



RAX721-A-XF

RAX721-A/B series are compact IP/MPLS, SR-MPLS, SRv6 pre-aggregation devices, providing 4x10G SFP+ uplinks and 28x10G/1G SFP+/SFP or 24x1000/100M RJ-45 or 48x1G SFP or 48x1000M/100M RJ-45 downlinks in standard 1U 19-inch enclosure. They are optimized for metro access and aggregation, leased-line service delivery, and multi-service aggregation scenarios. Standard Carrier Ethernet service models, L2VPN/L3VPN over IP/MPLS, SR-MPLS and SRv6 data plane, and the support of OAM & SLA greatly simplify service delivery and monitoring. With rich L2/L3 unicast and multicast features, advanced QoS and high reliability on both hardware and software, RAX721-A/B series are very flexible and reliable service aggregators for enterprise campus, university/college, government networks and residential LAN, and are capable of delivering multiple services (Internet, VoIP, IPTV, video surveillance etc.) and fitting in various networking structures.



RAX721-A-XF

Highlights >>

Power Reliability	<p>The device has a short-circuit proof mechanism to prevent accidental contact with voltage-carrying parts when the device is under maintenance. (It is recommended to turn off the power during maintenance, or wear an anti-static wristband)</p> <p>Dual hot-swappable DC or AC power supplies with voltage/temperature monitoring</p> <p>Support to prevent accidental polarity reversal on the input to protect the device from damage</p>
Flexible Service Delivery	<p>Standard CE2.0 service (E-Line, E-LAN, E-Tree, E-Access) delivery</p> <p>VPWS, VPLS, H-VPLS, MS-PW, L3VPN, 6PE/6VPE over MPLS</p> <p>EVPN over SR-MPLS and SRv6 BE</p> <p>Flexible traffic classification guarantees customer-defined service SLA</p>
Multicast	<p>Full set of multicast routing and control protocols implemented for flexible multiple service access and aggregation</p>
Committed Network Resiliency	<p>Protection mechanism including STP/RSTP/MSTP, switchport backup, IEEE802.1ax Link Aggregation, MC-LAG, ITU-T G.8032 ERPS, Static/dynamic IP FRR, TE/LDP/VPN/EVPN* FRR, VRRP, MPLS PW redundancy, MPLS TE hot-standby* guarantee network resiliency in chain, star, mesh, dual-homing and ring topologies</p>
OAM & Hardware-based SLA	<p>Hardware-based IEEE802.1ag/ITU-T Y.1731 end-to-end CFM (CCM interval 3.3ms), hardware-based ITU-T Y.1731 end-to-end SLA performance monitoring with test result showing on user-friendly GUI</p> <p>BFD helps customer achieve fast fault detection for dynamic IP services and MPLS services</p>
IPv4/v6 Dual-Stack	<p>IPv6 for management and services</p> <p>6PE/6vPE support helps customers plan their future network evolution</p>

