

Contents

Telcordia GR-1337 - Documentation Information

Generic Requirements Notice Of Disclaimer	iii
List of Figures	xii
List of Tables	xiv
Preface	Preface-1
Telcordia Interactive GR Process	Preface-1
FA-TA-TR to GR	Preface-1
Transition Phase	Preface-1
Comments and Issues List Report Mechanism	Preface-2
GR-1337-CORE Current Maturity Level, Status, and Plans	Preface-2
Formatting Comments	Preface-3
Where and When to Submit Comments	Preface-3

1 Introduction

1.1 Motivation	1-2
1.2 Organization of Document	1-2
1.3 H.200 Series References and Nomenclature	1-3
1.4 Reference Documents	1-4
1.5 Requirements Terminology	1-4

2 MCU and Services Overview

2.1 MCU Overview (Phase I and Phase II)	2-1
2.1.1 Phase I MCU	2-1
2.1.2 Phase II MCU	2-3
2.1.3 Phase I and Phase II MCU Features and Capabilities	2-5
2.2 Conference Modes and Services	2-5
2.2.1 Conference Modes	2-6
2.2.2 Phase I Services	2-7
2.2.2.1 Meet-Me Service (Reservation Based Conferencing)	2-7
2.2.2.2 Add-On Service (Reservation Based and On-Demand-Conferencing)	2-7
2.2.3 Phase II Services	2-8
2.2.3.1 Blast-Up Conference (Reservation Based and On-Demand)	2-8
2.2.3.2 Pre-Meet (Reservation Based)	2-8
2.2.3.3 Pre-Cache (Reservation Based)	2-8

3 Interfaces to the MCU

3.1 PRI Interface to MCU (Phase I Interface)	3-1
3.2 T1 Interface to the MCU for Private Lines (Phase I Interface)	3-1
3.3 ATM Interface to the MCU (Phase II Interface)	3-2

4 Criteria Related to H.221 and H.242

4.1 Criteria Related To H.221	4-1
4.2 Criteria Related To H.230	4-5
4.3 Criteria Related to H.242	4-9

5 Reservations Systems

5.1 Phase I User Interface	5-1
5.1.1 Reservation System Interface for Phase I (Keypad Interface)	5-1
5.1.1.1 Parameters Provided by the Customer (via keypad)	5-3
5.1.1.2 Information Provided by the Reservation System	5-3
5.1.1.3 General Operating Features of the Keypad Interface to Reservations	5-4
5.1.1.4 Classes of Video Quality	5-6
5.1.1.5 Changing Ongoing Conferences	5-6
5.2 Phase II Reservation Systems	5-7
5.2.1 ITU-T Study Group 8 - T.RES	5-7
5.2.2 Use of a Graphic User Interface (GUI)	5-8
5.2.3 Functional Requirements for User-to-Res	5-10
5.2.3.1 Connect/Disconnect	5-10
5.2.3.2 Conference Book	5-10
5.2.3.3 Conference Modify	5-11
5.2.3.4 Conference Cancel	5-11
5.2.3.5 Conference Inquire	5-11
5.2.3.6 Conference Check Availability	5-12
5.2.3.7 Conference Template	5-12
5.2.3.8 Create Site	5-12
5.2.3.9 Modify Site	5-12
5.2.3.10 Remove Site	5-12
5.2.3.11 Security Administration	5-12
5.2.4 Functional Requirements for Res-to-MCU	5-12
5.2.4.1 Usage Statistics, Performance Requirements	5-13

6 Conferencing for Phase I MCU

6.1 Conference Establishment	6-2
6.1.1 Calls from H.221 Channel Aggregation Units	6-4
6.1.2 SWF-DS1 Calls	6-4
6.1.3 Calls from a TIA-619 Channel Aggregation Unit	6-5
6.1.4 Speech Calls	6-6
6.2 Treatment of SWF-DS1 Calls and Calls Originating from Channel Aggregation Units	6-6
6.2.1 Location of BAS and FAS	6-6
6.2.2 Generic Use of SBE Characters/DTMF for User Interface	6-7
6.2.3 PIN	6-8
6.2.4 Assignment and Dissemination of Terminal Numbers	6-11
6.2.5 Personal Identifiers and Dissemination Thereof	6-12

