ETX-2

Carrier Ethernet Demarcation

- Feature-rich demarcation and aggregation suite, offering a complete Service Assured Access (SAA) solution

- Ideal for carriers, wholesalers and mobile operators, seeking to deliver and monitor SLA-based MEF-certified Carrier Ethernet 2.0, Layer-3 VPN, and TDM-over-packet services

- Versatile offering of multi-rate Ethernet over fiber, SHDSL and TDM, assuring unified service delivery over any access technology

- Hardware-based OAM and diagnostics for scalable and accurate traffic monitoring, quick fault detection and troubleshooting

- Wide-range product offering for increased revenue and reduced TCO

The ETX-2 Carrier Ethernet demarcation device, together with the ETX-5 Carrier Ethernet aggregation platform, are the main components of RAD's Service Assured Access solution, providing:

- Ethernet service uniformity over multiple access technologies including GbE and 10GbE, SHDSL, PDH, and SDH
- Operation in diverse topologies including ring, daisy chain, and hub and spoke
- PW functionality for mobile backhauling and business services
- Synchronization for mobile 2G, 3G, LTE, and LTE-A backhauling networks.

ETX-2 devices can be ordered in different hardware flavors (ETX-203AM, ETX-203AX, ETX-205A, and ETX-220A). *Table 1* provides further information on the capabilities offered by each flavor.

MARKET SEGMENTS AND APPLICATIONS

ETX-2 is ideal for carriers, service providers, wholesale providers, and mobile operators seeking to offer unified SLA-based Ethernet business services, such as Ethernet Private Line (EPL), Ethernet Virtual Private Line (EVPL), and bridged E-LAN for enterprise and carrier-to-carrier applications as well as mobile backhauling applications.

NETWORK TOPOLOGIES AND INTEROPERABILITY

ETX-2 supports several network topologies such as linear, daisy chain, and self-healing rings (G.8032v2), working opposite ETX-5 or third-party Ethernet devices.

CARRIER ETHERNET 2.0

ETX-2 incorporates a complete set of CE 2.0-certified Ethernet service tools that allow the service provider to distinguish between high- and low-priority traffic, and to optimize TCP sessions.

ETX-2 provides two-rate three-color policers, and delivers true multi-CoS with hierarchical traffic management. Additionally, it supports advanced scheduling, WRED per CoS, shaping per EVC, and flexible classification rules.

Services
ETX-2 delivers E-Line (EVL, EVPL), E-LAN (EPLAN, EVPLAN), and E-Tree (EP-TREE, EVP-TREE) services.

End-To-End Service Assurance
ETX-2 provides wire-speed Ethernet OAM with delay measurements at line rate. Furthermore ETX-2 offers service activation tools such as RFC-2544/Y.1564 testers.

Layer-2 Control Processing
ETX-2 can be configured to forward Layer-2 control frames (including other vendors' L2CP frames), with optional MAC change, across the network or to peer supported protocols (IEEE 802.3-2005 and LACP), or to discard the L2CP frames.

ROUTING

ETX-2 features a 1G bidirectional router with Virtual Routing Instances (VRF), allowing service providers to deploy L2 and L3 VPNs.

ETHERNET OVER PDH

ETX-2 transports Ethernet over PDH infrastructure via the following NG-PDH technologies:

- Generic Framing Procedure (GFP G.7041)
- GFP o PDH (G.8040)
- PDH Virtual Concatenation (VCAT G.7043)
- Link Capacity Adjustment Scheme (VCAT G.7042).

NG-PDH solutions improve overall network availability by reducing latency and optimizing line utilization and throughput.

Integrated management of MiRICi and MiTOP smart SFPs provides TDM (E1/T1/E3/T3/ OC-3/STM-1) connectivity over PDH or SDH legacy networks.

E1/T1 PSEUDOWIRE

ETX-2 provides E1/T1 pseudowire (PW) services via 4 or 8 integrated interfaces, as well as via a smart SFP (MiTOP). The PWs can be encapsulated using CESoPSN per IETF RFC 5086 or SAToP per IETF RFC 4553. The PWs are transmitted over IP networks or L2 networks with UDP/IP or MEF-8 encapsulation.

