

1 Overview

1.1 Introduction

The Remote Integrated Multiplexer (RIM) is an Integrated Digital Loop Carrier (IDLC) based on the ETSI digital hierarchy. It is an access product with application in small exchange replacement, pair gain systems and the provision of special services into the network.

It features a wide range of customer interfaces, transmission, power, a remote housing and comprehensive, user-friendly management facilities easily adapted to user's requirements.

The RIM consists of an Exchange Unit (EU) and a Remote Unit (RU). The EU provides the bridge between the remote customers and the network access connection points for the various services. The RU acts as a distribution node for data and voice services to customers located within its serving area.

Transmission between the Remote Unit and the Exchange Unit is over inbuilt 8 Mbit/s or 34 Mbit/s optical line systems, 34 Mbit/s electrical or Terminal Regenerator Units, or optionally via external transmission systems such as digital radio or copper. See the *RIM System Block Diagram* (p. 1–3).

The remote equipment may be housed in a weatherproof, controlled environment housing, or in Type 84 or 92 racks for indoor installations. The exchange equipment is also installed in the exchange building in the same rack types.

The RIM product family offers mechanical and electronic modularity; commonality of building blocks and T9 construction practice for simple unit interchange from a common parts catalogue.

The RIM system is monitored and maintained either remotely via COMNET or on site, using local systems management software (NECTAS).

