INTERNATIONAL TELECOMMUNICATION UNION

CCITT

T.503

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

TERMINAL EQUIPMENT AND PROTOCOLS FOR TELEMATIC SERVICES

A DOCUMENT APPLICATION PROFILE FOR THE INTERCHANGE OF GROUP 4 FACSIMILE DOCUMENTS

Recommendation T.503

Geneva, 1991

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

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Recommendation T.503 was prepared by Study Group VIII and was approved under the Resolution No. 2 procedure on the 18 of January 1991.

CCITT NOTE

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

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(revised 1990)

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1 Scope

1.1 This Recommendation defines a document application profile conforming to the T.410 series of Recommendations

Its purpose is to specify an interchange format suitable for the interchange of Group 4 facsimile documents that contain only raster graphics.

Documents are interchanged in a formatted form, which enables the recipient to display or print the document as intended by the originator.

1.2 This Recommendation, together with designated parts of T.563, defines a document application profile that may be used by any telematic service.

2 Field of application

2.1 This Recommendation defines a document application profile that is in conformance with T.410 Series of Recommendations and that allows Group 4 facsimile documents to be interchanged only in a formatted form, which allows a recipient to reproduce the document as intended by the originator.

2.2 This document application profile is designed to be independent of the means used to create or to interchange the encoded documents.

2.3 The features which can be interchanged used this document application profile fall into the following categories:

a) Page format features – these concern how the layout of each page of a document will appear when reproduced;

b) Raster-graphics layout and imaging features – these concern how the document content will appear within the pages of the reproduced document;

c) Raster-graphics coding – these concern the raster graphics representations and control functions that make up the document raster-graphics content.

2.4 It is assumed that, when negotiation is performed by the service using this document application profile, all non-basic features are subject to negotiation.

3 References

The following references are required in order to implement this Recommendation:

– T.410 series: "Open Document Architecture (ODA) and Interchange Format".

– Rec. T.6: "Facsimile Coding Schemes and Coding Control Functions for Group 4 facsimile apparatus".

– Rec. X.208: "Specification of Abstract Syntax Notation One".

– Rec. X.209: "Basic Encoding Rules for Abstract Syntax Notation One".

– Rec. T.417: "ODA Raster Graphics Content Arthitectures".

– Rec. T.563: "Terminal Characteristics for Group 4 Facsimile Apparatus".

4 Definitions

The definitions in Recommendation T.411 apply to this Recommendation.

5 Characteristics supported by this document application profile

5.1 *Overview*

A Group 4 facsimile document is the result of a formatting process and therefore the purpose of this document application profile is to allow transfer of the complete layout of the document.

Only one category of content is allowed within the same page, namely: *raster graphics content* (per CCITT Recommendation T.417) as used by facsimile Group 4 apparatus.

This section specifies the functional description of the features supported by this document application profile.

5.2 *Logical characteristics*

Not applicable.

5.3 *Layout characteristics*

5.3.1 *Layout document structure*

A document is seen as a succession of pages.

The content of a page is: *raster graphics content* architecture.

5.3.2 *Document structure elements*

5.3.2.1 *Page format*

5.3.2.1.1 The document is imaged in a text area which must be within the assured reproduction area.

5.3.2.1.2 The dimensions of the assured reproduction area depend on the paper used.

5.3.2.1.3 The possible paper formats are defined in Recommendation T.563.

5.3.2.1.4 Only the vertical orientation of the page is permitted.

5.3.2.2 *Block*

Not applicable (the content is directly related to the page).

5.4 *Content characteristics*

The Group 4 facsimile document contains raster graphics in facsimile Group 4 format.

5.4.1 *Raster-graphics content*

5.4.1.1 *Raster-graphics imaging*

The content of raster-graphics is defined by the dimensions of the page and the number of pels per line, in accordance with Table 2/T.563.

5.4.1.2 *Pel spacing, line spacing and pel transmission density*

This property defines the distance between successive pels on a line and between successive lines of pels.

The basic value is 6 BMU, corresponding to 200 pels per 25.4 mm. It is also the default value.

