



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.812

Amendment 3
(02/00)

SERIES Q: SWITCHING AND SIGNALLING

Specifications of signalling system no. 7 – Q3 interface

**Protocol profile for electronic communications
interactive agent**

Amendment 3:

CAUTION !

PREPUBLISHED RECOMMENDATION

This text is a non-edited version of a recently approved Recommendation. It shall be replaced by the final version after edition. Consequently, some discrepancies may appear between this text and its final edited form.

FOREWORD

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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.

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

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ADDENDUM 3 TO RECOMMENDATION Q.812

PROTOCOL PROFILE FOR ELECTRONIC COMMUNICATIONS INTERACTIVE AGENT

Based upon discussions with the ITU-T SG 4 Chair, it was agreed at the 19/4 meeting of March 1999 to make the following changes to Recommendation Q.812. Additional changes were agreed to at the 19/4 meeting of January 2000. The diff marks in this document are relative to COM 4-121.

Amend section 1.2 to include the following additional references:

Recommendation Q.814 - Specification of an Electronic Data Interchange Interactive Agent

Recommendation Q.815 - Specification of a Security Module For Whole Message Protection

Amend section 1.3, Symbols and Abbreviations

BER Basic Encoding Rules

DER Distinguished Encoding Rules

EDI Electronic Data Interchange

EDIFACT United Nations rules for Electronic Data Interchange For Administration, Commerce and Transport

IA Interactive Agent

IATP Interactive Agent Transfer Protocol

TLS Transport Layer Security

Add to section 1.4, Definitions, the following:

Electronic Data Interchange (Q.815)

The computer-to-computer transmission of business information between peer entities. The data should be organized in standard file formats or transaction sets.

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Interactive Agent (Q.814)

The IA supports the exchange of electronic data interchange (UN/EDIFACT or ASC X12 EDI) transactions between peer entities. The IA functions as an interface between its direct user (normally an EDIFACT/ASC X12 EDI translator or a security module) and the transport layer security. Various implementation approaches may be taken ranging from a simple API (Application Program Interface) through a stand-alone program. The IA is described in Recommendation Q.814 and the Security Module is described in Recommendation Q.815.

Transport Layer Security (Q.814)

The Transport Layer Security (TLS) protocol optionally provides communications privacy. The protocol allows client/server applications to communicate in a way that is designed to prevent eavesdropping, tampering, and intrusion. The TLS protocol also provides strong peer authentication and data flow integrity.

Distinguished Encoding Rules (DER) (X.690)

DER for ASN.1 are a subset of Basic Encoding Rules (BER), and give exactly one way to represent any ASN.1 value as an octet string. DER are intended for applications in which a unique octet string encoding is needed, and is the case when an ASN.1 message is encoded for transport via TLS. DER are described in X.690. In this profile the definite-length method of constructing IA messages must be employed.

Interactive Agent Transfer Protocol (IATP) (Q.814)

The IATP protocol is utilized between peer Interactive Agents wishing to exchange Electronic Data Interchange transactions/messages via Transmission Control Protocol/Internet Protocol utilizing Transport Layer Security. The IATP is described in ITU-T Recommendation Q.814.

EDI Translator (Q.814)

A computer software module or program that translates private data formats and representations to/from standard formats and standard data representations such as those specified by ISO 9735 or ANSI ASC X12.

Add new Clause 8, as follows:

8 Protocol Profile for EDI/EDIFACT Based Services

8.1 Scope of EDI/EDIFACT Protocol Profile

TMN applications that have X interface definitions for use at the service management layer may interoperate according to the provisions of this protocol profile. This Recommendation defines the profile for The Electronic Communication Interactive Agent (IA) and associated layers of functionality. The protocol for the IA itself is found in ITU-T Recommendation Q.814. The IA peer-to-peer interface will support near real-time bidirectional data transfer between peer entities.

The overall profile described in this addendum is modelled after the seven-layer open system interconnection (OSI) model, that is, the profile layers herein are described in terms of the transport layer (4), the session layer (5), the presentation layer (6), and the application layer (7).

The IA described herein provides layer five (5) services. The other layers, four, six, and seven, provide functionality that interacts directly or indirectly with the IA. This profile describes the interaction and responsibilities of each of these four layers.

8.2 Layer Summary

Refer to Figure 5/Q.812 in the following discussions.

8.3 TLS Protocol Profile for Use With IA

Layer four provides transport layer security, and transport services utilizing the Transmission Control Protocol (TCP).

