

# 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, ISDL, 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.



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## Next Generation Multiservice Access Node

### Applications

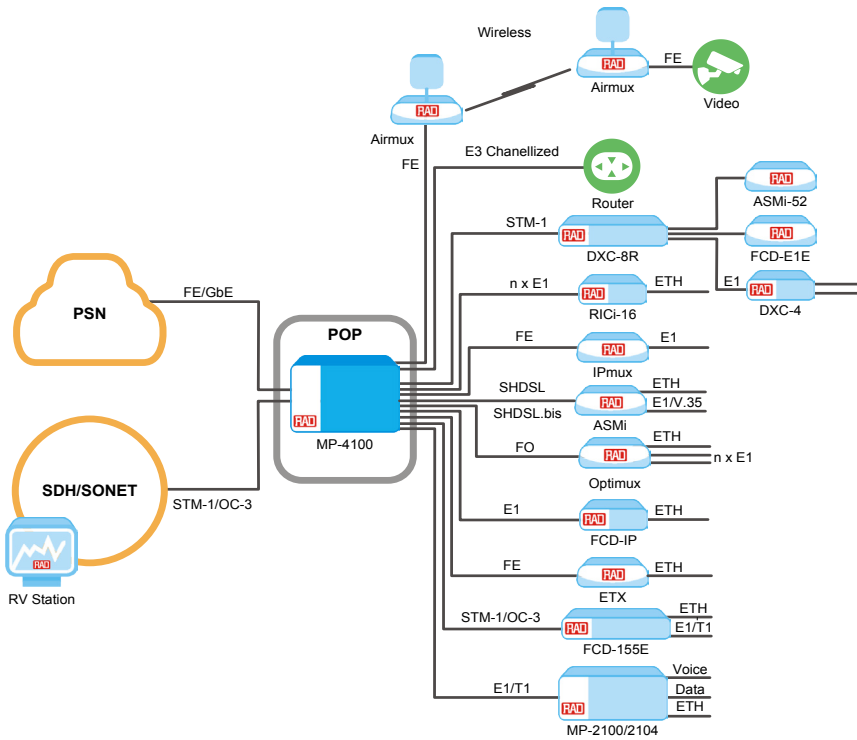


Figure 2. Megaplex-4100 as a Central Site Aggregator for different RAD CPEs, Ethernet and TDM Aggregator for SDH/SONET and PSN

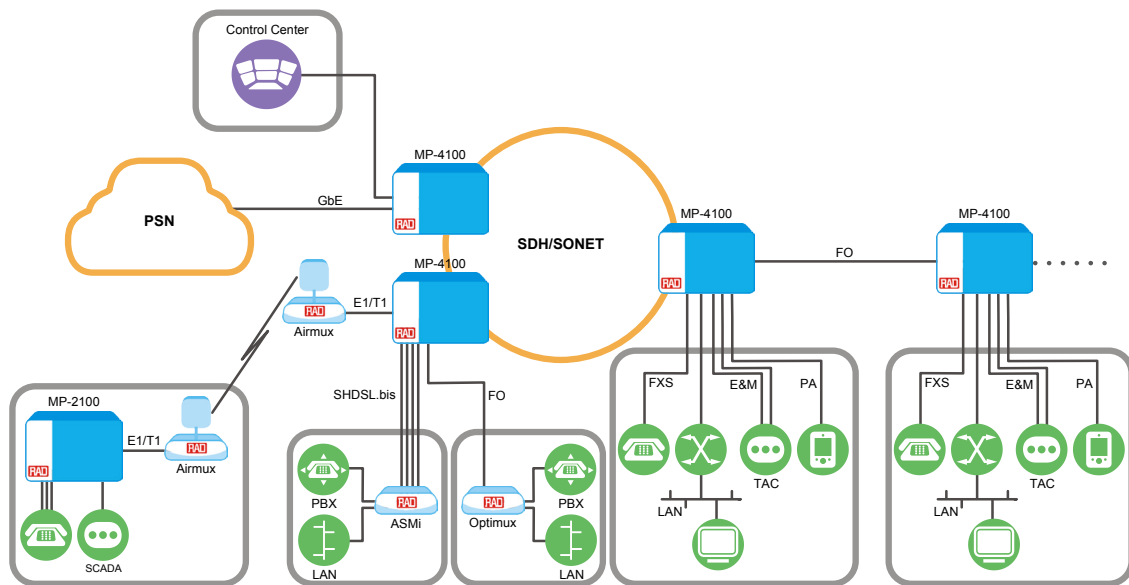


Figure 1. Megaplex-4100 as Multiservice Platform with Diverged Interfaces and Access Topologies for U&T Market Segment

## Specifications

### SDH/SONET INTERFACE

#### Bit Rate

155.52 Mbps  $\pm$ 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](http://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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## Next Generation Multiservice Access Node

### 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 modules with SDH/SONET SFP sockets and GbE SFP sockets

155GBESFPR

### 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

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