LRS-102

12-Slot Transparent Rack with SNMP Management

High-density rack with SNMP management provides E1/T1 and Ethernet services over copper and fiber

- Up to 24 Ethernet ports and up to 192 E1/T1 links over fiber and copper
- Low collocation costs, space and power
- Single IP address
- ASCII terminal or Telnet management
- RADview SNMP management for convenient and low-cost maintenance on PC or Unix (HPOV) platforms

RAD
data communications
The Access Company

LRS-102

12-Slot Transparent Rack with SNMP Management

LRS-102 is a low-cost solution for collocating TDM and PSN services, providing simple, plug-and-play connectivity for up to 120 km over fiber and copper.

LRS-102 is a high-density SNMP managed transparent rack. The chassis has 12 slots that accommodate up to 12 individual I/O modules (cards). The modules include ASMi and Optimux cards, transmitting up to 24 Ethernet and up to 192 E1/T1 links over fiber and copper.

All cards and cables are hot-swappable and can be replaced or removed during operation without causing interference to data transmission between other cards in the chassis.

LRS-102 requires a single IP address.

A fully loaded chassis saves two-thirds of the space needed in comparison with the equivalent solution in standalone units.
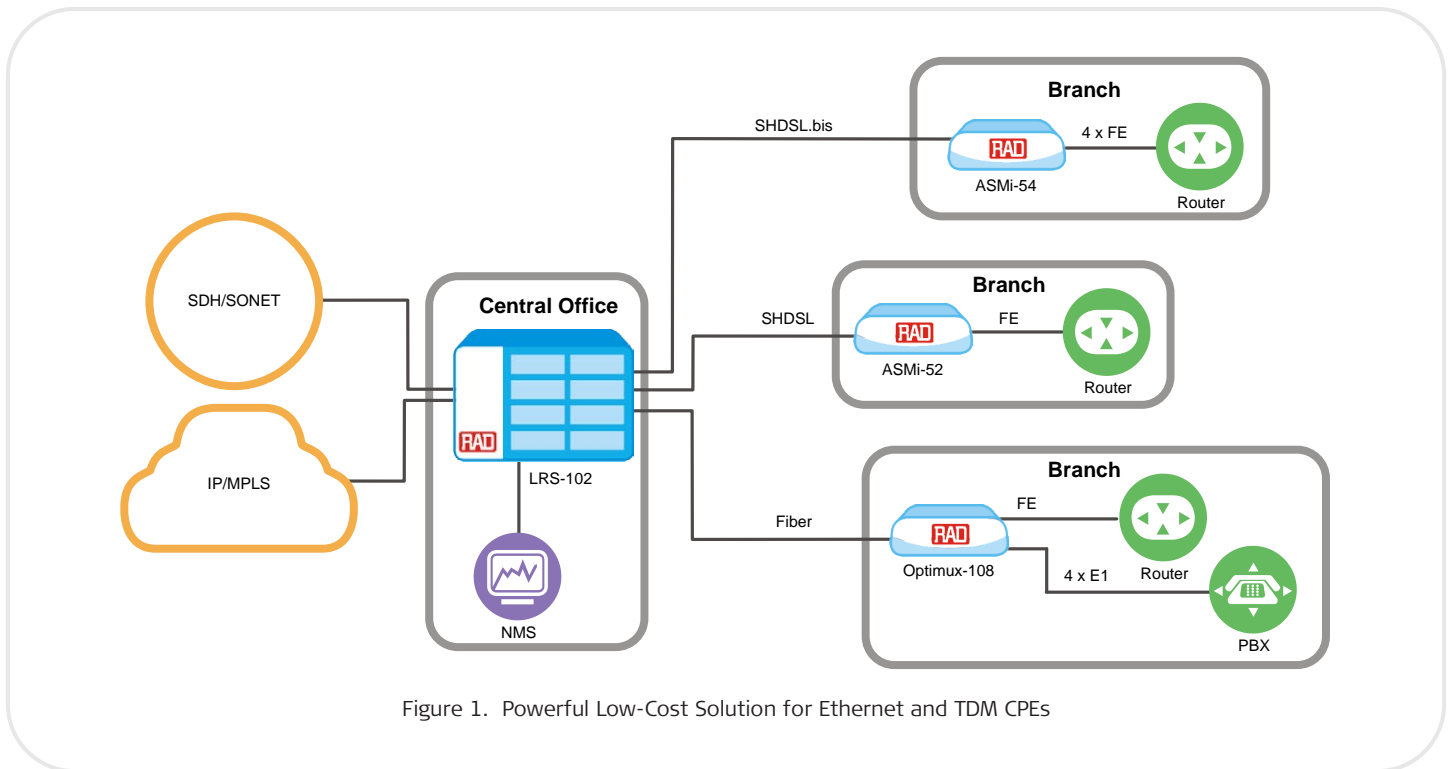