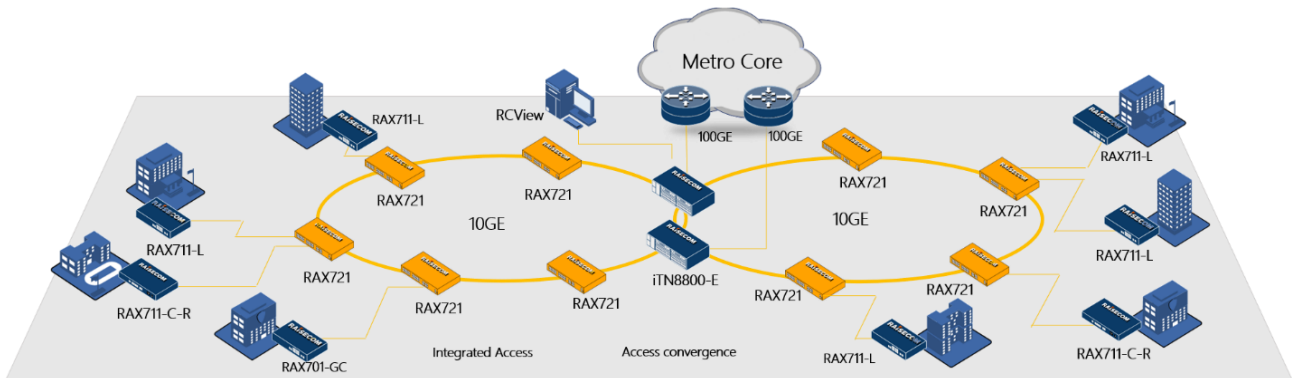


* Features that will be available in future release

Application >>

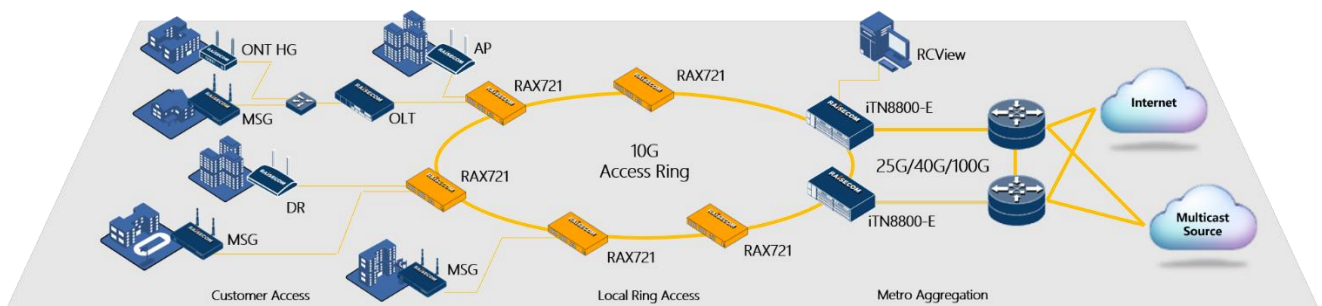
Business Leased-Line Service Delivery

RAX721-A/B series working with Raisecom intelligent CPE RAX700 series can deliver 1G/10G standard CE2.0 E-Line, E-LAN, E-Tree and E-Access services. It is also capable of delivering VPWS, VPLS, H-VPLS, MS-PW, and L3VPN services over MPLS, 6PE, 6VPE over MPLS, EVPN over MPLS and EVPN over SR-MPLS as a PE device. The service delivery can be very flexible. ZTP and hardware-based CFM and SLA offer service providers an easier way to deploy and manage the services. Various fault detection and protection mechanisms guarantee high availability and stability of services. The whole solution is fully managed on unified GUI-based B/S structured NMS system with rich NBI options.



Multi-Service Access and Aggregation

RAX721-A/B series can work as an aggregator of multi-service access network, such as campus network, enterprise network, and residential LAN. Its high port density and rich protection mechanisms allow it to flexibly fit in different network topology. The support of a full set of L2/L3 unicast/multicast protocols guarantees fluent access of multiple services. Flexible traffic classification, scheduling and policing ensures quality of different types of services.