RESILIENCY

ETX-2 offers fast protection for virtually any kind of failure and in any linear, ring, or dual-homed topology. The device employs IEEE 802.3ad link aggregation (1:1 LAG), ITU-T G.8032v2 Ethernet ring protection, and ITU-T G.8031 Ethernet linear protection to ensure continuous availability and sub-50ms restoration in the event of network outages.

TIMING AND SYNCHRONIZATION

ETX-2 incorporates RAD's advanced SyncTop synchronization and timing over packet feature set to support mobile heterogeneous network (HetNet) topology.

The device combines Synchronous Ethernet (SyncE) with IEEE 1588v2 Precision Time Protocol per ITU-T G.8265.1 and G.8275.1 Telecom profiles for cost-effective synchronization of frequency and phase.

With an integrated GPS receiver and 1588v2 Grandmaster support, ETX-2 offers a Distributed GM™ solution, allowing mobile operators and service providers to cost-effectively provide reliable frequency and phase accuracy for LTE-A. The device also supports 1588v2 slave clock, boundary clock (BC), and transparent clock (TC).

MANAGEMENT AND SECURITY

The device can be managed via RADview, RAD's carrier-class NMS for Windows and Unix, or any SNMP-based management system. ETX-2 supports a variety of access protocols, including CLI over Telnet, SNMPv3, and TFTP.

Security features include SNMPv3, RADIUS (client authentication), TACACS+ (client authentication, authorization, and accounting), SSH, and SFTP.

Access Control Lists (ACL) can also be used to flexibly filter and mark management traffic, enabling service providers to maintain network security by dropping unwanted packets.

MONITORING AND DIAGNOSTICS

Featuring multi-layer OAM and PM tools, ETX-2 performs hardware-based monitoring and diagnostics at high scale and precision. End-to-end connectivity OAM (IEEE 802.1ag) as well as single-segment OAM (IEEE 802.3-2005) ensure flow-level fault management and performance monitoring over Layer-2 networks and also quickly detect connectivity failures for robust protection. RFC-5357 TWAMP Light delivers the same functionality over Layer-3 networks. Layer-2 and 3 wire-speed loopbacks offer flexible diagnostic tools.

The Performance Management Portal is an SLA assurance system that is part of the RADview management system, enabling real-time monitoring of Ethernet service performance by collecting KPI data from RAD devices.

