
Generic Requirements for the ATM Network and Element Management Layers

Contents

Preface	Preface-1
1. Introduction.....	1-1
1.1 Purpose.....	1-1
1.2 Scope	1-1
1.2.1 Technologies and Services.....	1-1
1.2.2 TMN layers	1-1
1.2.3 Physical Systems vs. Logical Layerings	1-3
1.2.4 Functional areas	1-6
1.3 Who Should Read This Document.....	1-7
1.4 Organization of Document.....	1-7
1.5 Related Bellcore and Standards Documents	1-8
1.6 Terminology and Conventions.....	1-9
2. Configuration Management	2-1
2.1 Resource Configuration Management.....	2-1
2.1.1 EML Functions	2-2
2.1.1.1 Installation Support.....	2-2
2.1.1.2 Provisioning	2-3
2.1.1.3 Status and Control.....	2-5
2.1.2 NML Functions	2-6
2.1.2.1 Installation Support.....	2-6
2.1.2.2 Provisioning.....	2-7
2.1.2.3 Status and Control.....	2-8
2.2 Connection Management	2-9
2.2.1 EML Functions	2-9
2.2.2 NML Functions	2-10
2.2.2.1 Connection Setup.....	2-10
2.2.2.2 Connection modifications.....	2-12
2.2.2.3 Connection release.....	2-14
3. Fault Management.....	3-1
3.1 EML Functions.....	3-1
3.1.1 Alarm Surveillance	3-1
3.1.2 Fault Localization	3-3
3.1.3 Testing.....	3-4
3.2 NML Functions	3-4
3.2.1 Alarm Surveillance	3-4

3.2.2	Fault Localization	3-6
3.2.3	Testing.....	3-7
4.	Performance Management	4-1
4.1	EML Functions.....	4-1
4.1.1	Performance Monitoring	4-1
4.1.2	Network Traffic Management.....	4-7
4.1.3	Network Data Collection (Capacity Planning)	4-9
4.1.3.1	Congestion Measurements.....	4-9
4.1.3.2	Traffic Load Measurements.....	4-10
4.2	NML Functions	4-11
4.2.1	Performance Monitoring	4-11
4.2.2	Network Traffic Management.....	4-14
4.2.3	Network Data Collection	4-15
4.2.3.1	Congestion Measurements.....	4-15
4.2.3.2	Traffic Load Measurements.....	4-16
5.	Accounting Management (Usage Information for Billing).....	5-1
5.1	Essential Usage Information Functions	5-2
5.1.1	EML Functions	5-2
5.1.2	NML Functions	5-4
5.2	Additional Usage Information Functions.....	5-5
5.3	Implementation Considerations	5-5
5.3.1	Existing Environment	5-6
5.3.2	Emerging Environment	5-7
6.	Security Management	6-1
7.	Implementation Considerations	7-1
7.1	High level Management Model.....	7-1
7.2	Functional Deployment Alternatives	7-2
7.3	Application of Functional Layers and Areas to ATM	7-4
7.3.1	Element Management Systems Manage Individual NEs.....	7-4
7.3.2	Subnetwork Management	7-6
7.4	Deployment Alternatives	7-6
7.5	Functional Requirements for Example Management Systems	7-7
7.5.1	Configuration Management	7-8
7.5.2	Fault Management.....	7-12
7.5.3	Performance Management	7-14
7.5.4	Accounting Management	7-18
Appendix A:	Distributed Processing Considerations	A-1
A.1	Broadband ATM Management Needs	A-1
A.1.1	Overall Needs.....	A-1
A.1.2	Software Architecture Principles	A-2
A.2	Information Networking Architecture (INA).....	A-3
A.2.1	Basic INA Components	A-4

A.2.2	Managing/Managed-Object Model	A-5
A.2.3	Distributed Processing Environment	A-6
A.2.4	Contracts	A-8
A.2.4.1	Contract Characteristics.....	A-8
A.2.4.2	Contract Specification	A-9
A.2.5	The Trading Service.....	A-10
A.2.6	Network Manager Objects	A-11
A.2.7	Reference Objects and Data Agents.....	A-11
A.2.8	Configured Objects and Proxy Agents.....	A-13
Appendix B: Summary of Associated Requirements from TA-NWT-001248		B-1
References		References-1
Ref.1	Bellcore Documents	References-1
Ref.2	T1 Document.....	References-2
Ref.3	ITU-T (formerly CCITT) Documents	References-3
Ref.4	International Standards Organization ISO Documents	References-3
Ref.5	Joint International Standards Organization (ISO) ITU-T (formerly CCITT) Documents	References-3
Ref.6	ATM Forum Document.....	References-4
Bibliography		Bibliography-1
Bib.1	Bellcore Documents	Bibliography-1
Bib.2	ITU-T (formerly CCITT) Documents	Bibliography-1
Acronyms.....		Acronyms-1

List of Figures

Figure 1-1.	TMN layers and scope of work	1-2
Figure 1-2.	Example of Physical Implementation Architectures	1-5
Figure 5-1.	AMATPS Logical Architecture.....	5-6
Figure 5-2.	AMADNS Logical Architecture.....	5-7
Figure 7-1.	Network Management	7-2
Figure 7-2.	EML Management of Individual NEs	7-5
Figure 7-3.	Subnetwork Management Example.....	7-6
Figure 7-4.	Example Deployment Alternatives.....	7-7
Figure A-1.	Basic INA Components	A-5
Figure A-2.	Manager/Managed Object Model.....	A-6
Figure A-3.	Architecture for Network Manager Objects (NMOs).....	A-11
Figure A-4.	Configured Object Management	A-13
Figure A-5.	Data Management Alternatives	A-15

List of Tables

Table 7-1.	Relationship of Function Types to System Types	7-3
Table 7-2.	Mapping of EML CM Function vs. Management System Types.....	7-9
Table 7-3.	Mapping of NML CM Functions vs. Management System Types.....	7-10
Table 7-4.	Mapping of EML FM Functions vs. Management System Types	7-12
Table 7-5.	Mapping of NML FM Functions vs. Management System Types	7-13
Table 7-6.	Mapping of EML PM Functions vs. Management System Types	7-14
Table 7-7.	Mapping of NML PM Functions vs. Management System Types	7-17
Table 7-8.	Mapping of EML AM Functions vs. Management System Tapes	7-18
Table 7-9.	Mapping of NML AM Functions vs. Management System Tapes.....	7-19