

RS 32000 Internet Switch Router

KEY APPLICATIONS

- Deploying Gigabit Ethernet or DWDM in Metropolitan Area Networks
- Aggregating high-density Gigabit Ethernet and Fast Ethernet in collocated customer cages
- Aggregating TDM connectivity in SONET-based networks
- Providing OC-48c uplinks to the Internet core

PRODUCT OVERVIEW

The RS 32000 Internet Switch Router delivers wire-speed routing and switching in a high port density chassis. By aggregating traffic from all IP access technologies, provisioning bandwidth and shaping traffic on a per-port basis, and delivering hardware-accelerated accountability, the RS 32000 enables the profitable delivery of tiered IP services.

Supporting the full array of Internet routing protocols, including BGP, IS-IS, PIM, and OSPF, the RS 32000's modular design allows service providers to aggregate all IP access technologies — including 10 GbE, GbE, Fast Ethernet, DWDM, POS, ATM, and channelized T3. Traffic engineering is achieved with MPLS and policy-based routing, allowing service providers to provision traffic at any layer through the network.

CUSTOMER CHALLENGES & RS 32000 SOLUTIONS

Challenge

Rapidly deploy value-added services and establish a time-to-market advantage

Solution

Bandwidth provisioning from 1 Kbps to multiple 10 Gbps links on per-port or per-aggregate flow basis. e-QoS provisioning features with independent classifications, prioritization, and queue management on a per-customer basis

Challenge

Enable high-density traffic aggregation across any media type

Solution

From 10 GbE to WDM, POS, ATM, Channelized T3, Gigabit Ethernet, or Fast Ethernet, the RS 32000 delivers massive port density and wire-speed routing and switching

Challenge

Ensure interoperability with Internet core routers

Solution

Full support for standards-based Internet routing protocols, including BGP, IS-IS, PIM, and OSPF. Full MPLS supported for core-router traffic engineering



River
STONE
NETWORKS™

Ordering Information

Part No.	Product Description
R32-CHS	16-slot Switch Router chassis, backplane, switch fabric, and fan tray (also requires R32-CM, SYS-OS, R32-PAC, or R32-PDC)
R32-PAC	AC power supply (two minimum configuration, up to four total)
R32-PDC	DC power supply (one, or two for redundancy from same DC source)
R32-CM3-256	Control module (one required, second for redundancy)
R32-FAN	Fan tray assembly (one ships with system, for spare parts)
R32-SWF	Switching fabric module (one ships with system, optional second for redundancy)
System Software SYS-OS	RS Router operating system software (PC-card format) required for operation

For complete ordering information, including specific modules, contact your Riverstone representative at **(408) 878-6500**. You may also visit our Website at www.riverstonenet.com.

Platform Features

Feature-rich Wire-speed Services

- VLANs based on port or protocol
- IP routing, unicast, and multicast
- MPLS and policy-based routing
- Security (ACLs, L2 filters)
- Layer 4 application-flow switching and QoS
- Network Address Translation (NAT)
- Server Load Balancing (LSNAT)
- Hardware-based WAN compression and encryption
- Hardware-based Rate Limiting
- Jumbo Frame support

Highly Fault Tolerant

- Redundant CPU, power supplies, and switching fabric
- Hot-swappable media modules
- Standards-based VRRP

Extensive Management

- Wire-speed full RMON/RMON2
- SNMP manageable
- Telnet client secured by:
 - RADIUS
 - TACACS+
- RS-232 (out-of-band management)
- Command Line Interface (CLI)

Interfaces

10/100 Base-TX
 1000 Base-SX
 1000 Base-LX (intermediate and long range)
 Channelized T3
 ATM OC-12c
 POS OC-12c, OC-48c
 DWDM

