

RC1201-2GE16E1T1 TDMoverIP Gateway

RC1201-2GE16E1T1 is a TDMoverIP access gateway device for enterprises and mobile operators, offering TDM lease line extension or TDM traffic backhaul over a packet switched network. It provides a legacy service over Ethernet/IP solution supporting transmission of E1/T1 streams over Packet Switching Networks.

RC1201-2GE16E1T1 is integrated with 16 x E1/T1 interfaces, 2 x GE ports and two expansion slots for 4/8 x GE ports and clock signal input/output. It is designed to act as the TDM over IP aggregation gateway at the central office, aggregating TDM over IP traffics from remote sites. It converts legacy TDM service from 16 E1/T1 ports into packets for transmission over the packet switching network such as MPLS, IP, and Ethernet network.



RC1201-2GE16E1T1 TDMoP Gateway

Highlights

- Topology Flexibility** Flexibly fits in both point-to-point and point-to-multipoint TDMoP solutions as an aggregation or a remote Gateway
- Ethernet Compatibility** Expand 8 GE interfaces for connecting remote gateway on line side or transparent transmit on client side
- Carrier Ethernet Service** Support IEEE 802.3ah Link OAM, UDP/IP OAM connection of PW for diagnostics
- Pseudowire Capability** Support up to 64 MPLS tunnels and 64 PWs
- Easy Management** Management via local CLI, remote SNMP telnet, and GUI-based NView NNM system

Typical Application

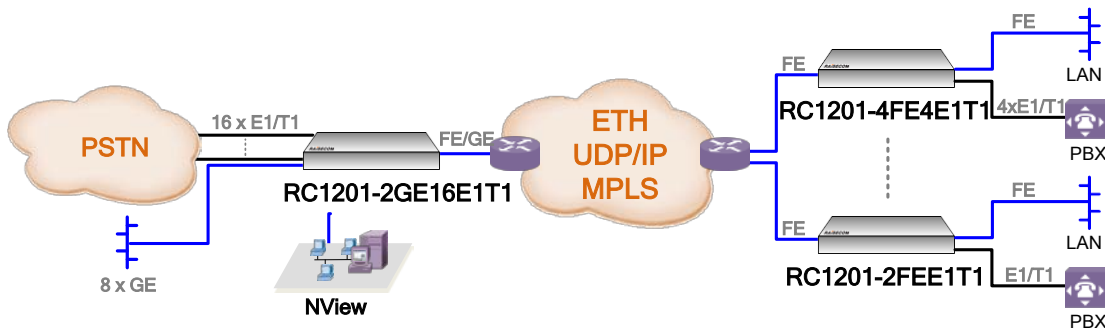


Figure.1 Aggregate remote Pseudowire traffic

Features

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|---------------------------|---|
| Ethernet interface | 2 Gigabit Ethernet SFP ports (fiber or copper module) Support SFP DDMI; 2 expansion slots support up to 8 Gigabit Ethernet copper ports |
| Switching Mode | Store and forward mode; Broadcast/Multicast/DLF storm control |
| Packet Forwarding | Support Jumbo Frame; MTU: 12k byte configurable (default 12,288byte) |
| MAC Address Table | MAC address learning/add/remove/searching/ageing; Up to 8K MAC addresses Support 1024 static MAC address, 16K dynamic MAC address forward list |
| Bandwidth Profile | Ingress rate limit per port; Egress traffic shaping per port; Rate limit per VLAN |
| VLAN | IEEE 802.1Q VLAN: 4094 active VLANs; Support QinQ |
| Link Aggregation | Up to 16 link aggregation group, with up to 8 ports in each group |
| Flow Control | IEEE 802.3x flow control based on full duplex mode Back-pressure flow control based on half duplex mode Bi-direction flow control configurable |
| Port Mirroring | Mirroring of egress/ingress traffic of ports configurable |
| Protection | Port based Ethernet local loopback detection |
| Firmware Upgrade | TFTP upgrade in BOOTROM mode FTP/TFTP upgrade and backup BOOTROM, system file and configuration file |
| Time Management | Time zone management Time modification DST System time synchronization by SNTP Client/NTP |
| Router Protocol | Static routing and default gateway PING (Packet Internet Groper) |
| OAM | IEEE802.3ah EFM OAM including discovery, link performance, remote loopback, fault detection & performance stats per OAM standards; OAM Active/Passive mode, Dying Gasp |
| QoS | Support port/CoS/DSCP mapping; Priority trust based on port/CoS(default)/DSCP; Up to 8 queues per port; Support SP, WRR and DRR scheduling; WRR/DRR weight range 1-127; |



Flow-based statistics /rate-limiting/redirecting/Rewriting of 802.1p
CoS/DSCP/IP Precedence based on flow

PWE3 (TDMoP)

