Card JC686A
HPE X600 512M Compact Flash Card JC685A
HPE X600 1G Compact Flash Card JC684A
- Note 5** No mixing of any type of MPU. Must all be the same sku.
- Note 6** If this product is ordered for delivery to Russia, it must be ordered with the A59 option (also allowed for other countries desiring Low Encryption), then #A59 is the required option for BTO, and must be added in addition to #0D1 for CTO

Service Processing Units

HPE FlexNetwork MSR4000 SPU-100 Service Processing Unit

JG413A

- 4 COMBO 1000M RJ45/SFP ports
- min=0 \ max=4 SFP Transceivers
- min=0 \ max=2 VPM Modules
- default=2GB \ max=2GB DDR SDRAM

See Configuration
NOTE:1, 2

HPE FlexNetwork MSR4000 SPU-200 Service Processing Unit

JG414A

- 4 COMBO 1000M RJ45/SFP ports
- min=0 \ max=4 SFP Transceivers
- 1 - SFP+ Port
- min=0 \ max=1 SFP+ Transceiver
- min=0 \ max=2 VPM Modules
- default=2GB \ max=2GB DDR SDRAM

See Configuration
NOTE:1, 2, 3

HPE FlexNetwork MSR4000 SPU 300 Service Processing Unit

JG670A

- 4 COMBO 1000M RJ45/SFP ports
- min=0 \ max=4 SFP Transceivers
- 1 - SFP+ Port
- min=0 \ max=1 SFP+ Transceiver
- min=0 \ max=2 VPM Modules
- default=4GB \ max=4GB DDR SDRAM

See Configuration
NOTE:1, 2, 3

Configuration

Configuration Rules:

Note 1	The following SFP Transceivers install into this SPU:	
	HPE X120 1G SFP LC SX Transceiver	JD118B
	HPE X120 1G SFP LC LX Transceiver	JD119B
	HPE X125 1G SFP LC LH40 1310nm Transceiver	JD061A
	HPE X120 1G SFP LC LH40 1550nm Transceiver	JD062A
	HPE X125 1G SFP LC LH70 Transceiver	JD063B
	HPE X120 1G SFP LC LH100 Transceiver	JD103A
	HPE X120 1G SFP RJ45 T Transceiver	JD089B
	HPE X115 100M SFP LC FX Transceiver	JD102B
	HPE X110 100M SFP LC LX Transceiver	JD120B
	HPE X110 100M SFP LC LH40 Transceiver	JD090A
	HPE X110 100M SFP LC LH80 Transceiver	JD091A
	HPE X120 1G SFP LC BX 10-U Transceiver	JD098B
	HPE X120 1G SFP LC BX 10-D Transceiver	JD099B
Note 2	The following VPM Modules install into this SPU:	
	HPE FlexNetwork MSR G2 128-channel Voice Processing Module	JG417A
Note 3	The following SFP+ Transceivers install into this SPU:	
	HPE X130 10G SFP+ LC SR Transceiver	JD092B
	HPE X130 10G SFP+ LC LRM Transceiver	JD093B
	HPE X130 10G SFP+ LC LR Transceiver	JD094B
	HPE X130 10G SFP+ LC ER 40km Transceiver	JG234A
	HPE FlexNetwork X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C
	HPE FlexNetwork X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
	HPE FlexNetwork X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
	HPE FlexNetwork X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable	JG081C

HMIM Modules

System (std 0 // max 6 or 8) User Selection (min 0 // max 6 or 8) per Router Chassis (See Modules for Port information)

HPE FlexNetwork MSR 1-port E1 Voice HMIM Module	JG429A
<ul style="list-style-type: none"> (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) min=0 \ max=1 E1 Cable 	See Configuration NOTE:1, 3, 5, 11
HPE FlexNetwork MSR 1-port T1 Voice HMIM Module	JG430A
<ul style="list-style-type: none"> (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) min=0 \ max=1 E1 Cable 	See Configuration NOTE:1, 3, 5, 10, 11
HPE FlexNetwork MSR 2-port E1 Voice HMIM Module	JG431A
<ul style="list-style-type: none"> (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) min=0 \ max=1 E1 Cable 	See Configuration NOTE:1, 3, 5, 11

Configuration

HPE FlexNetwork MSR 1-port T3/CT3/FT3 HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)
- min=0 \ max=2 E3/T3 Cable

JG435A
See Configuration
NOTE:2, 4, 6

HPE FlexNetwork MSR 1-port E3/CE3/FE3 HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)
- min=0 \ max=2 E3/T3 Cable

JG436A
See Configuration
NOTE:2, 4, 6

HPE FlexNetwork MSR 1-port OC-3c/STM 1c POS HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)
- min=0 \ max=1 SFP Transceiver

JG438A
See Configuration
NOTE:2, 4, 7

HPE FlexNetwork MSR 4-port Enhanced Sync/Async Serial HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)
- min=0 \ max=4 Serial Port Cable

