

**QWEST Communications
International Inc.
Technical Publication**

**Customer Network Management for Asynchronous
Transfer Mode (ATM) Cell Relay Service (CRS)**

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1. Introduction

1.1 General

This document describes QWEST Customer Network Management service for Asynchronous Transfer Mode (ATM)/Cell Relay Service (CRS). The information provided in this document includes technical specifications and service features.

1.2 Reason For Reissue

To show QWEST Communications International Inc. as the owner of this publication and the one to contact concerning the content.

1.3 Customer Network Management for Cell Relay Service - Brief Overview

For a customer to get CNM for CRS, they must already have or concurrently obtain ATM Cell Relay Service from QWEST. The CNM capability for ATM CRS allows customers to monitor, on a read only basis, the configuration, fault and performance management information specific to their ATM CRS User Network Interfaces. For specific technical information on ATM/CRS please refer to QWEST Technical Publication 77378, "*ATM Cell Relay Service.*"

To access CNM for CRS, the customer needs ATM CRS or Frame Relay Service at the physical location where the customer will use CNM capabilities. (For specific technical information on FRS please refer to QWEST Technical Publication 77372, "*Frame Relay Service.*") A CNM for CRS service connection is depicted in Figure 1-1.

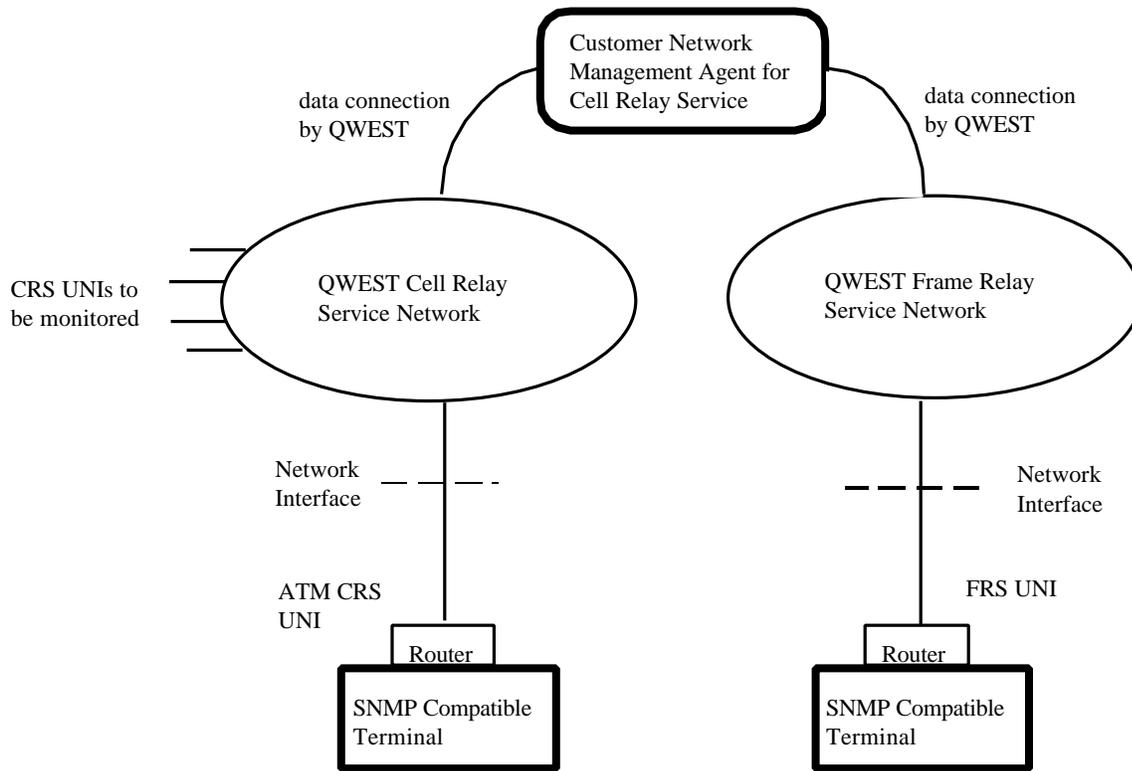


Figure 1-1 CNM for CRS Service Connectivity

A Customer Network Management Agent, an embedded part of QWEST's ATM/CRS network, provides CNM query response and event notification. A Simple Network Management Protocol compatible terminal is connected the CNM agent via a FRS or ATM CRS UNI. From this terminal, the end user can enter SNMP commands to query the status of their ATM/CRS connection(s) and to receive CRS event notifications.

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2. Technical Description

2.1 Interface Requirements

Customer Network Management for Cell Relay Service is available over the ATM/CRS and Frame Relay Service User Network Interfaces (UNI). CNM for CRS requires the customer to have a Simple Network Management Protocol (SNMP) compatible terminal as their Network Management System (NMS). For further information on SNMP, the reader can refer to RFC 1157, "A Simple Network Management Protocol."

Communication between the SNMP compatible terminal and the CNM agent is possible by (1) an ATM CRS Permanent Virtual Circuit (PVC) or (2) a FRS PVC, between the customer premises router and CNM for CRS Agent (see figure 1-1). This PVC is dedicated to CNM service.

The PVC supporting CNM is established at service turn up, and is established in 64 Kbit/s increments over a CRS UNI and 64 or 56 Kbit/s increments over a FR UNI. Depending on individual customer usage and other customer parameters, a 64 or 56 Kbit/s PVC bandwidth could support one or more NMSs. The customer should discuss their exact CNM needs with their QWEST Account Manager to determine an optimal PVC bandwidth.

