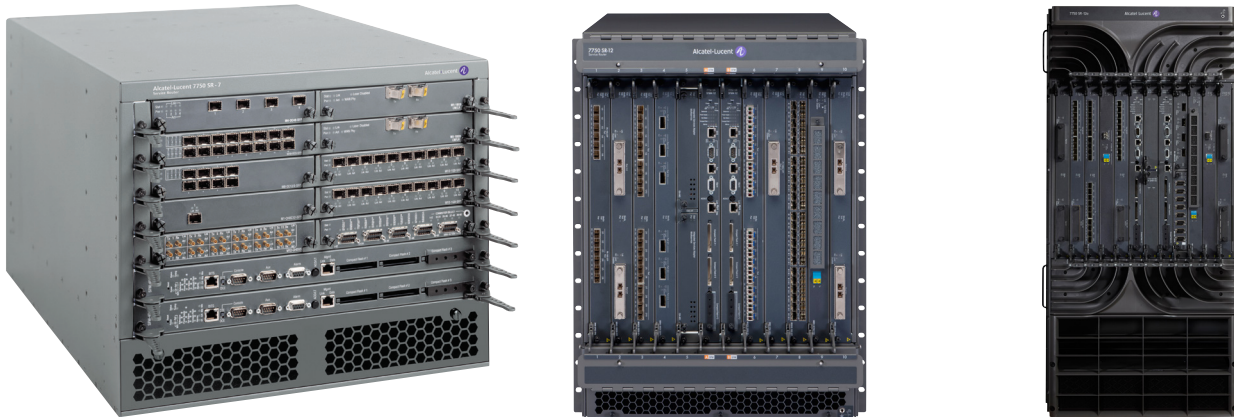# Alcatel-Lucent 7750 Service Router Series

Key features

- Flexible, scalable, and high performance: delivers high bandwidth, low latency
- User, content, and application intelligence: service differentiation with non-stop routing and services
- Field proven OS: Feature-rich, fault-tolerant operating system for enterprise and cloud services
- Operational efficiency: common SR and optical portfolio management platform with service-aware network management, operation, and reporting

Product overview

The Alcatel-Lucent 7750 Service Router (SR) Series delivers the performance, service richness, and intelligence to drive the converged IP network edge. Leveraging 400 Gbps FP3 network processing (NP) silicon technology, the portfolio scales capacity up to 9.6 Tbps and delivers up to 36 x 100GbE, 60 x 40GbE, or 360 x 10GbE ports. With support for a comprehensive suite of Layer 2 and Layer 3 routing capabilities, advanced traffic management, hierarchical quality of service (HQoS), and specialized service-aware application processing, this feature-rich multiservice routing platform enables the full range of advanced business, residential, mobile services and dynamic applications without sacrificing performance. It integrates IPv4/IPv6, MPLS, Ethernet, Provider Backbone Bridge (PBB), and MPLS Transport Profile (MPLS-TP) protocols with a broad range of Ethernet and multiservice interfaces. The 7750 SR platform supports redundant system hardware and line card redundancy for high availability and resilience.

The comprehensive feature set enables a best-of-breed multiservice edge router that supports end-user, business, cloud, and data center interconnect services for HP's target large enterprise and cloud service provider markets.

Features and benefits

Quality of service (QoS)

• Hierarchical QoS (HQoS)

Provides a built-in QoS engine that supports hierarchical QoS (HQoS) and can implement a hierarchical scheduling mechanism based on ports, user groups, users, and user services; also cooperates with MPLS Traffic Engineering (TE) to implement bandwidth reservation and scheduling based on tunnels and services

• Weighted random early detection (WRED)/random early detection (RED)

Delivers congestion avoidance capabilities through the use of queue management algorithms

• Advanced classifier-based QoS

Classifies traffic using multiple match criteria based on Layer 2, 3, and 4 information; applies QoS policies such as setting priority level and rate limit to selected traffic on a per-port or per-VLAN basis

• Bandwidth shaping

 – Port-based rate limiting

   Provides per-port ingress-/egress-enforced increased bandwidth

 – Classifier-based rate limiting

   Uses an access control list (ACL) to enforce increased bandwidth for ingress traffic on each port

 – Reduced bandwidth

   Provides per-port, per-queue egress-based reduced bandwidth

• Traffic policing

Supports Committed Access Rate (CAR) and line rate

Virtual private network (VPN)

• Layer 2 Tunneling Protocol (L2TP)

