Frame Relay Service Customer Network Management
Implementation Agreement

FRF.6

Frame Relay Forum Technical Committee

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1   INTRODUCTION

1.1   Purpose

This document is a Frame Relay Service Customer Network Management Implementation Agreement (IA). This IA is intended to be used for Customer Network Management (CNM) of a Frame Relay Network Service. It provides information that allows end-customers to obtain performance monitoring, fault detection, and configuration information about their Frame Relay Service.

The agreements herein were reached in the Frame Relay Forum, and are based on the relevant Frame Relay and network management standards referenced in Section 2.0. They document agreements reached among vendors and suppliers of Frame Relay network products and services regarding the Frame Relay service customer network management.

This document may be submitted to different bodies involved in ratification of implementation agreements and conformance testing to facilitate multi-vendor interoperability.

1.2   Definitions

Must, Shall, or Mandatory - the item is an absolute requirement of this IA.

Should - the item is highly desirable.

May or Optional - the item is not compulsory, and may be followed or ignored according to the needs of the implementor.

Not Applicable - the item is outside the scope of this IA.

2   Relevant Standards

The following is a list of standards and IAs on which this Frame Relay Frame Relay Service Customer Network Management IA is based:
1. Brown, T. (editor), RFC 1604, Definitions of Managed Objects for Frame Relay Service, Bell Communications Research, March 1994 (attached as Annex B).
2. ANSI T1.606 - Architectural Framework and Service Description for Frame Relaying Bearer Service, American National Standards Institute, Inc., 1991.
3. ANSI T1.617 - DSS1 - Signaling Specification for Frame Relay Bearer Service, American National Standards Institute, Inc., 1991.
4. ANSI T1.618 - DSS1 - Core Aspects of Frame Protocol for Use with

Frame Relay Bearer Service, American National Standards Institute, Inc., 1991.

5. CCITT Recommendation Q.922, ISDN Data Link Layer Specification for Frame Mode Bearer Services, 1991.

6. CCITT Recommendation Q.933, DSS1 Signaling Specification for Frame Mode Basic Call Control, 1992.

7. Frame Relay Forum FRF.1, Frame Relay User-to-Network Interface Implementation Agreement, 1992.

8. Frame Relay Forum FRF.2, Frame Relay Network-to-Network Interface Phase I Implementation Agreement, 1992.

9. Frame Relay Forum FRF.3, Frame Relay Multiprotocol Encapsulation Implementation Agreement, 1992.

10. Case, J., K. McCloghrie, M. Rose, and S. Waldbusser, "Structure of Management Information for version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1442, SNMP Research, Inc., Hughes LAN Systems, Dover Beach Consulting, Inc., Carnegie Mellon University, April 1993.

11. Galvin, J., and K. McCloghrie, "Administrative Model for version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1445, Trusted Information Systems, Hughes LAN Systems, April 1993.

12. Case, J., K. McCloghrie, M. Rose, and S. Waldbusser, "Protocol Operations for version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1448, SNMP Research, Inc., Hughes LAN Systems, Dover Beach Consulting, Inc., Carnegie Mellon University, April 1993.

13. McCloghrie, K., and M. Rose, "Management Information Base for Network Management of TCP/IP-based internets - MIB-II", RFC 1213, Hughes LAN Systems, Performance Systems International, March 1991.

14. Brown, C., F. Baker, and C. Carvalho (editors), RFC 1315, "Management Information Base for Frame Relay DTEs", Wellfleet Communications, ACC, April 1992.

15. Bradley, T., Brown, C., and A. Malis, RFC 1490, "Multi-Protocol Interconnect over Frame Relay", Wellfleet Communications, ascom Timeplex, July 1993.

3   IMPLEMENTATION AGREEMENT

This agreement applies to Frame Relay network service providers that wish to provide their customers with a customer network management (CNM) capability, and to Frame Relay network service customers that wish to perform network management functions on the services provided to them. It shall be implemented in the network management equipment used by customers to perform their CNM activities, and by the equipment used by the service providers to support their customer's CNM activities. This will typically take the form of a network management proxy agent within the provider's Frame Relay network, but other arrangements are not precluded.

This agreement specifies that CNM activities shall use the Simple Network Management Protocol (SNMP). This allows service providers and customers to

perform CNM activities using any of the widely available SNMP-based network management systems.

The Frame Relay Forum and the Internet Engineering Task Force have jointly developed a standard SNMP Management Information Base (MIB) for Frame Relay CNM, RFC 1604, "Definitions of Managed Objects for Frame Relay Service" [1], which is attached as Annex B.

