



## RAX711-C-R

RAX711-C-R is a compact 10G NID providing 6x10G SFP+ network interfaces and 10x1G SFP user interfaces in half 19" space. It can work as a 10G EDD or an MPLS PE device. It is designed for 1G/10G leased-line service delivery and 4G/5G mobile backhaul. The support of standard CE2.0 services (E-Line, E-LAN, E-Tree, E-Access), various service models over MPLS (VPWS, VPLS, H-VPLS, L3VPN), and advanced OAM, SLA, resiliency features, ensures service providers great flexibility and reliability in service design and deployment. Temperature hardened HW design and the support of SyncE make RAX711-C-R ready for mobile backhaul.



RAX711-C-R-AC\_DC

## Highlights >>

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power Reliability</b>            | Dual hot-swappable power supply with voltage/temperature monitoring                                                                                                                                                                                                                                                                                                                                      |
| <b>Compact HW Design</b>            | Half-19" in width help service providers save installation space greatly                                                                                                                                                                                                                                                                                                                                 |
| <b>Temperature Hardened</b>         | Operating temperature range from -20 °C to +65 °C                                                                                                                                                                                                                                                                                                                                                        |
| <b>Flexible Service Delivery</b>    | Standard CE2.0 service (E-Line, E-LAN, E-Tree, E-Access) delivery<br>VPWS, VPLS, H-VPLS, L3VPN services over MPLS<br>Flexible traffic classification guarantees customer-defined service SLA                                                                                                                                                                                                             |
| <b>Committed Network Resiliency</b> | Protection mechanism including switchport backup, IEEE802.1ax Link Aggregation, MC-LAG, ITU-T G.8031 ELPS and ITU-T G.8032 ERPS, Static/dynamic IP FRR, TE/LDP/VPN/EVPN FRR, VRRP, MPLS PW redundancy, MPLS TE redundancy, MPLS TE hot-standby guarantee network resiliency in chain, star, mesh, dual-homing and ring topologies                                                                        |
| <b>OAM &amp; Hardware-based SLA</b> | 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 (1us measurement resolution) speed up service provisioning and troubleshooting<br>BFD helps customer achieve fast fault detection for dynamic IP services and MPLS services<br>Standard RFC2544, Y.1564 SAT tests for various types of services available |
| <b>Synchronization</b>              | SyncE and IEEE1588v2 ready for mobile backhaul                                                                                                                                                                                                                                                                                                                                                           |

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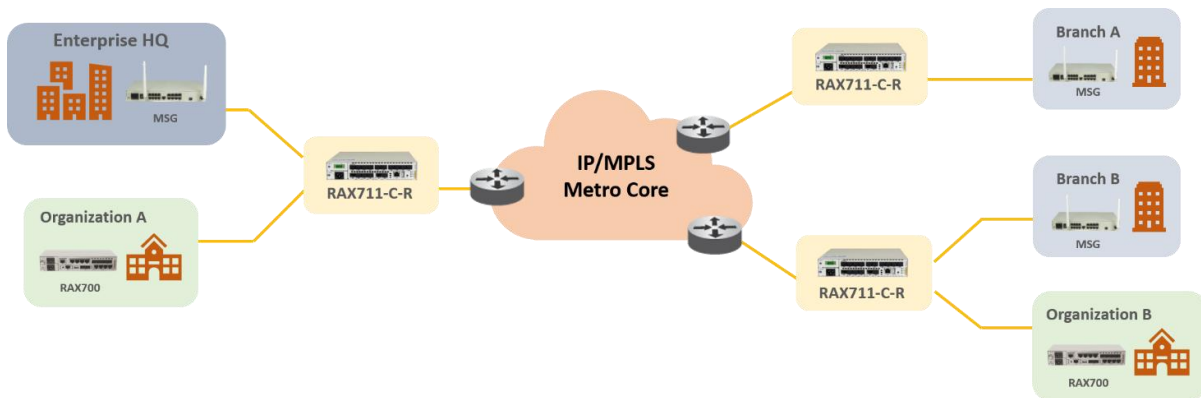
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## Application >>