An industry standard-based traffic encapsulation mechanism supported by many common operating systems; will tunnel the Point-to-Point Protocol (PPP) traffic over the IP and non-IP networks; may use the IP/UDP transport mechanism in IP networks

• Generic Routing Encapsulation (GRE)

Transports Layer 2 connectivity over a Layer 3 path in a secured way; enables the segregation of traffic from site to site

Management

• Command authorization

Leverages RADIUS to link a custom list of CLI commands to an individual network administrator's login; an audit trail documents activity

• Command-line interface (CLI)

Provides a secure, easy-to-use CLI for configuring the module via SSH or a switch console; provides direct real-time session visibility

• 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

- Network management

  SNMP v2c/v3 MIB-II with traps

- Remote Monitoring (RMON)

  Uses standard SNMP to monitor essential network functions; supports events, alarm, history, and statistics group plus a private alarm extension group

- SNMP v1, v2, and v3

  Provide complete support of SNMP; provide full support of industry-standard Management Information Base (MIB) plus private extensions; SNMP v3 supports increased security using encryption

Layer 3 routing

- Layer 3 IPv4 routing

  Provides routing of IPv4 at media speed; supports static routes, RIP and RIPv2, OSPF, IS-IS, and BGP

- Layer 3 IPv6 routing

  Provides routing of IPv6 at media speed; supports static routes, RIPng, OSPFv3, IS-ISv6, and MP-BGP

- 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

- Equal-Cost Multipath (ECMP)

  Enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth

- IPv6 tunnels over IPv4

  Allows IPv6 infrastructure to be connected over legacy IPv4 networks

- MPLS support

  Provides extended support of MPLS, including MPLS VPNs and MPLS Traffic Engineering (MPLS TE)

- Multiprotocol Label Switching (MPLS) Layer 3 VPN

  Allows Layer 3 VPNs across a provider network; uses MP-BGP to establish private routes for increased security; supports RFC 2547bis multiple autonomous system VPNs for added flexibility

- Multicast VPN

  Supports multicast domain (MD) multicast VPN, which can be distributed on separate service cards, providing high performance and flexible configuration

- Multiprotocol Label Switching (MPLS) Layer 2 VPN

  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

- Virtual Private LAN Service (VPLS)

  Establishes point-to-multipoint Layer 2 VPNs across a provider network

• Multiprotocol Label Switching Traffic Engineering (MPLS TE)

Traffic Engineering (TE) is used to enhance traffic over large MPLS networks based on type of traffic and available resources; TE dynamically tunes traffic management attributes and enables true load balancing; MPLS TE supports route backup using fast reroute (FRR)

• VPLS support

Provides extended support of VPLS for data center to data center communication at Layer 2; provides support of hierarchical VPLS for scalability

Security

• Access control lists (ACLs)

Provide IPv4 and IPv6 filtering based on source and destination IP address/subnet and source/destination TCP/UDP port number

• Network Address Translation (NAT)

Provides a method for translating private IP addresses to public IP addresses, reducing the number of IP addresses used, and isolates the enterprise addressing environment

• Secure management access

Delivers secure encryption of all access methods (CLI, GUI, or MIB) through SSHv2 and SNMPv3

• 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; supports distributed UFPF

Resiliency and high availability

• Non-Stop Routing

provides instant recovery from a control plane failure without relying on an adjacent router. It uses a hot-standby control card with the latest router image, configuration and network state and is able to maintain existing protocol sessions with adjacent routers while continuing to learn new route updates during the fail over

• Non-Stop Services

Extends non-stop routing to ensure uninterrupted availability of network services during a control plane fail over. The hot-standby control card maintains the state of services and sessions so that VPLS, VLL, IP VPN, and enhanced Internet services are not affected during a control plane fail over

• Graceful restart

Supports graceful restart for OSPF, IS-IS, BGP, LDP, and RSVP; the network remains stable during the active-standby switchover; after the switchover, the device quickly learns the network routes by communicating with adjacent routers; forwarding remains uninterrupted during the switchover to achieve nonstop forwarding (NSF)

• Hot-swappable modules

Permits modules and mini-GBICs to be added or swapped without interrupting the network

• IP Fast Reroute (FRR)

Nodes are configured with backup ports and routes; local implementation requires no cooperation of adjacent devices, simplifying the deployment; solves the traditional convergence faults in IP forwarding; achieves restoration within 50 ms, with the restoration time independent of the number of routes and fast link switchovers without route convergence

- Redundant design of main processing unit and power supply

  Increases the overall system availability

- Separate data and control planes

  Provide greater flexibility and enable continual services

- Virtual Router Redundancy Protocol (VRRP)