JG442A
See Configuration
NOTE:2, 4, 8

HPE FlexNetwork MSR 8-port Enhanced Sync/Async Serial HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)
- min=0 \ max=8 Serial Port Cable

JG443A
See Configuration
NOTE:2, 4, 8

HPE FlexNetwork MSR 4-port FXS HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)

JG446A
See Configuration
NOTE:2, 4

HPE FlexNetwork MSR 4-port FXO HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)

JG447A
See Configuration
NOTE:2, 4

HPE FlexNetwork MSR 4-port E and M HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)

JG448A
See Configuration
NOTE:2, 4

HP MSR 2-port E1 / CE1 / PRI HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)
- min=0 \ max=2 E1 Cable

JG450A
See Configuration
NOTE:2, 4, 5

HP MSR 4-port E1 / CE1 / PRI HMIM Module

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot)
- min=0 \ max=4 E1 Cable

JG451A
See Configuration
NOTE:2, 4, 5

HP MSR 8-port E1 / CE1 / PRI (75ohm) HMIM Module

JG452A

Configuration

<ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) • min=0 \ max=1 8E1 Cable 	See Configuration NOTE:2, 4, 9
<p>HP MSR 4-port E1 / Fractional E1 HMIM Module</p> <ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) • min=0 \ max=4 E1 Cable 	JG453A See Configuration NOTE:2, 4, 5
<p>HP MSR 2-port T1 / CT1 / PRI HMIM Module</p> <ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) 	JG456A See Configuration NOTE:2, 4
<p>HP MSR 4-port T1 / Fractional T1 HMIM Module</p> <ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) 	JG457A See Configuration NOTE:2, 4
<p>HPE FlexNetwork MSR 2-port Gig-T HMIM Module</p> <ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) 	JG420A See Configuration NOTE:2, 4
<p>HPE FlexNetwork MSR 4-port Gig-T HMIM Module</p> <ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) 	JG421A See Configuration NOTE:2, 4
<p>HPE FlexNetwork MSR 8-port Gig-T HMIM Module</p> <ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) 	JG422A See Configuration NOTE:2, 4
<p>HPE FlexNetwork MSR 2-port 1000BASE-X HMIM Module</p> <ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) • min=0 \ max=2 SFP Modules 	JG423A See Configuration NOTE:2, 4, 14
<p>HPE FlexNetwork MSR 4-port 1000BASE-X HMIM Module</p> <ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) • min=0 \ max=4 SFP Modules 	JG424A See Configuration NOTE:2, 4, 14
<p>HPE FlexNetwork MSR 8-port 1000BASE-X HMIM Module</p> <ul style="list-style-type: none"> • (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) • min=0 \ max=8 SFP Modules 	JG425A See Configuration NOTE:2, 4, 14
<p>HPE FlexNetwork MSR 24-port Gig-T Switch HMIM Module</p> <ul style="list-style-type: none"> • (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) 	JG426A See Configuration NOTE:1, 3, 11
<p>HPE FlexNetwork MSR 24-port Gig-T PoE Switch HMIM Module</p>	JG427A

Configuration

<ul style="list-style-type: none"> (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) 	See Configuration NOTE:1, 3, 11
HPE FlexNetwork MSR 1-port OC-3/STM-1 CPOS HMIM Module	JG428A
<ul style="list-style-type: none"> (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=1 SFP Transceiver 	See Configuration NOTE:2, 4, 7
HPE FlexNetwork MSR 2-port T1 Voice HMIM Module	JG432A
<ul style="list-style-type: none"> (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) min=0 \ max=2 T1 Cable 	See Configuration NOTE:1, 3, 10
HPE FlexNetwork MSR 16-port FXS HMIM Module	JG434A
<ul style="list-style-type: none"> (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) 	See Configuration NOTE:1, 3
HPE FlexNetwork MSR 8-port 10/100/1000BASE-T/2-port 1000BASE-X (Combo) Switch HMIM Module	JG741A
<ul style="list-style-type: none"> (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=2 SFP Transceivers 	See Configuration NOTE:2, 4, 7, 14
HPE FlexNetwork MSR 16-port Enhanced Async Serial HMIM Module	JG445A
<ul style="list-style-type: none"> (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) 	See Configuration NOTE:1, 3
HPE FlexNetwork MSR 8-port E1/CE1/T1/CT1/PRI HMIM Module	JH169A
<ul style="list-style-type: none"> (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=8 E1/T1 Cable 	See Configuration NOTE: 2, 4, 10, 15, 16
HPE FlexNetwork MSR 8-port E1/Fractional E1/T1/Fractional T1 HMIM Module	JH172A
<ul style="list-style-type: none"> (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=8 E1/T1 Cable 	See Configuration NOTE: 2, 4, 10, 15, 16
HPE FlexNetwork MSR 8-port 100BASE-FX/1000BASE-X/4-port 1000BASE-T (Combo) L2/L3 HMIM Module	JH238A
<ul style="list-style-type: none"> (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=8 SFP Modules 	See Configuration NOTE: 2, 4, 7, 14
HPE FlexNetwork MSR 1U HMIM Adapter Module	JG416A
<ul style="list-style-type: none"> (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) 	See Configuration NOTE:2, 4, 12
HPE FlexNetwork MSR 0.5U HMIM Adapter Module	JG415A
<ul style="list-style-type: none"> (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) 	See Configuration NOTE:2, 4, 13

