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**SERIES T: TERMINAL EQUIPMENTS AND PROTOCOLS
FOR TELEMATIC SERVICES**

**Cooperative document handling (CDH) – Joint
synchronous editing (point-to-point)**

ITU-T Recommendation T.191

(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 T.191 was prepared by ITU-T Study Group 8 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 3rd of July 1996.

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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SUMMARY

This Recommendation specifies one complex service, "joint synchronous editing (point-to-point)", where two users are communicating for the purpose to produce a new document, revise an existing document and view an existing document jointly.

Recommendation T.191

COOPERATIVE DOCUMENT HANDLING (CDH) – JOINT SYNCHRONOUS EDITING (POINT-TO-POINT)

(Geneva, 1996)

1 Scope

The T.190-Series of Recommendations specify the document communication services to be provided on top of existing base standards or profiles, giving constraints on them and rules on how to use and combine them.

The Open Document Architecture (ODA) and associated profiles specify the means to represent and interchange multimedia documents.

The Document Transfer and Manipulation (DTAM) and Document Filing & Retrieval (DFR) specify interchange, remote manipulation and management of documents at the application layer of the Open Systems Interconnection (OSI).

Recommendation T.190 defines the framework for document communication services and set of basic services. Based on the framework and the basic services, the T.190-Series of Recommendations define a set of complex services such as Asynchronous document production, Sequential document production, Joint synchronous editing and Joint presentation/viewing, by combining basic services.

This Recommendation specifies one complex service, "joint synchronous editing (point-to-point configuration)", where two users are communicating for the purpose to produce a new document, revise an existing document and view an existing document jointly.

2 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.

- ITU-T Recommendation T.190 (1995), *Cooperative Document Handling (CDH) – Framework and basic services*.
- CCITT Recommendation T.431 (1992), *Document Transfer and Manipulation (DTAM) – Services and protocols – Introduction and general principles*.
- CCITT Recommendation T.432 (1992), *Document Transfer and Manipulation (DTAM) – Services and protocols – Service definition*.
- CCITT Recommendation T.433 (1992), *Document Transfer and Manipulation (DTAM) – Services and protocols – Protocol specification*.
- ITU-T Recommendation T.435 (1995), *Document Transfer and Manipulation (DTAM) – Services and protocols – Abstract service definition and procedures for confirmed document manipulation*.
- ITU-T Recommendation T.436 (1995), *Document Transfer and Manipulation (DTAM) – Services and protocols – Protocol specifications for confirmed document manipulation*.
- ISO/IEC 10166-1:1991, *Information technology – Text and office systems – Document Filing and Retrieval (DFR) – Part 1: Abstract service definition and procedures*.
- ISO/IEC 10166-1:1991, *Information technology – Text and office systems – Document Filing and Retrieval (DFR) – Part 1: Abstract service definition and procedures – Technical Corrigendum 1: 1994 and Technical corrigendum 2: 1994*.

- ISO/IEC 10166-2:1991, *Information technology – Text and office systems – Document Filing and Retrieval (DFR) – Part 2: Protocol specification.*
- CCITT Recommendation T.522 (1992), *Communication application profile BT1 for document bulk transfer.*
- ITU-T Recommendation T.502 (1994), *Document application profile PM-11 for the interchange of simple structure, character content documents in processable and formatted forms.*
- ITU-T Recommendation T.505 (1994), *Document application profile PM-26 for the interchange of enhanced structure, mixed content documents in processable and formatted forms.*
- ITU-T Recommendation T.506 (1993), *Document Application Profile PM-36 for the interchange of extended document structure and mixed content documents in processable formatted forms.*
- ISO/IEC ISP, *International Standard Profiles ADF12069 – Application profiles for Document Filing and Retrieval (DFR).*
- ISO/IEC ISP, *International Standard Profiles AOD15129 – Application profiles for Open Document Architecture (ODA): Profiles for interactive manipulation of ODA documents.*

3 Definitions

For the purposes of this Recommendation, the definitions given in Recommendation T. 190 apply.

4 Abbreviations

For the purposes of this Recommendation, the following abbreviations are used.

