General Availability

ETX-203AX-T

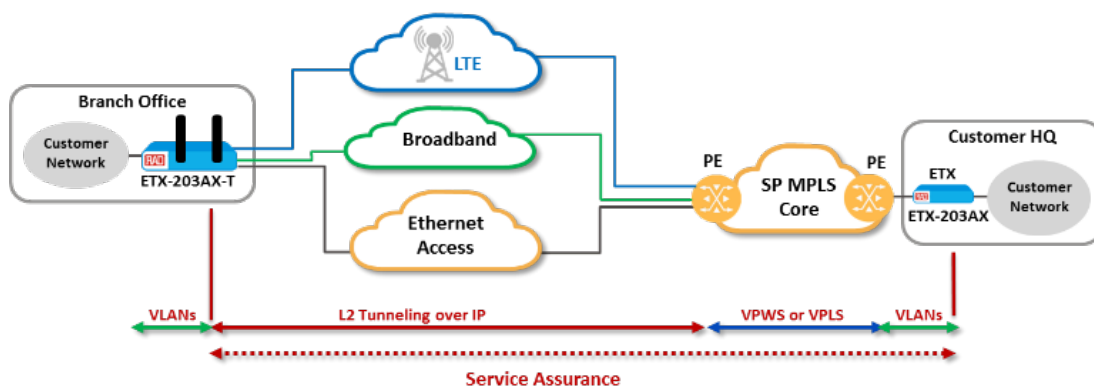## Carrier Ethernet Services Delivery over LTE and BB

- Rapid site commissioning and extension of Ethernet services to new, out-of-reach locations, over LTE or Broadband (BB) secured access, while reducing time-to-revenue

- Cost-effective, BB Internet or LTE based backup improves service reliability and enables remote troubleshooting, reducing truck rolls and time-to-repair.

- Cost optimization by splitting traffic between service-assured VPN and "Best-Effort" LTE or BB services

- Full suite of MEF Carrier Ethernet 2.0 capabilities enables SLA monitoring, diagnostics, and fault detection.

- Flexible and cost-effective Ethernet service delivery over LTE or BB Internet

As business requirements for global connectivity continue to increase, service providers are looking for effective solutions to quickly expand network coverage for Carrier Ethernet based VPN services.

ETX-203AX-T, a new addition to the RAD ETX-2 family of Ethernet demarcation devices, enables service providers to rapidly roll out Ethernet services using LTE or Broadband access. It enables extending Ethernet services over LTE in locations where fixed-line access is not available. Alternatively, LTE or Broadband access may be used as backup for an optical primary connection, increasing service reliability.

This unique device provides the complete set of ETX-2 family MEF Carrier Ethernet 2.0 features, enabling delivery of service assured VPN services. At the same time, it enables secure tunneling of Ethernet EVCs over public Internet, or over a third party IP network, with the ability to choose from an optional integrated LTE modem, or go directly to the Broadband CPE/modem.

RAD

Your Network's Edge®

ETX-203AX-T

Carrier Ethernet Services Delivery over LTE and BB

FEATURES AND BENEFITS

- Secure tunneling of Ethernet services (EVCs) over IP (LTE or public Internet), using L2oGRE and L2TPv3 with optional IPsec encapsulation
- IPv4 Fragmentation to overcome LTE/BB max MTU limitation
- Optional Integrated LTE modem with global coverage and automatic fallback from 4G to 3G
- Obtaining initial IP from the network using DHCP or PPP support
- QoS to give precedence to the preferred services when going to the LTE/BB network
- PPPoE protocol for DSL Broadband modem connection
- MEF CE2.0 compliant service attributes
- Data and management protection with automatic switchover and switchback
- Advanced management capabilities, fully compatible with the ETX-2 family
- Full Zero Touch Provisioning to reduce OPEX
- Front Access standard SIM card protected slot
- Radio Signal Strength front panel indication
- Integrated wide-range AC/DC power supply
- Compact half 19" 1RU form factor, metal enclosure

CARRIER GRADE SERVICES

ETX-203AX-T incorporates a complete set of CE 2.0-certified Ethernet service tools. It supports advanced scheduling, WRED per CoS, shaping per EVC and port, with flexible classification rules and access lists.

ETX-203AX-T delivers the following MEF services: E-Line (EVL, EVPL), E-LAN (EPLAN, EVPLAN), E-Tree (EP-TREE, EVP-TREE), and E-Access services.

SDN READY MANAGEMENT AND CONTROL

ETX-203AX-T leverages RAD's field-proven, carrier grade operating system – integrated in the entire ETX-2 family – to provide a familiar and uniform interface for provisioning, administration, and maintenance operations.

ETX-203AX-T can be managed using RADview, RAD's carrier-class NMS, or any SNMP-based management system. The device supports a variety of access protocols, including CLI over Telnet, SNMPv3, and TFTP, with a comprehensive security suite.

Specifications

INTERFACES

Ethernet Ports

Five GbE ports (orderable as SFP or UTP)

Management Port

Type: 10/100/1000BaseT
Connector: RJ-45

Control Port

Interface: V.24/RS-232 DCE
Connector: RJ-45
Format: Asynchronous
Data rate: 9.6, 19.2, or 115.2 kbps Bridge

INTEGRATED LTE OPTION

ETX-203AX-T can be ordered with the following integrated LTE modem options.

