Megaplex-4100

Next Generation Multiservice Access Node
Ver 2.x

- Gigabit Ethernet and/or STM-1/OC-3 uplinks

- Ethernet over copper, fiber or DSL aggregator

- STM-1/OC-3 ADM (add/drop multiplexer)

- 4/1/0 cross-connect

- xDSL, E1/T1, DS0, sub-DS0, analog voice, data, fiber multiplexing, pseudowire connectivity and Ethernet services

- Powerful protection including resilient ring topology and module redundancy at various levels

RAD's Megaplex-4100 multiservice access node, a high-capacity, carrier-class multiservice concentrator, provides multiple TDM and next-generation services (Ethernet) over fiber or copper over PDH/SDH/SONET or packet-switched networks (PSN) for large enterprises, including utilities, transportation and campuses. It is an STM-1/OC-3 add/drop multiplexer that transports Ethernet and traditional (TDM) traffic over SDH/SONET networks. When bandwidth granularity of the Ethernet channel is configured to n*VC-12/VC-3 or n*1.5/STS-1, Megaplex-4100 utilizes the SDH/SONET infrastructure for cost-effective TDM and Ethernet connectivity.

Megaplex-4100 offers a connection for packet-based Ethernet traffic via its GbE or Fast Ethernet links.

Megaplex-4100 is available as a 4U-high chassis featuring slots for up to 2 common logic and 10 I/O modules.

Megaplex-4100 is a flexible and scalable node offering a variety of user services, including E1, T1, IDSL, SHDSL, Fast Ethernet, Gigabit Ethernet, STM-1/OC-3, n x 64 kbps high speed data, sub-DS0 low speed data, digital voice, analog voice, and ISDN.

The ability to handle a broad range of data and voice services and various network technologies in a single compact managed node makes Megaplex-4100 a versatile and cost-effective next-generation multiservice access node.

A powerful internal cross-connect matrix of up to 5120 DS0 per chassis (from DS0 or sub-DS0 to STM-1/OC-3 level) can cross-connect traffic directly from any tributary channel to any other channel.

These capabilities enable Megaplex-4100 to function as a service differentiation point at the central site, handing off traditional voice/data and advanced Ethernet services to the respective networks.

At the remote point-of-presence (POP) or customer premises, Megaplex-4100 may also be deployed to effectively fan out multiple voice and data services.

Located at the carrier POP, Megaplex-4100 can extend user services in the Last Mile over E1, T1, ISDN, or SHDSL/SHDSL.bis lines, copper or fiber, by working with dedicated customer-located equipment such as RAD's FCD, ASMi, Optimux, RIC-E1/8E1 or DXC.

Megaplex-4100 eliminates the need for two separate units (ADM and multiplexer) for private networks where voice, Ethernet and data services are required.

Megaplex-4100 is interoperable with MP-2100/2104, ASMi, Optimux, ETX, RICi, IPMUX, DXC and FCD devices, and can interwork with third-party devices or networks complying with PDH/SDH/SONET or Ethernet, SHDSL standards.

Configuration and monitoring can be performed via an ASCII terminal, Web, Telnet or RADview.

Remote units can be managed in the following ways:

- Out-of-band, using the 10/100 Ethernet management port. This simple and efficient method takes advantage of IP bandwidth on demand, while saving link bandwidth for user traffic