Figure 1. Powerful Low-Cost Solution for Ethernet and TDM CPEs

FIBER CARDS

Each OP-108C/106C module can work with two remote devices. Dual OP-108C/106C modules that feature up to 4 E1/T1 ports per section and transmit up to 100/75 Mbps of Ethernet traffic from each remote device, enable a wide range of applications that require E1/T1 and Ethernet services.

COPPER CARDS

Each ASMi-54C module features two Ethernet ports for transmission over 16-wire SHDSL lines and can work with remote devices in the following combinations, depending on the application requirements:

- 2 x 8-wire ASMi-54 standalone modems
- 4 x 4-wire ASMi-54 or ASMi-54L standalone modems
- 8 x 2-wire ASMi-54 or ASMi-54L standalone modems.

The ASMi-54C/N module features eight E1 ports for transmission over 16-wire SHDSL/SHDSL.bis lines and works with 8 x 2-wire/4 x 4-wire ASMi-54, ASMi-54L, ASMi-52, or ASMi-52L standalone modems. When ordered with Ethernet ports, the module also transports Ethernet over SHDSL/SHDSL.bis lines.

Table 1. LRS-102 Modules

Module	Technology	Working with	Description	Power Consumption
OP-108C	Fiber optic	Optimux-108, Optimux-108L	Dual multiplexer combining four E1 channels, with 100 Mbps Ethernet from each of the multiplexers over a single link, up to 120 km (75 miles), fiber optic link redundancy option	8W
OP-106C	Fiber optic	Optimux-106	Dual multiplexer combining four T1 channels, with 75 Mbps Ethernet from each of the multiplexers over a single link, up to 120 km (75 miles), fiber optic link redundancy option	8W
ASMi-54C	SHDSL.bis	ASMi-54/4ETH (2W,4W,8W) ASMi-54L/4ETH (2W,4W)	16-wire, SHDSL.bis modem, two Ethernet 10/100BaseT ports, UTP or SFP	14.5W
ASMi-54C/N	SHDSL/ SHDSL.bis	ASMi-54/4ETH and/or E1 (2W,4W) ASMi-54L/4ETH and/or E1 (2W,4W) ASMi-52/ETH and/or E1 (2W,4W) ASMi-52L/ETH or E1 (2W,4W)	16-wire, SHDSL/SHDSL.bis modem, eight E1 ports and two optional Ethernet ports	ASMi-54C/E1/N: 7.3W ASMi-54C/E1/ETH/N: 12W

MANAGEMENT

The modem rack is managed by a Unix- or PC-based SNMP management system. The software (RADview-EMS) is user-friendly, GUI-based, and runs on PC/Windows or HP-OpenView platforms. The SNMP management session runs over a 10/100BaseT Ethernet port.

To protect network operations against unauthorized access, LRS-102 features SNMP management with authentication and privacy per SNMPv3, with continued support for SNMPv1.

Network management allows centralized control of all LRS-102 hubs, I/O modules and remote units in the network. The management system provides interface configuration, connection setup, alarm monitoring and diagnostic testing. A single management station can control up to 64,000 LRS-102 hubs.

LRS-102 can also be managed from an ASCII terminal (which performs all management functions without a GUI interface) and Telnet, which allows terminal connection over any IP network.

In addition, alarms can activate dry contacts located on the alarm connector of the CL.1/CLS.1 card.

New software versions can be downloaded to the CL.1/CLS.1 card from a remote site via TFTP.

LRS-102 restores fragmented IP data sent to the rack by the network management station.