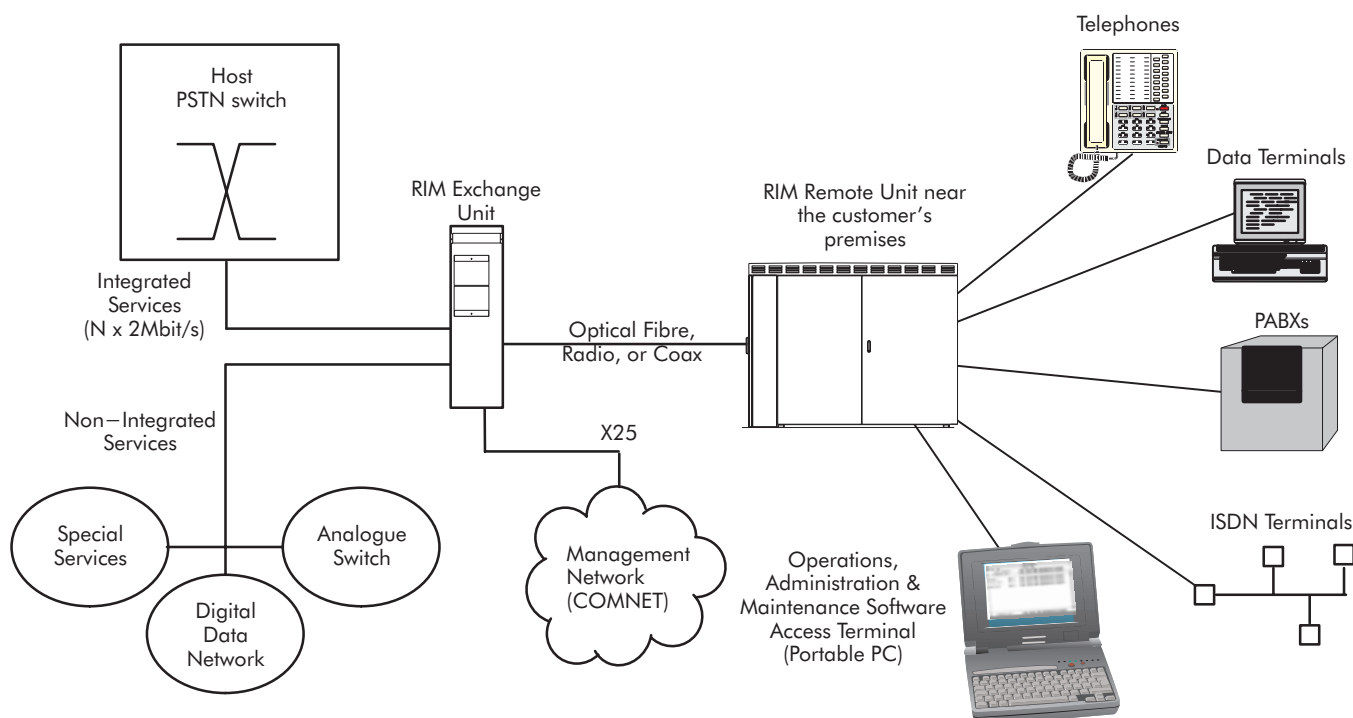


Figure 1–1 RIM System Block Diagram

1.1.1 Additional Information

For additional information on RIM (including C–RIM) refer to:

- Appendix A – *Abbreviations*, which defines the abbreviations used in this *RIM Application Guide*.
- Appendix C – *RIM Documents List* which contains a list of relevant handbooks and other documents.

1.2 Product Description

The RIM is a microprocessor based multiplex system providing data and voice customer services via a variety of transmission systems (e.g. copper pairs, optical fibre or digital radio).

It is a complete system providing:

- ▶ Housing, power and batteries.
- ▶ Transmission over optical fibre or copper pairs. It also provides interfaces for external transmission equipment.
- ▶ Preloaded software and data.
- ▶ Complete Operations, Administration and Management facilities.
- ▶ Remote site operation.

The system is precabled and tested in the factory.

The system is monitored and maintained either remotely via COMNET or on site, using NECTAS (Network Equipment Craft Terminal Applications Software).

It provides a variety of services to the Customer Access Network (CAN) or can be used in the Inter Exchange Network (IEN) for exchange replacement purposes.

See the *RIM Functional Block Diagram* and the *C–RIM Functional Block Diagram* on page 1–6.

1.2.1 Exchange Units and Remote Units

The EU and RU consist of a combination of rack mountable panels, containing appropriate plug-in units which are linked by connectors located at the front of each unit or on the panel backplane. The hardware construction comprises the following:

- ▶ An Exchange Unit (EU).
This provides the bridge between the remote customers and the network access connection points for the various services.

The EU equipment is mounted in Type 84 or 92 racks.

- ▶ A Remote Unit (RU).
The RU acts as a distribution centre for a wide range of services to customers located within its serving area.

The Remote equipment can be housed in two locations:

- Indoor in Type 84 or 92 racks.
- In a weatherproof, controlled environment housing.

1.2.2 Transmission

Transmission between the Remote Unit and the Exchange Unit is by one of the following:

- ▶ Optical fibre at 8 Mbit/s.
- ▶ Optical fibre at 34 Mbit/s.
- ▶ External Transmission.

1.2.3 RIM and C–RIM Architectures

There are two hardware architectures used in RIM:

- ▶ RIM.
This is the traditional architecture used in releases up to Release 6.1.
- ▶ C–RIM.
A compact architecture, introduced with Release 7.1.

Note In this document the abbreviation RIM is used to cover both the original RIM architecture and the compact C–RIM architecture when referring to matters that are relevant to both architectures.

1.2.4 Panel Types

There are eight panel types used in the EU and RU:

- ▶ Panels used by both traditional architecture RIM and C–RIM:
 - Access.
 - Ring/Meter.
- ▶ Panels used only by traditional architecture RIM:
 - Common.
 - Line Transmission.
 - Trunk Interface.
 - Terminal Regenerator Panel.
- ▶ Panels used only by compact architecture C–RIM:
 - Main.
 - Climate Control.

A basic outline of panel interactions for both RIM and C–RIM is given in the figures on the next page.