Configuration Rules:

- Note 1** These Modules can install directly to the Router Chassis (JG402A)
min=0\ max=6 per enclosure (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically)

Configuration

Note 2	These Modules can install directly to the Router Chassis (JG402A) min=0\ max=8 per enclosure	
Note 3	These Modules can install directly to the Router Chassis (JG403A) min=0\ max=4 per enclosure (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically)	
Note 4	These Modules can install directly to the Router Chassis (JG403A) min=0\ max=6 per enclosure	
Note 5	The following Cables install into this Module: HPE FlexNetwork X260 E1 (2) BNC 75 ohm 3m Router Cable HPE FlexNetwork X260 E1 BNC 20m Router Cable HP X260 E1 2 BNC 75 ohm 40m Router Cable HPE FlexNetwork X260 E1 RJ45 3m Router Cable HPE FlexNetwork X260 E1 RJ45 20m Router Cable	JD175A JD514A JD516A JD509A JD517A
Note 6	The following E3/T3 Cable and Connector install into this Module: HPE FlexNetwork X260 T3/E3 Router Cable HP X260 E3-30 E3/T3 Router Cable	JD531A JD533A
Note 7	The following Transceivers install into this Module: HPE X115 100M SFP LC FX Transceiver HPE X110 100M SFP LC LX Transceiver HPE X110 100M SFP LC LH40 Transceiver HPE X110 100M SFP LC LH80 Transceiver	JD102B JD120B JD090A JD091A
Note 8	The following Cables install into this Module: HPE FlexNetwork X260 RS449 3m DCE Serial Port Cable HPE FlexNetwork X260 RS449 3m DTE Serial Port Cable HPE FlexNetwork X200 V.24 DTE 3m Serial Port Cable HPE FlexNetwork X200 V.35 DTE 3m Serial Port Cable HPE FlexNetwork X260 RS530 3m DTE Serial Port Cable HPE FlexNetwork X200 V.35 DCE 3m Serial Port Cable HPE FlexNetwork X260 RS530 3m DCE Serial Port Cable HPE FlexNetwork X200 V.24 DCE 3m Serial Port Cable	JF826A JF825A JD519A JD523A JF827A JD525A JF828A JD521A
Note 9	The following Cable install into this Module: HPE FlexNetwork X260 8E1 BNC 75 ohm 3m Router Cable	JD512A
Note 10	The following T1 Cables install into this Module: HPE FlexNetwork X260 T1 Router Cable	JD518A
Note 11	Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically	
Note 12	Remark for Watson: Adapter Modules allow customers with existing MIM Modules to adapt them to HMIM slots of HP MSR 4000 Series Router. 1U HMIM Adapter Modules can adapt the following MIM Modules: HP A-MSR 1-port E1 Voice MIM Module HP A-MSR 2-port E1 Voice MIM Module	JD565B JD567B

Configuration

HP A-MSR 1-port T1 Voice MIM Module	JD566B
HP A-MSR 2-port T1 Voice MIM Module	JD568B
HP 16-port FXS Voice Interface MIM Module	JF822A
HP MSR 16-port Async Serial Interface MIM Module	JF841A
HPE FlexNetwork MSR Open Application Platform (OAP) with VMware vSphere MIM Module	JG532A

Note 13 Remark for Watson: Adapter Modules allow customers with existing MIM Modules to adapt them to HMIM slots of HP MSR 4000 Series Router.

0.5U HMIM Adapter Modules can adapt following MIM Modules:

HP MSR 8-port Async Serial Interface MIM Module	JF840A
HP MSR 1-port FT3/CT3 MIM Module	JD628A
HP MSR 1-port FE3/CE3 MIM Module	JD630A
HP MSR 1-port OC-3c/STM-1c POS MIM Module	JG193A
HPE FlexNetwork MSR 2-port Enhanced Serial MIM Module	JD540A
HPE FlexNetwork MSR 4-port Enhanced Serial MIM Module	JD541A
HPE FlexNetwork MSR 8-port Sync/Async Interface Enhanced Module	JD552A
HP MSR 4-port FXS MIM Module	JD553A
HP MSR 4-port FXO MIM Module	JD542A
HP MSR 4-port Voice E and M MIM Module	JD539A
HP A-MSR 2-port E1/CE1/PRI MIM Module	JD544B
HP A-MSR 4-port E1/CE1/PRI MIM Module	JD550B
HPE FlexNetwork MSR 8-port E1/CE1/PRI (75ohm) MIM Module	JD563A
HP MSR 4-port E1/Fractional E1 MIM Module	JF257B
HPE MSR 8-port Fractional E1 MIM Module	JF255A
HP MSR 2-port Fractional T1/Channelize T1 PRI MIM Module	JD549A
HP MSR 4-port T1/Fractional T1 MIM Module	JF254B
HPE FlexNetwork 6600 8-port T1 MIM Router Module	JC160A
HPE FlexNetwork 6600 8-port Fractional T1 MIM Router Module	JC159A
HP MSR 2-port 10/100 MIM Module	JD613A
HP MSR 4-port 10/100BASE-TX Module	JD551A
HP MSR 2-port Gig-T MIM Module	JD548A
HP MSR 2-port FXO MIM Module	JD543A
HP 4-port ISDN BRI S/T Voice Interface MIM Module	JF837A
HP MSR 1-port OC-3 ATM MIM Module	JD624A