Key Features >>

Ethernet Service	<ul style="list-style-type: none">• MAC address table: 32K• Jumbo frame up to 12288 Bytes• 4,094 VLANs, IEEE802.1Q VLAN, IEEE802.1ad QinQ• Layer 2 control protocol (LACP) handling• Super VLAN• Private VLAN (PVLAN) with primary, community and isolated type
IP Service	<ul style="list-style-type: none">• IPv4/IPv6 Dual Stack• IPv4/v6 static routes, multicast static routes• RIPv1/v2/ng, OSPFv2/v3, ISISv4/v6 and BGP4/4+ RIP, OSPF, IS-IS, BGP, support RIPng, OSPFv3, IS-ISv6. BGP route reflector• Support SR-TE and SR-BE• SRv6• SRv6 BE• support EVPN over SRv6• support SRv6 BE, support EVPN over SRv6 BE• support routing policy• PMTU IPv4/v6• VRF Lite IPv4/v6• DHCPv4/v6 server, client, relay, snooping
MPLS Service	<ul style="list-style-type: none">• support dual-stack VPN• MPLS L2VPN: VPWS, VPLS, H-VPLS, MS-PW, support VLAN and VPLS services• MPLS L3VPN• Ethernet VPN• 6PE/6vPE• BGP-LU• Inter-AS MPLS L2VPN Option A,B,or C• Inter-AS MPLS L3VPN Option A,B,or C• Static CR-LSP, LDP, RSVP-TE, SR-MPLS, tunnel policy, support OSPF- LDP, IS-IS LDP synchronization, MPLS LDP and MPLS RSVP-TE
Multicast	<ul style="list-style-type: none">• IGMP v1, v2, v3• IGMP Snooping, MVR, VLAN copy, Proxy• support multicast protocols such as: IGMPv2, PIM-SM, MSDP, MBGP, IGMPv3• support anycast RP and Reverse Path Forwarding• The Ethernet and trunk interfaces support multicast protocols• MLD v1, v2*• MLD Snooping*• PIM-SM and PIM-SSM IPv4/v6*• NG-MVPN• mLDP In-Band MVPN*
QoS	<ul style="list-style-type: none">• Flexible Traffic classification base on MAC, IP, Port, VLAN, CoS, DSCP, etc.• Traffic policing



- Hierarchical CAR
- 8 local priority, 8 queues per port
- WRED
- Traffic shaping per queue/port
- support PQ, WFQ and LPQ.SP, DRR, WRR, SP+DRR, SP+WRR queue scheduling
- 3-level H-QoS

Reliability

- IEEE802.1ax Link aggregation group, manual, LACP
- Multi-chassis LAG
- Switchport backup
- STP, RSTP, MSTP, MRSTP
- ITU-T G.8032 ERPS based on port or CFM, switchover time less than 50ms
- ITU-T G.8031 ELPS based on port or CFM, switchover time less than 50ms
- Support load balancing in unequal cost multiple path mode
- Loop detection
- Ethernet fault propagation, MPLS PW fault propagation
- support TI-LFA FRR
- ULDP
- IPv4/v6 ECMP
- Flow Aware Labels
- Static/dynamic IPv4/v6 FRR, TE FRR, LDP FRR, VPNv4/v6 FRR, TI-LFA FRR
- support LDP and TE FRR, support complete the FRR switching within 200ms
- VRRPv2/v3
- MPLS PW redundancy
- MPLS TE hot-standby
- MAC address limit function
- router support Dual- Device hotbackup

OAM/SLA

- IEEE 802.3ah EFM-OAM
- IEEE 802.1ag/ITU-T Y.1731 CFM
- ITU-T Y.1731 performance monitoring (LM, DM) for Ethernet and MPLS L2VPN
- RFC2544 for Ethernet, IP, MPLS L2VPN, MPLS L3VPN; support RFC2544 as a sender and reflector;
- Y.1564 for Ethernet, IP, MPLS L2VPN, MPLS L3VPN;support Y.1564 as a sender and reflector;
- 10G throughput test
- TWAMP-Lite* for Ethernet, IP, MPLS L3VPN, 6PE/6vPE
- MPLS ping and traceroute
- VCCV ping and traceroute
- BFD for interface, static routing, RIP, OSPF, ISIS, BGP, LDP, LSP, CR-LSP*, PW, MS-PW*, VRRP, FRR, PIM; support BFD for VRRP, OSPF, ISIS, BGP, LDP, TE, SR,VRRPv6, OSPFv3, ISISv6, BGP4+,SRv6,PW
- support hardware BFD. BFD detect package send period should within 3.3ms.
- support Eth-Trunk interfaces and BFD for eth-trunk to detect the eth-trunk interface status.
- Layer 2 or 3 Dying Gasp in case of power failure
- support Ethernet in the First Mile and connectivityFault Management.