6.2.6 Selected Communications Mode and Interworking	6-13
6.2.6.1 Conferencing at 56/64 kbps	6-13
6.2.6.2 Conferencing at 128/112 kbps	6-14
6.2.6.3 Conferencing at 256/224 and 384/336 kbps	6-17
6.2.6.4 Conferencing at 768, 1472, and 1536 kbps	6-17
6.2.6.5 Securing/Unsecuring the Conference	6-17
6.3 H.200 Series Related Conference Features	6-18
6.3.1 Basic Features	6-18
6.3.1.1 Audio Bridging	6-18
6.3.1.2 Video Bridge	6-19
6.3.1.2.1 Audio Switched Video	6-20
6.3.1.2.2 Video Forcing	6-20
6.3.1.2.3 Selection of Video Received (Browsing)	6-21
6.3.1.2.4 Broadcast Modes	6-21
6.3.1.2.5 H.261 Still Image	6-22
6.3.1.3 Data Bridge	6-23
6.3.1.4 H.224 Criteria	6-24
6.3.1.5 Dial-Out Facility	6-24
6.3.1.5.1 Treatment of Speech Calls	6-25
6.3.1.5.2 Treatment of Video Terminal Calls	6-26
6.3.1.6 Time Limit Warning	6-30
6.3.1.7 Operator Access	6-31
6.3.2 Features Involving Chair Control	6-31
6.3.2.1 Establishing Chair Control	6-31
6.3.2.2 Handing Chair Control Over to Another Terminal	6-32
6.3.2.3 Terminal Dropping by Chair Control	6-32
6.3.2.4 Dropping the Entire Conference	6-32
6.3.2.5 Chair Control of Video Broadcasted	6-32
6.3.2.6 Request for Floor	6-33
6.3.2.7 Withdrawal of Data Tokens by Chair Control	6-33

7 T.120/Multilayer Protocol (MLP) - Phase II MCU

7.1 Overview	7-1
7.2 Non-T.120 Criteria for Phase II MCUs	7-3
7.2.1 Continuous Presence	7-3
7.2.2 Cascade	7-4
7.2.3 Video Transcoding	7-4
7.3 MLP/T.120 Within the Context of H.221	7-5
7.3.1 MLP Channel Proxy	7-8
7.4 T.123 Criteria	7-11
7.5 T.122/T.125 Criteria	7-12
7.6 T.124 Criteria	7-13
7.6.1 Conference Establishment and Termination	7-14
7.6.1.1 Meet-Me	7-14
7.6.1.2 Meet-Me Proxy	7-17
7.6.1.3 Blast-Up	7-18

7.6.1.4 Blast-Up Proxy	7-18
7.6.1.5 Adding Terminals to an On-going Conference	7-19
7.6.1.6 Spontaneous Conference	7-19
7.6.1.7 3 Way Spontaneous Conferencing (N-ISDN)	7-20
7.6.1.8 3 Way Spontaneous Conferencing (B-ISDN)	7-22
7.6.1.9 Extending the Time of an On-going Conference	7-22
7.6.1.10 Other Conference Establishment and Termination Functions . .	7-22
7.6.2 Conference Roster	7-23
7.6.3 Application Roster	7-23
7.6.4 Application Registry	7-24
7.6.5 Conference Conductorship	7-24
7.6.6 Miscellaneous Functions	7-25
7.7 T.128 (Audio/Visual Control)	7-25

8 MCU Operations Criteria

8.1 MCU Operations Communications Position	8-1
8.1.1 MCU - Gateway NE, Intermediate NE, Versus an End NE	8-1
8.1.2 An Analysis of the Need for MCU-OS Direct Access Capability	8-2
8.1.2.1 MCU Engineering	8-4
8.1.2.2 Examples of Functions That Could Be Supported Via an OS-NE Interface	8-5
8.2 Preliminary Generic Requirements for Operations Interfaces	8-5
8.2.1 Local Workstation (Craftsperson) Interface	8-6
8.2.2 Remote Workstation Interface	8-7
8.2.3 MCU-OS Interface	8-8
8.3 Preliminary Generic Requirements for MCU Operations Functions	8-9
8.3.1 Preliminary Generic Requirements for Facility Maintenance	8-9
8.3.1.1 Preliminary Generic Requirements for T1 Maintenance	8-9
8.3.1.1.1 Introduction	8-10
8.3.1.1.2 Facility Performance Monitoring	8-10
8.3.1.1.3 Carrier Group Alarm Operation	8-11
8.3.1.1.4 CGA-AIS Processing	8-12
8.3.1.1.5 AIS Generation	8-13
8.3.1.1.6 MCU CGA Plan	8-13
8.3.1.1.7 Facility Maintenance	8-14
8.3.1.2 Preliminary Generic Requirements for PRA Maintenance	8-14
8.3.2 Preliminary Generic Requirements for Frame Maintenance	8-15
8.3.2.1 Alarm and Status Reporting Capabilities	8-15
8.3.2.2 Loopback Capabilities	8-16
8.3.2.2.1 Terminal Loopback	8-17
8.3.2.2.2 Facility Loopback	8-18
8.3.3 Memory Administration	8-19
8.3.3.1 Local and Remote Provisioning	8-19
8.3.3.2 Memory Backup	8-20
8.3.3.3 System Administration and Security	8-20
8.3.4 Network Data Collection	8-21