Note 14 The following Transceivers install into this Module:

HPE X120 1G SFP LC SX Transceiver	JD118B
HPE X120 1G SFP LC LX Transceiver	JD119B
HPE X125 1G SFP LC LH40 1310nm Transceiver	JD061A
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
HPE X120 1G SFP RJ45 T Transceiver	JD089B

Note 15 The following E1 Cables install into this Module:

HPE FlexNetwork X260 E1 RJ45 to 2xBNC 75ohm 3m Router Cable	JH294A
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Note 16 The following E1 Cables install into this Module:

Configuration

HPE FlexNetwork X260 E1 RJ45 120 ohm 30m Router Cable	JC152A
HPE FlexNetwork X260 E1 RJ45 120 ohm 15m Router Cable	JC151A
HPE FlexNetwork X260 E1 RJ45 120 ohm 2m Router Cable	JC156A

Remarks: PoE Module JG427A can be used a non-POE module on chassis without PoE power supplies.

MIM Modules

HPE FlexNetwork MSR Open Application Platform (OAP) with VMware vSphere MIM Module	JG532A See Configuration NOTE:1, 2
HP MSR Small Survivable Branch Communication MIM Module powered by Microsoft Lync	JG587A See Configuration NOTE:1, 2
HPE FlexNetwork MSR Medium Survivable Branch Communication MIM Module Powered by Microsoft Lync	JG588A See Configuration NOTE:1, 2

Configuration Rules:

Note 1 This Module installs into JG416A.
JG402A min=0\ max=6 per enclosure
JG403A min=0\ max=4 per enclosure

Note 2 A Minimum of 2 Power Supplies are required when more than 2 Modules are selected.

VPM Modules

HPE FlexNetwork MSR G2 128-channel Voice Processing Module	JG417A See Configuration NOTE:1
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Configuration Rules:

Note 1 These Modules can install directly to the Service Processing Unit
min=0\ max=2 per SPU

Transceivers

SFP Transceivers

System (std 0 // max 4) User Selection (min 0 // max 4) per SPU

HPE X120 1G SFP LC SX Transceiver	JD118B
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Configuration

HPE X120 1G SFP LC LX Transceiver	JD119B
HPE X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HPE X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HPE X125 1G SFP LC LH70 Transceiver	JD063B
HPE X110 100M SFP LC LH40 Transceiver	JD090A
HPE X110 100M SFP LC LH80 Transceiver	JD091A
HPE X115 100M SFP LC FX Transceiver	JD102B
HPE X110 100M SFP LC LX Transceiver	JD120B
HPE X120 1G SFP LC LH100 Transceiver	JD103A
HPE X120 1G SFP LC BX 10-U Transceiver	JD098B
HPE X120 1G SFP LC BX 10-D Transceiver	JD099B
HPE X120 1G SFP RJ45 T Transceiver	JD089B

SFP+ Transceivers

HPE X130 10G SFP+ LC SR Transceiver	JD092B
HPE X130 10G SFP+ LC LRM Transceiver	JD093B
HPE X130 10G SFP+ LC LR Transceiver	JD094B
HPE X130 10G SFP+ LC ER 40km Transceiver	JG234A
HPE FlexNetwork X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C
HPE FlexNetwork X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
HPE FlexNetwork X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
HPE FlexNetwork X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable	JG081C

Cables

HPE FlexNetwork X200 V.24 DTE 3m Serial Port Cable	JD519A
HPE FlexNetwork X200 V.24 DCE 3m Serial Port Cable	JD521A