Up to 64 Tunnels;
Up to 64 PWs;
PW payload type: SAToP, CESoPSN;
PSN type: UDP/IP, MPLS, MEF;
PW clock: Internal clock, Loopback clock, Recovery clock;
Payload size: 8-1280 Bytes;
Configurable Jitter Buffer size: 375 -128,000μs;
UDP/IP OAM connection based on PW;
OOS control;
PW Vlan configuration: TPID, inner/outer Vlan ID, outer Vlan priority;
IP encapsulation header configuration: IP TOS, IP TTL, destination IP/MAC,
next hop IP/MAC;
MPLS encapsulation header configuration: outer label number, label ID,
EXP, TTL, next hop MAC;
PW connection status, packet statistics and clear statistics

TDM(E1/T1)

Up to 16 E1/T1 service ports to access legacy voice services;
E1 interface:
Bit rate: 2.048Mbps;
Lice code: HDB3;
Framing: Unframed/Framed with or without CRC-4;
Signaling: CAS and transparent CCS;
Jitter: ITU-T G.823
T1 interface:
Bit rate: 1.544Mbps;
Lice code: B8ZS/AMI, Bellcore GR-499-CORE, ANSI T1.403;
Jitter: ITU-T G.824
TX clock mode configurable;
Internal/external/bidirectional loopback;
E1/T1 alarm statistics

Management options

Local management through console port and CLI
Remote management through SNMP and Telnet
GUI-based SNMP management on Raisecom NView NNM system

Specifications

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| Physical Interface | Management port: 1 console (RJ45); 1 SNMP(RJ45); E1/T1 interface: 16 x E1/T1 interfaces (8 x RJ45 connector, 2 x E1/T1 each RJ45 port); Client interfaces: 2 expansion slots Network interfaces: 2 x100/1000M SFP connector; |
| ETH Expansion Card | Client interfaces: 4 x 10/100/1000Base-T RJ45 ports; |
| Clock Expansion Card (available in phase-2) | Mini-BNC connector: 1 x 2Mbit/2MHz input/output; 1 x 10MHz input/output; 1 x 1PPS input/output; RJ45 connector: 1 x TOD input/output; |
| Power Specs | Dual AC: 100~240V; Or dual DC: -48V hot-swappable; Full load: ≤25.0W |
| User Conditions | Operating temp: [Normal version] 0~50 °C (32~122 °F); [Hardening version] -25~50 °C (-13~122 °F); Storage temp: -25~60 °C (-13~140 °F); Humidity: 10~100% non-condensing |
| Lightning Proof | 6kV |
| Dimensions | 440(L) x 266(W) x 44(H) mm ³ |
| Weight | ≤ 5.0Kg |

Compliances

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|----------------------------------|---|
| Standards & protocols | TDM interface: ITU-T G.703 ITU-T G.704 ITU-T G.706 ITU-T G.732 ITU-T G.823 Ethernet port: IEEE802.3 IEEE802.3x IEEE802.3u IEEE802.3ad Link Aggregation IEEE802.1p IEEE802.1Q VLAN IEEE802.1ad QinQ IEEE802.3ah OAM IEEE802.1ag CFM ITU-T Y.1731 Services OAM SNMPv1/v2c/v3 CE marking EMC RoHS compliance |
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Ordering Information

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|------------------------|--|
| RC1201-2GE16E1T1-AC/D | TDMoP aggregation gateway, 16 x E1/T1 interfaces (8 x RJ-45 ports, each for 2 x E1/T1 channels), 2 x GE SFP fiber or copper ports, 2 x Expansion slots; dual AC power supply |
| RC1201-2GE16E1T1-DC/D | TDMoP aggregation gateway, 16 x E1/T1 interfaces (8 x RJ-45 ports, each for 2 x E1/T1 channels), 2 x GE SFP fiber or copper ports, 2 x Expansion slots; dual DC power supply |
| RC1201-2GE16E1T1-AC_DC | TDMoP aggregation gateway, 16 x E1/T1 interfaces (8 x RJ-45 ports, each for 2 x E1/T1 channels), 2 x GE SFP fiber or copper ports, 2 x Expansion slots; one AC and one DC power supply |
| RC1201-2GE16E1T1-AC/S | TDMoP aggregation gateway, 16 x E1/T1 interfaces (8 x RJ-45 ports, each for 2 x E1/T1 channels), 2 x GE SFP fiber or copper ports, 2 x Expansion slots; signal AC power supply |
| RC1201-2GE16E1T1-DC/S | TDMoP aggregation gateway, 16 x E1/T1 interfaces (8 x RJ-45 ports, each for 2 x E1/T1 channels), 2 x GE SFP fiber or copper ports, 2 x Expansion slots; signal DC power supply |

Assembly Parts List

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|----------------|---|
| RC1201-SUB-4GE | Ethernet Expansion Module, 4 x GE (RJ45 port) for line side |
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RC1201-4FE4E1T1 TDMoverIP Access Gateway

RC1201-4FE4E1T1 is a TDMoverIP access gateway device for enterprises and mobile operators, offering TDM lease line extension or TDM traffic backhaul over a packet switched network. It provides a legacy over Ethernet/IP solution supporting transmission of E1/T1 streams over IP and Ethernet-based networks.

be configured from 4 10/100BaseT and 1 1000BaseX port. It converts data streams from its E1/T1 ports into packets for transmission over the packet switching network such as MPLS and Ethernet network. RC1201 TDMoverIP devices are working in pairs.