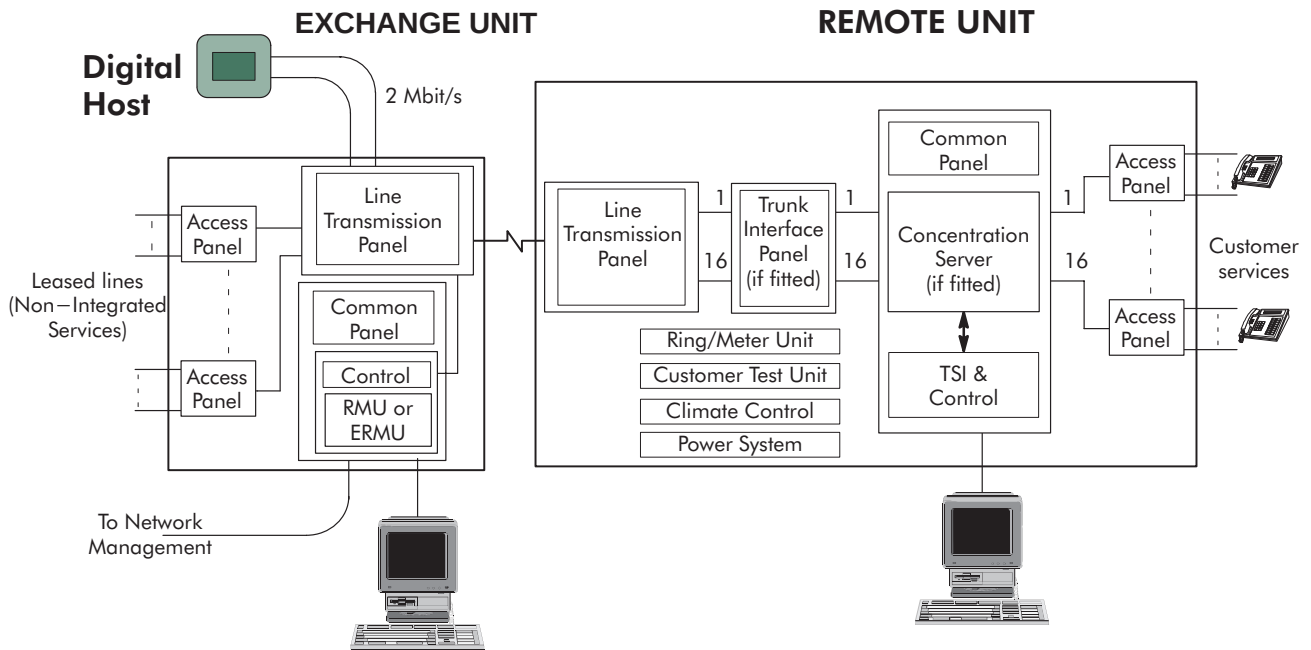


Figure 1-2 RIM Functional Block Diagram

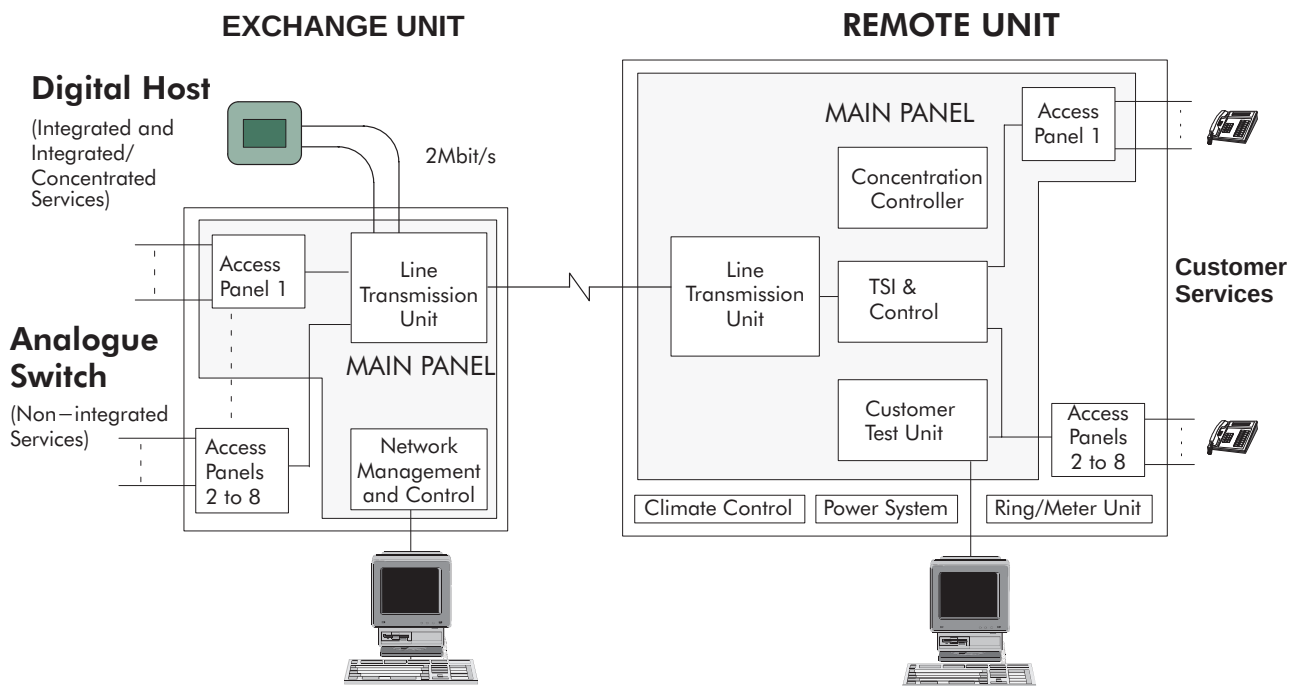


Figure 1-3 C-RIM Functional Block Diagram

1.2.5 OA&M

RIM provides both local and remote access (via the Telstra management network) to Operations, Administration and Maintenance (OA&M) functions.