  Allows groups of two routers to back each other up dynamically to create highly available routed environments in IPv4 and IPv6 networks

- Assured high availability

  – Resilient switch fabric

    Protection from a single failed fabric module, supporting total capacity by the remaining fabric module

  – Optional redundant management

    Automatic failover for active and standby management modules

  – Modular and distributed software

    Increase capability/capacity by using distributed hardware and software

  – Optional redundant power supply

    Uninterrupted power

  – No single point of failure architecture

    Separate control and management planes

- In-service software upgrades

  Leveraging non-stop routing and non-stop services, allows major and minor upgrades to be installed without restarting the device, increasing network uptime and simplifying maintenance
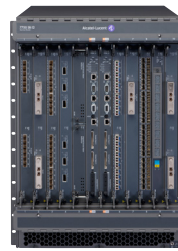
Software-defined networking
- OpenFlow

  Supports OpenFlow 1.0 and 1.3 specifications to enable SDN by allowing separation of the data (packet forwarding) and control (routing decision) paths

Multicast support
- 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; PIM Dense Mode (DM), Sparse Mode (SM), and Source-Specific Mode (SSM) are supported

- 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 separately from unicast traffic

Alcatel-Lucent 7750 Service Router Series

Specifications

	Alcatel-Lucent 7750 SR7 Switch Fabric and Control Processor Module DC Power Chassis Starter Bundle (JL136A)	Alcatel-Lucent 7750 SR12 Switch Fabric and Control Processor Module DC Power Chassis Starter Bundle (JL139A)	Alcatel-Lucent 7750 SR12e Switch Fabric and Control Processor Module DC Power Chassis Starter Bundle (JL142A)
Included accessories	1 Alcatel-Lucent 7750 SR SFM5-7 Switch Fabric Module and CPM5 Control Processor Module Bundle (JL137A)	1 Alcatel-Lucent 7750 SR SFM5-12 Switch Fabric Module and CPM5 Control Processor Module Bundle (JL140A)	1 Alcatel-Lucent 7750 SR SFM5-12e Switch Fabric Module and CPM5 Control Processor Module Bundle (JL143A)
I/O ports and slots*	5 I/O module slots Supports a maximum of 5 100GbE ports or 15 40GbE ports or 100 10GbE ports or 240 Gigabit Ethernet ports, or a combination	10 I/O module slots Supports a maximum of 10 100GbE ports or 30 40GbE ports or 200 10GbE ports or 480 Gigabit Ethernet ports, or a combination	9 I/O module slots Supports a maximum of 9 100GbE ports or 27 40GbE ports or 180 10GbE ports or 432 Gigabit Ethernet ports, or a combination
Additional ports and slots	2 Integrated SF/CPM (Switch Fabric and Control Processor Module) slots	2 Integrated SF/CPM (Switch Fabric and Control Processor Module) slots	2 Integrated SF/CPM (Switch Fabric and Control Processor Module) slots 2 Mini SFM (Switch Fabric Module) slots
Physical characteristics Dimensions Weight Full configuration weight	 17.52(w) x 25.51(d) x 14.02(h) in. (44.5 x 64.8 x 35.6 cm) (8U height) 90.39 lb (41 kg) 155.42 lb (70.5 kg)	 17.52(w) x 25.39(d) x 24.49(h) in. (44.5 x 64.5 x 62.2 cm) (14U height) 124.34 lb (56.4 kg) 343.26 lb (155.7 kg)	 17.52(w) x 30(d) x 38.5(h) in. (44.5 x 76.2 x 97.8 cm) (22U height) 175.05 lb (79.4 kg) 550.05 lb (249.5 kg)
Memory and processor	Cavium 10-core @ 1.5 GHz, 16 GB DDR3 DIMM; storage: Default one 2GB compact flash with single SF/CPM, Maximum six 2GB compact flashes with two SF/CPMs	Cavium 10-core @ 1.5 GHz, 16 GB DDR3 DIMM; storage: Default one 2GB compact flash with single SF/CPM, Maximum six 2GB compact flashes with two SF/CPMs	Cavium 10-core @ 1.5 GHz, 16 GB DDR3 DIMM; storage: Default one 2GB compact flash with single SF/CPM, Maximum six 2GB compact flashes with two SF/CPMs
Mounting and enclosure	EIA-standard 19 in. rack	EIA-standard 19 in. rack	EIA-standard 19 in. rack
Performance Throughput Routing/Switching capacity Switch fabric speed Routing table size Forwarding table size	 up to 2976 Mpps 2 Tbps 2 Tbps 22000000 entries (IPv4), 12000000 entries (IPv6) 2000000 entries (IPv4), 1000000 entries (IPv6)	 up to 5952 Mpps 4 Tbps 4 Tbps 22000000 entries (IPv4), 12000000 entries (IPv6) 2000000 entries (IPv4), 1000000 entries (IPv6)	 up to 10713.6 Mpps 7.2 Tbps 9.6 Tbps 22000000 entries (IPv4), 12000000 entries (IPv6) 2000000 entries (IPv4), 1000000 entries (IPv6)
Environment Operating temperature Operating relative humidity Altitude	 41°F to 104°F (5°C to 40°C) 5% to 85% up to 13,123 ft (4 km)	 41°F to 104°F (5°C to 40°C) 5% to 85% up to 13,123 ft (4 km)	 41°F to 104°F (5°C to 40°C) 5% to 85% up to 13,123 ft (4 km)