- Inband, using the IP/PPP over DCC, via the STM-1/OC-3 links

- Inband, using the IP/PPP over a dedicated timeslot in any E1/T1 or SHDSL link

- Network management station running RADview, RAD's SNMP element management application.
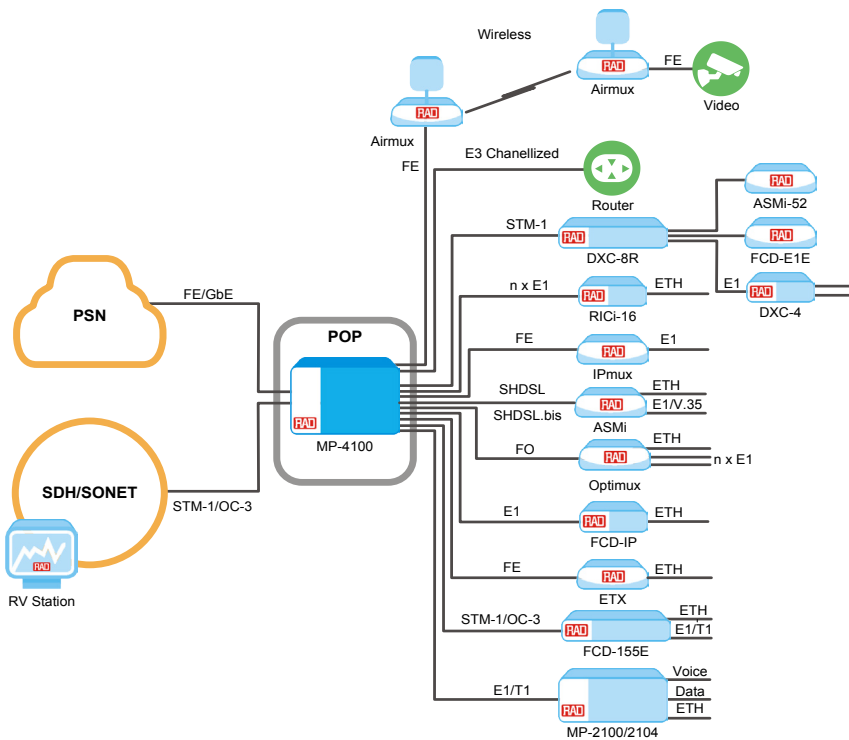
Applications

Figure 2. Megaplex-4100 as a Central Site Aggregator for different RAD CPEs, Ethernet and TDM Aggregator for SDH/SONET and PSN
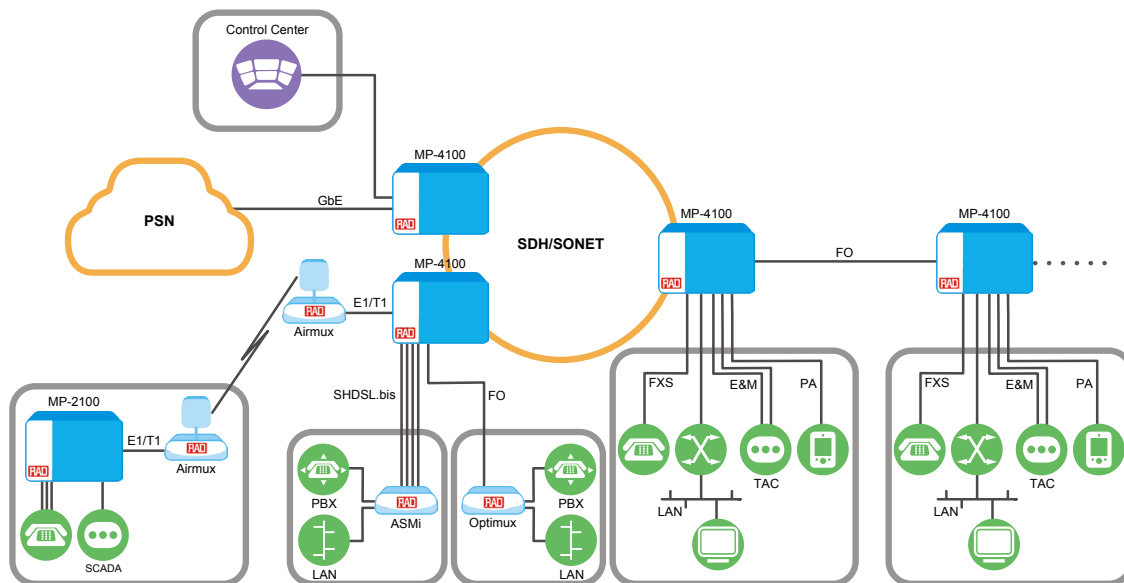

Figure 1. Megaplex-4100 as Multiservice Platform with Diverged Interfaces and Access Topologies for U&T Market Segment

Specifications

SDH/SONET INTERFACE

Bit Rate
155.52 Mbps ±20 ppm

Compliance
SDH: ITU-T G.957, G.783, G.798
SONET: GR-253-core

Framing
SDH: ITU-T G.707, G.708, G.709
SONET: GR-253-core

Protection
1+1 unidirectional APS (G.842)

Line Code
NRZ

Connectors
SFP-based

GIGABIT ETHERNET INTERFACE

Number of Ports
2 per CL.1 module (4 per chassis)

Data Rate
10/100/1000 Mbps
Autonegotiation (copper interface only)

Connectors (per port)
RJ-45, shielded
SFP socket (for SFP transceivers,
    see *Ordering*)

TIMING

Clock Sources
Internal clock
Recovered from the STM-1/OC-3 interface
External clock from TDM interfaces

Station Clock
Bit Rate:

* 1.544 Mbps (T1) (AMI)
* 2.048 Mbps (E1) (AMI)
* 2.048 MHz squarewave

Connector: RJ-45

SDH/SONET AND GBE SFPS

For full details, see the SFP/SFP
Transceivers data sheet at www.rad.com

* All SFPs listed for STM-1/OC-3 are
  supported by SDH/SONET link except
  those with external calibration

* All SFPs listed for GbE are supported
  by the GbE link except those with
  external calibration and SGMII.