The design of a customer premises network is a customer's responsibility. As such, it is the customer's decision how their SNMP terminal should connect to their router for accessing the CNM-dedicated PVC.

2.2 SNMP Terminal Software and Hardware Requirements

QWEST does not recommend any specific software product. The only requirement is that the software be able to issue and interpret SNMP commands and responses. QWEST equally doesn't recommend any specific hardware product.

2.3 CNM for CRS Features

2.3.1 Alarms Supported

U S WEST's CNM for CRS supports four alarms. These alarms are defined in the Telcordia's GR-1117-CORE, "*Generic Requirements for Phase 1 Exchange PVC CRS Customer Network Management Service.*" These alarms are: CNM Agent Cold Start, Link Down, Link UP, and Fyitrapp PVC up/down. Because these alarms are defined thoroughly in the Bellcore document, they will not be redefined here.

2.3.2 Object Groups Supported

The object groups supported in QWEST's CNM for CRS are a subset of the Class I requirements of The ATM Forum's document number af-nm-0019.000, "*Customer Network Management (CNM) for ATM Public Network Service (M3 Specification)*" document. This document in turn refers to Request for Comments (RFC) documents that further define object groups. The specific object groups supported in QWEST's CNM for CRS are:

From RFC 1213 and RFC 1573

ifGeneralGroup
ifHCFixed LengthGroup
ifStackGroup

From RFC 1695

atmInterfaceConfGroup
atmTrafficDescrGroup
atmVpCrossConnectGroup
atmVccTerminationGroup
atmVcCrossConnectGroup

Because these object groups are defined thoroughly in the M3 document, they will not be redefined here. QWEST as part of service turnup, will provide the customer with the necessary object group software definitions for their SNMP terminal.

The following items from the M3 Specification and RFC 1695 are not currently supported:

- All tables mentioned in M3 from RFC 1595 for management information about SONET physical layer will not be supported.
- All tables mentioned in M3 from RFC 1406 and RFC 1407 will not be supported for CNM physical layer information on DS1 and DS3 interfaces.
- Physical Layer information from RFC 1695 (ATM MIB) will also not be supported.
- No Class II (Write Capabilities) Optional Requirements listed in the M3 document will be supported.)
- All data fields will be supported in the SNMPv1 format. No data fields in the SNMPv2 format (for example 64 bit fields) will be supported.
- The Interim Local Management Interface (ILMI) objects in the atmInterfaceConfGroup from RFC 1695 will not be supported.
- The AAL5 objects in the atmInterfaceConfGroup from RFC 1695 will not be supported.

- The Transmission Convergence Layer objects in the atmInterfaceConfGroup from RFC 1695 will not be supported.
- The "ifOutErrors" counter in the ifHCFixedLengthGroup will not be supported.
- The following object groups will not be supported from the atmInterfaceConfGroup because these are useful only when SVCs are deployed. Also the last 2 objects are not necessary for CNM.

"atmInterfaceAddressType"

"atmInterfaceAdminAddress"

"atmInterfaceMyNeighborIpAddress"

"atmInterfaceMyNeighborIfName"

- None of the "rowStatus" fields are supported in any of the tables. These are only meaningful when there is write capability to the tables. The same also applies to the "atmVpCrossConnectIndexNext" object in the atmVpCrossConnectGroup and the "atmVcCrossConnectIndexNext" object in the atmVcCrossConnectGroup.

2.4 CNM for CRS Service Objectives

2.4.1 Availability

Availability is a measure of the time the service is usable by a customer. The availability is expressed as a percentage that the service is performing in accordance with the service objectives during a 1-year period. This percentage is represented by:

$$\text{Availability (\%)} = \frac{\text{total time in a year} - \text{outage time during the year}}{\text{total time in a year}} \times 100$$

(All time values must have identical units.)

The availability value for CNM for CRS is 99.63%. As such, CNM for CRS will not be available for 1.35 days or less during the year.

2.4.2 Average Response Time

An average response time of 5 seconds will apply (1) between submittal of a GET or GET_NEXT SNMP command and receiving a response or (2) from specific ATM network events to alarm notification (see 2.3.1 Alarms Supported).

2.4.3 Scheduled Service Time

Scheduled Service Time is the expected period that CNM for CRS is available for customer access. For CNM for CRS, the Scheduled Service Time is 24 hours a day, 7 days a week.

2.5 In Case of Trouble

Before calling QWEST, the customer should verify that the source of the problem is not within equipment the customer is solely responsible for. Once that is verified, and if the trouble persists, the customer should contact QWEST !NTERPRISE Networking Services Customer Service Center at 800-227-2218.

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3. Definitions

3.1 Acronyms

PVC	Permanent Virtual Circuit
CNM	Customer Network Management
CRS	Cell Relay Service
ATM	Asynchronous Transfer Mode
RFC	Request for Comment
UNI	User Network Interface
SNMP	Simple Network Management Protocol
FRS	Frame Relay Service

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4. References

4.1 Telcordia Documents

GR-1117 *Generic Requirements for Phase 1 Exchange PVC CRS Customer Network Management Service*, Issue 1, June 1994.

4.2 ATM Forum Documents

af-nm-0019.000 *Customer Network Management (CNM) for ATM Public Network Service*, October 1994.

4.3 Request for Comment (RFC) Documents

RFC 1157 *Simple Network Management Protocol*

4.4 QWEST Technical Publications

PUB 77372 *Frame Relay Service*, Issue H, December 2000

PUB 77375 *1.544 Mbit/s Channel Interfaces*, Issue E, September 2001

PUB 77378 *ATM Cell Relay Service*, Issue E, October 2001

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