RC1201-4FE4E1T1 is integrated with 4 E1/T1 and 4 local Ethernet traffic ports which can



Feature

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| Ethernet interface | 5 Ethernet ports, 4 for user side and one for network side Transparent Ethernet bridging User bandwidth profile by rate-limiting and VLAN filtering VLAN tagging and stacking (Q-in-Q) |
| TDM interface | 4 E1 or T1 ports E1 balanced and unbalanced or T1 options G.703 unframed and G.704 framed modes CAS and CRC generation for E1 circuit |
| TDM payload type | CESoPSN, SAToP, HDLC and AAL1 |
| TDMoverIP for Pseudowire Emulation | E1/T1 communication over Packet Switching Network Support both framed and unframed E1/T1 Configurable buffer compensation for network packet jitter Dedicated external clock injection port QoS support by ToS and VLAN per 802.1p and 802.1Q |
| TDMoverIP timing | Adaptive: the clock is recovered from the Ethernet network side interface Internal: the master clock source for the TDM circuit is provided by internal crystal oscillator External: an external clock injection is provided for synchronization Loopback: the transmit clock is derived from the E1/T1 receiving clock |
| Ethernet switching functions | VLAN creation, deletion and configuration 3 port modes: access, tunnel and trunk Port isolation configuration Link aggregation configuration Port mirroring configuration Per port bandwidth profile and rate limiting MAC address table management Up to 4 output queues QoS policy based on CoS and DSCP Ethernet port loopback detection ACL configuration based on MAC |
| SFP module function | SFP module basic information (module type, media type, connector, manufacturer information, speed, wavelength, etc) SFP information retrieve (existing, speed, LOS and fault stats) Digital Diagnostic (Tx power, received optical power, temperature, supply voltage, Tx bias current, etc) Alarm indication |
| Management options | Local management through console port Remote management through SNMP and Telnet |

Specification

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|--------------------|---|
| E1 interface | 4 ports Data rate: 2.048Mbps Line code: HDB3 Framing: unframed or framed with or without CRC-4 Signaling: CAS and transparent CCS Line impedance: 120/75 Ohm Jitter: per ITU-T G.823 Connector: RJ45 balanced and BNC unbalanced |
| T1 interface | 4 ports Bit Rate: 1.544Mbps Line code: B8ZS/AMI Comply with Bellcore GR-499-CORE, ANSI T1.403, Jitter: per ITU-T G.824 Connector: 100Ω balanced, RJ-45 |
| Ethernet interface | 1 network port & 4 user ports Data rate: 4 x 10/100Mbps 1 x 1000Mbps |
| Bundles | Up to 64 bundles Payload: CESoPSN, SAToP, HDLC and AAL1 PSN: UDP/IP, MPLS, MEF TDM Bytes: 1-1500 Jitter buffer size: 0-250ms Destination bundle configure Clock recovery: configurable VLAN: untag, tag & double tag Active VLAN: 4K TPID: configurable VLAN priority: 0-7 Dest IP address: configurable |
| Timing | Internal, external, loopback and adaptive |
| Loopback | E1/T1 local and remote loopback |

Typical Application



Point-to-point E1 and LAN extension over Packet Switching Network

Ordering Information

| Part Number | Description |
|----------------------|--|
| RC1201-4FE4E1T1-AC | 1U 19" standalone, 4 E1/T1 interfaces, 4 10/100BaseT interfaces, 1 1000BaseX (SFP) interface, AC power supplies |
| RC1201-4FE4E1T1-DC | 1U 19" standalone, 4 E1/T1 interfaces, 4 10/100BaseT interfaces, 1 1000BaseX (SFP) interface, DC power supplies |
| RC1201-4FE4E1T1-O-AC | 1U 19" standalone, 4 E1/T1 interfaces, 4 10/100BaseT interfaces, 1 1000BaseX (SFP) interface, AC power supplies, use the OCXO highly accurate crystal oscillator |
| RC1201-4FE4E1T1-O-DC | 1U 19" standalone, 4 E1/T1 interfaces, 4 10/100BaseT interfaces, 1 1000BaseX (SFP) interface, DC power supplies, use the OCXO highly accurate crystal oscillator |

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|---------------------|--|
| Statistics | E1/T1 per G.826 & RFC2495 Ethernet per RFC2819 Receive buffer indication SFP Digital Diagnostic |
| Dimension | 440(W)*44(H)*210(D) mm |
| Weight | < 3KG |
| Power supply | AC: 176~264V, 50Hz DC: -36 ~ -72V |
| Power consumption | ≤ 13W (at max load) |
| Working environment | Temp: -5 ~ 50 Celsius RH: < 90% non-condensing |
| Safety compliance | CE certification |

Compliance

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|-----------------------|--|
| Standards & protocols | For TDM interface: ITU-T G.703 ITU-T G.704 ITU-T G.706 ITU-T G.732 ITU-T G.823 For Ethernet port: IEEE802.3x full duplex on 10BaseT and 100BaseTX IEEE802.3 10BaseT IEEE802.3u 100BaseTX IEEE802.1p IEEE802.1Q SNMPv1/v2c/v3 |
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