Security	<ul style="list-style-type: none">• CPU CAR• CPU anti-attack for Land, Ping of death, ICMP unreachable/redirecting/forward, Tear drop, Smurf, Fraggle, WinNuke, TCP malformed• DHCPv4/v6 Snooping• ARP filter, DAI• IPSGv4/v6*• DOT1X• ACL based on VLAN, CoS, MAC, EtherType, IP or user-define• RADIUS, TACACS+• Storm control (broadcast, multicast, DLF), support traffic suppression include multicast, broadcast, and unknown unicast traffic.• Port-security MAC• URPF• TCP and UDP Small Servers disabled by default• support MD5 authentication
Maintenance and Management	<ul style="list-style-type: none">• Zero-Touch Provisioning• SNMP v1/v2/v3• Netconf, Telemetry• CLI management by local CONSOLE, Telnet and SSHv2• KeepAlive, RMON, LLDP, Syslog• SFP digital diagnostic management (DDM)• CPU, memory monitoring• Voltage and temperature monitoring• Telnet client, Telnet server• sshv2 client, sshv2 server
Synchronization	<ul style="list-style-type: none">• NTP, SNTP• 1588v2 TC• SyncE
Capacity	<ul style="list-style-type: none">• FIBIPv4:32K IPv6: 16K• RIBIPv4:48K IPv6:24k• MAC address at least 32k• ACLv4 at least 512• ACLv6 at least 256

* Features that will be available in future release



Model Comparison >>

Model	RAX721-A	RAX721-A-T	RAX721-A-XF	RAX721-B	RAX721-B-T
Switching capacity	128Gbps / 800Gbps	128Gbps / 800Gbps	560Gbps / 800Gbps	176Gbps / 800Gbps	176Gbps / 800Gbps
	NOTE: device's switching capability / chip's switching capability				
Management interface	2 x CONSOLE (USB-A & RJ-45); 1 x NEG management port (RJ-45)	1 x CONSOLE (USB-A); 1 x NEG management port (RJ-45)	2 x CONSOLE (USB-A & RJ-45); 1 x NEG management port (RJ-45)	1 x CONSOLE (USB-A or RJ-45); 1 x NEG management port (RJ-45)	
Service Interface	4 x 10G/1G SFP+/SFP 24 x 1G/100M/10M SFP	4 x 10G/1G SFP+/SFP 24 x 1000/100/10M (RJ-45)	28x10G/1GSFP+/SFP 24x 10G/1G/100/10M SFP+/SFP; Support 10G 80km optical module	4 x 10G/1G SFP+/SFP	4 x 10G/1G SFP+/SFP 48 x 1000/100/10M (RJ-45)
Power Supplies	2 hot-swappable DC or AC power supplies provide 1+1 redundancy, Support redundancy for power DC: -48V, -36~-72V AC: 220V, 100~240V				
FAN	Support redundancy for fans				
Power consumption	≤ 75W	≤ 52W	≤ 75W	≤ 93W	≤ 58W
Operating Temperature	-5~55°C				
Humidity	10~90% non-condensing				
Dimension	1U: 440(W)mm x 360(D)mm x 44(H)mm				
Weight	4.42 kg		6.77 kg		6.22 kg
Clock Sync	Sync E, 1588v2 TC	1588v2 TC	Sync E, 1588v2 TC	1588v2 TC	1588v2 TC

Compliances >>

Standards & Protocols

CE, UL, FCC compliance
EMC Class A
RoHS compliance
IEEE802.3, 802.3u, 802.3z, 802.3-2008