By using this MIB, a customer's network management system (NMS) can monitor its PVCs, UNI ports, and NNI ports. SVCs may be added in the future following the adoption by the Forum of SVC Implementation Agreements.

The MIB models an abstract Frame Relay network to the customer. Management of the actual internal aspects of the network (e.g., switching elements, line cards, and network routing tables) is outside the scope of this IA. In addition, Frame Relay DTEs are not managed with this MIB; rather, RFC 1315 [14] is used.

Since the provider Frame Relay network is a shared network amongst many Frame Relay customers, each customer will only be provided with access to their relevant information (e.g., information with respect to their interfaces and PVCs).

The customer's NMS will typically access the SNMP proxy agent within the provider Frame Relay network using SNMP over UDP over IP, with IP encapsulated in Frame Relay according to FRF.3 [9], which specifies RFC 1490 [15] and T1.617 Annex F [3] procedures. The customer's NMS thus has a PVC to the SNMP proxy agent. Alternate access mechanisms are possible (such as through routers attached to the Frame Relay network) and are not precluded.

This MIB is only used to manage a single Frame Relay Service offering from one provider network. Therefore, this MIB models a PVC segment through one Frame Relay network. If the customer's PVCs traverse multiple networks, then the customer NMS must poll multiple network proxy agents to retrieve their end-to-end view of their service (Figure 1).
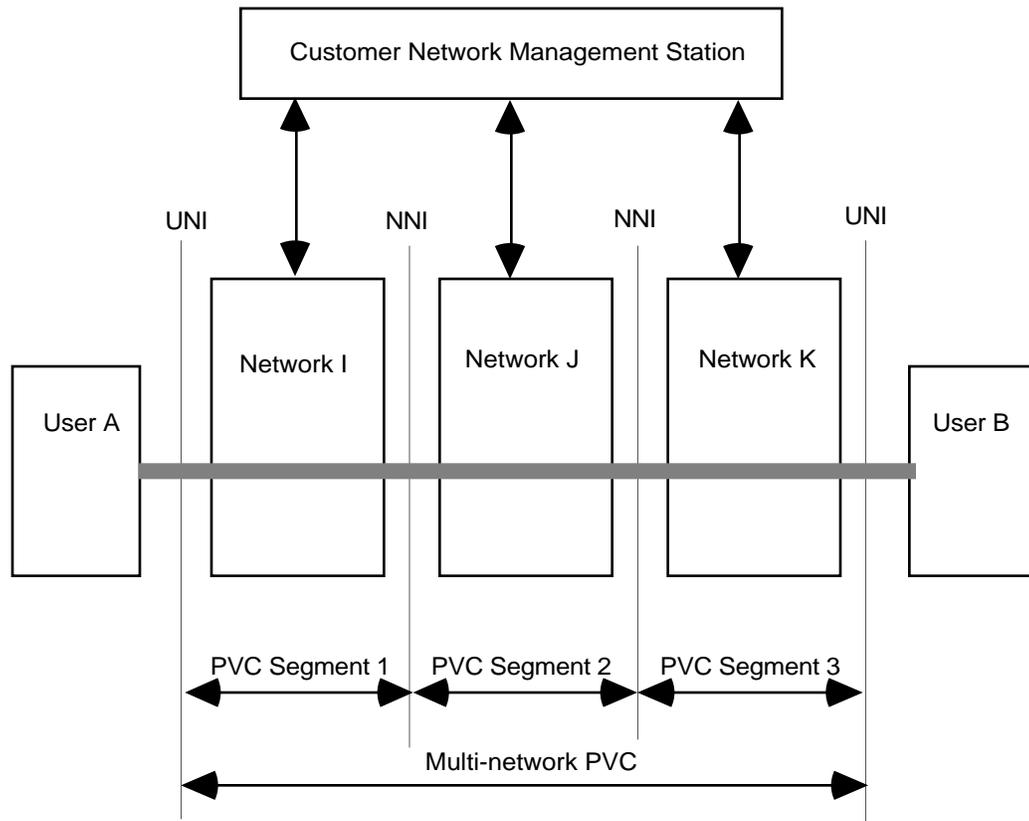
Figure 1. Multi-network PVC

4. Conclusion

This IA allows Frame Relay service customers to gain significant value (above and beyond pure data transfer functionality) from Frame Relay services, and more cost-effectively manage their usage. This, in turn, will assist Frame Relay services in the marketplace.

Annex A

This informative annex will contain a technical overview of RFC 1604, Definitions of Managed Objects for Frame Relay Service. This annex was not available at the initial publication of this Implementation Agreement, and will be added at a later time. It will be informative only, and will not affect the agreement itself. This annex will not be balloted.

Annex B

This annex contains the complete text of RFC 1604 on the pages that follow.