ACSE	Association Control Service Element
ADF	Application profile for DFR
AOD	Application profile for ODA
CAP	Communication Application Profile
DAP	Document Application Profile
DFR	Document Filing and Retrieval
DTAM	Document Transfer and Manipulation
DTAM-BT	DTAM Bulk Transfer
DTAM-DM	DTAM Document Manipulation
DTAM-TK	DTAM application Token
ODA	Open Document Architecture
OSI	Open Systems Interconnection
ROSE	Remote Operations Service Element
RTSE	Reliable Transfer Service Element

5 Overview of joint synchronous editing (point-to-point)

Joint synchronous editing (point-to-point) supports document creation or presentation by two-users cooperatively on real-time basis. The communication model of this complex service is based on extended client-to-server model where two communication entities play the role of both client and server simultaneously. In this communication model, all clients have the copy of the same document and document processing capabilities, which are in line with features required by this Recommendation.

In order to keep consistency of the document copies located at the client, floor control (token control) is used. This ensures that the possibility for the two clients to manipulate the document is limited. Therefore with the result of modification or presentation, all the document copies located at the client must be always the same during and after the joint synchronous editing service.

Joint synchronous editing covers various kinds of applications, such as co-writing of multimedia documents, co-development of software, computer base training and educating (CBT), electronic contract, remote CAD system, medical application.

This Recommendation specifies the profiles for the standard document, i. e. "Document Application profile", and the profile for the standard communication protocol, i.e. "Communication Application profile" and "terminal characteristics", which may be used for joint synchronous editing service.

5.1 Basic procedures of joint synchronous editing (point-to-point)

The basic procedure of the joint synchronous editing consists of document pre-manipulation/presentation phase, and joint synchronous editing phase as illustrated in Figure 1.

1) *Document Pre-manipulation /Presentation phase* (optional)

In this phase, all the documents to be revised or viewed are transmitted to the other terminal before joint synchronous editing. Storing and retrieving all the documents to/from the document store at the remote site, both terminals possess the same copies of the documents at the start of the joint synchronous editing service. This phase must require document bulk transfer function or document filing & retrieval function.

This phase is optionally used.

2) *Joint Synchronous editing Phase* (mandatory)

This phase includes the following sub-procedures, association establishment, opening of the documents, manipulation/presentation of the opened documents (including token interchange), closing of the documents, and association release. During this phase, both users can manipulate or view a part of the documents, i.e. document fragments remotely.

NOTE – New documents used to be revised or viewed jointly may be created locally. This is out of the scope of this Recommendation.

5.2 Configuration of joint synchronous editing (point-to-point)

Joint synchronous editing is based on the extended server client model, where two users play the role of both server and client alternately. In this model, all the conference terminals have the same document processing capabilities and the same document.

In this service, two users can manipulate or present documents by using the basic services defined in Recommendation T.190. Each communication entity consists of the document process, the basic services, the documents and the application as illustrated in Figure 2. Application is out of scope of this Recommendation.

Figure 2 a) shows the situation where terminal 1 plays the role of the client and terminal 2 plays the role of the server. In this situation, terminal 1 which possesses an application token can manipulate the copy of the documents.

If, for example, the terminal 1 edits document fragment, then the local editing process is executed by the local document process. At the same time, the local editing command may be converted to standardized protocol data by basic services at the client, and the standardized protocol data may be conveyed to the remote server. At the server, standardized protocol data may be converted to the corresponding local editing command via basic services at the remote server. Finally, local editing command is executed by the document process at the server.

After the token interchange procedure, Figure 2 b) shows the situation where the terminal 2 plays the role of the client and the terminal 1 plays the role of the server.

