

Contents

Generic Requirements Notice of Disclaimer	iii
Contents	v
List of Figures	xi
List of Tables	xiii
Preface	xv
The Telcordia Interactive GR Process	xv
About GR-1344-CORE	xvi
To Submit Comments	xvii
1. Introduction	1-1
1.1 Purpose	1-1
1.2 Scope and Terminology	1-1
1.2.1 Terminology	1-2
1.2.2 Functional Models for Network Operations	1-2
1.2.3 TMN Relationship to OTGR	1-3
1.3 Relationship to Other Telcordia Documents	1-4
1.4 Organization	1-5
1.5 Summary of Changes	1-5
1.6 Requirements Terminology	1-6
1.7 Requirement Labeling Conventions	1-7
1.7.1 Numbering of Requirement and Related Objects	1-7
1.7.2 Requirement, Conditional Requirement, and Objective Object Identification	1-7
2. Architectures	2-1
2.1 PACS Architecture	2-2
2.2 Operations Architecture	2-3
3. TMN Management Overview	3-1
3.1 Performance Management	3-1
3.1.1 Performance Management Background	3-1
3.1.2 Performance Management Strategies	3-3
3.1.2.1 Subscriber Unit Performance Management Strategy	3-3
3.1.2.2 Radio Port Performance Management Strategy	3-4
3.1.2.3 RPCU Performance Management Strategy	3-5
3.2 Fault Management	3-5
3.2.1 Fault Management Background	3-5
3.2.2 Fault Management Strategies	3-7
3.2.2.1 Alarm Monitoring	3-7
3.2.2.2 Testing	3-7
3.2.2.3 Fault Localization	3-8
3.3 Configuration Management	3-8
3.3.1 Configuration Management Background	3-8
3.3.2 Configuration Management Strategies	3-11
3.3.2.1 FWA SU	3-11

3.3.2.2 FWA RP	3-11
3.3.2.3 RPCU	3-11
3.4 Security Management	3-12
3.4.1 Security Management Background	3-12
3.4.2 Security Management Strategies	3-12
3.4.2.1 FWA SU	3-12
3.4.2.2 FWA RP	3-12
3.4.2.3 RPCU	3-13
4. FWA Subscriber Unit (SU)	4-1
4.1 Performance Management	4-1
4.2 Fault Management	4-1
4.2.1 Alarm Monitoring	4-1
4.2.1.1 Battery Backup Alarms	4-1
4.2.1.2 Equipment Alarms	4-2
4.2.2 Testing	4-2
4.2.2.1 SU Loopback Test	4-3
4.2.2.2 SU to Network Interface Test	4-4
4.2.2.3 SU Support of General Alert Test	4-5
4.2.3 Fault Localization	4-6
4.3 FWA SU Configuration Management	4-6
4.3.1 FWA SU Database Management	4-6
4.4 FWA SU Security Management	4-7
4.4.1 Overview of PACS Privacy and Authentication	4-7
4.4.2 Security Parameters in the FWA SU	4-8
4.4.2.1 A-key	4-8
4.4.2.2 Shared Secret Data	4-8
4.4.2.3 Terminal Identifier	4-9
4.4.2.4 Electronic Serial Number and UIMESN	4-9
4.4.2.5 Temporary TID	4-9
4.4.3 Provisioning for the Public Key AKA Protocol	4-9
4.4.4 Provisioning for the Secret Key AKA Protocol	4-11
4.4.5 Security of FWA SU Equipment	4-11
4.4.6 FWA SU Validation	4-12
5. FWA Radio Port (RP)	5-1
5.1 Performance Management	5-1
5.1.1 Performance Monitoring	5-1
5.1.1.1 A-Interface Performance Monitoring	5-1
5.1.1.2 Autonomous RP Measurements	5-1
5.1.2 Performance Analysis	5-1
5.1.3 Performance Management Controls	5-1
5.2 Fault Management	5-2
5.2.1 Alarm Monitoring	5-2
5.2.1.1 Antenna Alarms	5-2
5.2.1.2 Battery Backup Alarms	5-3
5.2.1.3 Environmental Alarms	5-4
5.2.1.4 Equipment Alarms	5-4