* Please Note: I/O port density is calculated based on the line cards (integrated multimedia modules) that are available through HP networking. Alcatel-Lucent 7750 service router offers additional line cards (integrated multimedia modules and input/output modules) that can provide higher I/O port density.

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Electrical characteristics			
Voltage	–40 to –72 VDC, rated (depending on power supply chosen)	–40 to –72 VDC, rated (depending on power supply chosen)	–40 to –72 VDC, rated (depending on power supply chosen)
Current	93 A	162 A	60 A
Maximum power rating	3750 W	6480 W	12000 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. Optional external 200 to 240 VAC power supply (JL138A) available.	**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. Optional external 200 to 240 VAC power supply (JL141A) available.	**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. Optional external 200 to 240 VAC power supply (JL138A) available.
Safety	EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; EN 60950-1; CSA; IEC 60825-1; IEC 60950-1, Second Edition; UL 60950-1 2nd Edition	EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; EN 60950-1; CSA; IEC 60825-1; UL 60950-1, 2nd Edition; IEC 60950-1, Second Edition	EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; EN 60950-1; CSA; IEC 60825-1; IEC 60950-1, Second Edition; UL 60950-1 2nd Edition
Emissions	FCC part 15 Class A; BSMI CNS 13438; FCC Part 15, Subpart B; EN 61000-3-2; EN 61000-3-3; AS/NZS CISPR 22:2009; VCCI V-4/2012.04; ETSI EN 300 386 V1.6.1(2012-09); CISPR 22:2008 Class A; EN 55022:2010 Class A; ICES-003 Issue 5 Class A; VCCI V-3/2013.04 Class A	FCC part 15 Class A; BSMI CNS 13438; FCC Part 15, Subpart B; EN 61000-3-2; EN 61000-3-3; AS/NZS CISPR 22:2009; VCCI V-4/2012.04; ETSI EN 300 386 V1.6.1(2012-09); CISPR 22:2008 Class A; EN 55022:2010 Class A; ICES-003 Issue 5 Class A; VCCI V-3/2013.04 Class A	FCC part 15 Class A; BSMI CNS 13438; FCC Part 15, Subpart B; EN 61000-3-2; EN 61000-3-3; AS/NZS CISPR 22:2009; VCCI V-4/2012.04; ETSI EN 300 386 V1.6.1(2012-09); CISPR 22:2008 Class A; EN 55022:2010 Class A; ICES-003 Issue 5 Class A; VCCI V-3/2013.04 Class A
Immunity			
Generic	ETSI EN 300 386 V1.6.1	ETSI EN 300 386 V1.6.1	ETSI EN 300 386 V1.6.1
EN	EN 55024, CISPR 24; EN 61000-6-2:2005/AC:2005	EN 55024, CISPR 24; EN 61000-6-2:2005/AC:2005	EN 55024, CISPR 24; EN 61000-6-2:2005/AC:2005
ESD	EN 61000-4-2	EN 61000-4-2	EN 61000-4-2
Radiated	EN 61000-4-3	EN 61000-4-3	EN 61000-4-3
EFT/Burst	EN 61000-4-4	EN 61000-4-4	EN 61000-4-4
Surge	EN 61000-4-5	EN 61000-4-5	EN 61000-4-5
Conducted	EN 61000-4-6	EN 61000-4-6	EN 61000-4-6
Power frequency magnetic field	EN 61000-4-8	EN 61000-4-8	EN 61000-4-8
Voltage dips and interruptions	EN 61000-4-11	EN 61000-4-11	EN 61000-4-11
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