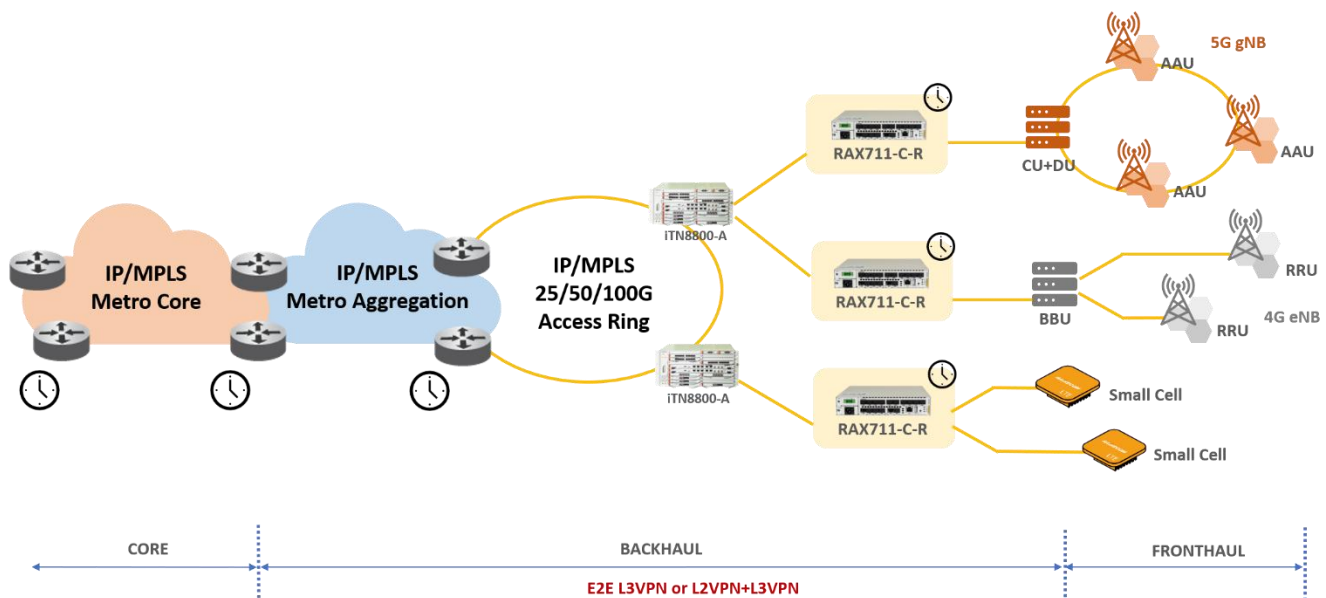
### Business Leased Line Service Delivery

RAX711-C-R is able to deliver 1G/10G standard CE2.0 E-Line, E-LAN, E-Tree and E-access services. It is also capable of delivering L2VPN and L3VPN services over MPLS core as a PE device. The service delivery can be very flexible with the support of VPWS, VPLS, H-VPLS, MS-PW, and inter-AS L2VPN/L3VPN. ZTP and hardware-based CFM and SLA ensure service providers easier way to deploy and manage the services. Various fault detection and protection mechanisms guarantee high availability and stability of services.



### New Generation Mobile Backhaul

MPLS L2VPN + L3VPN and MPLS E2E L3VPN are the common ways to carry mobile backhaul traffic as the mobile network is evolving to 4G and 5G. RAX711-C-R supports the services with full flexibility and high reliability. In addition, its compact HW design (half 19" wide) helps service providers save installation space, its wide-range operating temperature (-20~65 °C) ensures the device to work stably in harsh environment, and its support of SyncE and IEEE1588 V2 guarantees accurate synchronization along the service delivery.



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## Key Features >>

### Ethernet Service

- MAC address table: 32k
- Jumbo frame up to 12288 Bytes
- 4,094 VLANs, IEEE802.1Q VLAN, IEEE802.1ad QinQ
- Layer 2 control protocol (L2CP) handling
- Super VLAN
- Private VLAN (PVLAN) with primary, community and isolated type

### IP Service

- IP static routing
- RIP, OSPFv2, ISISv4 and BGP4
- PMTU support
- VRF Lite
- DHCP server, client, relay, snooping

### MPLS Service

- MPLS L2VPN: VPWS, VPLS, H-VPLS, MS-PW
- MPLS L3VPN
- Static CR-LSP, LDP, CSPF, RSVP-TE, tunnel policy
- Inter-AS MPLS L2VPN Option A, B, C
- Inter-AS MPLS L3VPN Option A, B, C

### Multicast

- IGMP v1, v2, v3
- IGMP Snooping, MVR, VLAN copy, Proxy
- PIM-SM and PIM-SSM
- MSDP

### QoS

- Flexible traffic classification based on MAC, IP, port, VLAN, CoS, DSCP, etc.
- Traffic policing with color-aware and color-blind mode, two-rate three-color marker
- Hierarchical CAR
- 8 local priority, 8 queues per port
- WRED
- Traffic shaping per queue/port
- SP/WRR/SP+WRR queue scheduling

### Reliability

- IEEE802.1ax Link aggregation group, manual, LACP
- MC-LAG
- Switchport backup
- STP, RSTP, MSTP, MRSTP
- ITU-T G.8031 ELPS and G.8032 ERPS based on port or CFM, switchover time less than 50ms
- Port/VLAN-based Ethernet loop detection
- Ethernet fault propagation, MPLS PW fault propagation
- ULDP
- IP ECMP

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- Static/dynamic IP FRR, TE/LDP/VPN/EVPN FRR
- VRRP
- MPLS PW redundancy, MPLS TE redundancy, MPLS TE hot-standby