Up to five modem and system configuration databases can be stored. All databases can be copied to any media and used for backup or configuration purposes.
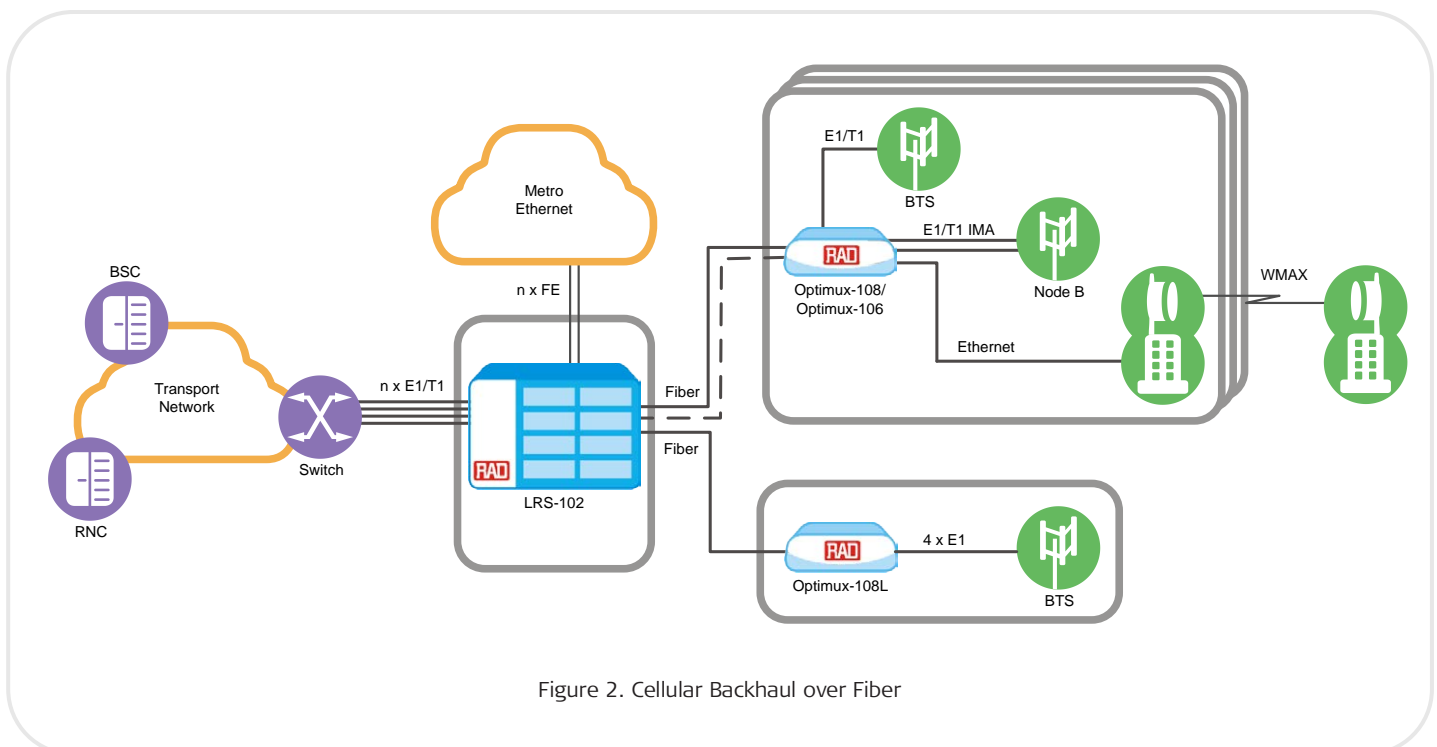

Figure 2. Cellular Backhaul over Fiber

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TIMING

Each I/O module installed in the LRS-102 chassis has its own independent timing subsystem, with an internal oscillator that can serve as its timing source. In addition, other clock sources are available, such as internal clock source or recovered clock signal from a selected external E1 or T1 interface of an I/O module.

The optional CLS.1 modules designed for operation with ASMi-54C/N I/O modules, include an external station clock interface, and a timing distribution subsystem that can supply the external clock signal received through the CLS.1 module CLOCK connectors to the LRS-102 I/O slots. The external clock signal is provided by a highly-accurate master clock source, which is often available at communication facilities (for example, a signal provided by a GPS-based timing source, an independent primary clock source, clock signals provided by an SDH/SONET ADM, or other suitable clock source).

POWER

LRS-102 operates with either single or dual AC or DC power supplies.

A power supply can be replaced during operation (hot-swapped), without affecting system performance.

