

# LRS-24

## 12-Slot Modem Rack with SNMP Management



High-density rack  
with SNMP  
management for  
xDSL, fiber, or  
baseband modems

- High-density modem rack accommodates any combination of xDSL, fiber or baseband modems
- Convenient and low-cost maintenance on PC or UNIX (HPOV) platforms using RADview SNMP management
- ASCII terminal or Telnet management
- Easy and cost-effective migration to higher speeds on the same platform with a variety of data rates from 1.2 kbps to 45 Mbps

LRS-24 is a high-density SNMP managed modem rack. The chassis has 12 slots that accommodate up to 48 individual modems (with quad cards). Using modular interface cards, LRS-24 can support xDSL, fiber, or baseband modems in the same chassis under a single management application (see *Table 1*).

The rack supports different modem technologies and enables a wide range of data rates from 1.2 kbps for IDSL modems to 4608 kbps for SHDSL modems, up to 45 Mbps for fiber modems. These modem technologies enable ranges from 1.75 km (1 miles) at 2 Mbps over copper to 110 km (68 miles) over fiber optic cables.



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

LRS-24 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 rack complies with the 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 7U), and complies with the ETSI standard. Cards can be hot-swapped without removing cables.

Modular data interfaces allow modem connectivity using a wide range of data interfaces. These include V.24, V.35, X.21, RS-530, V.36, G.703 Codirectional, E1/T1, E3/T3, built-in Ethernet bridge (with or without VLAN support), and built-in IP router.

LRS-24 accepts a system clock via the DB-15 connector on the CM-2 card and distributes the clock to all the cards.

### Management/CM-2 Functions

The modem rack is managed by a UNIX-based or PC-based SNMP management system imbedded in the Central Management card (CM-2). The software is user-friendly, GUI-based, and runs on PC/Windows (RADview-PC) or HP-OpenView (RADview-HPOV) platforms. The SNMP management session can be run over a 10BaseT Ethernet port.

Network management allows centralized control of all LRS-24 hubs, modem cards and remote modems in the network, including interface configuration, connection setup, alarms and monitoring. A single management station can control up to 64,000 LRS-24 hubs.

LRS-24 can also be managed from an ASCII terminal that performs all SNMP functions without a GUI interface.

Telnet allows terminal connection over any IP network.