## OAM

- 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 and MPLS L2VPN, Y.1564 for Ethernet, IP, MPLS L2VPN, MPLS L3VPN
- 10G throughput test
- TWAMP-Lite for Ethernet, IP, MPLS L3VPN
- Layer 2 loopback with MAC swap
- MPLS ping and traceroute
- BFD for interface, static routing, RIP, OSPF, ISIS, BGP, LDP, LSP, CR-LSP, PW, MS-PW, VRRP, FRR, PIM
- L2/L3 Dying Gasp in case of power failure

## Security

- CPU CAR
- CPU anti-attack for Land, Ping of death, ICMP unreachable/redirecting/forward, Tear drop, Smurf, Fraggle, WinNuke, TCP malformed
- DHCP Snooping
- ARP filter, DA
- IPSG
- ACL based on VLAN, CoS, MAC, Ethernet Type, IP or user-define
- RADIUS, TACACS+, DOT1X
- Storm control (broadcast, multicast, DLF)
- Port-security MAC

## Maintenance and Management

- Zero-touch provisioning based on standard DHCP
- SNMP v1/v2/v3 based GUI management
- CLI management by local CONSOLE, Telnet and SSHv2
- KeepAlive, RMON, LLDP, Syslog
- SFP digital diagnostic management (DDM)
- CPU, memory monitoring
- Voltage and temperature monitoring

## Synchronization

- NTP, SNTP
- SyncE
- IEEE1588 v2 TC

## Specifications >>

## Compliances >>

### Performance

Switching capacity: 52Gbps x 2

### Standards &

CE, UL, FCC compliance

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|                    |                                                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Physical Interface | 1 x CONSOLE (USB);<br>1 x management port (RJ-45)<br>Client interfaces: 10 x 1G SFP<br>Network interfaces: 6 x 10G SFP+        |
| Power Supply       | Dual, hot-swappable version available<br>AC: 220V, 100~240V<br>DC: -48V, -36~-72V<br>Power Consumption: ≤40W                   |
| Environmental      | Operating:<br>Temperature: -20~65°C<br>Humidity: 10~90% non-condensing<br>Storage and Transportation:<br>Temperature: -25~75°C |
| Dimensions         | 220(W)mm x 266(D)mm x 44(H)mm                                                                                                  |
| Weight             | 2.5Kg                                                                                                                          |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| protocols | EMC Class A<br>RoHS compliance<br>IEEE802.3, 802.3u, 802.3z, 802.3-2008<br>IEEE802.1D, 802.1Q, 802.1p, 802.1ad<br>IEEE802.1ax, ITU-T G.8031, G.8032<br>IEEE802.3ah, 802.1ag, ITU-T Y.1731<br>RFC5357<br>IEEE802.1AB<br>MEF6, 9, 10, 11, 13, 14, 16, 17, 20, 31, 36<br>MEF CE2.0 Compliance<br>RFC826, 768, 793<br>RFC792, 4443<br>RFC2131, 2132, 3046, 3315, 4649<br>RFC2328, 3630, 5187, 3101, 3137, 3623<br>RFC1195, 2966, 3567, 3277, 2763<br>RFC1771, 1772, 1997, 2439, 3065, 4271, 4273, 4760, 4893, 5575<br>RFC3031, 3032, 3034, 3035, 3036, 3037, 4182, 5036, 5462<br>RFC3209, 3473, 6511<br>RFC4447, 4448, 4761, 4762, 5659<br>RFC4090, 5286, 5883, 7130<br>RFC4377, 4378, 4379<br>RFC1112, 2236, 3376, 4605, 3618, 2362, 2710, 4541<br>IEEE1588v2<br>ITU-T G.8261, G.8262, G.8264 |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Ordering Information >>

| Part No.        | Description                                                                                                                                                |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RAX711-C-R-AC/S | Compact 10G NID, half-19" wide, 6x10G SFP+ for uplink, 10x1G SFP for downlink, CONSOLE and SNMP ports for management, single hot-swappable AC power supply |
| RAX711-C-R-DC/S | Compact 10G NID, half-19" wide, 6x10G SFP+ for uplink, 10x1G SFP for downlink, CONSOLE and SNMP ports for management, single hot-swappable DC power supply |

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|                  |                                                                                                                                                                                               |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RAX711-C-R-AC/D  | Compact 10G NID, half-19" wide, 6x10G SFP+ for uplink, 10x1G SFP for downlink, CONSOLE and SNMP ports for management, dual hot-swappable AC power supply                                      |
| RAX711-C-R-DC/D  | Compact 10G NID, half-19" wide, 6x10G SFP+ for uplink, 10x1G SFP for downlink, CONSOLE and SNMP ports for management, dual hot-swappable DC power supply                                      |
| RAX711-C-R-AC_DC | Compact 10G NID, half-19" wide, 6x10G SFP+ for uplink, 10x1G SFP for downlink, CONSOLE and SNMP ports for management, one hot-swappable AC power supply and one hot-swappable DC power supply |

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