Configuration

HPE FlexNetwork X200 V.35 DTE 3m Serial Port Cable	JD523A
HPE FlexNetwork X200 V.35 DCE 3m Serial Port Cable	JD525A
HPE FlexNetwork X260 RS449 3m DTE Serial Port Cable	JF825A
HPE FlexNetwork X260 RS449 3m DCE Serial Port Cable	JF826A
HPE FlexNetwork X260 RS530 3m DTE Serial Port Cable	JF827A
HPE FlexNetwork X260 RS530 3m DCE Serial Port Cable	JF828A
HPE FlexNetwork X260 Auxiliary Router Cable	JD508A
HPE FlexNetwork X260 E1 RJ45 3m Router Cable	JD509A
HPE FlexNetwork X260 E1 RJ45 20m Router Cable	JD517A
HPE FlexNetwork X260 E1 (2) BNC 75 ohm 3m Router Cable	JD175A
HPE FlexNetwork X260 E1 BNC 20m Router Cable	JD514A
HP X260 E1 2 BNC 75 ohm 40m Router Cable	JD516A
HPE FlexNetwork X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable	JD511A
HPE FlexNetwork X260 T1 Router Cable	JD518A
HPE FlexNetwork X260 T3/E3 Router Cable	JD531A
HP X260 E3-30 E3/T3 Router Cable	JD533A
HPE FlexNetwork X260 8E1 BNC 75 ohm 3m Router Cable	JD512A
HPE FlexNetwork X260 E1 RJ45 to 2xBNC 75ohm 3m Router Cable	JH294A
HPE FlexNetwork X260 E1 RJ45 120 ohm 30m Router Cable	JC152A
HPE FlexNetwork X260 E1 RJ45 120 ohm 15m Router Cable	JC151A
HPE FlexNetwork X260 E1 RJ45 120 ohm 2m Router Cable	JC156A
Remarks: The following cable is used for RJ45 BNC Conversion - HPE FlexNetwork X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable	JD511A

Router Enclosure Options

Configuration

SDRAM

User Selection (min 0 // max 1) (default=2GB \ max=4GB) per MPU-100 Main Processing Unit (4GB Max, by replacing existing single 2GB SDRAM)

HP X610 2GB DDR3 SDRAM UDIMM Memory JG529A
 • Spare Only (Parts List Only)

HPE FlexNetwork X610 4GB DDR3 SDRAM UDIMM Memory JG530A
 • (Must remove existing 2GB UDIMM to install the 4GB UDIMM)

Compact Flash Card

System (std 0 // max 1 External CF Card) per MPU

HPE X600 1G Compact Flash Card JC684A

HPE X600 512M Compact Flash Card JC685A

HPE X600 256M Compact Flash Card JC686A

Opacity Shield Kit

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

HPE FlexNetwork MSR4060 Opacity Shield Kit JG602A
NOTE: See Configuration **NOTE:1**
 Supported on the HPE MSR4060 Routers (JG403A).

HPE FlexNetwork MSR4080 Opacity Shield Kit JG603A
NOTE: See Configuration **NOTE:1**
 Supported on the HPE MSR4080 Routers (JG402A).

Configuration Rules:

Note 1 If selected with a CTO Router Solution, Quantity 1 of JG586A#B01 must also be ordered.

Tamper Evidence Labels

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

HP 12mm x 60mm Tmpr-Evidence (100) Lbl JG586A
NOTE: See Configuration **NOTE:1**
 Supported on the HPE MSR4060/MSR4080 Routers (JG403A,JG402A).

Configuration

Configuration Rules:

Note 1 If selected with a CTO Router Solution, Quantity 1 of JG602A#B01 or JG603A#B01 must also be ordered.

Remarks: Each JG602A or JG603A would use 1 of JG586A.

Technical Specifications

HPE FlexNetwork MSR4060 Router Chassis (JG403A)

I/O ports and slots	2 MPU (Main Processing Unit) slots 1 SPU (Service Processing Unit) slot 6 HMIM slots 4 Power Supply slots	
AP characteristics Radios (via optional modules)	3G, 4G LTE	
Physical characteristics	Dimensions	17.32(w) x 18.9(d) x 6.89(h) in (44 x 48 x 17.50 cm) (4U height)
	Weight	45.52 lb (20.65 kg)
Memory and processor	MPU-100, 2 cores RISC @ 1 GHz, 512 MB flash capacity, 2 GB DDR3 SDRAM SPU-100, 8 cores RISC @ 1 GHz, 2 GB DDR3 SDRAM SPU-200, 16 cores RISC @ 1 GHz, 2 GB DDR3 SDRAM SPU-300, 32 cores RISC @ 1 GHz, 4 GB DDR3 SDRAM	
Mounting and enclosure	Desktop or can be mounted in a EIA standard 19-inch telco rack when used with the rack-mount kit in the package.	
Performance	Throughput	up to 36 Mpps (64-byte packets)
	Routing table size	1000000 entries (IPv4), 1000000 entries (IPv6)
	Forwarding table size	1000000 entries (IPv4), 1000000 entries (IPv6)
Environment	Operating temperature	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	5% to 90%, noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	5% to 90%, noncondensing
	Altitude	up to 16,404 ft (5 km)
Electrical characteristics	Frequency	50/60 Hz
	Maximum heat dissipation	285/347 BTU/hr (300.67/366.09 kJ/hr), lower number is with SPU-100 module installed; higher number is for SPU-200
	Voltage	100 - 240 VAC, rated -36 to -75 VDC, rated (depending on power supply chosen)
	Maximum power rating	300 W
	PoE power	450 W PoE+
	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. PoE Power is the power supplied by the internal power supply, it is dependent on the type and quantity of power supplies and may be supplemented with the use of a External Power Supply (EPS). No default power supply is included in the chassis; a minimum of one/maximum of four power supplies should be ordered.
Reliability	MTBF (years)	178.66
Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1; FDA 21 CFR Subchapter J; AS/NZS	

