



CHAPTER 2

Interfaces

This chapter describes the RFSS Network Controller (RNC) interfaces, and includes the following sections:

- [RNC Interfaces, page 2-1](#)
- [User Indications and RNC Logging, page 2-2](#)

RNC Interfaces

The RNC has the following three main interfaces:

- [RNC to NLR Interface, page 2-1](#)
- [RNC to Sites in the Local RFSS Interface, page 2-1](#)
- [RNC to Other RFSS Interface, page 2-2](#)

RNC to NLR Interface

The RNC communicates with the NLR (Network Location Register) via an IP-based interface. The RNC uses this interface to access profiles for subscribers and groups homed at that Radio Frequency Subsystem (RFSS). This interface is also used to update and retrieve visiting subscriber information for mobiles that are roaming within this RFSS.

RNC to Sites in the Local RFSS Interface

The RNC interfaces to network elements within the local RFSS. These can include:

- BSCs (Base Station Controllers).
- Soft radios.
- PSTN gateways.
- Network management systems.
- Digital voice recorders.
- Console applications.

This interface is based upon an extension of APCO P25 ISSI standards with SIP (Session Initiation Protocol) and RTP (Real-time Transport Protocol) based protocols to provide the functionality required for sites within the local RFSS. While this interface is not defined in the P25 standards, it is a well defined interface which is used to extend the ISSI in the local RFSS to enable further control of local sites.

RNC to Other RFSS Interface

The interface between the RNC and other RFSSs is defined in the APCO P25 ISSI suite of standards.



Note

Consoles that support the full CSSI effectively appear to the RNC as another RFSS interface.

User Indications and RNC Logging

The RNC normally runs on a Commercial Off the Shelf (COTS) PC, so status indications are provided by the hardware used, that is, power, hard disk and network activity status. If more detailed information is required about the RNC's operation, its log can be consulted. To quickly check recent events, a shell script is provided from the directory /home/RncUser. To do this, execute the following command:

```
bin/tail_ latest.sh log/Rnc.log
```

Logs are stored in the directory /home/RncUser/log. The RNC writes its logging output to the file Rnc.log. The RNC log is rotated on a daily basis into a date-stamped file of the form Rnc.log.YYYYMMDD. For example, the file Rnc.log.20081127 would contain the log for 11/27/2008. By default, log files are held for a maximum of 30 days before being removed.

Within each file, log messages accumulate from all the functional modules of the RNC. Each entry is marked with a label to indicate the part of the RNC from which it originated, along with an indication of its importance on a scale of zero to four, as shown in [Table 2-1](#).

Error! Reference source not found. lists.

[Table 2-1](#) describes the log entry ratings list.

Table 2-1 Log Entry Ratings List

Index	Description
0	Exceptional messages/critical errors
1	Warnings and abnormal program operation
2	Normal operation
3	Verbose output; trivial messages
4	Debug output; most basic level of operation

Time and date-stamp information is also included in each log entry, resulting in output of the following format:

```
YYYY-MM-DD HH:MM:SS.mmm CATEGORY(Level) <Log Message>
```

Where:

YYYY is the year

MM is the date (01 = Jan, 12 = Dec)

DD is the day of month (01 to 31)

HH is the hour of day (00 to 23)

MM is the minute (00 to 59)

SS is the second (00 to 59)

mmm is the millisecond

An example of this output in an actual log file is shown below:

```
2008-11-18 12:36:27.264 RNCC(0) Version - Rnc: 02.04.000 RELEASE
```

