

## Contents

Preface . . . . .	Preface-1
1. Introduction . . . . .	1-1
1.1 Definition . . . . .	1-1
1.2 Background . . . . .	1-1
1.2.1 High-Level Description of SS7 Routing Capabilities . . . . .	1-1
1.2.1.1 Intermediate Signaling Network Identification (ISNI) Capability . . . . .	1-2
1.2.1.2 Determination of Interconnecting CCS Network (ICN) . . . . .	1-4
1.2.1.3 Client Company Administrative Options Regarding SS7 Message Routing . . . . .	1-7
1.2.1.4 AR Customer Options Impacting SS7 Message Routing . . . . .	1-7
1.2.2 Brief Description of Feature/GRP Communication . . . . .	1-8
1.2.2.1 Primitives Sent From a Feature to the GRP . . . . .	1-10
1.2.2.2 Primitives Sent From the GRP to a Feature . . . . .	1-11
1.3 High-Level Feature Description . . . . .	1-11
1.4 Automatic Recall (AR) Versus Automatic Callback (AC) - A Comparison . . . . .	1-11
1.5 Terminology . . . . .	1-13
1.6 Requirements Notation . . . . .	1-15
1.7 Figure Notation . . . . .	1-15
2. User Perspective . . . . .	2-1
3. Feature Requirements . . . . .	3-1
3.1 Feature Operations . . . . .	3-1
3.1.1 Descriptions of TCAP Messages, Timers, and Announcements . . . . .	3-1
3.1.2 Feature Processing . . . . .	3-7
3.1.2.1 Feature Activation . . . . .	3-8
3.1.2.2 Initial AR Processing . . . . .	3-16
3.1.2.3 Immediate Processing . . . . .	3-35
3.1.2.4 Delayed Processing . . . . .	3-37
3.1.2.5 Deactivation . . . . .	3-71
3.1.2.6 AR Reactivation . . . . .	3-78
3.1.2.7 IntraSPCS Automatic Recall . . . . .	3-79
3.1.3 Release Treatment . . . . .	3-80
3.1.4 Interrupt Treatment . . . . .	3-80
3.1.5 Error Treatment and Abnormal Events . . . . .	3-80
3.2 Internal Call Processing Controls . . . . .	3-83
3.2.1 Connections . . . . .	3-83
3.2.2 CLASS of Service . . . . .	3-84
3.2.3 Code Interpretation . . . . .	3-85

3.2.4	Screening . . . . .	3-86
3.2.5	Overload . . . . .	3-86
3.3	Signaling . . . . .	3-86
3.3.1	Customer Loop . . . . .	3-86
3.3.2	Customer Signaling . . . . .	3-86
3.3.3	Intersystem DC Signaling . . . . .	3-87
3.3.4	Intersystem AR Signaling . . . . .	3-87
3.3.4.1	Common Channel Signaling . . . . .	3-87
3.3.4.2	SS7 Interface Signaling . . . . .	3-87
3.4	Routing . . . . .	3-103
3.5	Administration . . . . .	3-104
3.5.1	Data Items and Usage . . . . .	3-104
3.5.2	Service Changes . . . . .	3-108
3.5.3	Installation . . . . .	3-108
3.5.4	Traffic Measurements . . . . .	3-109
3.5.5	Maintenance Measurements . . . . .	3-110
3.5.6	Automatic Message Accounting . . . . .	3-110
3.5.6.1	AR Usage-Record Generation Conditions . . . . .	3-110
3.5.6.2	AMA Element Generation . . . . .	3-111
3.5.6.3	AMA Record Generation to Support AR Toward Anonymous Numbers . . . . .	3-116
3.5.7	Input/Output Messages . . . . .	3-118
3.6	Maintenance . . . . .	3-118
3.7	Performance . . . . .	3-118
3.8	Feature Interactions . . . . .	3-119
3.9	Limitations and Restrictions . . . . .	3-138
3.10	Timing and Tolerances . . . . .	3-139
Appendix A: Incoming Memory Slot Requirements . . . . .		A-1
A.1	Introduction . . . . .	A-1
A.2	Contents of Incoming Memory Slot . . . . .	A-1
A.3	Update Requirements . . . . .	A-2
A.3.1	Calls From Two-Party Lines . . . . .	A-3
A.3.2	Centrex Calls . . . . .	A-4
A.3.3	Multiline Hunt Group Calls . . . . .	A-4
A.3.4	Multiparty Lines . . . . .	A-4
A.3.5	No Common Channel Signaling Connectivity . . . . .	A-5
A.3.6	Operator Calls . . . . .	A-5
A.3.7	Private Branch Exchange Calls . . . . .	A-5
A.4	Feature Interactions . . . . .	A-6
A.4.1	Automatic Recall/Automatic Callback . . . . .	A-6
A.4.2	Call Forwarding Don't Answer . . . . .	A-6
A.4.3	Call Forwarding Variable, SCF, SCA with Forwarding Treatment, Call Forwarding Busy Line . . . . .	A-7
A.4.4	Call Waiting and Caller Identity Delivery on Call Waiting . . . . .	A-8
A.4.5	Calling Name Delivery . . . . .	A-8
A.4.6	Screening List Editing . . . . .	A-9