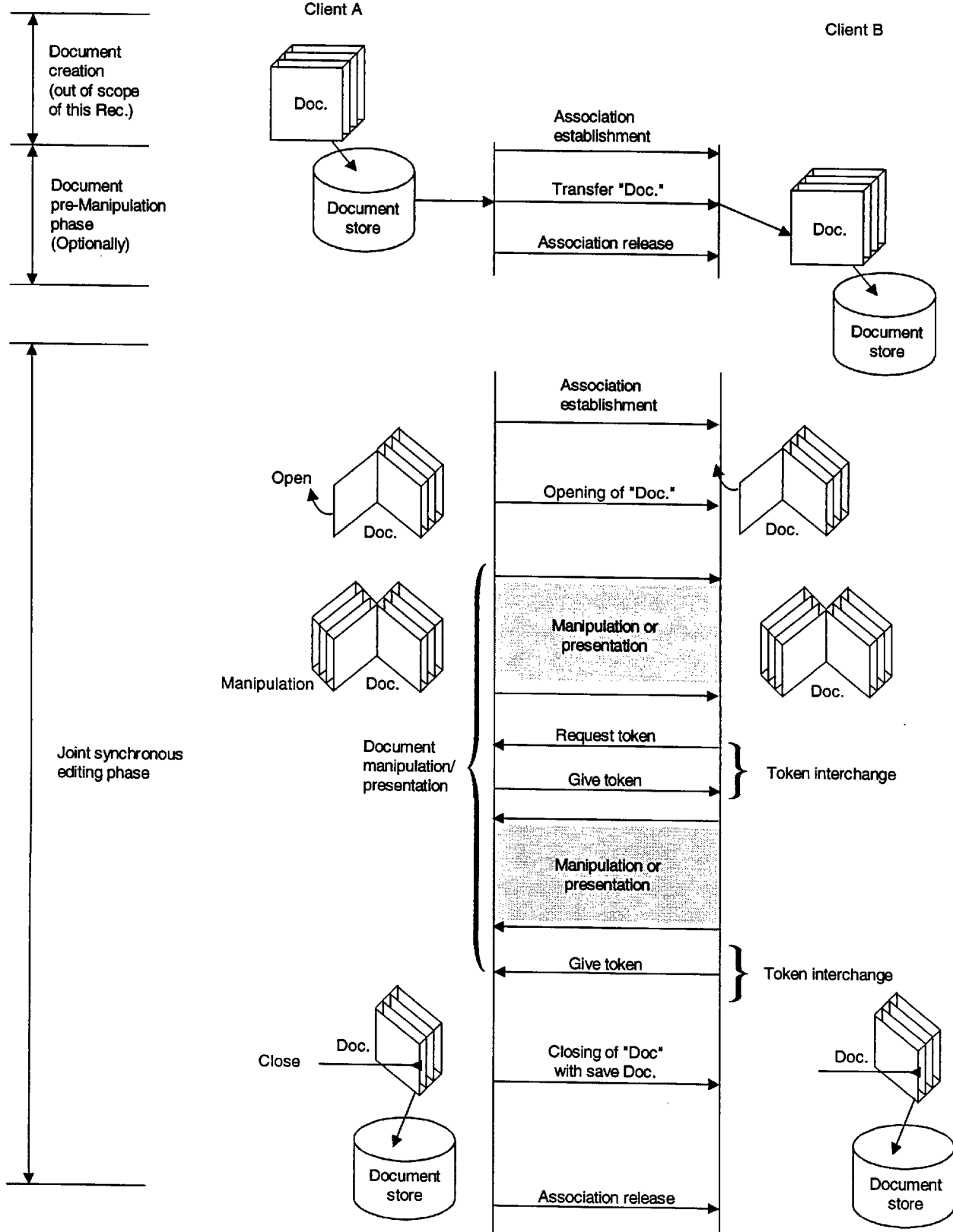
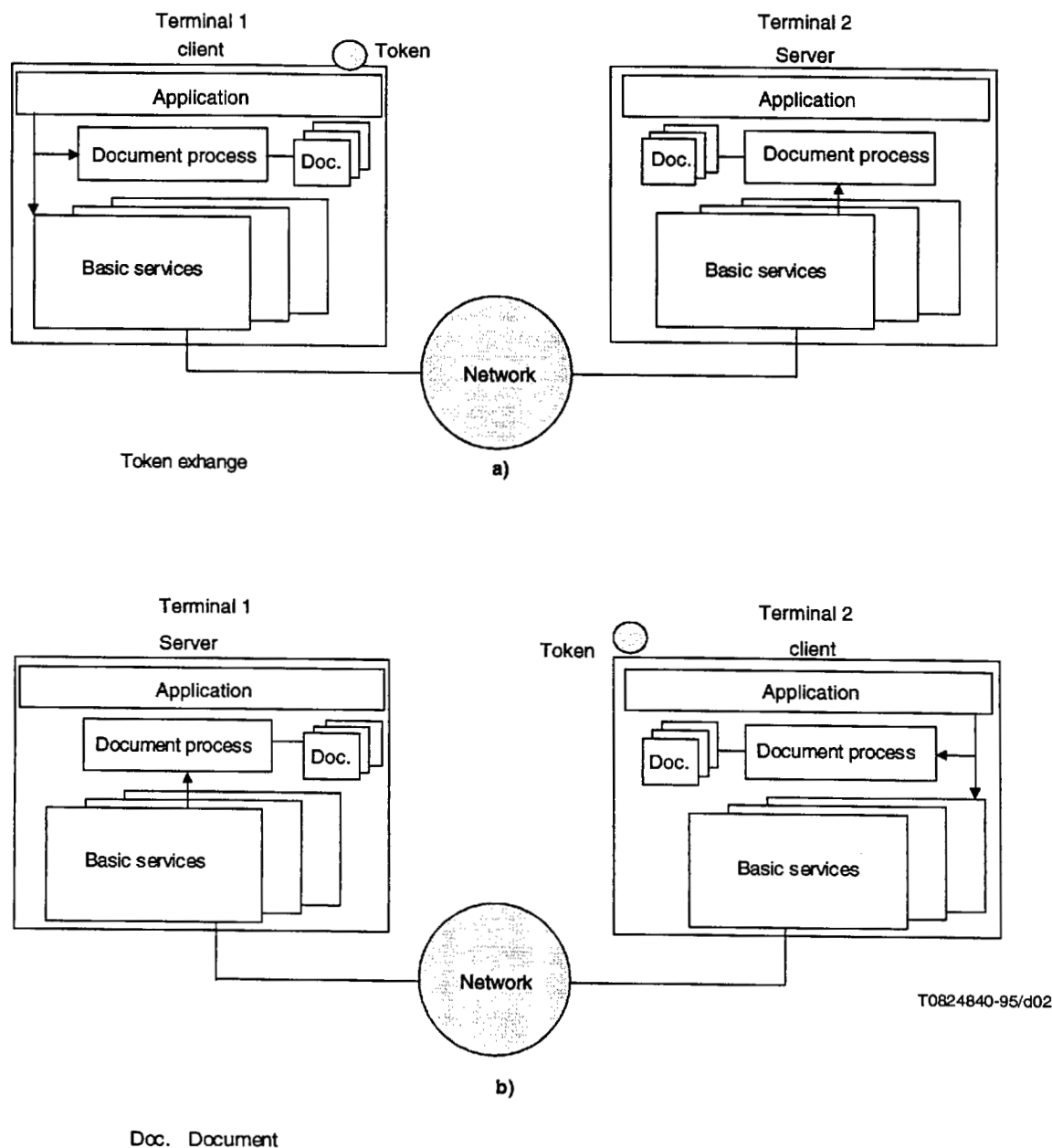