Note: *It is strongly recommended to order this device with* **original** *RAD SFPs* **installed***. This will ensure that prior to shipping, RAD has performed comprehensive functional quality tests on the entire assembled unit, including the SFP devices. RAD cannot guarantee full compliance to product specifications for units using non-RAD SFPs.*

MANAGEMENT

Control Port
Interface: RS-232/V.24 (DCE)
Connector: DB-9
Baud Rate: 9.6, 19.2, 38.4, 57.6, 115.2

Ethernet Management Port
Interface: 10/100BaseT
Connector: RJ-45

DIAGNOSTICS

Tests
Local and remote loopbacks per link

Alarms
Time and date stamped
Last 256 alarms stored in RAM on CL
    module, readable by management
    system or terminal
Current alarms status

Alarm Relay
1 inbound relay (dry contact)
2 outbound relays triggered by any
user-selected Megaplex alarm
Operation: normally open, normally
closed, using different pins
Connector: 9-pin, D-type, female

Statistics
Performance statistics for bundles and
    Ethernet ports
SDH/SONET link monitoring

GENERAL

Indicators

Chassis
POWER SUPPLY A, B:
    Green (on) – Corresponding PS
        modules on (if CL module is active)

SYSTEM TEST
    Yellow (on) – System test in process

SYSTEM ALARM
    Red (flashing) – Major and/or critical
        alarm in the system

CL.1 Module
ON LINE
    Green (on) – Master (active) module is
        active
    Yellow (on) – Master (active) module is
        being tested
    Green (flashing slowly) – Standby
    Green (flashing rapidly) – Software
        downloading
    Yellow (flashing) – Software
        decompressing

ALM
    Red (flashing) – Critical alarm in
        system, but highest alarm severity
        is minor or warning

CLOCK ON
    Green (on) – Station clock port is
        configured as connected

CLOCK LOS
    Red (on) – Loss-of-signal condition at
        the station clock port

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STM-1/OC-3 Interface (per port)

ON LINE

Green (on) –Link is active

Green (flashing) – Link is on standby

Yellow (on) – Test is active

LOS

Red (on) – Loss of signal at the corresponding port

Physical

Chassis

2 power supply module slots
2 CL.1 module slots
10 slots for I/O modules
Height: 18 cm (7 in) (4U)
Width: 44 cm (17 in)
Depth: 33 cm (13 in)
Weight: 15.3 kg / 33.8 lb max.
    (fully loaded chassis)

CL.1 Module

Height: 17.3cm (6.8 in)
Width: 4.5 cm (1.8 in)
Depth: 32.5cm (12.8 in)
Max Weight: 630 g (1.3 lb)

Power Supply Input

AC: 115 or 230 VAC
DC: 24 or -48 VDC
Selectable ground reference
or floating ground

Output Power (max)

250W

Power Consumption (per CL, max)

CL.1/155GbE: 30W

Environment

Operating temperature: -10°C to 55°C
    (14°F to 131°F)
Storage temperature: -20°C to +70°C
    (-4°F to +158°F)
Humidity: up to 95%, non-condensing

Note: *Actual operating temperature range is determined by the specific modules installed in the chassis, and might require special ordering options.*

If you need -20°C to 55°C (-4°F to 131°F) operating temperature support, contact your local RAD Partner.

Ordering

MP-4100-MN
Megaplex-4100 chassis with no PS or CL.1 module

MP-4100-1/!/*
Megaplex-4100 chassis equipped with PS and CL.1 modules

!	**Power supply modules**	
	115	Single/dual, 115 VAC
	115R	
	230	Single/dual, 230 VAC
	230R	
	24R	Dual, +24 VDC
	48	Single/dual, -48 VDC
	48R	
*	**Link option**	
	155GBESFP	Single/dual CL.1
	155GBESFPR	modules with SDH/SONET SFP sockets and GbE SFP sockets

MP-4100M-PS/~
Power supply module

~	Power supply modules	
	115	Single, 115 VAC
	230	Single, 230 VAC
	24	Single, +24 VDC
	48	Single, -48 VDC

MP-4100M-CL.1/155GBESFP
CL.1 module, SDH/SONET SFP sockets and GbE SFP sockets

RAD
Your Network's Edge