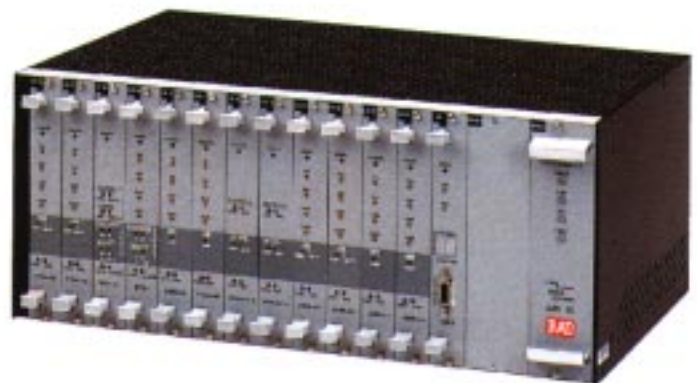


LRS-12



"Last Mile" SNMP Modem Rack



FEATURES

- Accommodates any combination of 12 HDSL, copper or fiber optic modem cards
- SNMP management agent
- Supports modems with or without integrated SNMP agent
- Management running on UNIX or PC platform
- HPOV application for management of LRS-12 and remote modems
- Direct connection to Ethernet for controlling large number of racks from a central management station
- Two hub versions:
 - ANSI: 4U high, connectors on the back
 - ETSI: 6U high, connectors on the front
- Optional dual power supplies with full redundancy, AC or DC
- Hot swapping of cards and power supplies
- Remote power feed option
- System clock distribution to all cards for network synchronization
- Supports Telnet protocol
- Remote software download
 - via LAN by TFTP protocol
 - via terminal by X-MODEM protocol

LRS-12

"Last Mile" SNMP Modem Rack

DESCRIPTION

- The LRS-12, "Last Mile" SNMP modem rack, is a 12-card hub that accommodates any combination of HDSL, copper and fiber modem cards (see *Table 1*). All cards, electrical or fiber optic, can be managed by the RADview-HPOV SNMP management system.
 - All cards in the hub have remote control abilities for monitoring and/or controlling remote units. Several cards contain an internal SNMP agent.
 - RADview-HPOV management is available for modules with or without integrated SNMP agent, via the SNMP Control Module (CM-2). The RADview-HPOV station is connected to the LRS-12 via an integrated Ethernet connection on the CM-2 module. The CM-2 module provides transparent connection to modules with SNMP agent and acts as a proxy SNMP agent for those cards without an agent.
- LRS-12 is available in two different physical hub versions:
 - ANSI** – card insertion, LEDs and switches are at the front, but cable connections are at the rear of the hub. This compact, 4U high unit complies with the American ANSI standard. Cards can be hot-swapped without removing cables.
 - ETSI** – card insertion, LEDs, switches and cable connections are at the front. This version is 30 cm high (almost 6U), and complies with European ETSI standard. Cards can be hot-swapped without removing cables.
 - Both control modules, CM-1 and CM-2, have a station clock connection enabling clock distribution to all cards, so that all cards can be synchronized to the same station clock.
 - LRS-12 can also be managed from an ASCII terminal. In this case, Control Module CM-1 can be used for management of modules with SNMP agent on-board, such as HTU-E1C. CM-2 supports ASCII terminal management for modules with or without on-board SNMP agents.