FIGURE 1/T.191

Basic procedures of joint synchronous editing

T0824820-95/d01



T0824840-95/d02

FIGURE 2/T.191
Configuration of joint synchronous editing (point-to-point)

6 Definition of document conferencing and remote presentation service

6.1 The use of basic services

Basic services which are the fundamental document communication service, are defined in Recommendation T.190. By combining these basic services, new complex services may be defined. The following basic services are used to realize joint synchronous editing (point-to-point).

1) *Storing basic service* (optional)

Storing basic service may be optionally used to transfer the document at pre-manipulation/presentation phase defined in 5.1.

2) *Storing and Retrieval basic service* (optional)

If each terminal supports document store, Storing and Retrieval basic service may be optionally used to transfer or retrieve the document at pre-manipulation/presentation phase defined in 5.1.

In the case that pre-manipulation/presentation phase is supported, either storing basic service or storing & retrieval basic service shall be used.

3) *Manipulation basic service* (mandatory)

Manipulation basic service shall be used to manipulate the remote document fragments stored in the peer entity during the joint synchronous editing phase defined in 5.1.

4) *Token interchange basic service* (mandatory)

Token interchange basic service shall be used to control the application token during the joint synchronous editing phase defined in 5.1. In this service, the terminal which possesses an application token can manipulate the document or the document fragments.

5) *Pointing basic service* (mandatory)

Pointing basic service shall be used to inform the peer user of the specific document fragment to be paid attention to.

6.2 Formal definition of joint synchronous editing (point-to-point)

This subclause defines the joint synchronous editing by means of the components and design rules for basic services, defined in Recommendation T.190

6.2.1 Document related service attributes

This complex service may be formalized by using the following document related service attributes defined in Recommendation T.190.

6.2.1.1 document location

In this complex service, the client manipulates the remote document at the peer entity, i.e. the server. Furthermore, the client has also the local copy of the documents which are identical to the documents at the remote server because the role of client/server may be altered by the token interchange. Therefore, the value of the service attribute "document location" shall take 'local' and 'remote'.

6.2.1.2 document copies

As defined in 6.2.1.1, each user has completely the same copy of the documents. Therefore, the value of the service attribute "document copies" shall take 'several'.

6.2.1.3 document access rights

This complex service requires to read, delete, add and modify the existing document fragments. Therefore, the value of the service attribute "document access rights" shall take 'full access'.