Table 2. LRS Family Comparison Chart

	LRS-16 Ver 2.0	LRS-102 Ver 3.3
Max. E1 ports	16	192
Max. Ethernet ports	2 (mng)	24
Ethernet performance	N/A	VLAN aware, VLAN stacking/stripping

Specifications

CHASSIS

Number of Slots
2 slots for the CL.1/CLS.1 module
2 slots for power supply modules
12 card slots

Connectors
Each card has its own connector options. The standard LRS-102 front panel can be replaced by a patch panel with BNC connectors, to support unbalanced E1 interfaces (see *Ordering*).

Power
AC: 100 to 240 VAC, 47 to 63 Hz, 200W
DC: −48 VDC (−36 to −72 VDC), 200W

Physical
Height: 17.7 cm (7.0 in)
Width: 48.2 cm (19.0 in)
Depth: 32.4 cm (12.8 in)
Weight: 12.2 kg / 26.8 lb max.
(fully loaded chassis)

Environment
Temperature: 0° to 45°C (32° to 113°F)
Humidity: Up to 90%, non-condensing

CL.1/CLS.1 CARDS

Ethernet Interface
Interface: IEEE 802.3 10BaseT (UTP)
Connector: shielded RJ-45

Control Port
Type: V.24/RS-232
Rate: Selectable 9.6 –115.2 kbps
Format: Async, 8 bits, 1 stop bit,
    no parity
Terminals supported: VT-52, VT-100,
    VT-920
Connector: D-type, 9-pin female

System Clock Connector
RJ-45

Alarm Relay
RJ-45

Station Clock (CLS.1 only)
Interface: ITU-T Rec. G.703
Connector: RJ-45
Rate:
- 2.048 MHz
- 2.048 Mbps
- 1.544 Mbps
Coding:
2.048 Mbps and 2.048 MHz: HDB3
1.544 Mbps: B8ZS

Indicators
On line (green/yellow):
- Green On: module is active
- Green Flashing: standby or software download
- Yellow On: test exists on active module
- Yellow Flashing: software is decompressed

Alarm (red):
- On: alarm severity does not exceed minor
- Flashing: major or critical alarm exists

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Ordering

STANDARD CONFIGURATIONS

LRS-102/ACR/CL1R

12-slot modem rack with SNMP management, redundant AC power supply, redundant common logic module

LRS-102/DCR/CL1

12-slot modem rack with SNMP management, redundant DC power supply, Common Logic module

LRS-102/DCR/CL1R

12-slot modem rack with SNMP management, redundant DC power supply, redundant common logic module

LRS-102/UNBAL/DCR/CL1

12-slot modem rack with SNMP management, Unbalanced E1 port, redundant DC power supply, Common Logic module

LRS-102/UNBAL/DCR/CL1R

12-slot modem rack with SNMP management, Unbalanced E1 port, redundant DC power supply, redundant common logic module

SPECIAL CONFIGURATIONS

LRS-102/@/$/#

Legend

@ Front panel type (default: standard front panel with system status indicators)
  UNBAL patch panel with BNC connectors

$ Power supply:
  AC 100 to 240 VAC, 200W
  ACR redundant AC power supply
  DC –48 VDC, 200W
  DCR redundant DC power supply
  AD redundant AC and DC power supply

Common logic cards:
  CL1 Single CL.1
  CL1R Dual CL.1
  CLS1 Single CLS.1 (with station clock)
  CLS1R Dual CLS.1 (with station clock)

For ordering modem cards, see individual data sheets.

SUPPLIED ACCESSORIES

AC power cord (when AC power supply is ordered)

DC adapter plug (when DC power supply is ordered)

RM-MP-MX-23/19
Hardware kit for mounting one LRS-102 unit into both 19-inch and 23-inch racks

OPTIONAL ACCESSORIES

LRS-102-PS/~

Additional power supply

~ Power supply type:
  AC 100 to 240 VAC, 200W
  DC –48 VDC, 200W

LRS-102-CL/#
Additional common logic card

Common logic cards:
  CL1 Single CL.1
  CL1R Dual CL.1
  CLS1 Single CLS.1 (with station clock)
  CLS1R Dual CLS.1 (with station clock)

CBL-SP-9
Control port cable

PulseSupply
pulsesupply.com

RAD
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