8.3.4.1	Background	8-21
8.3.4.2	Scope of this Section	8-21
8.3.4.3	Relationship to TR-NWT-000478	8-22
8.3.4.4	MCU Measurement Approach	8-22
8.3.4.5	Generic Requirements for MCU Measurements;	8-24
8.4	Switch Memory Administration	8-28
8.4.1	Administrative Views	8-29
8.4.1.1	Access Line Data (CO Switch to MCU)	8-32
8.4.1.2	Service Data	8-38

9 Usage Measurement Generic Requirements

9.1	Usage Measurement Philosophy	9-1
9.2	Usage Measurement Assumptions	9-3
9.3	Usage Measurement Functionality	9-4
9.3.1	Data Collection for MVS	9-7
9.3.1.1	Billing Treatment Determination for General MVS Session Information	9-8
9.3.1.1.1	Reservation Initiation	9-8
9.3.1.1.2	Reservation Modification	9-11
9.3.1.2	Billing Treatment Determination for Incoming MVS Connections .	9-13
9.3.1.3	Billing Treatment Determination for Outgoing MVS Connections .	9-14
9.3.1.4	Billing Treatment Determination for Reservation Feature Usage .	9-16
9.3.2	Data Formatting	9-16
9.3.2.1	Format Methodology	9-17
9.3.2.2	Format Requirements for Structure Code 0111	9-19
9.3.2.3	Format Requirements for Connection Modules (Modules 112, 113, MYY, MZZ, MAA, and MBB)	9-23
9.3.2.3.1	Generic Requirements for the "Core" Information Building Block	9-26
9.3.2.3.2	Generic Requirements for the Per-Connection Charging Parameters Building Block	9-28
9.3.2.3.3	Generic Requirements for the Per-Connection Dial-In Parameters Building Block	9-30
9.3.2.3.4	Generic Requirements for the Dial-Out Parameters Building Block	9-30
9.3.2.4	Format Requirements for Reservation System Modules (Modules 114 and MDD)	9-31
9.3.3	Data Transmitting	9-33
9.3.4	Usage Measurement Reliability and Quality	9-33
9.3.4.1	Usage Measurement Availability	9-34
9.3.4.1.1	Mean-Time-Between-Failure	9-35
9.3.4.1.2	Mean-Time-To-Restore	9-35
9.3.4.1.3	System Reliability and Performance Analysis	9-35
9.3.4.2	Data Loss	9-35
9.3.4.3	Analysis and Testing Documentation	9-36

10 Reliability and Quality

11 Spatial and Environmental Criteria

11.1 Power Supply Requirements	11-1
11.2 Equipment Design Requirements	11-1
11.3 Physical Requirements	11-1
11.4 Environmental Requirements	11-2
11.4.1 Temperature and Humidity	11-2
11.4.2 Altitude	11-2
11.4.3 Heat Dissipation	11-2
11.4.4 Acoustical Noise	11-2
11.4.5 Airborne Contaminants	11-2
11.4.6 Electrostatic Discharge	11-3
11.4.7 Electromagnetic Emission and Immunity	11-3
11.5 Electrical and Other Safety Requirements	11-3

Appendix A: Overview of H.221

A.1 FAS	A-2
A.2 BAS	A-4
A.2.1 BAS Attributes and Associated Values	A-5

Appendix B: Overview of T.120

B.1 Overview	B-1
B.2 Network Specific Transport Protocols (T.123)	B-3
B.3 MCS T.122/T125	B-6
B.4 Generic Conference Control (GCC)	B-8
B.5 Real Time Stream Control (T.128)	B-8
B.5.1 Quality of Service Manager	B-10
B.5.2 The Real Time Multipoint Communication Service Network Dependent Interface Management	B-10
B.5.3 Remote Device Control and Multimedia Network Services	B-12
B.5.4 Mapping of User Features to T.128 Components	B-12
B.5.4.1 Side Conferences (both Audio and Audio/Video)	B-12
B.5.5 Advanced Continuous Presence	B-14
B.5.6 Stereo Audio Video Window	B-14
B.5.7 Multipoint Far-End Camera Control (M-FECC)	B-15
B.5.8 Platform Interworking	B-15