Digital Diagnostics Monitoring
ETX-2 supports digital diagnostics monitoring (DDM) SFP functions according to SFF-8472, excluding external DDM calibration.
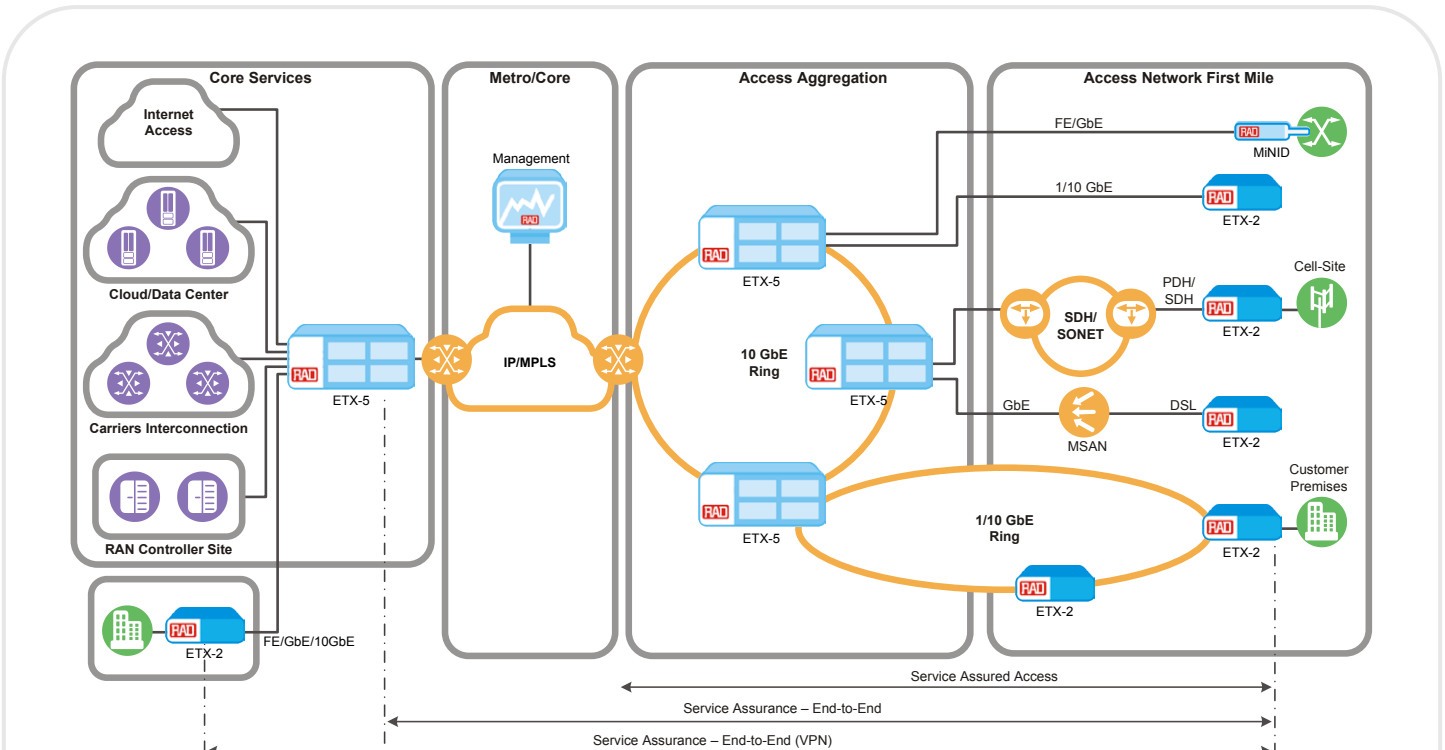
Applications

Figure 1. Access Aggregation with SLA-Based Services

Table 1. Feature Comparison

Service Assured Access Capabilities		ETX-203AX	ETX-203AM	ETX-205A	ETX-220A
Interfaces	10GbE XFP interfaces				✓
	FE/GbE SFP interfaces	✓	✓	✓	✓
	GbE combo interfaces		2 ports	✓	
	10/100/1000 electrical interfaces	✓	✓	✓	✓
	PDH network interfaces (GFP mapping)		✓ (4/8 E1/T1, 1/2 T3)		
	SHDSL network interfaces		✓		
	E1/T1 user interfaces (SAToP, CESoPSN, CAS)			✓	
	E1/T1/T3/STM-1/OC3 network interfaces via integrated smart SFP (MiRIC)	✓	✓	✓	✓
	E1/T1/T3 PWE services via integrated smart SFP (MiTOP)	✓	✓	✓	✓
	Timing interfaces (2 MHz, 2 Mbps, 1PPS, ToD)			✓	✓
Networking Capabilities	Ethernet E-Line, E-LAN, E-Tree services	✓	✓	✓	✓
	Wire-speed L2 forwarding	✓	✓	✓	✓
	1 Gbps wire-speed router with Virtual Routing Instances (VRF)		✓	✓	
	Flexible classification rules	✓	✓	✓	✓
	2-rate/3-color policing per EVC.CoS	✓	✓	✓	✓
	H-QoS shaping per EVC and EVC.CoS	✓	✓	✓	✓
	Strict priority and weighted fare queuing (WFQ) scheduling	✓	✓	✓	✓
	G.8031 linear protection	✓	✓	✓	✓
	G.8032v2 ring protection	✓	✓	✓	✓
	1:1 link protection with 1:1 LAG/LACP	✓	✓	✓	✓
	1:1 link protection with dual homing	✓	✓	✓	✓
	LAG with load balancing				✓
	Jumbo frame support	✓	✓	✓	✓
	Synchronous Ethernet (SyncE) on all interfaces			✓	✓
	IEEE-1588v2 precision time protocol (PTP) per G.8265.1 and G.8275.1 Telecom profiles	TC	TC	Slave, TC, BC, GM with integrated GPS	Slave, TC, BC
OAM and Diagnostics	8 built-in RFC-2544 service activation testers	✓	✓	✓	✓
	8 built-in Y.1564 service activation testers	✓	✓	✓	✓(up to 10G services)
	Continuity fault management (CFM) per IEEE 802.3ag	✓	✓	✓	✓
	Service utilization and performance monitoring per ITU-T Y.1731	✓	✓	✓	✓
	Accurate one-way delay measurement (microsecond accuracy)			✓	✓
	TWAMP light generator and responder	✓	✓	✓	✓
	LLDP discovery per IEEE 802.1AB	✓	✓	✓	✓
	Link-level OAM per IEEE 802.3-2005	✓	✓	✓	✓
	RMON2 port-level counters	✓	✓	✓	✓
	On-demand Layer-2 and 3 loopbacks	✓	✓	✓	✓
General and Management	Zero-touch provisioning (DHCP, PPPoE)	✓	✓	✓	✓
	SNMPv1/v2/v3	✓	✓	✓	✓
	RADIUS and TACACS+ AAA	✓	✓	✓	✓
	Network time protocol (NTP)	✓	✓	✓	✓
	Power supply redundancy			✓	✓
	Temperature-hardened option		✓	✓	✓