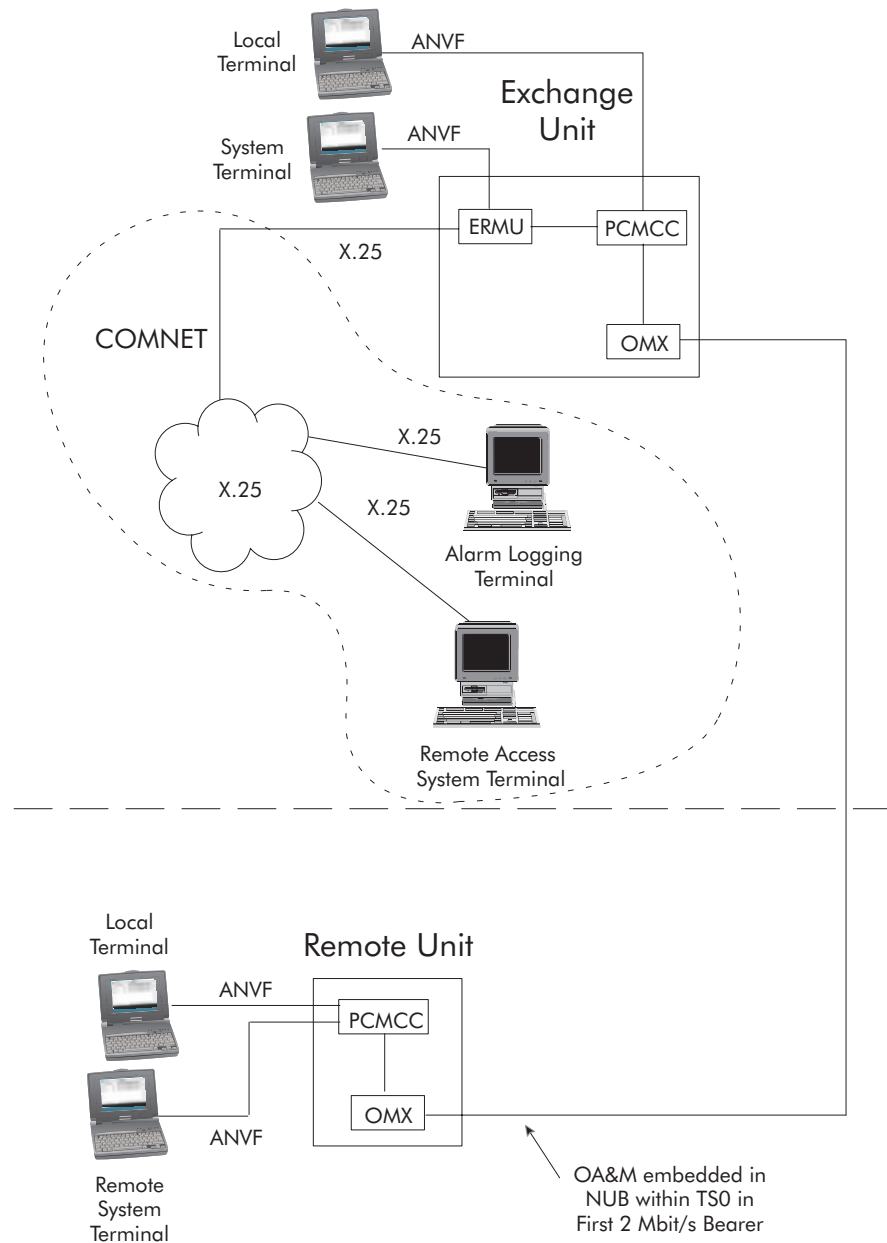


Figure 1–4 RIM OA&M Functions

The OA&M functions include:

- ▶ Alarm surveillance.
- ▶ System performance monitoring.
- ▶ Equipment configuration and circuit grooming.
- ▶ Software download and bearer provisioning.
- ▶ Customer testing and configuration.

The OA&M Channel is a communications path established between the ERMU and the NMQs (RIM) or PCMCCs (C–RIM) located at both the EU and the RU. It is required to integrate the network management facility and provides a single point of access to the RIM system through the ERMU.

- ▶ In the traditional RIM architecture, OA&M is carried by a physical connection between the remote and exchange equipment, via either two preallocated 64 kbit/s channel timeslots or an optical service channel.
- ▶ In C–RIM, OA&M is carried by a physical connection between the Remote and Exchange equipment, via an embedded OA&M channel which uses the National Usage Bits (NUB) in timeslot TS0 of the first 2Mbit/s bearer.

See the OA&M functions block diagram on page 1–7.

1.2.6 COMNET–2 Network Management

COMNET–2 is a set of network management facilities to support the population of RIMs in the CAN & IEN. COMNET–2 provides centralised management of RIM configuration and alarm data and includes services provided on a number of platforms to seamlessly integrate with Telstra’s existing systems.

COMNET–2 functions include:

- ▶ Centralised database.
Stores all configuration, security data, RIM–NPAMS mappings, COMNET–2 configuration & maintenance information, and FNN database.
