

First edition
1999-12-15

**Information technology — Message
Handling Systems (MHS): MHS Routing —
Guide for messaging systems managers**

*Technologies de l'information — Systèmes de messagerie (MHS): Routage
MHS — Guide pour responsables de systèmes de messagerie*

Reference number
ISO/IEC TR 10021-11:1999(E)



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO/IEC 1999

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Published by ISO in 2000

Printed in Switzerland

CONTENTS

		<i>Page</i>
1	Scope	1
2	Normative References	1
	2.1 Identical Recommendations International Standards.....	1
	2.2 Paired Recommendations International Standards equivalent in technical	1
3	Definitions	1
	3.1 MHS definitions	2
	3.2 ASN.1 definitions.....	2
	3.3 Directory definitions.....	2
	3.4 Presentation Service definitions	2
	3.5 MHS-routing definitions	2
	3.6 MHS Routing Methodology Definitions	3
4	Abbreviations	3
5	Overview	3
	5.1 The role of MHS Routing.....	3
	5.2 Administrative Roles	4
	5.3 The Role of the MHS Routing Standard	5
	5.4 The advantages of using MHS Routing	6
6	MHS Routing Concepts.....	6
	6.1 Introduction	6
	6.2 MHS	7
	6.3 The Message Routing Problem	7
	6.4 A Directory Solution to Message Routing	8
	6.5 General Directory Services and Functions	8
	6.6 MHS-Routing use of the Directory	9
	6.7 Scenario.....	9
	6.8 Routing Collectives and Connection Groups	10
	6.9 Routing Collective Directory Representation.....	12
	6.10 Connection Groups.....	12
	6.11 Connection Group Directory Representation	13
	6.12 OR-address Plan	13
	6.13 OR-address plan directory representation in OR-address subtrees	13
	6.14 MTA definitions	14
	6.15 The MTA's Message Routing Process	14
	6.16 MHS Routing Administrative Roles	15
	6.17 MHS Routing Administrative Tasks	15
	6.17.1 Organizational Requirements Analysis	16
	6.17.2 Design Tasks	16
	6.17.3 Configuring the Directory	17
	6.17.4 MTA Configuration.....	20
	6.17.5 MTA Initialization.....	20
	6.18 Prerequisites for MHS Routing	21
	6.19 Organizational Requirements Analysis	21
	6.20 The user community	22
	6.21 Cultural requirements and constraints	22
	6.22 Organizational messaging administrative structures	22
	6.23 Existing, non-standard and other Messaging Systems	22
	6.24 Available Communications Infrastructure.....	23
	6.25 Messaging Traffic Patterns and Volumes.....	23

	<i>Page</i>	
6.26	Security requirements.....	23
6.27	Specific message routing requirements or policies	23
6.28	Alternative routing capability.....	23
6.29	Directory systems availability	23
6.30	Distribution lists	24
6.31	MTS Topology Design.....	24
6.32	General Guidance.....	24
6.33	Input information.....	24
6.34	Results of the Topology design process	25
6.35	Identifying Connection Groups for MTAs	26
6.36	Results	26
7	OR-address Plan Design.....	27
7.1	General	27
7.2	Information Input	27
7.3	OR-address plan specification.....	27
7.4	Special Cases.....	28
7.5	OR-address Registration Authority Roles	28
7.6	Results of the OR-address plan design.....	28
8	Routing Collective Design and Configuration	29
8.1	Introduction	29
8.2	Directory Information Base Preparation	30
8.3	Directory Information Base Configuration	31
8.4	Connection Groups.....	32
8.4.1	Defining Connection Groups	32
8.4.2	Adding a Connection Group to a Routing Collective	33
8.4.3	Deleting a Connection Group Definition	33
8.4.4	Routing Collectives	34
8.4.5	Identifying Routing Collectives	34
8.4.6	Routing Collective Definition	35
8.4.7	Creating the top level Routing Collective	35
8.4.8	Adding a Subordinate Routing Collective.....	35
8.4.9	Deleting a Routing Collective	35
8.4.10	Adding Proxy routing collectives.....	35
8.5	Configuring Routes for MTAs in OR-address subtrees	36
8.5.1	OR-address subtree types	36
8.5.2	OR-address subtrees Model.....	36
8.5.3	Routing Information	37
8.5.4	Specifying OR-address subtree bases.....	37
8.5.5	Building OR-address subtrees	38
8.5.6	Establishing External Routes to destinations outside the routing collective	40
8.5.7	Distributing Access to External routes through a routing collective	41
8.5.8	Establishing Routes to non-Routing MTAs or proprietary messaging systems	42
8.5.9	Default Routes.....	42
8.6	OR-address subtree Entry Routing Information Configuration	42
8.6.1	OR-address attribute registration.....	42
8.6.2	The Target Routing Collective Instruction.....	43
8.6.3	MHS User Instruction	43
8.6.4	Aliases	44
8.6.5	Aliasing Techniques	44
8.6.6	Alias OR-address Instructions for Personal Names	44
8.6.7	The Alias Redirection Instruction	44
8.6.8	The Non-delivery Instruction	45
8.6.9	The Distribution List Instruction.....	46
8.6.10	The Recipient MD Assigned Alternate Recipient Instruction.....	46
8.6.11	The Double Enveloping Instruction	47
8.6.12	The Expression Matches Instruction	48
8.6.13	Truncating an OR-address subtree	48