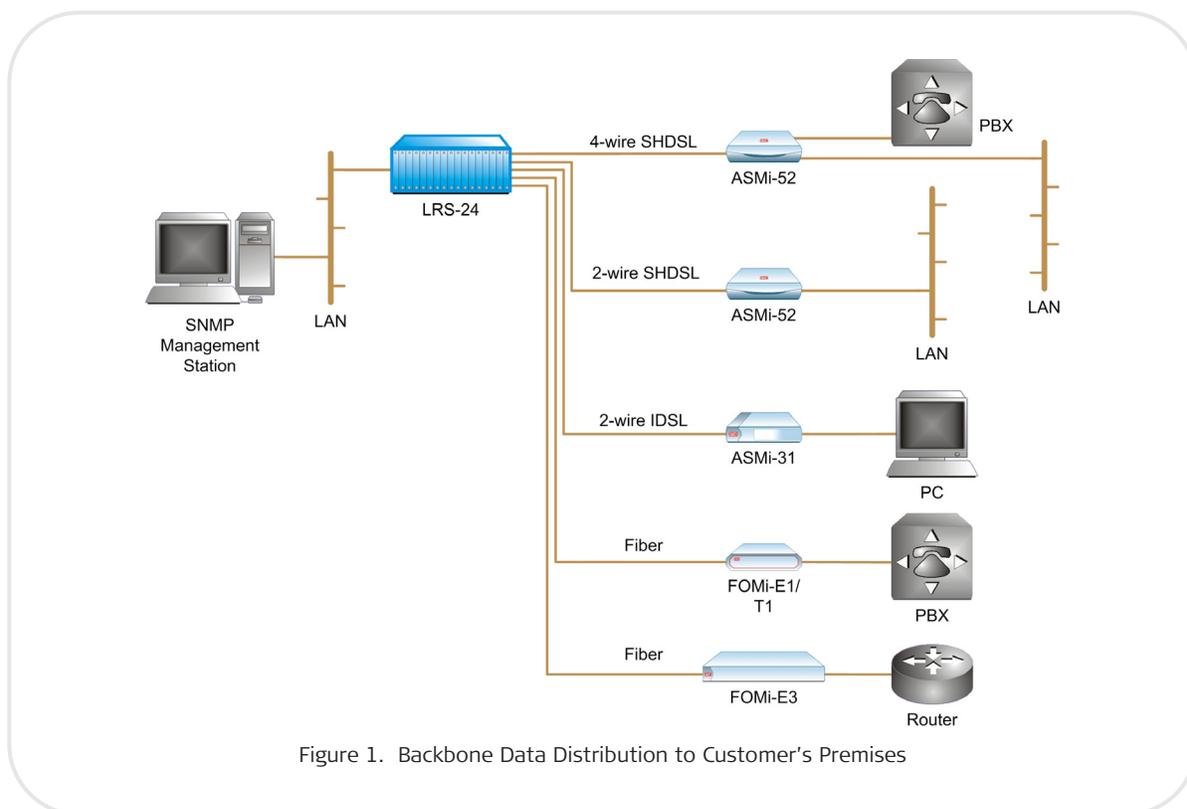


Figure 1. Backbone Data Distribution to Customer's Premises

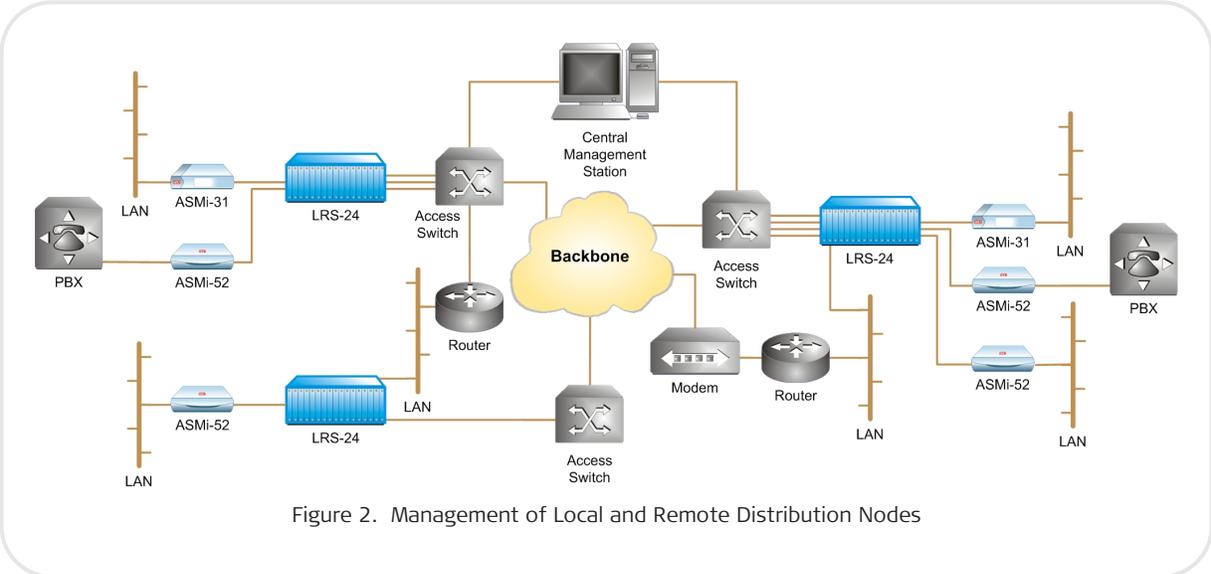


Figure 2. Management of Local and Remote Distribution Nodes

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Performance information for the last 24 hours is available in graph and table format and can be saved in a file for accounting purposes.

If a major alarm occurs, the CM-2 card can dial out through an external dial-up modem to a central management site. This saves a direct connection to remote sites, while providing alerts if critical events occur. In addition, alarms can activate dry contacts located on the system clock connector on CM-2.

Two types of modem cards are supported by LRS-24:

- **S-Mode** – Cards with a built-in SNMP agent. The single IP option reduces the number of addresses used by LRS-24 and S-Mode modems. With this option, only the CM-2 module is assigned an IP address; all connections to the modems are made via CM-2.
- **I-Mode** – Cards without an SNMP agent. For these cards CM-2 serves as the SNMP proxy agent. The CM-2 built-in agent complies with SNMP MIB II and supports generic SNMP HPOV applications.

New software versions can be downloaded to the CM-2 or any modem card that supports this feature from a remote site via:

- LAN by TFTP protocol
- Terminal by XMODEM protocol.

CM-2 saves up to two software versions.

If the management station includes BootP server software and the CM-2 card is configured to BootP mode, it automatically retrieves the IP address required for management connection. This eliminates the need to configure IP addresses for new hub installations.

When operating opposite another LRS-24, the local modem rack can reset the remote CM-2 module. In addition, the management software allows the user to reset the ASMi-52CD or ASMi-52CQ modem cards.

LRS-24 supports IP fragmentation that restores fragmented IP data sent to the rack by the network management station.

Up to three modem and system configuration files can be stored. These files can be copied to any media and used for backup or configuration purposes.