	Alcatel-Lucent 7750 SR7 Switch Fabric and Control Processor Module DC Power Chassis Starter Bundle (JL136A)	Alcatel-Lucent 7750 SR12 Switch Fabric and Control Processor Module DC Power Chassis Starter Bundle (JL139A)	Alcatel-Lucent 7750 SR12e Switch Fabric and Control Processor Module DC Power Chassis Starter Bundle (JL142A)
Management	Command-line interface; Out-of-band management (serial RS-232c); Out-of-band management (RJ-45 Ethernet); SNMP manager; Telnet; FTP; In-line and out-of-band	Command-line interface; Out-of-band management (serial RS-232c); Out-of-band management (RJ-45 Ethernet); SNMP manager; Telnet; FTP; In-line and out-of-band	Command-line interface; Out-of-band management (serial RS-232c); Out-of-band management (RJ-45 Ethernet); SNMP manager; Telnet; FTP; In-line and out-of-band
Notes	Additional safety standards and compliance agency certifications safety • EN 60950-1 2nd Ed CE Mark • IEC 60950-1 2nd Ed CB Scheme • CSA/UL 60950-1 2nd Ed NRTL • FDA CDRH 21-CFR 1040 • IEC/EN 60825-1 • IEC/EN 60825-2 Maximum ports are calculated based on the Integrated Media Modules (IMM) which HP offers. Alcatel-Lucent has other interface modules that provide higher port density and maximum ports for the system.	Additional safety standards and compliance agency certifications safety • EN 60950-1 2nd Ed CE Mark • IEC 60950-1 2nd Ed CB Scheme • CSA/UL 60950-1 2nd Ed NRTL • FDA CDRH 21-CFR 1040 • IEC/EN 60825-1 • IEC/EN 60825-2 Maximum ports are calculated based on the Integrated Media Modules (IMM) which HP offers. Alcatel-Lucent has other interface modules that provide higher port density and maximum ports for the system.	Additional safety standards and compliance agency certifications safety • EN 60950-1 2nd Ed CE Mark • IEC 60950-1 2nd Ed CB Scheme • CSA/UL 60950-1 2nd Ed NRTL • FDA CDRH 21-CFR 1040 • IEC/EN 60825-1 • IEC/EN 60825-2 Maximum ports are calculated based on the Integrated Media Modules (IMM) which HP offers. Alcatel-Lucent has other interface modules that provide higher port density and maximum ports for the system.
Services	Refer to the HP website at hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	Refer to the HP website at hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	Refer to the HP website at hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

Standards and protocols
(applies to all products in series)