The non-basic values are 3, 4 and 5 BMU, respectively corresponding to 400, 300 and 240 pels per 25.4 mm.

5.4.2 *Received document*

This document application profile, being limited to formatted form, does not support any features to facilitate processing of an interchanged document by a receiver.

6 Definition of the document application profile

6.1 *Overview*

6.1.1 *Document architecture level*

This document profile makes use of document architecture class FDA, as defined in Recommendation T.412. A document according to this document architecture profile includes a specific layout structure only.

The document architecture level is defined in Tables 2/T.503, 3/T.503 and 4/T.503.

The specific layout structure is always present in any document conforming to this document application profile.

6.1.2 *Content architecture level*

The content architecture level that may be used in documents conforming to this document application profile is as follows: *raster graphics formatted content architecture level*, defined in Tables 5/T.503 and 6/T.503.

The coding method to be used is that defined by Recommendation T.6. In addition, any non-basic features defined in Recommendation T.6 may be used, provided that they are indicated in the document profile.

6.1.3 *Document profile level*

The document profile level used in this document application profile is defined in Table 1/T.503. Every document interchanged in accordance with this document application profile must include a document profile. Every non-basic attribute value used in a document must be indicated in the document profile.

6.1.4 *Interchange format class*

The interchange format class used in this document application profile is "B", as defined in Recommendation T.415.

6.2 *Definition of document structure*

6.2.1 *Specific layout structure*

The number of hierarchical levels is 2, namely:

– document layout root;

– page.

The document layout root and page levels are mandatory. Only one content portion must be associated with each page.

6.2.2 *Generic layout structure*

Not applicable.

6.3 *Definition of attribute values*

The attributes applicable to layout components are defined in Table 2/T.503. The following notation is used in this table:

- - - attribute not applicable to object description

m mandatory attribute

nm non-mandatory attribute

d defaultable attribute.

Capital letters (M, NM and D) are used for groups of attributes. The allowable attribute values for object descriptions are defined in Table 3/T.503.

TABLE 1/T.503

Document profile attributes

Attribute	Value	Permissible values
Document profile descriptor	M	
Specific layout structure	m	Present
Document characteristics	M	
Document Application Profile	m	Group 4 fax
Document architecture class	m	Formatted
No basic document charact.	NM	
Page dimensions (see Note 1)	nm	North American letter = (10 200, 13 200 fixed or variable) ISO B4 = (11 811, 16 677 fixed or variable) ISO B3 = (14 030, 19 840 fixed or variable) Japanese legal = (12 141, 17 196 fixed or variable) Japanese letter = (8598, 12 141 fixed or variable) North American legal = (10 200, 16 800 fixed or variable) North American ledger = (13 200, 20 400 fixe or variable) (see Note 2)
Raster graphics coding attributes	NM	
Compresion	nm	Uncompressed
Raster graphics presentation features	NM	
Pel transmission density	nm	5 BMU (240 pels/25.4 mm) 4 BMU (300 pels/25.4 mm) 3 BMU (400 pels/25.4 mm)

Note 1 — This dimension attribute is represented as a data element which consists of two integers.

Two integers specify width and height of a page in basic measurement units (BMUs).

Note 2 — An indefinite page length is represented by a variable measure in the vertical dimension. The value of this data is then arbitrary and should be the nominal page length.

TABLE 2/T.503

Attributes applicable to layout components

Attribute	Document layout root	Page
Shared attributes		
Object type	m	m
Object identifier	nm	nm
Subordinate	nm	- - -
Content portions	- - -	nm
Default value lists	nm	- - -
Layout attributes		
Presentation attributes	- - -	d
Dimensions	- - -	d