Specifications

CAPACITY

Max. Frame Size
12,288 bytes

ETX-203AM:
    SHDSL uplink module: 2,048 bytes
    E1/T1/T3 EoPDH uplink module:
       10,240 bytes

BRIDGE

Compliance
802.1D, 802.1Q, 802.1ad

Mode
VLAN-aware, VLAN-unaware

ROUTER
(ETX-203AM, ETX-205A)

Integrated router providing up to 1 Gbps
Layer-3 IPv4 and IPv6 forwarding with
performance of over 2 MPPS, as well as
bidirectional forwarding detection (BFD)
for fast forwarding path failure detection

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

HIERARCHICAL QUALITY OF SERVICE (HQOS)

Policing
Dual token bucket with user-configurable
CIR + CBS and EIR + EBS

Scheduling
8 × CoS per EVC scheduling elements
Strict Priority (SP) and Weighted Fair
Queue (WFQ)

Shaping
Single- and dual-rate per EVC/EVC.CoS

FLOWS

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

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

DIAGNOSTICS

Loopback Tests
Non-disruptive loopback per flow, with
swapping of MAC address and optionally
IP address

Loopbacks at Ethernet port level

Service Activation Tests
RFC-2544: 8 built-in wire-speed testers
ITU-T Y.1564: 8 built-in wire-speed testers

Table 2. Ethernet Interfaces

	Specifications	ETX-203AX	ETX-203AM	ETX-205A	ETX-220A
10GbE	Number of Ports				Network: 1 or 2 User: 1 or 2
	Type				XFP
	Fiber Optic (XFP-based)				10GBaseSR, 10GBaseER, 10GBaseLR, 10GBaseZR
	Connector				XFP slot
	XFP Transceivers				See *Note*
GbE	Number of Ports	Network: 2 User: 4	Network: 2 with GbE network module, or 1 with router module User: 4 (3 with router module)	Network: 2 User: 4 with regular router, or 2 with wire-speed router	Network: up to 2 User: up to 10 or 20
	Type	SFP or copper port	Network: SFP/copper combo port User: SFP or copper port	SFP/copper combo port	SFP or copper port
	Fiber Optic (SFP-based)		Fast Ethernet: 100BaseFx, 100BaseLX10, 100BaseBx10 Gigabit Ethernet: 1000BaseSx, 1000BaseLX10, 1000BaseBx10		
	Copper		10/100BaseT or 10/100/1000BaseT		
	Connector	Port 1: SFP slot All other ports: SFP slot or RJ-45	Replaceable module with SFP slot and RJ-45	SFP slot or RJ-45	SFP slot or RJ-45
	SFP Transceivers	See *Note*	See *Note*	See *Note*	See *Note*

Note: *It is strongly recommended to order this device with **original** RAD SFPs/XFPs. RAD cannot guarantee full compliance to product specifications for units using non-RAD SFPs/XFPs. For full details on SFP/XFP transceivers, see the SFP/XFP Transceivers data sheet at www.rad.com. For the list of SFP/XFP transceivers supported by ETX-220A, see the SFP/XFP Compatibility document.*