BGP	RFC 1772 Application of the BGP RFC 1965 BGP-4 confederations RFC 1997 BGP Communities Attribute RFC 2385 BGP Session Protection via TCP MD5 RFC 2439 BGP Route Flap Damping RFC 2918 Route Refresh Capability RFC 3107 Support BGP carry Label for MPLS RFC 3392 Capabilities Advertisement with BGP-4	RFC 4271 A Border Gateway Protocol 4 (BGP-4) RFC 4360 BGP Extended Communities Attribute RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP) RFC 4486 Subcodes for BGP Cease Notification Message RFC 4724 Graceful Restart Mechanism for BGP	RFC 4760 Multiprotocol Extensions for BGP-4 RFC 4893 BGP Support for Four-octet AS Number Space RFC 5065 Autonomous System Confederations for BGP RFC 5291 Outbound Route Filtering Capability for BGP-4 RFC 5492 Capabilities Advertisement with BGP-4
Device management	RFC 1157 SNMPv1/v2c RFC 2452 MIB for TCP6	RFC 2573 (SNMPv3 Applications) SSHv1/SSHv2 Secure Shell	TACACS/TACACS+
General protocols	RFC 768 UDP RFC 791 IP RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 951 BOOTP RFC 1058 RIPv1 RFC 1332 The PPP Internet Protocol Control Protocol (IPCP) RFC 1350 TFTP Protocol (revision 2) RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP) RFC 1519 CIDR RFC 1534 DHCP/BOOTP Interoperation RFC 1542 BOOTP RFC 1638 PPP Bridging Control Protocol (BCP) RFC 1661 The Point-to-Point Protocol (PPP)	RFC 1662 PPP in HDLC-like Framing RFC 1812 IPv4 Routing RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses RFC 1989 PPP Link Quality Monitoring RFC 1990 The PPP Multilink Protocol (MP) RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP) RFC 2082 RIP-2 MD5 Authentication RFC 2131 DHCP RFC 2453 RIPv2 RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE) RFC 2615 PPP over SONET/SDH (Synchronous Optical Network/Synchronous Digital Hierarchy) RFC 2787 Definitions of Managed Objects for VRRP	RFC 2878 PPP Bridging Control Protocol (BCP) RFC 3046 DHCP Relay Agent Information Option RFC 3596 DNS Extensions to Support IP Version 6 RFC 3768 VRRP RFC 5286 Basic Specification for IP Fast Reroute: Loop-Free Alternates RFC 5382 The IP Network Address Translator (NAT) RFC 5508 NAT Behavioral Requirements for ICMP RFC 5880 Bidirectional Forwarding Detection RFC 5881 BFD for IPv4 and IPv6 (Single Hop) RFC 5883 BFD for Multihop Paths
IP multicast	RFC 1112 IGMP RFC 2236 IGMPv2 RFC 2362 PIM Sparse Mode RFC 3376 IGMPv3 RFC 3446 Anycast Rendezvous Point (RP) mechanism using Protocol Independent Multicast (PIM) and Multicast Source Discovery Protocol (MSDP)	RFC 3618 Multicast Source Discovery Protocol (MSDP) RFC 4601 PIM Sparse Mode RFC 4604 Using Internet Group Management Protocol Version 3 (IGMPv3) and Multicast Listener Discovery Protocol Version 2 (MLDv2) for Source-Specific Multicast	RFC 4607 Source-Specific Multicast for IP RFC 4608 Source-Specific Protocol Independent Multicast in 232/8 (PIM SSM) RFC 4610 Anycast-RP Using Protocol Independent Multicast (PIM)
IPv6	RFC 1981 IPv6 Path MTU Discovery RFC 2375 IPv6 Multicast Address Assignments RFC 2460 IPv6 Specification RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2464 Transmission of IPv6 over Ethernet Networks RFC 2529 Transmission of IPv6 Packets over IPv4	RFC 2545 Use of MP-BGP-4 for IPv6 RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2740 OSPFv3 for IPv6 RFC 3587 IPv6 Global Unicast Address Format RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6 RFC 4007 IPv6 Scoped Address Architecture	RFC 4193, Unique Local IPv6 Unicast Addresses RFC 4291 IP Version 6 Addressing Architecture RFC 4443 ICMPv6 RFC 4552 Authentication/Confidentiality for OSPFv3 RFC 5072 IP Version 6 over PPP RFC 5095 Deprecation of Type 0 Routing Headers in IPv6

Standards and protocols (continued)
(applies to all products in series)

MIBs	RFC 1157 A Simple Network Management Protocol (SNMP) RFC 1215 A Convention for Defining Traps for use with the SNMP RFC 1657 BGP-4 MIB RFC 1724 RIPv2 MIB RFC 1850 OSPFv2 MIB RFC 1907 SNMPv2 MIB RFC 2011 SNMPv2 MIB for IP	RFC 2452 IPV6-TCP-MIB RFC 2465 IPv6 MIB RFC 2571 SNMP Framework MIB RFC 2572 SNMP-MPD MIB RFC 2573 SNMP-Notification MIB RFC 2573 SNMP-Target MIB RFC 2574 SNMP USM MIB RFC 2578 Structure of Management Information Version 2 (SMIv2)	RFC 2665 Ethernet-Like-MIB RFC 2819 RMON MIB RFC 2863 The Interfaces Group MIB RFC 3273 HC-RMON MIB RFC 3414 SNMP-User based-SM MIB RFC 3418 MIB for SNMP RFC 3826 AES for SNMP's USM MIB RFC 4133 Entity MIB (Version 3) RFC 4292 IP Forwarding Table MIB
MPLS	RFC 3031 Multiprotocol Label Switching Architecture RFC 3032 MPLS Label Stack Encoding	RFC 3443 Time To Live (TTL) Processing in Multi-Protocol Label Switching (MPLS) Networks	RFC 4182 Removing a Restriction on the use of MPLS Explicit NULL
Network management	RFC 1157 SNMPv1 RFC 1215 Convention for defining traps for use with the SNMP RFC 2571 SNMP Management Frameworks RFC 2572 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP) RFC 2573 SNMP Applications RFC 2574 SNMPv3 User-based Security Model (USM)	RFC 2575 SNMPv3 View-based Access Control Model (VACM) RFC 2576 Coexistence between SNMP versions RFC 2578 SMIv2 RFC 2819 Remote Network Monitoring Management Information Base RFC 3164 BSD syslog Protocol RFC 3411 An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks	RFC 3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP) RFC 3413 Simple Network Management Protocol (SNMP) Applications RFC 3414 SNMPv3 User-based Security Model (USM) RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP) RFC 4292 IP Forwarding Table MIB
OSPF	RFC 1765 OSPF Database Overflow RFC 2328 OSPFv2	RFC 2370 OSPF Opaque LSA Option RFC 3101 OSPF NSSA	RFC 3137 OSPF Stub Router Advertisement RFC 3623 Graceful OSPF Restart
Security	RFC 2138 RADIUS Authentication RFC 2865 RADIUS Authentication	RFC 2866 RADIUS Accounting RFC 4250 The Secure Shell (SSH) Protocol Assigned Numbers	draft-grant-tacacs-02 (TACACS) SSHv1/SSHv2 Secure Shell