TABLE 3/T.503

Attribute values for layout objet descriptions

Attribute	Basic value	Default value	Non-basic value
Shared attributes			
Object type	Document layout root, page	None	None
Object identifier	As defined in Rec. T.412 (see also Annex A)	None	None
Subordinate	As defined in Rec. T.412	None	None
Content portions	As defined in Rec. T.412	None	None
Default value lists	See Table 4/T.503	None	None
Layout attributes			
Presentation attributes	See Table 5/T.503		
Dimensions (see Note 1)	Horizontal = 9920 BMU	Horizontal = 9920 BMU	North American letter = (10 200, 13 200) ISO B4 = (11 811, 16 677)
	Vertical = 14030 BMU (see Note 2)	Vertical = 14 030 BMU (see Note 3)	ISO A3 = (1430, 19 840) Japanese legal = (12 141, 17 196) Japanese letter = (8598, 12 141) North American legal = (10 200, 16 800) North American ledger = (13 200, 20 400) (see Note 2)

Note 1 – This dimension attribute is represented as a date element which consists of two integers. Two integers specify width and height of a page in basic measurement units (BMUs).

Note 2 – Width is indicated by fixed measure, and at the same time height is indicated by either fixed or variable measure.

The use of variable measure for height indication depends o each application, for example, real time scanning, fixed printing paper, etc. Therefore, for example, when a transmitting terminal requests to use variable measure for height indication, a receiving terminal will accept variable measure for height indication even though the receiving terminal adopts cut sheet paper (fixed size paper) for printing.

Note 3 – Both width and height are indicated by fixed measures.

TABLE 4/T.503

Defaultable attributes that may be specified in a default value list of the document layout root

Object type	Defaultable attributes that can be specified
Page	Presentation attributes Dimensions

6.4 *Content architectures*

The following raster graphics content architecture level is used in this document application profile.

6.4.1 *Raster graphics content architecture level*

The type of coding to be used is as defined in Recommendation T.6.

The code extension control function may be used, provided its use is agreed by prior negotiation and is indicated in the document profile. This control function is used to invoke uncompressed mode of coding.

The presentation attributes that may be used are defined in Table 5/T.503.

TABLE 5/T.503

Presentation attributes

Attributes	Basic values	Default values	Non-basic values
Type de contenu	Formatted raster graphics content architecture	Formatted raster graphics content architecture	None
Raster graphics attributes			
Pel path	0°	0°	None
Line progression	270°	270°	None
Pel transmission density	6 BMU (200 pels/25.4 mm)	6 BMU	5 BMU (240 pels/25.4 mm) 4 BMU (300 pels/25.4 mm) 3 BMU (400 pels/25.4 mm)

6.4.2 *Coding attributes*

Attributes applicable to content portions are defined in Table 6/T.503.

TABLE 6/T.503

Attributes applicable to content portions

Attributes	Qualifier	Basic values	Default value	Non-basic values
Content identifier layout	nm	As defined in Rec. T.412	None	None
Type of coding	d	T.6	T.6	None
Raster graphics coding attributes				
Number of pels per line	d	As defined in Table 3/T.563	As defined in Table 3/T.563	None
Compression	d	Compressed	Compressed	Uncompressed
Number of discarded pels	d	As defined in Table 3/T.563	As defined in Table 3/T.563	None
Content information	m	T.6 string	None	None

ANNEX A

(to Recommendation T.503)

Format of the values of the attributes "object identifier"

The object identifiers of the specific layout object descriptions are composed of sequences of numbers, each of these numbers representing a particular level of the specific layout structure.

The number assigned to the specific document layout root object description is "1". The subordinate pages ave a second number which uniquely identifies a particular page. The delimiter between "1" and this second number is the "space" character.

Example:

"1 27" corresponding coding: '31 20 32 37'H

where character '1' is coded 03/01 or 31 in hexadecimal,
where character 'space' is coded 02/00 or 20 in hexadecimal,
where character '2' is coded 03/02 or 32 in hexadecimal,
and where character '7' is coded 03/07 or 37 in hexadecimal.

Content portion identifiers are composed of the identifier of the page to which the content portion belongs and an additional number which identifies the content portion.

Examples:

page description "1 27" coding: '31203237'H
content portion associated with the page "1 27 1" coding: '312032372031'H (optional).

The value of the attribute "content portions" consists of a single number, which indicates the content portion of that object. This number is equal to the last number in the content portion identifier.