APPLICATION

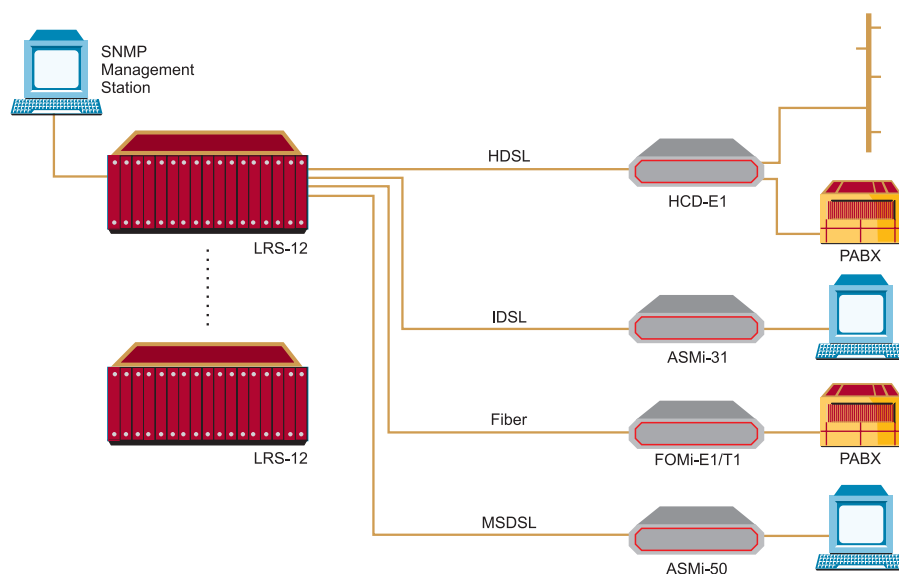


Figure 1. Backbone Data Distribution up to the Customer's Premises



RADview - HPOV Network Management System

"Last Mile" SNMP Modem Rack

POWER SUPPLIES

- LRS-12 can operate with single or dual, AC or DC power supplies. Each power supply supports a full rack of cards. The redundant power supply can be replaced during operation, without affecting the system performance (hot-swapping).
- Cards in the hub can provide remote power feeding for repeaters and remote standalone units. For this purpose, a separate standalone power supply should be ordered (see *Ordering*).

INSTALLATION AND MAINTENANCE

- All cards can be replaced, or cables removed, during operation, without causing interference to data transmission to/from other cards in the hub.

CENTRALIZED NETWORK MANAGEMENT

- The RADview HPOV/UNIX and RADview-PC provide network management for LRS-12. RADview manages LRS-12 together with other RAD WAN products such as Megaplex-2100 E1/T1 Multiplexer and DXC DACs products. RADview-HPOV can be integrated into other NMS applications from third party vendors running on the standard HPOV/UNIX platform. LRS-12 can also be managed on a PC platform by RADview-PC, a Windows-based Graphical User Interface (GUI) SNMP platform.