Alcatel-Lucent 7750 Service Router Series accessories

Alcatel-Lucent 7750 SR7 Switch Fabric and Control Processor Module DC Power Chassis Starter Bundle (JL136A)	Alcatel-Lucent 7x50 1-port 100GBASE LR4 CFP Single Mode 10km LC Connector Transceiver (JL153A) Alcatel-Lucent 7x50 1-port 100GBASE SR10 CFP Multimode 100m MPO Connector Transceiver (JL154A) Alcatel-Lucent 7x50 1-port 40GBASE LR4 QSFP+ Single Mode 10km LC Connector Transceiver (JL155A) Alcatel-Lucent 7x50 1-port 10GBASE-SR SFP+ Multimode 300m LC Connector Transceiver (JL156A) Alcatel-Lucent 7x50 1-port 10GBASE-LR SFP+ Single Mode 10km LC Connector Transceiver (JL157A) Alcatel-Lucent 7x50 1-port 1000BASE-SX SFP Multimode 550m LC Connector Transceiver (JL158A) Alcatel-Lucent 7x50 1-port 1000BASE-LX SFP Single Mode 10km LC Connector Transceiver (JL159A) Alcatel-Lucent 7x50 1-port 10/100/1000BASE-TX SFP RJ45 Connector Transceiver (JL160A) Alcatel-Lucent 7750 SR-7/12e AC Power Bundle (JL138A) Alcatel-Lucent 7x50 IMM Full VPRN Support for up to 50Gb/s E-LTU (JL151AAE) Alcatel-Lucent 7x50 IMM Full VPRN Support for up to 200Gb/s E-LTU (JL152AAE) Alcatel-Lucent 7750 SR-7/12/12e Release 13.0 Operating Software E-LTU (JL144AAE) Alcatel-Lucent 7750 SR SFM5-7 Switch Fabric Module and CPM5 Control Processor Module Bundle (JL137A) Alcatel-Lucent 7x50 1-port 100GbE CFP+ and 10-port 10GbE SFP+ IMM 8 VPRN E-LTU Bundle (JL145A) Alcatel-Lucent 7x50 3-port 40GbE QSFP+ and 20-port GbE SFP IMM 8 VPRN E-LTU Bundle (JL146A) Alcatel-Lucent 7x50 20-port 10GbE SFP+ IMM 8 VPRN E-LTU Bundle (JL147A) Alcatel-Lucent 7x50 12-port 10GbE SFP+ IMM 8 VPRN E-LTU Bundle (JL148A) Alcatel-Lucent 7x50 10-port 10GbE SFP+ and 20-port GbE SFP IMM 8 VPRN E-LTU Bundle (JL149A) Alcatel-Lucent 7x50 48-port GbE SFP IMM 8 VPRN E-LTU Bundle (JL150A)
Alcatel-Lucent 7750 SR12 Switch Fabric and Control Processor Module DC Power Chassis Starter Bundle (JL139A)	Alcatel-Lucent 7x50 1-port 100GBASE LR4 CFP Single Mode 10km LC Connector Transceiver (JL153A) Alcatel-Lucent 7x50 1-port 100GBASE SR10 CFP Multimode 100m MPO Connector Transceiver (JL154A) Alcatel-Lucent 7x50 1-port 40GBASE LR4 QSFP+ Single Mode 10km LC Connector Transceiver (JL155A) Alcatel-Lucent 7x50 1-port 10GBASE-SR SFP+ Multimode 300m LC Connector Transceiver (JL156A) Alcatel-Lucent 7x50 1-port 10GBASE-LR SFP+ Single Mode 10km LC Connector Transceiver (JL157A) Alcatel-Lucent 7x50 1-port 1000BASE-SX SFP Multimode 550m LC Connector Transceiver (JL158A) Alcatel-Lucent 7x50 1-port 1000BASE-LX SFP Single Mode 10km LC Connector Transceiver (JL159A) Alcatel-Lucent 7x50 1-port 10/100/1000BASE-TX SFP RJ45 Connector Transceiver (JL160A) Alcatel-Lucent 7750 SR-12 AC Power Bundle (JL141A) Alcatel-Lucent 7x50 IMM Full VPRN Support for up to 50Gb/s E-LTU (JL151AAE) Alcatel-Lucent 7x50 IMM Full VPRN Support for up to 200Gb/s E-LTU (JL152AAE) Alcatel-Lucent 7750 SR-7/12/12e Release 13.0 Operating Software E-LTU (JL144AAE) Alcatel-Lucent 7750 SR SFM5-12 Switch Fabric Module and CPM5 Control Processor Module Bundle (JL140A) Alcatel-Lucent 7x50 1-port 100GbE CFP+ and 10-port 10GbE SFP+ IMM 8 VPRN E-LTU Bundle (JL145A) Alcatel-Lucent 7x50 3-port 40GbE QSFP+ and 20-port GbE SFP IMM 8 VPRN E-LTU Bundle (JL146A) Alcatel-Lucent 7x50 20-port 10GbE SFP+ IMM 8 VPRN E-LTU Bundle (JL147A) Alcatel-Lucent 7x50 12-port 10GbE SFP+ IMM 8 VPRN E-LTU Bundle (JL148A) Alcatel-Lucent 7x50 10-port 10GbE SFP+ and 20-port GbE SFP IMM 8 VPRN E-LTU Bundle (JL149A) Alcatel-Lucent 7x50 48-port GbE SFP IMM 8 VPRN E-LTU Bundle (JL150A)