5.2.2 Testing	5-5
5.2.2.1 Neighboring Radio Port Transceiver Test	5-5
5.2.2.2 General Alert Test	5-8
5.2.2.3 RP Loopback Test	5-8
5.2.3 Fault Localization	5-9
5.3 FWA RP Configuration Management	5-10
5.3.1 Provisioning Functions	5-10
5.3.1.1 FWA RP Configuration	5-11
5.3.1.2 FWA RP Database Management	5-17
5.4 FWA RP Security Management	5-18
6. Radio Port Control Unit (RPCU)	6-1
6.1 Performance Management	6-1
6.1.1 FWA SU Performance Monitoring	6-1
6.1.2 Radio Channel Performance Monitoring	6-1
6.1.3 Radio Port Transceiver Performance Monitoring	6-2
6.1.3.1 RP Transceiver Access Performance Monitoring	6-2
6.1.3.2 RP Transceiver Utilization Performance Monitoring	6-4
6.1.3.3 RP Transceiver ALT Performance Monitoring	6-4
6.1.3.4 Autonomous RP Transceiver Measurements	6-6
6.1.4 RPCU Performance Monitoring	6-6
6.1.4.1 RPCU Priority Access Performance Monitoring	6-6
6.1.5 Performance Analysis	6-7
6.1.5.1 RPCU Rate Reduction Index	6-7
6.1.6 Performance Management Control	6-7
6.1.6.1 Protective Actions	6-8
6.1.6.2 Expansive Actions	6-8
6.2 Fault Management	6-9
6.2.1 FWA SU Fault Management	6-9
6.2.1.1 SU Loopback Test	6-9
6.2.1.2 SU to Network Interface Test	6-9
6.2.2 FWA RP Fault Management	6-10
6.2.2.1 Neighboring RP Transceiver Test	6-10
6.2.2.2 General Alert Test	6-10
6.2.2.3 RP Loopback Test	6-11
6.2.2.4 Installation/Verification RP Test with Conventional SU	6-11
6.2.3 RPCU Fault Management	6-11
6.2.3.1 Alarm Monitoring	6-12
6.2.3.2 Testing	6-13
6.2.3.3 Fault Localization	6-14
6.3 RPCU Configuration Management	6-15
6.3.1 Provisioning Functions	6-15
6.3.1.1 RPCU Administrative Functions	6-15
6.3.1.2 RPCU Database Management	6-16
6.3.1.3 RP Provisioning	6-33
6.4 RPCU Security Management	6-34

7. PACS Embedded Operations Channel (EOC)	7-1
7.1 Message Definitions	7-1
7.1.1 SystemHello	7-1
7.1.2 QSAFAReport	7-2
7.1.3 QSAFAMode	7-3
7.1.4 SelectOperatingFrequency	7-3
7.1.5 SetServiceState	7-4
7.1.6 AntennaAlarm	7-4
7.1.7 BatteryBackupAlarm	7-5
7.1.8 BackupPowerLevelAlarm	7-5
7.1.9 TemperatureThresholdExceeded	7-6
7.1.10 CasingViolated	7-6
7.1.11 TransceiverFailureAlarm	7-7
7.1.12 GenericFailureAlarm	7-8
7.1.13 TransmitPowerLowAlarm	7-8
7.1.14 Neighboring Radio Port Transceiver Test	7-9
7.1.14.1 NeighborRPTransceiverTest	7-9
7.1.14.2 NeighborRPTransceiverTestResult	7-9
7.1.15 Loopback Test	7-10
7.1.15.1 LoopbackTest	7-10
7.1.15.2 LoopbackTestStatus	7-10
7.1.16 RPRreset	7-11
7.1.16.1 RPRreset	7-11
7.1.16.2 RPRresetStatus	7-11
7.1.17 Diagnostic Test	7-12
7.1.17.1 DiagnosticTest	7-12
7.1.17.2 DiagnosticResult	7-12
7.1.18 RP Database Query and Update	7-13
7.1.18.1 DatabaseQuery	7-14
7.1.18.2 DatabaseQueryResponse	7-14
7.1.18.3 DatabaseUpdate	7-15
7.1.18.4 DatabaseUpdateStatus	7-16
7.2 Information Element Definitions	7-17
7.2.1 AlarmStatus	7-17
7.2.2 AntennaId	7-17
7.2.3 OperationalState	7-17
7.2.4 AdministrativeState	7-18
7.2.5 UsageState	7-18
7.2.6 ControlStatus	7-18
7.2.7 NumTransceivers	7-18
7.2.8 QueryFields	7-19
7.2.9 RPNumber	7-19
7.2.10 ChannelId	7-19
7.2.11 SoftwareVersion	7-20
7.2.12 TPM01	7-20
7.2.13 TestResult	7-20
7.2.14 TransceiverId	7-20