The transport mechanism specified by the Interactive Agent (IA) requires a TLS session. This session either may be persistent or may be established or resumed for each message. The communication is essentially one way, from the client to the server. The IA status message is a mechanism that allows peer entities to exchange errors and other types of flow control information. Specific message codes may be defined by the peer entities outside the scope of this document. TLS provides secure handshake and transfer between peer TLS entities. TLS also provides for data flow integrity, peer entity authentication, and, optionally, privacy.

8.4 IA Profile

The IA performs the session layer functionality. The IA supports the exchange of Electronic Data Interchange (EDIFACT/ASC X12 EDI) transactions between peer entities. The IA supports this interchange over Transport Layer Security (TLS). The session layer functions provided by the IA include the establishment, management and closing of communications sessions between peer entities. The IA also performs the conversion of EDIFACT/ASC X12 EDI recipient names to network addresses and manages the TLS session.

The IA Service Agreement interface is defined at the boundary between the IA and its direct user.

The protocol supporting the exchange of IA messages is referred to as the interactive agent transfer protocol (IATP), and is defined in Recommendation Q.814.

8.5 Security Module For Whole Message Protection Profile

This security module functionality is optional depending on the security needs of the transaction. However, if whole message security services are needed, the procedures of Recommendation Q.815 shall be followed. Secure messages are transferred between security modules providing both non-repudiation of origin and receipt, and message integrity.

This security module generates/validates the appropriate security fields and performs the required encoding/decoding depending on whether it is sending/receiving, respectively.

Message flow between the EDI Translator and the IA may or may not require security services. The case where security enhancements are applied to a message is depicted in Figure 5/Q.812.

This security module is not sensitive to the content of messages coming from the EDI Translator or the IA.

8.6 EDI/EDIFACT Translator Protocol

EDI/EDIFACT protocol contains the user application that uses the services of both the Interactive Agent and, optionally, the Security Module.

An EDIFACT/ASC X12 EDI translator/gateway is an application service that provides a combination of data format translations and data interchange functions for electronic transaction message data.

An EDIFACT/ASC X12 EDI translator/gateway exchanges transaction data with network management applications via intermediate data formats. It translates this data to and from externally defined EDIFACT/ASC X12 EDI data formats using translation maps.

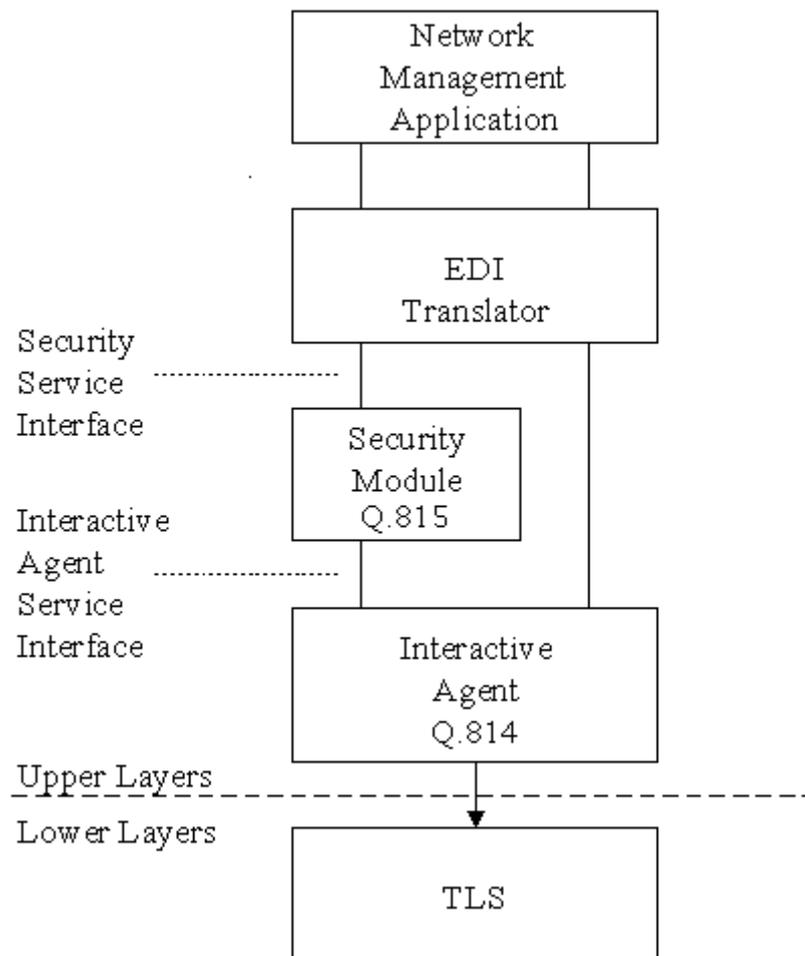


FIGURE 5/Q.812 IA

Upper Layer EDI/EDIFACT Based Services Protocol Stack