Specifications

Capacity	Performance	Physical	Environmental Specifications	Power Requirements	Agency Standards and Specifications	Standards Supported																																								
Up to 4,096 VLANs Up to 250,000 routes Up to 20,000 security/access control filters Up to 1,600,000 Layer-2 MAC addresses Up to 8,000,000 Layer-4 application flows	Up to 128 Gbps non-blocking switching fabric Up to 90 million packets per second routing throughput MTBF (predicted) > 200,000 hours	Dimension: 35" H x 17.25" W x 19" D (88.9cm x 43.82cm x 48.26cm) Weight: 125 lbs. (56.68kg)	Operating temp: +0° to +40°C (32° to 104°F) Non-operating temp: -40° to +70°C (-40° to 158°F) Operating relative humidity: 10 to 90% (non-condensing) Non-operating relative humidity: 5 to 95% maximum (non-condensing) Altitude, operating and non-operating: 10,000 ft (3,000 m) maximum Shock & vibration: GR63	AC power Input voltage: 100 - 240 VAC Input current: 12 A; 6 A Frequency: 50 to 60 Hz DC power Input voltage: -48 to -60 VDC Input current: 50 A	Safety: Certified UL1950, CSA C22.2 No. 950, EN60950, IEC950, and 72/73/EEC Electromagnetic FCC Compatibility: Compliant with the requirements of Part 15, CSA C108.8, EN55022, VCCI, EN50082-1, and 89/336/EEC NEBS: Designed for level 3 compliance	IETF Standards Support <table border="1"> <thead> <tr> <th>RFC No.</th> <th>Title</th> </tr> </thead> <tbody> <tr><td>RFC 768</td><td>UDP</td></tr> <tr><td>RFC 783</td><td>TFTP</td></tr> <tr><td>RFC 791</td><td>IP</td></tr> <tr><td>RFC 792</td><td>ICMP</td></tr> <tr><td>RFC 793</td><td>TCP</td></tr> <tr><td>RFC 826</td><td>ARP</td></tr> <tr><td>RFC 854</td><td>Telnet</td></tr> <tr><td>RFC 951</td><td>BootP</td></tr> <tr><td>RFC 1058</td><td>RIP v1</td></tr> <tr><td>RFC 1075</td><td>DVMRP</td></tr> <tr><td>RFC 1112</td><td>IGMP</td></tr> <tr><td>RFC 1157</td><td>SNMPv1</td></tr> <tr><td>RFC 1256</td><td>ICMP Router Discover Message</td></tr> <tr><td>RFC 1265</td><td>BGP Protocol analysis</td></tr> <tr><td>RFC 1266</td><td>Experience with the BGP Protocol</td></tr> <tr><td>RFC 1267</td><td>BGP-3</td></tr> <tr><td>RFC 1293</td><td>Inverse ARP</td></tr> <tr><td>RFC 1332</td><td>PPP IPCP</td></tr> <tr><td>RFC 1349</td><td>Type of service in the Internet Protocol suite</td></tr> </tbody> </table>	RFC No.	Title	RFC 768	UDP	RFC 783	TFTP	RFC 791	IP	RFC 792	ICMP	RFC 793	TCP	RFC 826	ARP	RFC 854	Telnet	RFC 951	BootP	RFC 1058	RIP v1	RFC 1075	DVMRP	RFC 1112	IGMP	RFC 1157	SNMPv1	RFC 1256	ICMP Router Discover Message	RFC 1265	BGP Protocol analysis	RFC 1266	Experience with the BGP Protocol	RFC 1267	BGP-3	RFC 1293	Inverse ARP	RFC 1332	PPP IPCP	RFC 1349	Type of service in the Internet Protocol suite
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RFC 1397	BGP Default Route Advertisement
RFC 1483	Multi-protocol encapsulation over AAL5
RFC 1490	Multi-protocol over Frame Relay
RFC 1519	CIDR
RFC 1542	BootP
RFC 1552	PPP IPXCP
RFC 1570	PPP LCP extensions
RFC 1583	OSPF v2
RFC 1631	IP NAT
RFC 1638	PPP BCP
RFC 1656	BGP-4 implementation
RFC 1661	PPP
RFC 1662	PPP in HDLC-like framing
RFC 1723	RIP-2
RFC 1771	BGP-4
RFC 1772	Application of BGP in the Internet Router requirements
RFC 1812	Router requirements
RFC 1966	BGP Route Reflection
RFC 1990	PPP MLP
RFC 1997	BGP communities attribute
RFC 2131	DHCP
RFC 2138	RADIUS
RFC 2139	RADIUS accounting
RFC 2178	OSPF
RFC 2225	Classical IP and ARP over ATM
RFC 2236	IGMP-2
RFC 2338	VRRP
RFC 2362	PIM-SM
RFC 2391	LSNAT

IETF Standards MIB Support

RFC No.	Title
RFC 1471	PPP-LCP-MIB
RFC 1472	PPP-Sec-MIB
RFC 1473	PPP-IP-NCP-MIB
RFC 1474	PPP-Bridge-NCP-MIB
RFC 1493	Bridge-MIB
RFC 1595	SONET-MIB
RFC 1657	BGP4-MIB
RFC 1695	ATM-MIB
RFC 1724	RIPv2-MIB
RFC 1757	RMON-MIB
RFC 1850	OSPF-MIB
RFC 1907	SNMPv2-MIB
RFC 2011	IP-MIB
RFC 2012	UDP-MIB
RFC 2013	TCP-MIB
RFC 2021	RMON2-MIB
RFC 2096	IP-Forward-MIB
RFC 2115	Frame-Relay-MIB
RFC 2233	IF-MIB
RFC 2358	EtherLike-MIB
RFC 2495	DS1-MIB
RFC 2496	DS3-MIB
RFC 2618	Radius-Auth-Client-MIB
RFC 2668	Mau-MIB
RFC 2674	P-Bridge-MIB, Q-Bridge-MIB
RFC 2787	VRRP-MIB

Standards and Protocols

IP routing:	RIPv1/v2, OSPF, BGP-4	
Multicast support:	IGMP, DVMRP, PIM-DM, PIM-SM	
QoS:	Application level, RSVP	
IEEE 802.1D	IEEE 802.1p	IEEE 802.1Q
IEEE 802.3	IEEE 802.3u	IEEE 802.3x
IEEE 802.3z		



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