Technical Specifications

	60950-1; GB 4943.1
Emissions	EN 61000-4-11:2004; ANSI C63.4-2009; AS/NZS CISPR 22:2009; CISPR 22 Ed2.0 2008-09; EN 55022:2010; EN 61000-3-3:2008; GB 9254-2008; IEC 61000-3-2 Ed3.0 (2009-02); IEC 61000-3-3 Ed2.0 (2008-06); VCCI V-4/2012.04; CISPR 24 Ed2.0 2010-08; EN 55024:2010; EN 61000-3-2:2006+A1:2009+A2:2009; EN 61000-4-2:2009; EN 61000-4-29:2000; EN 61000-4-3:2006; EN 61000-4-4:2012; EN 61000-4-5:2006; EN 61000-4-6:2009; EN 61000-4-8:2010; ETSI EN 300 386 V1.6.1(2012-09); FCC 47 CFR Part 15 (latest current version); ICES-003 Issue 5; IEC 61000-4-11 Ed2.0 (2004-03); IEC 61000-4-2 Ed2.0 (2008-12); IEC 61000-4-29 Ed1.0 (2000-08); IEC 61000-4-3 Ed3.2 (2010-04); IEC 61000-4-4 Ed3.0 (2012-04); IEC 61000-4-5 Ed2.0 (2005-11); IEC 61000-4-6 Ed3.0 (2008-10); IEC 61000-4-8 Ed2.0 (2009-09); VCCI V-3/2013.04
Telecom	FCC part 68; CS-03
Management	IMC - Intelligent Management Center; command-line interface; limited command-line interface; configuration menu; out-of-band management (RJ-45 Ethernet); SNMP Manager; Telnet; RMON1; FTP; in-line and out-of-band; modem interface; out-of-band management (serial RS-232C or Micro USB); 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 MSR4080 Router Chassis (JG402A)

I/O ports and slots	2 MPU (Main Processing Unit) slots 1 SPU (Service Processing Unit) slot 8 HMIM slots 4 Power Supply slots	
AP characteristics Radios (via optional modules)	3G, 4G LTE	
Physical characteristics	Dimensions	17.32(w) x 18.9(d) x 8.64(h) in (44 x 48 x 21.95 cm) (5U height)
	Weight	49.93 lb (22.65 kg)
Memory and processor	MPU-100, 2 cores RISC @ 1 GHz, 512 MB flash capacity, 2 GB DDR3 SDRAM SPU-100, 8 cores RISC @ 1 GHz, 2 GB DDR3 SDRAM SPU-200, 16 cores RISC @ 1 GHz, 2 GB DDR3 SDRAM SPU-300, 32 cores RISC @ 1 GHz, 4 GB DDR3 SDRAM	
Mounting and enclosure	Desktop or can be mounted in a EIA standard 19-inch telco rack when used with the rack-mount kit in the package.	
Performance	Throughput	up to 36 Mpps (64-byte packets)
	Routing table size	1000000 entries (IPv4), 1000000 entries (IPv6)
	Forwarding table size	1000000 entries (IPv4), 1000000 entries (IPv6)
Environment	Operating temperature	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	5% to 90%, noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	5% to 90%, noncondensing
	Altitude	up to 16,404 ft (5 km)
Electrical characteristics	Frequency	50/60 Hz
	Maximum heat dissipation	297/358 BTU/hr (313.33/377.69 kJ/hr), lower number is with SPU-100 module installed; higher number is for SPU-200
	Voltage	100 - 240 VAC, rated

Technical Specifications

		-36 to -75 VDC, rated (depending on power supply chosen)
	Maximum power rating	300 W
	PoE power	450 W PoE+
	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. PoE Power is the power supplied by the internal power supply, it is dependent on the type and quantity of power supplies and may be supplemented with the use of a External Power Supply (EPS). No default power supply is included in the chassis; a minimum of one/maximum of our power supplies should be ordered.
Reliability	MTBF (years)	178.66
Safety		UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1; FDA 21 CFR Subchapter J; AS/NZS 60950-1; GB 4943.1
Emissions		EN 61000-4-11:2004; ANSI C63.4-2009; AS/NZS CISPR 22:2009; CISPR 22 Ed2.0 2008-09; EN 55022:2010; EN 61000-3-3:2008; GB 9254-2008; IEC 61000-3-2 Ed3.0 (2009-02); IEC 61000-3-3 Ed2.0 (2008-06); VCCI V-4/2012.04; CISPR 24 Ed2.0 2010-08; EN 55024:2010; EN 61000-3-2:2006+A1:2009+A2:2009 ; EN 61000-4-2:2009; EN 61000-4-29:2000; EN 61000-4-3:2006; EN 61000-4-4:2012; EN 61000-4-5:2006; EN 61000-4-6:2009; EN 61000-4-8:2010; ETSI EN 300 386 V1.6.1(2012-09); FCC 47 CFR Part 15 (latest current version); ICES-003 Issue 5; IEC 61000-4-11 Ed2.0 (2004-03); IEC 61000-4-2 Ed2.0 (2008-12); IEC 61000-4-29 Ed1.0 (2000-08); IEC 61000-4-3 Ed3.2 (2010-04); IEC 61000-4-4 Ed3.0 (2012-04); IEC 61000-4-5 Ed2.0 (2005-11); IEC 61000-4-6 Ed3.0 (2008-10); IEC 61000-4-8 Ed2.0 (2009-09); VCCI V-3/2013.04
Telecom		FCC part 68; CS-03
Management		IMC - Intelligent Management Center; command-line interface; limited command-line interface; configuration menu; out-of-band management (RJ-45 Ethernet); SNMP Manager; Telnet; RMON1; FTP; in-line and out-of-band; modem interface; out-of-band management (serial RS-232C or Micro USB); 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