- ▶ NECTAS Interface.

Through the NECTAS COMNET–2 Interface (NCI) software running on NECTAS workstations, COMNET–2 provides a direct interface to the NECTAS environment, previously used to manage the RIM. All communication from the local craft terminal to the RIM is managed through COMNET–2.

- ▶ Alarm Management.
COMNET–2's alarm management allows alarms from all RIMs in the CAN & IEN to be centrally logged and managed.
- ▶ Service Verification.
COMNET–2 provides a familiar interface for NPAMS users to verify that the required services can be provided by the RIM. This is used in instances where the auto assignment process is terminated due to the presence of a RIM. Note that this is applicable to RIMs in NPAMS Release 1 format. Service verification does not work with RIMs in NPAMS Release 2 format.
- ▶ Access and Security.
COMNET–2's advanced security facilities ensure that all operators only have access to the applications for which they are configured.
- ▶ AUTOCAT Interface.
COMNET–2 interfaces directly to Telstra's AUTOCAT software to enable automated requests for RIM configuration to be managed and carried out by COMNET–2.
- ▶ SULTAN Interface.
COMNET–2 interfaces to Telstra's SULTAN system to allow subscriber line tests to be managed via COMNET–2.
- ▶ SASAF
The Semi-automatic Service Activation Facility (SASAF) provides a mechanism for the management of customer services on a RIM.
- ▶ BLCT
The Bulk Load Cutover Tool (BLCT) is used for bulk transposition/cutover of services from copper based access to access via RIM.