LTE Modem Code	Specification
L1	**EMEA, Korea, Thailand** LTE FDD: B1, B3, B5, B7, B8, B20 LTE TDD: B38, B40, B41 WCDMA: B1, B5, B8 GSM: B3, B8
L2	**North America** LTE FDD: B2, B4, B12 WCDMA: B2, B4, B5
L3	**Australia, New Zealand, Taiwan, Brazil** LTE FDD: B1, B2, B3, B4, B5, B7, B8, B28 LTE TDD: B40 WCDMA: B1, B2, B5, B8 GSM: B2, B3, B5, B8
L4	**North America** LTE FDD: B2, B4, B5, B12, B13, B14, B66, B71 WCDMA: B2, B4, B5

DATA RATES

LTE (max speeds)

LTE FDD: 150Mbps (DL) / 50Mbps (UL)
LTE TDD: 130Mbps (DL) / 35Mbps (UL)

UMTS (max speeds)

DC-HSDPA: 42Mbps (DL)
HSUPA: 5.76Mbps (UL)
WCDMA: 384Kbps (DL) / 384Kbps (UL)

GSM (max speeds)

EDGE: 296Kbps (DL) / 236.8Kbps (UL)
GPRS: 107Kbps (DL) / 85.6Kbps (UL)

Carrier Ethernet Services Delivery over LTE and BB

BRIDGING

Maximum Frame Size

12,288 bytes

Compliance

802.1D, 802.1Q, 802.1ad

Mode

VLAN-aware, VLAN-unaware

VLAN Editing

Inner/outer VLAN editing per VLAN and p-bit values

TRAFFIC MANAGEMENT

Classification

Per port, outer VLAN or outer + inner VLAN, PCP, TOS/DSCP, EtherType, IP/MAC source/destination address

Policing

Color-aware/unaware dual token bucket with user-configurable CIR, CBS, and EIR, EBS

Scheduling

Eight CoS per EVC scheduling elements
Strict Priority (SP) and Weighted Fair Queue (WFQ)

Shaping

Per port, per EVC, or per EVC.CoS
RFC 5618 TWAMP responder and receiver

EVC TUNNELING OVER IP NETWORKS

Ethernet Encapsulation: L2oGRE and L2TPv3
Optional encryption using IPsec

OAM AND DIAGNOSTICS

IEEE 802.1ag Connectivity Fault Management (CFM)
IEEE 802.3ah EFM Link-fault OAM
ITU-T Y.1731 PM (SLM; DM)
RFC 5618 TWAMP responder and receiver
TWAMP sender

Service Activation Tests

RFC-2544: eight built-in testers
ITU-T Y.1564: eight built-in testers

Loopback Tests

Non-disruptive loopback per flow, with MAC/IP address swap
Loopbacks at Ethernet port level

ICMP Echo

Over L2 and L3 services
Tests IP connectivity

RESILIENCY

Dual Homing

Dual homed link redundancy

Link Aggregation

IEEE 802.1ax (802.3ad), 1:1 LAG with LACP for pairs of network or user Ethernet ports

Ethernet Ring

G.8032v2 rings with sub 50 ms protection for Ethernet traffic

Ethernet Path Protection

G.8031, for linear 1:1 protection
Automatic fallback from 4G to 3G on the LTE modem

MANAGEMENT

Management Options

Local management via LAN port or serial port
Remote management via in-band VLAN
Remote management over Internet using secure tunneling
Password-protected access with authorization levels

Protocols and Security

Secure CLI via SSH
Telnet, SNMPv3, SFTP
NETCONF/YANG management interface
Dual Stack IPv4 and IPv6
RADIUS or TACACS+ authentication
Access Control List (ACL)
Configuration backup and restore

Plug and Play Zero Touch Provisioning

DHCP auto-configuration
XML configuration files download via TFTP/SCP

ETX-203AX-T

Carrier Ethernet Services Delivery over LTE and BB

GENERAL

Compliance

CE 2.0, MEF 6 (E-Line – EPL and EVPL, E-LAN – EPLAN and EVPLAN), MEF 9, MEF10, MEF 14, MEF 20, MEF 36, MEF 46, IEEE 802.3, 802.3u, 802.1D, 802.1Q, 802.1p, 802.3ad, 802.3-2005, 802.1ax, 802.1ag, ITU-T Y.1731, G.8031, G.8262, G.8265, RFC-2544, ITU-T Y.1564

Environmental

Storage Temperature: -40 to 85°C (-40 to 185°F)
Operating Temperature: 0 to 50°C (32 to 122°F), fanless
Humidity: 5% to 90%, noncondensing

Physical

Height: 43.7 mm (1.72")
Width: 215.5 mm (8.48")
Depth: 301 mm (11.85")
Weight: 2.12 kg (4.67 lb)

Power Supply

Wide-range AC/DC power supply with auto detection
AC: 100 to 240 VAC (-10%, +6%), 50/60 Hz
DC: 48 VDC (40 to 72 VDC)

Power Consumption

23W maximum

Ordering

RECOMMENDED CONFIGURATIONS

ETX-203AX-T/LTE/2SFP/3UTP/?
Metal enclosure, Integrated LTE modem, two GbE SFP ports, three GbE UTP ports

? **L1** – EMEA, Korea, Thailand

L2 – North America (AT&T)

L3 – Australia, New Zealand, Taiwan, Brazil

L4 – North America (Verizon, AT&T, FirstNet)

ETX-203AX-T/2SFP/3UTP
Metal enclosure, two GbE SFP ports, three GbE UTP ports, built-in wide range AC/DC power supply

SUPPLIED ACCESSORIES

AC power cord

Two cellular antennas for /LTE option

OPTIONAL ACCESSORIES

CBL-RJ45/D9/F/6FT
Control port cable with male RJ-45 and female DB-9 connector

RM-35
Rack Mount kit for mounting one or two units

ETX-ANT4G/2M
Outdoor cellular antenna with 2m connecting cable kit

ETX-ANT4G/5M
Outdoor cellular antenna with 5m connecting cable kit

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