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Public data networks – Network aspects

Principles for the routing of international frame relay traffic

ITU-T Recommendation X.111

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Principles for the routing of international frame relay traffic

Summary

The purpose of this Recommendation is to provide network operators with the information necessary to ensure that Frame Relay data traffic can be routed effectively and efficiently across the International Public Data Network. Guidelines and general principles for the planning of Public Frame Relay Data networks and the routing of International Frame Relay Traffic are provided. In particular guidance on the incorporation of service requirements into the network routing process is provided. Principles for routing in the case of Frame Relay/ATM interworking are also provided.

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Source

ITU-T Recommendation X.111 was prepared by ITU-T Study Group 17 (2001-2004) and approved under the WTSA Resolution 1 procedure on 13 February 2003.

Keywords

Frame Relay, Public Frame Relay Data Network, Routing.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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Principles for the routing of international frame relay traffic

1 Introduction

1.1 This Recommendation provides general principles and guidelines for the routing of international frame relay data traffic. The Frame Relay Data Transmission Service as defined by ITU-T Recs X.36 and X.76 provides a wide range of services such as closed user group, reverse charging, transit network selection, transfer and discard priorities and selection of service classes. Each service must be supported by a minimum level of network capability. For each connection requested by a user, the network must provide the appropriate switching, signalling and transmission capabilities required to successfully route the call to the required destination.

1.2 The purpose of this Recommendation is to provide network operators with the information necessary to ensure that Frame Relay data traffic can be routed effectively and efficiently across the International Public Data Network. In particular guidance on the incorporation of service requirements into the network routing process is provided.

1.3 This Recommendation establishes basic principles on which to base network design and routing decisions. It provides detailed information on the mapping between Frame Relay Data Transmission services, and the network capabilities (e.g., transmission links, signalling systems, etc.) required to support and route a call. Guidance on the conveyance and use of routing information within network components is also included.

NOTE – Within this Recommendation the term Public Frame Relay Data Network can be used interchangeably with the term Public Data Network providing the Frame Relay Data Transmission Service. The term ATM Network can be used interchangeably with the term B-ISDN.

2 Scope

2.1 The scope of this Recommendation is the routing of international frame relay data traffic supported by the service capabilities defined in ITU-T Rec. X.76, "Network-to-network interface between public networks providing PVC and/or SVC frame relay data transmission service", i.e., routing principles for PVC or SVC frame relay connections. The scope of this Recommendation is limited to Public Data Networks providing the Frame Relay Data Transmission Service. Contents of this Recommendation will be reviewed/extended in order to satisfy operational needs which will arise according to the evolution of public frame relay data networks.

2.2 This Recommendation is intended to provide a single definitive reference for Frame Relay routing. It is a companion document to ITU-T Rec. X.110, "International routing principles and routing plan for the Public Data Network".

2.3 Arrangements for the routing of international frame relay data traffic between PFRDNs and the Frame Mode Bearer Service provided by N-ISDNs is outside the scope of this Recommendation.

3 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

This Recommendation is related to and is compatible with the following Recommendations:

- ITU-T Recommendation E.164 (1997), *The international public telecommunication numbering plan*.
- ITU-T Recommendation E.177 (1996), *B-ISDN routing*.
- ITU-T Recommendation I.555 (1997), *Frame Relaying Bearer Service interworking*.
- ITU-T Recommendation X.36 (2000), *Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for public data networks providing frame relay data transmission service by dedicated circuit*.
- ITU-T Recommendation X.46 (1998), *Access to FRDTS via B-ISDN*.
- ITU-T Recommendation X.76 (2000), *Network-to-network interface between public networks providing PVC and/or SVC frame relay data transmission service*.
- ITU-T Recommendation X.78 (1999), *Interworking procedures between networks providing frame relay data transmission services via B-ISDN*.
- ITU-T Recommendation X.110 (2002), *International routing principles and routing plan for public data networks*.
- ITU-T Recommendation X.121 (2000), *International numbering plan for public data networks*.
- ITU-T Recommendation X.124 (1999), *Arrangements for the interworking of the E.164 and X.121 numbering plans for frame relay and ATM networks*.
- ITU-T Recommendation X.125 (1998), *Procedure for the notification of the assignment of international network identification codes for public frame relay data networks and ATM networks numbered under the E.164 numbering plan*.
- ITU-T Recommendation X.144 (2000), *User information transfer performance parameters for data networks providing international frame relay PVC service*.
- ITU-T Recommendation X.145 (1996), *Performance for data networks providing international frame relay SVC service*.
- ITU-T Recommendation X.146 (2000), *Performance objectives and quality of service classes applicable to frame relay*.
- ITU-T Recommendation X.300 (1996), *General principles for interworking between public networks and between public networks and other networks for the provision of data transmission services*.
- ITU-T Recommendation X.301 (1996), *Description of the general arrangements for call control within a subnetwork and between subnetworks for the provision of data transmission services*.
- ITU-T Recommendation X.329 (2000), *General arrangements for interworking between networks providing frame relay data transmission services and B-ISDN*.

4 Definitions

This terms and their definitions used in this Recommendation are consistent with those defined in ITU-T Recs E.164, E.177, I.155, X.36, X.46, X.76, X.78, X.110, X.121, X.124 and X.125.