7.2.15	PM03	7-20
7.2.16	PM04	7-21
7.2.17	PM05	7-21
7.2.18	NumChannels	7-21
7.2.19	NumBlocks	7-21
7.2.20	Mode	7-22
7.2.21	Status	7-22
7.2.22	SerialNumber	7-22
7.2.23	TestID	7-22
7.2.24	RSSIMeasurements	7-22
7.2.25	RSSI	7-22
7.3	Encoding Rules	7-23
7.3.1	Messages	7-23
7.3.2	Information Element Types	7-26
7.3.2.1	Integer	7-26
7.3.2.2	Enumerated	7-26
7.3.2.3	Boolean	7-26
7.3.2.4	Alphanumeric	7-26
7.3.2.5	List	7-27
7.4	LAPD Protocol	7-27
7.4.1	Frame Structure	7-28
7.4.2	LAPD Parameters Supported By PACS-EOC	7-29
7.4.2.1	Mode of Operation	7-30
7.4.2.2	Maximum Number of Outstanding I Frames (k)	7-30
7.4.2.3	Maximum Number of Retransmissions (N200)	7-30
7.4.2.4	Maximum Number of Octets In An I-Frame Information Field (N201)	7-30
7.4.2.5	Maximum Number of TEI Assignment Requests (N202)	7-31
7.4.2.6	Timer T200	7-31
7.4.2.7	Timer T201	7-31
7.4.2.8	Timer T202	7-31
7.4.2.9	Timer T203	7-32
7.4.2.10	Idle Code	7-32
7.4.3	SAPI/TEI Addressing Conventions	7-32
7.4.3.1	SAPI	7-32
7.4.3.2	TEI	7-32
7.4.3.3	SAPI/TEI Combinations	7-33
8.	Transport System	8-1
8.1	Wireline Transport Overview	8-1
8.2	Performance Management	8-3
8.2.1	W-DSL Performance Monitoring	8-4
8.2.2	HDSL Performance Monitoring	8-4
8.2.3	T1-Carrier Performance Monitoring	8-5
8.3	Fault Management	8-6
8.3.1	Alarm Surveillance	8-6
8.3.1.1	Transmission Facility Alarms	8-6
8.3.1.2	Battery Alarms	8-7

8.3.2 Testing	8-8
8.3.2.1 TSC/RTU Function	8-10
8.3.2.2 Digital Test Access Unit (DTAU) Function	8-11
8.3.2.3 Metallic Test Access Unit (MTAU) Function	8-12
8.3.3 Fault Localization	8-13
8.4 Configuration Management	8-14
8.4.1 Transport NE Provisioning Functions	8-14
8.4.1.1 Transport NE Database Management	8-14
8.4.1.2 Transport NE Administrative Functions	8-15
8.4.2 Transport NE Status and Control Functions	8-15
8.5 Security Management	8-15
8.6 C-Interface	8-16
8.6.1 Performance Management	8-17
8.6.2 Fault Management	8-18
8.6.2.1 Alarm Surveillance	8-18
8.6.2.2 Testing	8-20
8.6.2.3 Fault Localization	8-20
8.6.3 Configuration Management	8-21
8.6.4 Security Management	8-21
Appendix A: Installation/Verification Test Procedures	A-1
References	References-1
Reference Note	References-5
To Contact Telcordia Customer Service	References-5
To Order Documents From Outside Telcordia	References-5
To Order Documents Within Telcordia	References-6
Acronyms	Acronyms-1
Requirement-Object Index	ROI-1

List of Figures

Figure 2-1	Radio System Configurations with PASC and PASP	2-1
Figure 2-2	PACS Functional Reference Architecture	2-2
Figure 2-3	Relationship of Telecommunications Management Network (TMN) to Telecommunications Network	2-4
Figure 2-4	Logical Representation of Components	2-4
Figure 2-5	PACS and TMN/NE Interfaces Described in this GR	2-5
Figure 4-1	Information Exchange for Network Initiated SU Loopback Test . .	4-5
Figure 5-1	Information Exchange for Neighboring RP Transceiver Test . . .	5-7
Figure 5-2	Information Exchange for Network Initiated RP Loopback Test	5-10
Figure 7-1	The LAPD Frame	7-29
Figure 8-1	Conceptual Illustration of RPCU-to-RP Transport	8-1
Figure 8-2	Generic Test Architecture for PACS P-Interface Testing	8-9
Figure 8-3	Conceptual Illustration of RPCU-to-Switch Transport	8-17

List of Tables

Table 1-1	Correlation Between TMN Management Functional Areas and OTGR Domains	1-4
Table 3-1	Primary State and Qualifier to ISO State/Status Attribute Mapping	3-10
Table 5-1	Channel Numbers and Frequencies	5-12
Table 7-1	PACS-EOC Stack	7-1
Table 8-1	DSL/HDSL Power Status Bit Indicators	8-7