Appendix C: Alternate Platforms for T.120

C.1 B-ISDN (ATM)	C-1
C.2 Other Network Profiles Defined in T.123	C-4
C.3 ISO-Ethernet	C-4

Appendix D: List of Control and Indication Signals

Appendix E: Continuous Presence

E.1 Introduction	E-1
E.2 Preliminary Proposal	E-2
E.2.1 Video Mixing	E-2
E.2.1.1 4-QCIF Mode Continuous Presence	E-2
E.2.2 Interaction with video selection	E-4
E.2.2.1 Interaction with existing commands	E-4
E.2.2.2 4-OCIF Mode Video Selection Features	E-4
E.2.3 Interaction with Cascading	E-5
E.3 Issues	E-6

Appendix F: AMA Formats

F.1 BAF Structure Change Proposed for Division 2 of TR-NWT-001100 ^[53]	F-1
F.1.1 Preface to Division 2 (Tables) of TR-NWT-001100 ^[53]	F-1
F.1.2 Table Index	F-2
F.1.3 BAF Table Descriptions	F-2
F.2 BAF Structure Change Proposed for Division 3 of TR-NWT-001100 ^[53]	F-5
F.2.1 Preface to Division 3 (Structures) of TR-NWT-001100 ^[53]	F-5
F.2.2 Structure Index	F-5
F.2.3 Structures	F-6
F.3 BAF Call Type Change Proposed for Division 4 of TR-NWT-001100 ^[53]	F-8
F.3.1 Preface to Division 4 (Call Types) of TR-NWT-001100 ^[53]	F-8
F.3.2 Call Type Index	F-8
F.3.3 Call Types	F-8
F.4 BAF Module Change Proposed for Division 5 of TR-NWT-001100 ^[53]	F-9
F.4.1 Preface to Division 5 (Modules) of TR-NWT-001100 ^[53]	F-9
F.4.2 Module Index	F-9
F.4.3 Modules	F-10

Appendix G: References

Note	References-6
To Contact Telcordia Customer Service or to Order Documents . .	References-6
To Order Documents From Within Telcordia (Employees Only) . .	References-6

Appendix H: Glossary

Requirement-Object Index

List of Figures

Figure 2-1	Phase I MCU in Central Office	2-2
Figure 2-2	Phase II MCU in Central Office	2-4
Figure 2-3	Phase I and Phase II Services	2-9
Figure 5-1	Reference Card for Example Keypad Interface	5-2
Figure 5-2	T.RES System Model	5-7
Figure 5-3	Combination of T.RES PDUs and Reservation GUI	5-9
Figure 6-1	Example Touchtone-like Keypad for SBEs with LCD	6-7
Figure 6-2	Call Treatment for PIN and Terminal Numbering	6-9
Figure 6-3	Payloads for Various Calls at 112/128 kbps	6-15
Figure 6-4	Dial-Out Procedure Message Sequence Chart	6-25
Figure 6-5	Dial-Out Procedure - State Diagram	6-27
Figure 7-1	Use of TA 20/MLP on H.221 Terminals and MCU	7-2
Figure 7-2	One Method of Continuous Presence	7-4
Figure 7-3	MLP Examples for 2X56/2X64 Kbps Conferencing	7-7
Figure 7-4	MLP Example at 384 kbps Conferencing	7-7
Figure 7-5	LSD Substitution Method	7-8
Figure 7-6	Audio Method	7-9
Figure 7-7	HSD Substitution Method	7-10
Figure 7-8	T.123 ISDN Basic Mode Profile to Support T.120	7-11
Figure 7-9	T.123 ISDN Alternative Mode Profile to Support T.120	7-12
Figure 7-10	Use of Proxy for Meet-Me Case if Terminal is not T.120 Capable	7-17
Figure 7-11	Use of Proxy for Blast-Up Case if Terminal is not T.120 Capable	7-19
Figure 7-12	Message Sequence Chart for 3 Way Call	7-21
Figure 8-1	GNE, INE, and End NE	8-2
Figure 8-2	End Network Element	8-3
Figure 8-3	Possible MCU Operations Positions	8-4
Figure 8-4	Local Craft Interface	8-7
Figure 8-5	Loopbacks in Test Mode	8-17
Figure 8-6	The Generic Memory Administration Model	8-30
Figure 8-7	Generic Structure of an Administrative View	8-31
Figure 9-1	Illustrative Time-Line for An MVS Session	9-2
Figure 9-1	Illustrative Time-Line for A Conference	9-2
Figure 9-2	Separation of Processing Functions	9-4
Figure 9-3	Behavior Diagram of Overall MVS Usage Measurement Process	9-6
Figure 9-4	Modification Window	9-11
Figure 9-5	Information "Building Blocks" for MVS Connection Modules	9-24
Figure 9-5	"Building Blocks" Used for Each MVS Connection Module	9-24
Figure 9-6	Generic Illustration of a BAF Record for an MVS Session	9-38
Figure A-1	Frame of I Channel (64 kbps)	A-2
Figure A-2	H.221 Hierarchy	A-4
Figure B-1	T.120 System Model	B-2
Figure B-2	ISDN Basic Mode Profile to Support T.120	B-3
Figure B-3	ISDN Alternative Mode Profile to Support T.120	B-3
Figure B-4	T.123 Frame for N-ISDN	B-4