A.4.7	Selective Call Acceptance with Rejection Treatment . . . . .	A-9
A.4.8	Selective Call Rejection, Anonymous Call Rejection, Do Not Disturb . . . . .	A-9
A.4.9	Three-Way Calling . . . . .	A-9
Appendix B:	TCAP Message Formats for Automatic Recall . . . . .	B-1
B.1	Introduction . . . . .	B-1
B.2	TCAP Message Formats . . . . .	B-2
B.2.1	TCAP Information for Initial Query Message . . . . .	B-2
B.2.2	TCAP Information for Terminating Scanning Request Query Message . . . . .	B-9
B.2.3	TCAP Information for Originating Scanning-Busy/Idle Query Message . . . . .	B-13
B.3	TCAP Information for Response Messages . . . . .	B-17
B.3.1	TCAP Information for the Initial Response Message . . . . .	B-17
B.3.2	TCAP Information for the Terminating Scanning Request Conversation message . . . . .	B-20
B.3.3	TCAP Information for Terminating Scanning-Idle Response Message . . . . .	B-23
B.3.4	TCAP Information for the Originating Scanning - Busy/Idle Response Message . . . . .	B-25
B.3.5	TCAP Information for Cancel Terminating Scanning Response Message . . . . .	B-27
B.3.6	TCAP Information for Dequeue Call Unidirectional Message . . . . .	B-31
B.3.7	TCAP Information for Messages Containing . . . . .	B-34
B.3.8	TCAP Information for Messages Containing Reject Components . . . . .	B-37
B.3.9	TCAP Information for Messages That Report Errors in Return Results . . . . .	B-39
Appendix C:	Parameter Formats for Automatic Recall . . . . .	C-1
C.1	Busy/Idle Status . . . . .	C-1
C.2	Duration . . . . .	C-1
C.3	Call Forwarding Status . . . . .	C-2
C.4	Terminating Restrictions . . . . .	C-3
C.5	DN to Line Service Type Mapping . . . . .	C-4
C.6	Error Codes . . . . .	C-5
References . . . . .		References-1
Glossary . . . . .		Glossary-1



## List of Figures

Figure 1-1.	Example Configuration of Multiple Networks . . . . .	1-5
Figure 1-2.	Feature/GRP Communication . . . . .	1-9
Figure 3-1.	AR Overall Picture . . . . .	3-8
Figure 3-2.	AR Activation for Both One Level and Two Level Activation . . . . .	3-13
Figure 3-2.	AR Activation for Both One Level and Two Level Activation (Cont.) . . . . .	3-14
Figure 3-2.	AR Activation for Both One Level and Two Level Activation (Cont.) . . . . .	3-15
Figure 3-3.	Initial AR Processing From Originating SPCS Perspective . . . . .	3-31
Figure 3-3.	Initial AR Processing From Originating SPCS Perspective (Cont.) . . . . .	3-32
Figure 3-3.	Initial AR Processing From Originating SPCS Perspective (Cont.) . . . . .	3-33
Figure 3-4.	Initial AR Processing From Terminating SPCS Perspective . . . . .	3-34
Figure 3-4.	Initial AR Processing From Terminating SPCS Perspective (Cont.) . . . . .	3-35
Figure 3-5.	Immediate Processing From the Originating SPCS Perspective . . . . .	3-37
Figure 3-6.	Delayed Processing From the Originating SPCS Perspective . . . . .	3-42
Figure 3-7.	Terminating SPCS Responses to the Terminating Scanning Request Query . . . . .	3-43
Figure 3-8.	Originating Scanning (Originating SPCS View) . . . . .	3-50
Figure 3-9.	Originating Scanning (Terminating SPCS View) . . . . .	3-51
Figure 3-9.	Originating Scanning (Terminating SPCS View) (Cont.) . . . . .	3-52
Figure 3-10.	Terminating Scanning Procedures (Terminating SPCS) . . . . .	3-56
Figure 3-11.	Determining When AR Request Gets Called Party Idle Notification . . . . .	3-57
Figure 3-12.	Terminating Scanning (Originating SPCS) . . . . .	3-58
Figure 3-13.	Queue Serving Procedures . . . . .	3-60
Figure 3-14.	Call Setup Processing . . . . .	3-63
Figure 3-15.	Answered Special Ringing . . . . .	3-67
Figure 3-16.	Unanswered Special Ringing . . . . .	3-69
Figure 3-17.	Resumed Scanning Procedures . . . . .	3-71
Figure 3-18.	Dequeue Procedures (Originating SPCS View) . . . . .	3-76
Figure 3-19.	Dequeue Procedures (Terminating SPCS View) . . . . .	3-77

