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**DATA NETWORKS AND OPEN SYSTEM
COMMUNICATIONS**

PUBLIC DATA NETWORKS – NETWORK ASPECTS

**DEFINITION OF ADDRESS TRANSLATION
CAPABILITY IN PUBLIC DATA NETWORKS**

ITU-T Recommendation X.115

(Previously “CCITT Recommendation”)

FOREWORD

The ITU-T (Telecommunication Standardization Sector) is a permanent organ of the International Telecommunication Union (ITU). The 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 Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation X.115 was prepared by ITU-T Study Group 7 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 10th of April 1995.

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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ITU-T X-SERIES RECOMMENDATIONS
DATA NETWORKS AND OPEN SYSTEM COMMUNICATIONS

(February 1994)

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SUMMARY

This Recommendation provides definition of the address translation service, the service provided to its customers, the functions at the network interface and functions within the network when providing this service. The address translation service provides customers the ability to use addresses in formats other than X.121 or E.164 (e.g. user friends addresses like mnemonic addresses, etc.). The addresses can be any of the alternative addresses defined in Recommendation X.25. The network will translate the address in the *Call Request* packet to the desired address to complete the call.

INTRODUCTION

This Recommendation provides a definition of the address translation service, the services provided to its customers, the functions at the network interface and the functions within the network when providing the service.

Recommendation X.121 specifies the numbering plan for Public Data Networks (PDNs), Recommendation E.164 specifies the numbering plan for the Integrated Services Digital Network era. Recommendation X.122/E.166 defines the general procedures applicable to numbering plan interworking between ISDNs and PSPDNs; ISDNs and PSTNs; and PSPDNs and PSTNs. "A DTE on a PDN is identified by an international data number, which consists of the Data Network Identification Code (DNIC) of the PDN, followed by Network Terminal Number (NTN) of the called DTE/DCE interface, or the Data Country Code (DCC) followed by the National Number."

Recommendation X.25 allows the called DTE address to conform to the formats described in Recommendations X.121, Recommendation E.164 or an *alternative address*. Recommendation X.25 specifies a set of *Alternative Addressing* facilities that enables a calling DTE to use an alternative address to identify the called DTE when establishing a virtual call. An alternative address is defined as one that does not conform to the formats defined in Recommendations X.121 and X.301. The alternative addresses are for example, OSI NSAP address, MAC address, etc. In addition, Recommendation X.25 includes *Call Deflection and Call Redirection* facilities.

Recommendation X.35 presents different PSPDN/PSPvtDN interworking routing alternatives. Among the many alternatives that are discussed in X.35, the most relevant routing strategy is the case where routing is based on a non-X.121 PSPvtDN DTE Address. This is because the addresses assigned to DTEs on the PSPvtDN need not be from the PSPDN numbering plan. The addresses assigned to DTEs in PSPvtDN can be an OSI NSAP address or from a PSPvtDN addressing plan. The PSPDN in this case may desire to offer a capability to route the call either on the PSPvtDN numbering plan or on the OSI NSAP address rather than requiring "two stage dialling".

This Recommendation defines the service that can be provided by PSPDNs to its customers (i.e. DTEs or PSPvtDNs), the requirements on DTEs when using this service and the functions that must be provided in PSPDNs to offer such a service.

This Recommendation does not specify the interface specifications or the protocol elements that would be used to provide the address translation service.

Recommendation X.115

DEFINITION OF ADDRESS TRANSLATION CAPABILITY IN PUBLIC DATA NETWORKS

(Geneva, 1995)

1 References

The following 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: all 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.

- CCITT Recommendation E.164 (1991), *Numbering plan for the ISDN era*.
- CCITT Recommendation T.50 (1992), *International Reference Alphabet (IRA) – Information technology – 7-bit coded character set for information interchange*.
- ITU-T Recommendation X.25 (1993), *Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit*.
- CCITT Recommendation X.121 (1992), *International numbering plan for public data networks*.
- CCITT Recommendation X.122/E.166 (1992), *Numbering plan interworking for the E.164 and X.121 numbering plans*.
- CCITT Recommendation X.213 (1992) ISO/IEC 8348:(1993), *Information technology – Open Systems Interconnection – Network service definition*.
- ITU-T Recommendation X.301 (1993), *Description of the general arrangements for call control within a subnetwork and between subnetworks for the provision of data transmission services*.
- ISO/IEC 646:1991, *Information technology – ISO 7-bit coded character set for information interchange*.
- ISO/IEC TR 9575:1990, *Information technology – Telecommunications and information exchange between systems – OSI Routing Framework*.
- ISO/IEC 10030:1990, *Information technology – Telecommunications and information exchange between systems – End System Routing Information Exchange Protocol for use in conjunction with ISO 8878*.
- ISO/IEC 10039:1991, *Information technology – Open Systems Interconnection – Local area networks – Medium Access Control (MAC) service definition*.
- ISO/IEC 10747:1994, *Information technology – Telecommunications and information exchange between systems – Protocol for exchange of inter-domain routing information among intermediate systems to support forwarding of ISO 8473 PDUs*.

2 Definitions

For the purposes of this Recommendation, the following definitions apply:

- 2.1 Address Translation Service:** A service that enables the network to route calls to the proper X.121/E.164 address when the called address specified is not an X.121/E.164 address.
- 2.2 Administrative Domain:** A collection of *End Systems*, *Intermediate Systems*, and *subnetworks* operated by a single organization or administrative authority.
- 2.3 Border Intermediate System:** An *Intermediate System* that runs the protocol specified in ISO/IEC 10747, has at least one *inter-domain link* attached to it, and may optionally have intra-domain links attached to it.