Figure B-5	Reference Model for Real Time Stream Control	B-9
Figure B-6	Modelling of a Link	B-11
Figure B-7	Modelling of a Stream	B-11
Figure B-8	Format of H.221 for Private Side Conference	B-13
Figure B-9	Possible Format of H.221 Supporting Continuous Presence	B-14
Figure B-10	768 kbps H.2211 Frame for Video Window	B-15
Figure C-1	ATM Cell with AAL Type 5	C-1
Figure C-2	T.120/B-ISDN Protocol Stack for Separate VC Case	C-2
Figure C-3	T.120/B-ISDN Protocol Stack for Separate VC Case	C-3
Figure C-4	Basic Mode Profiles for All Network Types Covered by T.123	C-4
Figure C-5	Ethernet Protocol	C-5
Figure C-6	IsoEthernet Frame Protocol	C-5
Figure E-1	Four QCIF Pictures in a CIF Picture	E-3

List of Tables

Table 2-1	Phase I MCU Supported Rates and Formats	2-2
Table 2-2	MCU Features and Capabilities	2-6
Table 2-3	Phase I Services	2-8
Table 2-4	Phase II Services	2-9
Table 4-1	BAS Numerical Values	4-3
Table 4-2	BAS Numerical Values Reached by Escape Code (111) [16]	4-4
Table 4-3	Numerical Values for Applications in LSD/HSD Channels - Reached by BAS code 111[18]	4-5
Table 4-4	Table 4-4. BAS Codes in Additional Channels	4-5
Table 4-5	SBEs Reached by BAS Escape Code (111)[17] (Sheet 1 of 2)	4-6
Table 4-5	SBEs Reached by BAS Escape Code (111)[17] (Sheet 2 of 2)	4-7
Table 4-6	MBEs Reached by "Start MBE Code" (111) ^[25]	4-8
Table 4-7	H.230 Codes Found Directly in BAS Codes of H.221	4-8
Table 5-1	Proposed Classes	5-6
Table 6-1	Conferencing Functions and Features	6-1
Table 6-2	Phase I MCU Supported Rates and Formats	6-2
Table 6-3	Values of B for LSD and HSD	6-23
Table 6-4	Possible SBEs for MCU Dial-out	6-25
Table 7-1	The Subset of MLP, H-MLP, and T.120 BAS Codes for the Phase II MCU	7-6
Table 7-2	MCS Domain Parameters	7-13
Table 7-3	Conference - "Not Under Conductor Control" - Privilege List	7-15
Table 7-4	Conference - "Under Conductor Control" - Privilege List	7-15
Table 8-1	Data Dictionaries For MCU Applications	8-34
Table 8-1	Data Dictionaries For MCU Applications (Continued)	8-35
Table 8-1	Data Dictionaries For MCU Applications (Continued)	8-36
Table 8-1	Data Dictionaries For MCU Applications (Continued)	8-37
Table 8-1	Data Dictionaries For MCU Applications	8-38
Table 9-1	Key MVS Session Events	9-1
Table 9-2	Conditions Governing Use of MVS Modules	9-18
Table 9-3	Example Recording for Various Charging Number Values	9-22
Table A-1	Bit Positions of FAS	A-3
Table A-2	FAS Bits of Multiframe	A-3
Table A-3	Bit Positions of BAS	A-4
Table A-4	BAS Attributes and Their Significance	A-5
Table B-1	T.120 Documents	B-1
Table B-2	Q.922 and X.224 Functions	B-5
Table B-3	MCS Primitives	B-7
Table D-1	List of C&I Signals	D-1
Table D-1	List of C&I Signals	D-2
Table D-1	List of C&I Signals	D-3
Table D-1	List of C&I Signals	D-4
Table D-1	List of C&I Signals	D-5