SHDSL INTERFACES
(ETX-203AM: SHDSL NETWORK MODULE)

Type
SHDSL.bis

Number of Ports
2 or 4

Number of Wires
4 or 8

Connector
Replaceable network module, with one RJ-45 for 4-wire ordering option or two RJ-45s for 8-wire ordering option

Line Coding
16 or 32 TC-PAM

Line Rate
192–5696 kbps (see *Table 3*)

Impedance
135Ω

Compliance
ITU-T G.991.2, ETSI TS 101524

Bonding
According to IEEE 802.3ah, ITU-T G.998.2

E1/T1 INTERFACES
(ETX-203AM: EoPDH E1/T1 network module)

Number of Ports
4 or 8

Compliance
G.703, G.823

Data Rate
E1: 2.048 Mbps
T1: 1.544 Mbps

Line Coding
E1: HDB3
T1: B8ZS

Framing
E1: Framed (G732N with CRC)
T1: Framed (ESF)

Impedance
E1: 120Ω, balanced
    75Ω, unbalanced (via adapter cable)
T1: 100Ω, balanced

Connector
Replaceable module, with four RJ-45 connectors:
    Four E1/T1 ports:
      One E1/T1 interface per RJ-45
    Eight E1/T1 ports:
      Two E1/T1 interfaces per RJ-45,
      with adapter cable

T3 INTERFACES

(ETX-203AM: EoPDH T3 network module)

Number of Ports
1 or 2

Compliance
G.703, G.823

Data Rate
44.736 Mbps

Line Code
B3ZS

Framing
C-bit parity

Line Impedance
75Ω, unbalanced

Connector
Replaceable network module, with one or two pairs of BNC connectors:
One T3 port – One pair
Two T3 ports – Two pairs

E1/T1 INTERFACES

(ETX-205A: Built-in TDM PW E1/T1 ports)

Number of Ports
4 or 8

Compliance
E1: G.703, G.732N, G.732S
T1: ANSI T1.101, ANSI T1.403

Data Rate
E1:2.048 Mbps
T1: 1.544 Mbps

Line Coding
E1:HDB3
T1: B8ZS

Framing
E1: Framed (G.732N with or without CRC)
    Framed with CAS (G.732S with or
    without CRC)
    Unframed
T1: Unframed or ESF

Impedance
E1: 120Ω, balanced
    75Ω, unbalanced (via adapter cable)
T1: 100Ω, balanced

Connector
Electrical, RJ-45

Table 3. SHDSL Typical Ranges (26 AWG)

Data Rate	4-wire		8-wire	
[kbps]	[km]	[mi]	[km]	[mi]
192	8	4.9	8	4.9
512	6.7	4.1	6.7	4.1
1536	6	3.7	6.5	4
2048	5.7	3.5	6.4	3.9
4096	5.1	3.1	5.7	3.5
4608	5	3	5.5	3.4
5696	4.6	2.8	5.1	3.1
11392	2.9	1.8	4.6	2.8
17088	–	–	3.5	2.1
22784	–	–	2.9	1.8

PSEUDOWIRE (ETX-205A)

Payload Encapsulation
CESoPSN, SAToP

Network Encapsulation
MEF 8, UDP/IP

TIMING

Synchronous Ethernet
ITU-T G.8261-G.8264

1558v2
Slave clock (ETX-205A, ETX-220A)
Boundary clock (ETX-205A, ETX-220A)
Master clock with GPS (ETX-205A)
Transparent clock (TC)
Phase and frequency synchronization

Station Clock (ETX-205A, ETX-220A)
Type: Balanced E1, unbalanced E1 (via adapter cable)
Connector: RJ-45

PTP Ports (ETX-205A, ETX-220A)
TOD/1PPS (RJ-45)
External clock (BNC)
1PPS (BNC)

MANAGEMENT

Ethernet 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

Management Options
Password-protected access, authorization levels
Secure CLI via SSH
Telnet, SNMPv3, SFTP
RADIUS or TACACS+ authentication
Plug and play zero touch provisioning

