

Contents

1.	Introduction	1-1
1.1	Purpose and Scope	1-2
1.2	Nationally Consistent LEC PVC CRS Phases	1-2
1.3	Document Organization.....	1-3
1.4	Key Documents.....	1-4
1.5	Requirements Terminology	1-4
2.	Overview.....	2-1
2.1	Cell Relay Service Overview.....	2-1
2.2	Exchange PVC Cell Relay Service.....	2-3
3.	Service Features.....	3-1
3.1	Physical Interface	3-1
3.2	Cell Transport.....	3-2
3.3	Connection Type.....	3-2
3.4	Communication Configurations.....	3-3
3.5	Number of PVCs Per UNI.....	3-4
3.6	CRS Cell Transfer Rates.....	3-4
3.6.1	CRS Connections Carrying CBR Traffic.....	3-5
3.6.2	CRS Connections Carrying VBR Traffic	3-6
3.7	Quality of Service Classes	3-10
3.8	Bi-directional Connections.....	3-10
3.9	Traffic Management.....	3-11
3.9.1	Usage Parameter Control	3-11
3.9.2	Explicit Forward Congestion Indication.....	3-13
3.9.3	Egress Shaping.....	3-13
3.10	Compliant CRS Connections.....	3-14
3.11	Addressing and Routing	3-14
3.12	Customer Network Management Service.....	3-14
3.12.1	CNM access via SNMP.....	3-15
3.12.2	CNM access via ILMI	3-16
3.12.3	CNM access via layer management	3-16
3.13	Summary of Subscription Parameters	3-17
4.	Performance and Quality of Service.....	4-1
4.1	Delay Objectives.....	4-1
4.1.1	Cell Transfer Delay.....	4-1

4.1.2	Cell Delay Variation	4-1
4.2	Accuracy Objectives	4-2
4.2.1	Cell Loss Ratio.....	4-2
4.2.2	Errored Cell Ratio.....	4-3
4.2.3	Misinserted Cell Rate	4-3
4.3	Availability Objectives	4-3
4.3.1	Scheduled Hours of Service.....	4-3
4.3.2	Service Availability.....	4-3
4.3.3	Mean Time to Service Restoral.....	4-4
4.3.4	Mean Time Between Service Outages.....	4-4
5.	Cell Relay User-Network Interface.....	5-1
5.1	Access Interface.....	5-1
5.2	Protocol Overview.....	5-1
5.2.1	Physical Layer.....	5-2
5.2.2	ATM Layer	5-3
5.3	Additional UNI Criteria	5-7
6.	LEC-LEC Serving Arrangements.....	6-1
6.1	Introduction.....	6-1
6.2	Remote UNI Model	6-2
6.3	Separate Networks Model	6-2
6.4	Requirements for LEC-LEC Serving Arrangements.....	6-3
7.	Usage Information to Support Billing.....	7-1
7.1	Motivation.....	7-1
7.2	Overview of the Usage Measurement Functions.....	7-2
7.3	Usage Measurement Strategy for Exchange PVC CRS.....	7-2
7.3.1	Usage Information Generated by the LEC Network.....	7-3
7.3.2	Additional Exchange PVC CRS Parameters.....	7-4
7.4	Data Generation.....	7-5
7.4.1	Identifying Unidirectional Cell Flows.....	7-6
7.4.2	AMA Cell Counts	7-7
7.4.3	AMA Cell Counts for OAM Cells.....	7-7
7.5	Recording Intervals.....	7-9
7.6	Data Formatting.....	7-13

7.7	Data Transmitting.....	7-15
7.8	Usage Measurement Architecture.....	7-16
7.9	Operations and Performance.....	7-17
8.	Issues.....	8-1
8.1	DS1 Interface.....	8-1
8.2	Peak Cell Rates.....	8-1
8.3	Quality of Service Classes.....	8-1
8.4	Sustained Cell Rates.....	8-2
8.5	OAM cells.....	8-2
8.6	Usage Measurement Strategy.....	8-2
8.7	Interworking.....	8-2
8.8	Egress Shaping.....	8-3
Appendix A.	Rationale for PCR, SCR and BT.....	A-1
A.1	AAL.....	A-1
A.2	ATM Layer Management and OAM cells.....	A-1
A.3	Rate Calculations.....	A-3
A.3.1	CBR Connections.....	A-3
A.3.2	VBR Connections.....	A-4
Appendix B.	CRS Traffic Contract and the GCRA.....	B-1
B.1	Traffic Contract.....	B-1
B.2	Conforming Cell.....	B-1
B.3	Compliant Connection.....	B-2
Appendix C.	Proposed BAF Requirements for TR-NWT-001100.....	C-1
C.1	BAF Table Changes Proposed for Division 2 of TR-NWT-001100.....	C-1
C.2	BAF Structure Change Proposed for Division 3 of TR-NWT-001100.....	C-3
C.3	BAF Call Type Code Change Proposed for Division 4 of TR-NWT-001100.....	C-4
References.....		References-1
Acronyms.....		Acronyms-1

List of Figures

Figure 2-1.	End User Networking Using CRS.....	2-2
Figure 2-2.	Cell Relay Service Framework.....	2-3
Figure 3-1.	Exchange PVC CRS Framework	3-1
Figure 3-2.	Example of access to Exchange PVC CRS CNM capabilities	3-15
Figure 5-1.	A Possible Physical Realization of the UNI	5-1
Figure 5-2.	Protocol Reference Model	5-2
Figure 5-4.	ATM Cell Header Format	5-4
Figure 6-1.	Serving Arrangements Model	6-1
Figure 6-2.	Remote UNI Architecture Model	6-2
Figure 6-3.	Separate Networks Architecture Model	6-3
Figure 7-1.	Usage Information Generation Location.....	7-4
Figure B-1.	GCRA Flowchart.....	B-3

List of Tables

Table 3-1.	Number of PVCs Supported per UNI (DS3 & STS-3c).....	3-4
Table 3-2.	Number of PVCs Supported per UNI (DS1)	3-4
Table 3-3.	Supported PCRs for CBR Connections.....	3-6
Table 3-4.	Supported PCRs for VBR Connections.....	3-8
Table 3-5.	Cell Rates Corresponding to SCR Values.....	3-9
Table 3-6.	Subscription Parameter Summary.....	3-18
Table 4-1.	CDV Distribution.....	4-2
Table 4-2.	CLR Values	4-2
Table 5-1.	PTI Code Points.....	5-5
Table A-1.	Number of OAM PM operations per second.....	A-2