IEEE802.1AB, 802.1D, 802.1Q, 802.1p, 802.1ad, 802.1ax,
 IEEE802.3ah, 802.1ag,
 ITU-T G.8031, G.8032, G.8261, G.8262, G.8264, ITU-T Y.1731
 MEF CE2.0 Compliance, MEF6, 9, 10, 11, 13, 14, 16, 17, 20, 31, 36
 RFC826, 768, 792, 793, 1112, 1195, 1771, 1772, 1997, 2131, 2132, 2236, 2328, 2362, 2439, 2460, 2474, 2475,
 2710, 2763, 2966, 3031, 3032, 3034, 3035, 3036, 3037, 3046, 3065, 3101, 3107, 3137, 3209, 3277, 3315, 3376,
 3473, 3567, 3618, 3623, 3630, 4090, 4182, 4271, 4273, 4377, 4378, 4379, 4443, 4447, 4448, 4541, 4605, 4649,
 4760, 4761, 4762, 4893, 4950, 5036, 5120, 5187, 5286, 5357, 5462, 5575, 5659, 5883, 6391, 6511, 6842, 7130

Ordering Information >>

Equipment

Part No.	Description
RAX721-A	<p>Standard 1U, 19" standalone IP/MPLS pre-aggregation device, 4 x 10G SFP+ for uplink, 24 x 1G SFP for downlink, CONSOLE and SNMP ports for management</p> <p>-AC/D: dual hot-swappable AC power supply -AC/S: single hot-swappable AC power supply and single FANS310 module -DC/D: dual hot-swappable DC power supply -DC/S: single hot-swappable DC power supply and single FANS310 module -AC_DC: one hot-swappable AC power supply and one hot-swappable DC power supply</p>
RAX721-A-T	<p>Standard 1U, 19" standalone IP/MPLS pre-aggregation device, 4 x 10G SFP+ for uplink, 24 x 1000/100M RJ-45 for downlink, CONSOLE and SNMP ports for management</p> <p>-AC/D: dual hot-swappable AC power supply -AC/S: single hot-swappable AC power supply and single FANS310 module -DC/D: dual hot-swappable DC power supply -DC/S: single hot-swappable DC power supply and single FANS310 module -AC_DC: one hot-swappable AC power supply and one hot-swappable DC power supply</p>
RAX721-A-XF	<p>Standard 1U, 19" standalone IP/MPLS pre-aggregation device, 4 x 10G SFP+ for uplink, 24 x 10G/1G SFP+/SFP for downlink, CONSOLE and SNMP ports for management</p> <p>-AC/D: dual hot-swappable AC power supply -AC/S: single hot-swappable AC power supply and single FANS310 module -DC/D: dual hot-swappable DC power supply -DC/S: single hot-swappable DC power supply and single FANS310 module -AC_DC: one hot-swappable AC power supply and one hot-swappable DC power supply</p>
RAX721-B	<p>Standard 1U, 19" standalone IP/MPLS pre-aggregation device, 4 x 10G SFP+ for uplink, 48 x 1G SFP for downlink, CONSOLE and SNMP ports for management</p> <p>-AC/D: dual hot-swappable AC power supply -AC/S: single hot-swappable AC power supply and single FANS310 module</p>



- DC/D: dual hot-swappable DC power supply
- DC/S: single hot-swappable DC power supply and single FANS310 module
- AC_DC: one hot-swappable AC power supply and one hot-swappable DC power supply

RAX721-B-T

Standard 1U, 19" standalone IP/MPLS pre-aggregation device, 4 x 10G SFP+ for uplink, 48 x 1000/100M RJ-45 for downlink, CONSOLE and SNMP ports for management

- AC/D: dual hot-swappable AC power supply
- AC/S: single hot-swappable AC power supply and single FANS310 module
- DC/D: dual hot-swappable DC power supply
- DC/S: single hot-swappable DC power supply and single FANS310 module
- AC_DC: one hot-swappable AC power supply and one hot-swappable DC power supply

Power Supplies

Part No.	Description
RPA1221-S-220S12	AC power supply module
RPD1241-48S12	DC power supply module

Fan Module

Part No.	Description
FANS310	Fan module for RAX721 series