Routing for Management
IP forwarding, dual-stack IPv4 and IPv6 routing, static routing

GENERAL

Compliance
CE 2.0, MEF 6 (E-Line – EPL and EVPL, E-LAN – EPLAN and EVPLAN), MEF 10, MEF 9, MEF 14, MEF 20, IEEE 802.3, 802.3u, 802.1q, 802.1p, 802.3ad, 802.3-2005, 802.1ax, 802.1ag, ITU-T Y.1731, G.8031, G.8032v2, G.8262, G.8265, RFC-2544, ITU-T Y.1564

Table 4. Physical Specifications

	Specifications	ETX-203AX	ETX-203AM	ETX-205A	ETX-220A
Power	Power	AC/DC inlet connector with auto detection AC (wide range): 85–264 VAC, 47/63 Hz DC: 48 VDC (40–370 VDC)	AC: 100–230 VAC (±10%), 47–63 Hz DC: -48 VDC (36–72 VDC)	AC: 100–240 VAC, 50/60 Hz DC: -24/48 VDC nominal (20–72 VDC)	AC: 100–240 VAC, 50/60 Hz DC: -48 VDC nominal (-40 to 72 VDC)
	Power Consumption	15W max	GbE uplink module: 15W max SHDSL uplink module (4-wire): 15W max SHDSL uplink module (8-wire): 17W max E1/T1/T3 uplink module: 5W max	17W max	70W max
Physical	Height	43.7 mm (1.7 in)	43.7 mm (1.7 in)	43.7 mm (1.7 in)	43.7 mm (1.7 in)
	Width	220 mm (8.6 in)	215 mm (8.5 in)	440 mm (17.4 in)	440 mm (17.4 in)
	Depth	170 mm (6.7 in)	300 mm (11.8 in)	240 mm (9.5 in)	240 mm (9.5 in)
	Weight	0.7 kg (1.54 lb)	2.3 kg (5.1 lb)	3.1 kg (6.8 lb)	3.1 kg (6.8 lb)
Environment	Temperature	0 to 50°C (32 to 122°F)	Regular: 0 to 50°C (32 to 122°F) Temperature-hardened: -20 to 65°C (-4 to 149°F)	Regular: 0 to 50°C (32 to 122°F) Temperature-hardened: -40 to 65°C (-40 to 149°F)	Regular: 0 to 50°C (32 to 122°F) Temperature-hardened: -20 to 65°C (-4 to 149°F)
	Humidity	Up to 90%, non-condensing	Up to 90%, non-condensing	Up to 90%, non-condensing	Up to 90%, non-condensing

Ordering

RECOMMENDED CONFIGURATIONS

ETX-203AX:

ETX-203AX/2SFP/4SFP
2 SFP Ethernet ports, 4 empty SFP slots

ETX-203AX/2SFP/2UTP2SFP
2 SFP Ethernet ports, 2 UTP Ethernet ports, 2 SFP Ethernet ports

ETX-203AX/2SFP/4UTP
2 SFP Ethernet ports, 4 Ethernet UTP ports

ETX-203AX/2UTP/4UTP
2 UTP Ethernet ports, 4 Ethernet UTP ports

ETX-203AX/1SFP1UTP/4UTP
1 SFP Ethernet slot, 1 UTP Ethernet port, 4 Ethernet UTP ports

Note for ETX-203AX: All ordering options are also available with the GE or GE30 options.

ETX-203AM:

ETX-203AM/?/!/NP/MA/ +3

Legend

? Enclosure type
  (Default=Regular enclosure)
  H   Industrially-hardened enclosure

! Power supply
  AC AC power supply
  DC DC power supply

NP Software package (Default= 100 Mbps per port)
  GE   1 Gbps per port
  GE30 1 Gbps per port, 30 shaped EVCs

MA Network port module (Default= no network port module)
  2ETH   2 Ethernet combo ports
  SH4W   SHDSL 4-wire (2 ports)
  SH8W   SHDSL 8-wire (4 ports)
  4E1T1 4 E1/T1 ports
  8E1T1 8 E1/T1 ports
  1T3   1 T3 port
  2T3   2 T3 ports
  RTR   1 Gbps router