Accessories

HPE FlexNetwork MSR4000 Router Series accessories

Transceivers

HPE X115 100M SFP LC FX Transceiver	JD102B
HPE X110 100M SFP LC LX Transceiver	JD120B
HPE X110 100M SFP LC LH40 Transceiver	JD090A
HPE X110 100M SFP LC LH80 Transceiver	JD091A
HPE X120 1G SFP LC SX Transceiver	JD118B
HPE X120 1G SFP LC LX Transceiver	JD119B
HPE X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HPE X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HPE X125 1G SFP LC LH70 Transceiver	JD063B
HPE X120 1G SFP LC LH100 Transceiver	JD103A
HPE X120 1G SFP LC BX 10-U Transceiver	JD098B
HPE X120 1G SFP LC BX 10-D Transceiver	JD099B
HPE X120 1G SFP RJ45 T Transceiver	JD089B
HPE X130 10G SFP+ LC SR Transceiver	JD092B
HPE X130 10G SFP+ LC LRM Transceiver	JD093B
HPE X130 10G SFP+ LC LR Transceiver	JD094B
HPE X130 10G SFP+ LC ER 40km Transceiver	JG234A
HPE FlexNetwork X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C
HPE FlexNetwork X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
HPE FlexNetwork X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
HPE FlexNetwork X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable	JG081C

Cables

HPE FlexNetwork X200 V.24 DTE 3m Serial Port Cable	JD519A
HPE FlexNetwork X200 V.24 DCE 3m Serial Port Cable	JD521A
HPE FlexNetwork X200 V.35 DTE 3m Serial Port Cable	JD523A
HPE FlexNetwork X200 V.35 DCE 3m Serial Port Cable	JD525A
HPE FlexNetwork X260 RS449 3m DTE Serial Port Cable	JF825A
HPE FlexNetwork X260 RS449 3m DCE Serial Port Cable	JF826A
HPE FlexNetwork X260 RS530 3m DTE Serial Port Cable	JF827A
HPE FlexNetwork X260 RS530 3m DCE Serial Port Cable	JF828A
HPE FlexNetwork X260 Auxiliary Router Cable	JD508A
HPE FlexNetwork X260 E1 RJ45 3m Router Cable	JD509A
HPE FlexNetwork X260 E1 RJ45 20m Router Cable	JD517A
HPE FlexNetwork X260 E1 (2) BNC 75 ohm 3m Router Cable	JD175A
HPE FlexNetwork X260 E1 BNC 20m Router Cable	JD514A
HPE FlexNetwork X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable	JD511A
HPE FlexNetwork X260 T1 Router Cable	JD518A
HPE FlexNetwork X260 8E1 BNC 75 ohm 3m Router Cable	JD512A
HPE FlexNetwork X260 T3/E3 Router Cable	JD531A
HPE FlexNetwork X260 E1 RJ45 to 2xBNC 75ohm 3m Router Cable	JH294A

Power Supply

HPE FlexNetwork X351 300W 100-240VDC to 12VDC Power Supply	JG527A
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Accessories