A system terminal interface is provided at the EU for network access to all OA&M functions. The RIM presents itself to the TMN as three Network Elements (NE), the EU, RU and ERMU.

For system or local terminal access, interfaces at both the EU and RU support PC/LapTop based graphical user interface software (NECTAS), for access to all OA&M functions.

OA&M is detailed further in the *NECTAS Operator's Handbook* for each Release.

1.3 Services

The customer interfaces available allow for different configurations for carrying VF, data and ISDN traffic. The units available vary from 4, 5, 6 or 10 channels per unit, depending on their complexity. A variety of standard Access Panels are defined which have many different combinations of units within one Access Panel.

Each Access Panel supports up to sixty POTS channels or timeslots in seven unit slots. In the remote housing using traditional RIM architecture, eight Access Panels support up to 480 POTS lines. Using C–RIM architecture a Main Panel and seven Access Panels support up to 480 POTS lines.

Each unit allows flexible timeslot assignment so that an interface on a unit can be assigned to any timeslot within the 2048 kbit/s link, except TS0 or TS16.

The customer interface units currently supported by the RIM are housed in the Access Panel, including the logical Access Panel within the C–RIM Main Panel.

The following services are supported by RIM:

- ▶ POTS.
- ▶ Modem data services.
- ▶ Small business system 2–wire ports.
- ▶ Low bit rate data (to 64 kbit/s).
- ▶ 64Kbit/s data applications.
- ▶ 64kb/s G.703 with E&M signalling.
- ▶ PABX.
 - Tie lines.
 - Exchange lines.
 - Outdoor extensions.
- ▶ Telephones.
 - Coin.
 - Credit card 4–wire.
- ▶ Payphone.
 - CT3, CT–3E (red phone).
 - CT4 (gold phone).
 - CT6 (blue phone).
 - CP9 (card or coin phone).

- ▶ ISDN.
Basic Access (2B1Q and 4B3T Line Code).
Primary Access.
OnRamp, Spectrum digital (2B1Q).
Microlink (4B3T).
Macrolink (2 Mbit/s G.703).
- ▶ Spectrum.
Analogue – POTS.
ISDN – 2B1Q.
Attendant console.
P–Phone.
- ▶ VGDL.
Datel 2–wire or 4–wire lines.
Tie lines, Private lines.
MDATS.
Voicelink, Access.
- ▶ DDN.
Unimux (2B1Q, 2Mbit/s).
Fastway (2B1Q, 2 Mbit/s).
- ▶ Transend.
- ▶ FAX.
Faxstream.
Infofax.
- ▶ Easycall.
Call waiting, third party, etc.
CLIPA.
Distinctive ring.
- ▶ 4 wire cailho.
- ▶ 6 Wire E&M signalling.
- ▶ Telemetry (analogue digital data).
- ▶ Long line services.
- ▶ Remote private metering (12 kHz and 50 Hz).
- ▶ Securitel (in the non–integrated mode).
- ▶ G.703 2 Mbit/s services to the customer.

At the EU the Access Panel is required in non–integrated access applications to provide exchange end POTS interfaces. Access Panels at the EU also provide exchange end network access for non–POTS services such as 4–wire, indial PABX lines, ISDN basic access and 64 kbit/s DDN.

1.4 Support

Alcatel provides a range of RIM support services.

1.4.1 Help Desk

Alcatel provides 24 hour help desk to handle all RIM enquiries. From the help desk field support engineers will be contacted to help solve RIM related problems.

The Alcatel 24 Hour Help Line is on 1800 804 306.

1.4.2 Spares

A complete range of RIM spares is offered by Alcatel. The quantity and strategic location of spares is at the discretion of local management.

1.4.3 Repairs

Alcatel provides a 24 hour turnaround board/panel replacement for those items covered by warranty agreements.

Replacement of items damaged under conditions not covered by warranty agreements is subject to standard purchasing lead times.