+3 Ethernet user ports
  2SFP2UTP 2 SFP Ethernet ports + 2 1000BaseT Ethernet ports

  4SFP   4 SFP Ethernet ports
  4UTP   4 1000BaseT Ethernet ports

Configuration examples:

ETX-203AM/DC/2ETH/2SFP2UTP
DC power supply, GbE network module, 2 SFP Ethernet ports, 2 copper Ethernet ports

ETX-203AM/AC/GE30/SH4W/4UTP
AC power supply, 1 Gbps per port, 30 shaped EVCs, SHDSL 4-wire network module, 4 copper Ethernet ports

ETX-203AM/AC/GE30/2ETH/4SFP
AC power supply, 1 Gbps per port, 30 shaped EVCs, GbE network module, 4 SFP Ethernet ports

ETX-203AM/AC/GE30/8E1T1/4UTP
AC power supply, 1 Gbps per port, 30 shaped EVCs, E1/T1 8-port network module, 4 copper Ethernet ports

ETX-203AM/AC/4UTP
AC power supply, no network module, 4 copper Ethernet ports

ETX-205A:

ETX-205A/AC/19
100–240 VAC, 19" enclosure

ETX-205A/AC/19/4E1T1
100–240 VAC, 19" enclosure, 4 E1/T1 ports

ETX-205A/AC/19/8E1T1
100–240 VAC, 19" enclosure, 8 E1/T1 ports

ETX-205A/AC/19/SYE
100–240 VAC, 19" enclosure, SyncE

ETX-205A/AC/19/PTP
100–240 VAC, 19" enclosure, 1588v2 timing and SyncE

ETX-205A/AC/19/4E1T1/PTP
100–240 VAC, 19" enclosure, 4 E1/T1 ports, 1588v2 timing and SyncE

ETX-205A/AC/19/8E1T1/PTP
100–240 VAC, 19" enclosure, 8 E1/T1 ports, 1588v2 timing and SyncE

ETX-205A/AC/19/GPS
100–240 VAC, 19" enclosure, integrated grandmaster and GPS receiver

ETX-205A/AC/19/RTR
100–240 VAC, 19" enclosure, integrated 1 Gbps router

Note for ETX-205A: All ordering options are available with any combination of AC or DC power supplies.

ETX-220A:

ETX-220A/AC/2XFP/20S/SYE/ESK
AC power supply, 2 XFP 10GbE ports, 20 SFP GbE ports, SyncE, enhanced SW key

ETX-220A/AC/2XFP/10U10S/SYE/ESK
AC power supply, 2 XFP 10GbE ports, 10 copper GbE ports, 10 SFP GbE ports, SyncE, enhanced SW key

ETX-220A/AC/3XFP/10S/SYE/ESK
AC power supply, 3 XFP 10GbE ports, 10 SFP GbE ports, SyncE, enhanced SW key

ETX-220A/AC/3XFP/10U/SYE/ESK
AC power supply, 3 XFP 10GbE ports, 10 copper GbE ports, SyncE, enhanced SW key

ETX-220A/AC/3XFP/10S/PTP/ESK
AC power supply, 3 XFP 10GbE ports, 10 SFP GbE ports, SyncE, 1588v2, enhanced SW key

ETX-220A/H/DCR/2XFP/20S/SYE/ESK
Temperature hardened, dual DC power supplies, 2 XFP ports, 20 SFP GbE ports, SyncE, enhanced SW key

ETX-220A/AC/4XFP/10U/SYE/ESK
AC power supply, 4 XFP 10GbE ports, 10 copper GbE ports, SyncE, enhanced SW key

ETX-220A/AC/4XFP/SYE/ESK
AC power supply, 4 XFP 10GbE ports, SyncE, enhanced SW key

ETX-220A/AC/2XFP/20S/SYE/BSK
AC power supply, 2 XFP 10GbE ports, 20 SFP GbE ports, SyncE, basic SW key

ETX-220A/AC/2XFP/10U10S/SYE/BSK
AC power supply, 2 XFP 10GbE ports, 10 copper GbE ports, 10 SFP GbE ports, SyncE, basic SW key