The CM-2 panel includes a two-character alphanumeric display, which alerts on fault conditions during the power-up self-test. During normal operation it displays the last two digits of the hub number.

### POWER SUPPLIES

LRS-24 operates with single or dual, AC or DC power supplies. Each power supply supports an LRS-24 hub accommodating a limited number of modem cards. The number of supported cards depends on their power consumption.

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

Some cards in the LRS-24 chassis enable remote power feeding for repeaters and remote standalone modems. For this purpose, a separate power supply, LRS-PS-FEED, should be ordered (see *Ordering*).

## Specifications

### RACK

#### Number of Slots

1 slot for the CM-2 module  
2 slots for power supply modules  
12 card slots

#### Connectors

Each card has its own connector options (for connector types, see the specific data sheets of the cards)

#### Power Supply

AC: 100 to 240 VAC, 47 to 63 Hz, 112W  
DC: -48 VDC (-40.5 to -72 VDC)

#### Management Connectors

V.24/RS-232: DB-9, female  
Ethernet: RJ-45

#### System Clock Connector

DB-15

### Physical

ANSI Version (B):  
Height: 17.7cm (7.0 in)  
Width: 48.2cm (19.0 in)  
Depth: 32.4cm (12.8 in)

ETSI Version (F):  
Height: 30.0cm (11.8 in)  
Width: 48.2cm (19.0 in)  
Depth: 25.3cm (9.9 in)

#### Weight:

LRS24/AC: 6.9 kg (15.2 lb)  
1 AC power supply  
LRS24/48: 7.4 kg (16.3 lb)  
1 DC power supply  
LRS24/AC48: 8.6 kg (19.0 lb)  
1 AC and 1 DC power supply  
LRS24/ACR: 8.1 kg (17.8 lb)  
2 AC power supplies  
LRS24/48R: 9.0 kg (19.8 lb)  
2 DC power supplies

### Environment

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

### CM-2 CARD

#### LAN Interface

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

#### Control Port

Type: V.24/RS-232  
Rate: 38.4 kbps  
Characters: Async, 8 bits, 1 stop bit, no parity  
Terminals supported: VT-52, VT-100, VT-920  
Connector: D-type, 9-pin female

Table 1. LRS-24 Modules

Product	Technology	Description
ASM-40CD*	G.703	Modem or interface converter to T1 (1544 kbps) or E1 (2048 kbps)
ASMi-52CD* ASMi-52CQ**	SHDSL	Multiple data rates up to 4608 kbps, 2/4-wire, up to 9.5 km (5.9 miles)
FOMi-E1/T1C FOMi-E1/T1CD*	Fiber optic	1544 kbps (T1) or 2048 kbps (E1), up to 110 km (68 miles)
FOMi-40C FOMi-40CD*	Fiber optic	Up to 1544 kbps (T1) or 2048 kbps (E1), up to 110 km (68 miles)
FOMi-E3C/T3C	Fiber optic	E3, T3, or HSSI manageable fiber optic modem with optional fiber optic link redundancy

\*CD – double modem card, \*\*CQ – quad modem card

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**Indicators**

PWR (green) – Power on

TD (yellow) – SNMP management transmitting data

RD (yellow) – SNMP management receiving data

Rack indicator – 2-character display for the last two digits of the hub number, or for alerting on system fault condition

**Physical**

CM-2 main card:

Height: 158 mm (6.2 in)

Width: 20 mm (0.8 in)

Depth: 235 mm (9.2 in)

Weight: 350 g (12.3 oz)

CM-2 interface module:

Height: 103 mm (4.1 in)

Width: 20 mm (0.8 in)

Depth: 93 mm (3.7 in)

Weight: 110 g (3.8 oz)

**Power Consumption**

5W

**Environment**

Temperature: 0°–45°C (32°–113°F)

Humidity: Up to 90%, non-condensing

**Ordering****LRS-24\*/\$/CM2/UTP***Legend*

- \* Physical enclosure:
  - F** ETSI standard, 7U, connectors at the front
  - B** ANSI standard, 4U, connectors at the back
- \$ Power supply:
  - AC** 100 to 240 VAC
  - ACR** dual 100 to 240 VAC
  - 48** –48 VDC
  - 48R** dual –48 VDC
  - AC48** one AC, one DC

For ordering modem cards, see individual data sheets.

**OPTIONAL ACCESSORIES****LRS-PS-FEEDF/+**

Standalone power supply for remote power feeding, ETSI version

**LRS-PS-FEEDB/+**

Standalone power supply for remote power feeding, ANSI version

*Legend*

- + Power supply:
  - AC** 100 to 240 VAC
  - 48** –48 VDC

**CBL-DB9F-DB9M-STR**

Control port cable

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