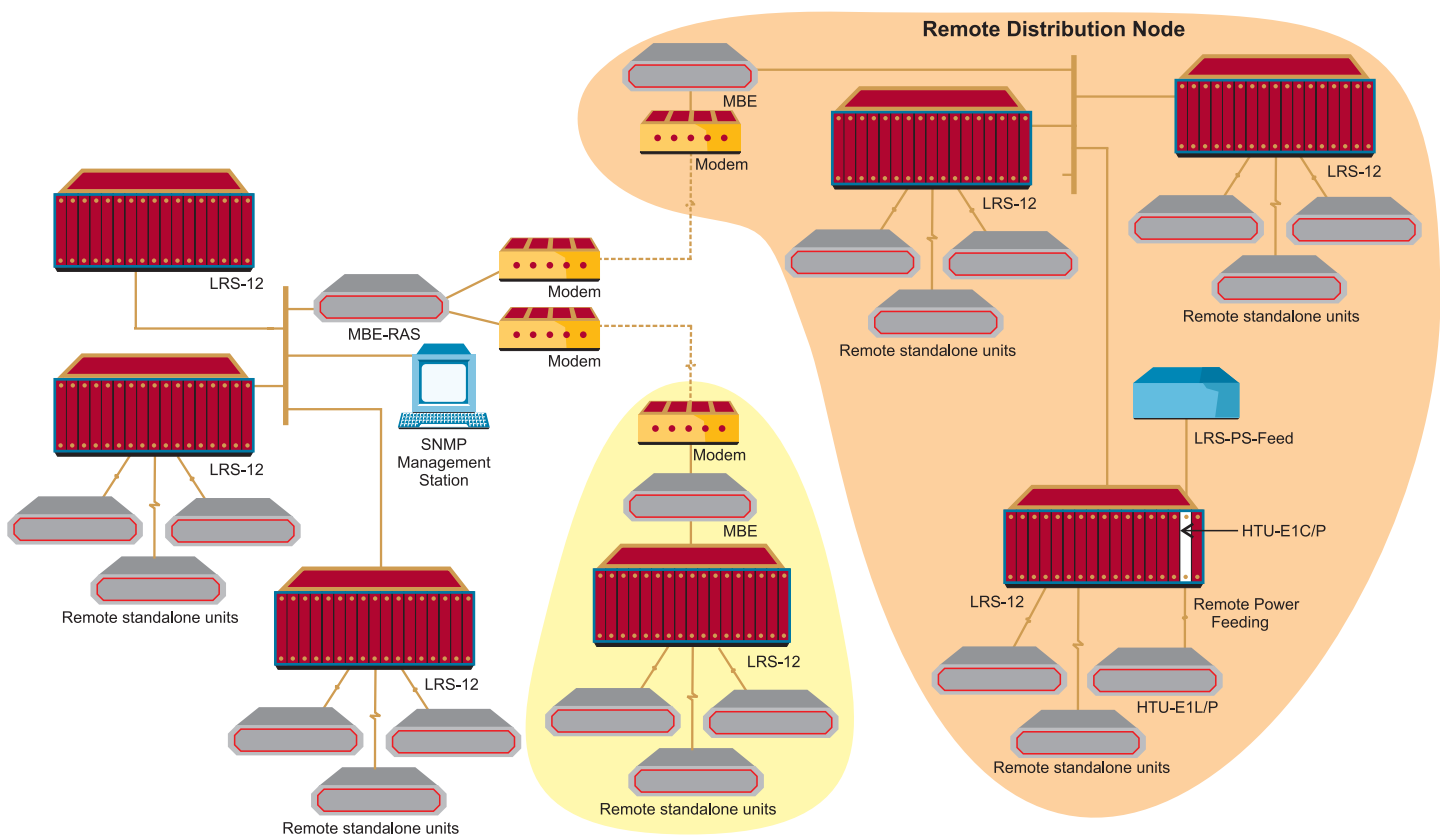


Figure 2. Management of Local and Remote Distribution Nodes

"Last Mile" SNMP Modem Rack

- Management functionality is provided in accordance with ITU-T Telecommunication Management Network (TMN) recommendations.
- System management supports real-time monitoring and control of more than 64,000 LRS-12 hubs and connected remote modems at the same time. Several users can simultaneously monitor and control the system.
- The central and remote sites can be managed in real-time. Performance information is available in graph and table format for the last 24 hours. This information can be saved in a file for accounting purposes.



SPECIFICATIONS

- **Number of Slots**
12 card slots
1 slot for common logic
2 slots for power supplies
- **Connectors**
Each card has its own connector options (see specific data sheet on the card for connector types)
- **Power Supply**
100 to 240 VAC
47 to 63 Hz, 100W or
-48 VDC ($\pm 25\%$)
- **Network Management Connections**
RS-232: DB-9 connector
Ethernet: Coax (BNC) or RJ-45 connector
(Available on CM-2 card only)
- **System clock**
DB-15 connector
- **Physical**
ANSI version (B):
Height 17.7 cm / 7.0 in (4U)
Width 48.2 cm / 19.0 in
Depth 32.4 cm / 12.75 in
ETSI version (F):
Height: 30.0 cm / 11.80 in (6U)
Width: 48.2 cm / 19.0 in
Depth: 25.3 cm / 9.94 in
- **Environment**
Temperature: 0-45°C / 32-113°F
Humidity: up to 90%,
non-condensing

Table 1. LRS-12 Modules

Product	Technology	Type	Description
ASMi-24	PR-4 modulation	4-wire, sync	up to 144 kbps, short range – 10 km (6.2 miles) at 64 kbps
ASMi-31	IDSL	2-wire, sync/async	up to 128 kbps, short range – up to 8 km (5 miles) independent of data rate
ASMi-50	MSDSL	2/4 wire	up to 1152 kbps, extended range modem – up to 9.5 km (6 miles)
FOMi-E1/T1	Fiber optic	sync	1544 kbps (T1) or 2048 kbps (E1), extended range
FOMi-40	Fiber optic	sync	up to 1544 kbps (T1) or 2048 kbps (E1), extended range – up to 100 km (62 miles)
HTU-E1	HDSL	4-wire	2048 kbps, short range – up to 4.8 km (3 miles)
HTU-T1	HDSL	4-wire	1544 kbps, short range – up to 4.8 km (3 miles)
HTU-2	HDSL	4-wire	n x 64 up to 2048 kbps, short range – up to 4.8 km (3 miles)
MTMi-20	QAM	4-wire, sync	up to 128 kbps, extended range – 14 km (8.7 miles)

LRS-12

"Last Mile" SNMP Modem Rack

ORDERING

LRS-12*/\$/&

"Last Mile" SNMP modem rack

- * Specify physical enclosure:
 - F** ETSI standard, 6U,
connectors on the front
 - B** ANSI standard, 4U,
connectors on the back
- \$ Specify power supply:
 - AC** for 100-260 VAC
 - ACR** for dual 100-260 VAC
 - 48** for -48 VDC
 - 48R** for dual -48 VDC
- & Specify control module card type:
 - CM1** for control module card
with ASCII terminal
management
 - CM2/BNC** for control module
card with SNMP management
and ETHERNET BNC
connector
 - CM2/UTP** for control module
card with SNMP management
and ETHERNET UTP
connector

For modem cards, see individual
datasheets.

LRS-PS-FEED/+

Standalone power supply for remote
power feeding

- + Specify power supply source:
 - AC** for 100-260 VAC
 - 48** for -48 VDC



data communications

<http://www.rad.com>

- **Corporate Headquarters**
12 Hanechoset Street
Tel Aviv 69710, Israel
Tel: (972) 3-6458181
Fax: (972) 3-6498250, 6474436
Email: rad@radmail.rad.co.il
 - **U.S. Main Office**
900 Corporate Drive
Mahwah, NJ 07430
Tel: (201) 529-1100
Fax: (201) 529-5777
Email: market@radusa.com
- 698-100-02/99