ETX-220A/AC/3XFP/10S/SYE/BSK
AC power supply, 3 XFP 10GbE ports, 10 SFP GbE ports, SyncE, basic SW key

ETX-2

Carrier Ethernet Demarcation

ETX-220A/AC/3XFP/10U/SYE/BSK
AC power supply, 3 XFP 10GbE ports, 10 copper GbE ports, SyncE, basic SW key

ETX-220A/AC/3XFP/10S/PTP/BSK
AC power supply, 3 XFP 10GbE ports, 10 SFP GbE ports, SyncE, 1588v2, basic SW key

ETX-220A/DC/4XFP/10S/SYE/BSK
DC power supply, 4 XFP 10GbE ports, 10 SFP GbE ports, SyncE, basic SW key

ETX-220A/DC/4XFP/10U/SYE/BSK
DC power supply, 4 XFP 10GbE ports, 10 copper GbE ports, SyncE, basic SW key

ETX-220A/DC/4XFP/SYE/BSK
DC power supply, 4 XFP 10GbE ports, SyncE, basic SW key

Notes for ETX-220A:

- *The Enhanced Software (ESK) option provides all Ver. 5.0 features; the (Basic Software) BSK option contains all features provided by ESK, except the BSK option supports one level of QoS with two shapers per NNI port (2×8 CoS)*

- *All ordering options are available with AC, DC, dual AC (ACR) or dual DC (DCR) power supplies*

- *Temperature-hardened options are available; please contact your local RAD partner for further information.*

SPECIAL CONFIGURATIONS

Please contact your local RAD partner for additional configuration options

SUPPLIED ACCESSORIES

Power cord (one per power supply)

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

CBL-E1-SPLT
Cable to extract 2 E1/T1 ports from one RJ-45 connector of ETX-203AM E1/T1 network module (four cables are supplied if 8 E1T1 option is ordered)

RM-34
Hardware kit for mounting one ETX-205A or ETX-220A unit in a 19" rack

RM-34-23
Hardware kit for mounting one ETX-205A or ETX-220A unit in a 23" rack

OPTIONAL ACCESSORIES

ETX-203AM-SW/GE30
Software license for 1 Gbps per port, and up to 64 shaped EVCs per port

ETX-203AM-SW/GE
Software license for 1 Gbps per port

ETX-203AX-SW/GE30
Software license for 1 Gbps per port, and up to 64 shaped EVCs per port

ETX-203AX-SW/GE
Software license for 1 Gbps per port

ETX-M/2ETH
Ethernet uplink module for ETX-203AM with two combo ports

ETX-M/SH4W
EFM bonded uplink module for ETX-203AM with 2 SHDSL ports (4-wire)

ETX-M/SH8W
EFM bonded uplink module for ETX-203AM with 4 SHDSL ports (8-wire)

ETX-M/4E1T1
Ethernet uplink module for ETX-203AM with 4 E1/T1 ports

ETX-M/8E1T1
Ethernet uplink module for ETX-203AM with 8 E1/T1 ports

Note: The CBL-E1-SPLT cables must be ordered separately when ordering this module.

ETX-M/1T3
Ethernet uplink module for ETX-203AM with 1 T3 port

ETX-M/2T3
Ethernet uplink module for ETX-203AM with 2 T3 ports

ETX-M/RTR
Ethernet module with integrated 1 Gbps router

RM-35/@
Hardware kit for mounting one or two ETX-203AM units in a 19" rack

@ Rack mount kit (Default=Both kits):
   P1 Kit for mounting one unit
   P2 Kit for mounting two units

RM-33-2
Hardware kit for mounting one or two ETX-203AX units in a 19" rack

WM-34
Wall mount hardware kit for one ETX-205A or ETX-220A unit

WM-35
Wall mount hardware kit for one ETX-203AM unit

ETX-205A_PS/!
! Power supply
   AC Single AC power supply
   DC Single DC power supply

ETX-220A_PS/N/!
! Power supply:
   AC Single AC power supply
   DC Single DC power supply

CBL-RJ45/2BNC/E1/X
Balanced E1 (RJ-45) to unbalanced E1 (2 BNC) adapter cable