Alcatel-Lucent 7750 Service Router Series accessories (continued)

Alcatel-Lucent 7750 SR12e Switch Fabric and Control Processor Module DC Power Chassis Starter Bundle (JL142A)	Alcatel-Lucent 7x50 1-port 100GBASE LR4 CFP Single Mode 10km LC Connector Transceiver (JL153A) Alcatel-Lucent 7x50 1-port 100GBASE SR10 CFP Multimode 100m MPO Connector Transceiver (JL154A) Alcatel-Lucent 7x50 1-port 40GBASE LR4 QSFP+ Single Mode 10km LC Connector Transceiver (JL155A) Alcatel-Lucent 7x50 1-port 10GBASE-SR SFP+ Multimode 300m LC Connector Transceiver (JL156A) Alcatel-Lucent 7x50 1-port 10GBASE-LR SFP+ Single Mode 10km LC Connector Transceiver (JL157A) Alcatel-Lucent 7x50 1-port 1000BASE-SX SFP Multimode 550m LC Connector Transceiver (JL158A) Alcatel-Lucent 7x50 1-port 1000BASE-LX SFP Single Mode 10km LC Connector Transceiver (JL159A) Alcatel-Lucent 7x50 1-port 10/100/1000BASE-TX SFP RJ45 Connector Transceiver (JL160A) Alcatel-Lucent 7750 SR-7/12e AC Power Bundle (JL138A) Alcatel-Lucent 7x50 IMM Full VPRN Support for up to 50Gb/s E-LTU (JL151AAE) Alcatel-Lucent 7x50 IMM Full VPRN Support for up to 200Gb/s E-LTU (JL152AAE) Alcatel-Lucent 7750 SR-7/12/12e Release 13.0 Operating Software E-LTU (JL144AAE) Alcatel-Lucent 7750 SR SFM5-12e Switch Fabric Module and CPM5 Control Processor Module Bundle (JL143A) Alcatel-Lucent 7x50 1-port 100GbE CFP+ and 10-port 10GbE SFP+ IMM 8 VPRN E-LTU Bundle (JL145A) Alcatel-Lucent 7x50 3-port 40GbE QSFP+ and 20-port GbE SFP IMM 8 VPRN E-LTU Bundle (JL146A) Alcatel-Lucent 7x50 20-port 10GbE SFP+ IMM 8 VPRN E-LTU Bundle (JL147A) Alcatel-Lucent 7x50 12-port 10GbE SFP+ IMM 8 VPRN E-LTU Bundle (JL148A) Alcatel-Lucent 7x50 10-port 10GbE SFP+ and 20-port GbE SFP IMM 8 VPRN E-LTU Bundle (JL149A) Alcatel-Lucent 7x50 48-port GbE SFP IMM 8 VPRN E-LTU Bundle (JL150A)

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