8.7	Organizing an MTA's OR-address subtrees.....	49
8.7.1	The MTA's OR-address subtree sequence.....	49
8.8	Publishing Routing Capabilities.....	49
8.9	Configuring an MTA.....	49
8.9.1	Routing MTA Entry.....	50
8.9.2	mHSMMessageTransferAgent Entry.....	50
8.10	MTA Initialization.....	50
8.11	MTA Cache information.....	51
9	Directory Information Base Guide.....	51
9.1	Directory Information Structure.....	51
9.2	Routing collective subtree components.....	51
9.2.1	The Routing Collective Object Class.....	51
9.2.2	Routing MTA Object Class.....	51
9.3	Connection Group.....	52
9.3.1	The Connection Group Object Class.....	52
9.4	MTA Components.....	52
9.4.1	MTA Information Object Class.....	52
9.5	OR-address subtree Components.....	53
9.5.1	The OR-address Element object class.....	53
10	Provision of the MHS Routing Directory Service.....	53
	Annex A – Scenarios.....	55
A.1	Single MTA MD connected only to an ADMD.....	55
A.2	A small MD under a single management.....	55
A.3	Large MD with autonomous management.....	55
A.4	The open access connection group case.....	56
A.5	Collection of MDs.....	56
A.6	Secret OR-addresses.....	56
	Annex B – MHS Routing DUA Specification.....	57

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

Attention is drawn to the possibility that some of the elements of this part of ISO/IEC TR 10021 may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC TR 10021-11 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.404.

ISO/IEC TR 10021 consists of the following parts, under the general title *Information technology — Message Handling Systems (MHS)*:

- *Part 1: System and Service Overview*
- *Part 2: Overall architecture*
- *Part 3: Abstract Service Definition Conventions*
- *Part 4: Message transfer system: Abstract service definition and procedures*
- *Part 5: Message store: Abstract service definition*
- *Part 6: Protocol specifications*
- *Part 7: Interpersonal messaging system*
- *Part 8: Electronic Data Interchange Messaging Service*
- *Part 9: Electronic Data Interchange Messaging System*
- *Part 10: MHS routing*
- *Part 11: MHS Routing — Guide for messaging systems managers*

Annexes A and B of this part of ISO/IEC 10021 are for information only.

Introduction

This Recommendation | Technical Report is one of a set of Recommendations | number of parts of ISO/IEC 10021 defining Message Handling in a distributed open systems environment.

ITU-T Rec. X.412 | ISO/IEC 10021-10 defines a method for routing messages through the Message Handling System (MHS). This Recommendation | Technical Report provides guidance for Configuring MTS Routing using the Directory, and suggests the characteristics of a Directory User Agent for managing that process. It allows OR-address plans, MTA interconnection topology and the management structures applied to MHS to be dealt with independently of each other whilst remaining within a co-ordinated framework.

TECHNICAL REPORT**ITU-T RECOMMENDATION****INFORMATION TECHNOLOGY – MESSAGE HANDLING SYSTEMS (MHS):
MHS ROUTING – GUIDE FOR MESSAGING SYSTEM MANAGERS****1 Scope**

This Recommendation | Technical Report specifies the means by which the administrator of various aspects of an MHS system may configure information into the directory for MTAs to use to determine the routing of messages.

ITU-T Rec. X.412 | ISO/IEC 10021-10 provides a set of directory structures that may be configured in many different ways to support a particular MHS routing strategy. In order to illustrate the use of these directory structures, this document contains advice on how an MHS Administrator might organize the configuration of directory trees and entries in the directory. In particular, it contains suggestions on the following:

- The types, construction and location of different OR-address subtrees that may be needed;
- The location of routing collective and MTA entries in the directory.

Other ways of using the routing capabilities specified in ITU-T Rec. X.412 | ISO/IEC 10021-10 are also valid.

Other Recommendations | International Standards define other aspects of the MHS. ITU-T Rec. F.400/X.400 | ISO/IEC 10021-1 defines the user-oriented services provided by the MHS. ITU-T Rec. X.402 | ISO/IEC 10021-2 provides an architectural overview of the MHS. ITU-T Rec. X.411 | ISO/IEC 10021-4 defines the abstract-service of the Message Transfer System. ITU-T Rec. X.412 | ISO/IEC 10021-10 defines MHS Routing using the directory.

2 Normative References

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | Technical Report. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | Technical Report are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation X.216 (1994) | ISO/IEC 8822:1994, *Information technology – Open Systems Interconnection – Presentation service definition.*
- ITU-T Recommendation X.402 (1995) | ISO/IEC 10021-2:1996, *Information technology – Message Handling Systems (MHS): Overall architecture.*
- ITU-T Recommendation X.412 (1999) | ISO/IEC 10021-10:1998, *Information technology – Message Handling Systems (MHS): MHS routing.*
- ITU-T Recommendation X.500 (1997) | ISO/IEC 9594-1:1998, *Information technology – Open Systems Interconnection – The Directory: Overview of concepts, models and services.*

2.2 Paired Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.208 (1998), *Specification of Abstract Syntax Notation One (ASN.1).*
ISO/IEC 8824:1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1).*

ISO/IEC TR 10021-11 : 1999 (E)

- ITU-T Recommendation F.400/X.400 (1999), *Message handling services: Message handling system and service overview*.

ISO/IEC 10021-1:1990, *Information technology – Text Communication – Message Oriented Text Interchange Systems (MOTIS) – Part 1: System and service overview*.