HPE FlexNetwork X351 300W 48-60VDC to 12VDC Power Supply JG528A

License

HPE IPS Activation for MSR4000 E-LTU JH223AAE

HPE DV Essential IPS Filter Service for MSR4000 1yr E-LTU JH227AAE

Router Modules

HPE FlexNetwork MSR4000 MPU-100 Main Processing Unit JG412A

HPE FlexNetwork MSR4000 SPU-100 Service Processing Unit JG413A

HPE FlexNetwork MSR4000 SPU-200 Service Processing Unit JG414A

HPE FlexNetwork MSR4000 SPU 300 Service Processing Unit JG670A

HPE FlexNetwork MSR 1-port E1 Voice HMIM Module JG429A

HPE FlexNetwork MSR 2-port E1 Voice HMIM Module JG431A

HPE FlexNetwork MSR 1-port T1 Voice HMIM Module JG430A

HPE FlexNetwork MSR 2-port T1 Voice HMIM Module JG432A

HPE FlexNetwork MSR 4-port FXS HMIM Module JG446A

HPE FlexNetwork MSR 4-port FXO HMIM Module JG447A

HPE FlexNetwork MSR 4-port E and M HMIM Module JG448A

HPE FlexNetwork MSR 16-port FXS HMIM Module JG434A

HPE FlexNetwork MSR 4-port Enhanced Sync/Async Serial HMIM Module JG442A

HPE FlexNetwork MSR 8-port Enhanced Sync/Async Serial HMIM Module JG443A

HPE FlexNetwork MSR 1-port Clear Channel T3 HMIM Module JH449A

HPE FlexNetwork MSR 1-port OC-3c/STM 1c POS HMIM Module JG438A

HPE FlexNetwork MSR 0.5U HMIM Adapter Module JG415A

HPE FlexNetwork MSR 1U HMIM Adapter Module JG416A

HPE FlexNetwork MSR 8-port 10/100/1000BASE-T/2-port 1000BASE-X (Combo) Switch HMIM Module JG741A

HPE FlexNetwork MSR 2-port Gig-T HMIM Module JG420A

HPE FlexNetwork MSR 4-port Gig-T HMIM Module JG421A

HPE FlexNetwork MSR 8-port Gig-T HMIM Module JG422A

HPE FlexNetwork MSR 2-port 1000BASE-X HMIM Module JG423A

HPE FlexNetwork MSR 4-port 1000BASE-X HMIM Module JG424A

HPE FlexNetwork MSR 8-port 1000BASE-X HMIM Module JG425A

HPE FlexNetwork MSR 24-port Gig-T Switch HMIM Module JG426A

HPE FlexNetwork MSR 24-port Gig-T PoE Switch HMIM Module JG427A

HPE FlexNetwork MSR 1-port OC-3/STM-1 CPOS HMIM Module JG428A

HPE FlexNetwork MSR Open Application Platform (OAP) with VMware vSphere MIM Module JG532A

HPE FlexNetwork MSR 8-port 100BASE-FX/1000BASE-X/4-port 1000BASE-T (Combo) L2/L3 HMIM Module JH238A

HPE FlexNetwork MSR 16-port Enhanced Async Serial HMIM Module JG445A

HPE FlexNetwork MSR 8-port E1/CE1/T1/CT1/PRI HMIM Module JH169A

HPE FlexNetwork MSR 8-port E1/Fractional E1/T1/Fractional T1 HMIM Module JH172A

Memory

HPE X600 1G Compact Flash Card JC684A

HPE X600 512M Compact Flash Card JC685A

HPE X600 256M Compact Flash Card JC686A

HPE FlexNetwork X610 4GB DDR3 SDRAM UDIMM Memory JG530A

Summary of Changes

Date	Version History	Action	Description of Change:
07-Apr-2017	From Version 21 to 22	Change	Updates made on Features and benefits and Accessories
03-Apr-2017	From Version 20 to 21	Added	SKU added: JH449A
06-Feb-2017	From Version 19 to 20	Changed	Adding MSR #A59 option on Configuration section
06-June-2016	From Version 18 to 19	Changed	Document name changed to HPE FlexNetwork MSR4000 Router Series. Product description updated.
29-Apr-2016	From Version 17 to 18	Changed	SKU descriptions updated on all the document. Accessories updated
31-Mar-2016	From Version 16 to 17	Added	SKUs added: JH223AAE, JH227AAE
		Changed	Features and benefits, Standards and protocols updated
01-Dec-2015	From Version 15 to 16	Changed	Overview and Technical Specifications updated
28-Aug-2015	From Version 14 to 15	Changed	Configuration section updated
17-Aug-2015	From Version 13 to 14	Added	SKUs added: JG445A, JH169A, JH172A, JH238A, JH294A
		Changed	Updated Overview, Features and Benefits and Accessories
24-Feb-2015	From Version 12 to 13	Changed	Minor change on Configuration section
06-Oct-2014	From Version 11 to 12	Changed	Configuration section updated
18-Aug-2014	From Version 10 to 11	Added	Added 4 new accessories: JG428A, JG432A, JG434A, JG741A
03-July-2014	From Version 9 to 10	Changed	Configuration menu updated.
10-June-2014	From Version 8 to 9	Added	Added two new Router Enclosure Options to Configuration as well as 10 new accessories: JG670A, JG420A, JG421A, JG422A, JG423A, JG424A, JG425A, JG426A, JG427A, JG528A.
10-Feb-2014	From Version 7 to 8	Changed	Key features was revised.
31-Jan-2014	From Version 6 to 7	Added	GRE tunnels was added to Technical Specifications.
22-Nov-2013	From Version 5 to 6	Changed	HIMM Modules and Cables were revised in Configuration.
12-Nov-2013	From Version 4 to 5	Changed	Power Supplies was revised in Configuration.
14-Oct-2013	From Version 3 to 4	Added	Overview images were added.
30-Sep-2013	From Version 2 to 3	Changed	Configuration was reorganized.
27-Sep-2013	From Version 1 to 2	Added	Configuration was added.

Summary of Changes



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