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Information technology — Open Systems Interconnection — Systems Management: Software management function

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — Gestion-systèmes: Fonction de gestion de logiciel

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Contents

		Page
1	Scope	1
2	Normative references	2
2.1	Identical Recommendations | International Standards	2
2.2	Paired Recommendations | International Standards equivalent in technical content	3
2.3	Additional references	3
3	Definitions	3
3.1	Management framework definitions	3
3.2	Systems management overview definitions	3
3.3	CMIS definitions	4
3.4	Management information model definitions	4
3.5	Guidelines for the definition of managed objects definitions	4
3.6	Implementation conformance statement proforma definitions	4
3.7	Additional definitions	4
4	Symbols and abbreviations	5
5	Conventions	5
6	Requirements for software management	6
7	Model for Software Management Function	6
7.1	Software management functions	6
7.1.1	Create	6
7.1.2	Delete	6
7.1.3	Deliver	6
7.1.4	Execute program	7
7.1.5	Get	7
7.1.6	Install	7
7.1.7	Revert	7
7.1.8	Set administrative state	7
7.1.9	Terminate Validation	7
7.1.10	Validation	8
7.1.11	Notifications	8

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7.2 Other functions ... 8
7.2.1 Backup ... 8
7.2.2 Restore ... 8
7.3 Software Unit Managed Object ... 8
7.3.1 Lifecycle ... 8
7.3.2 States of the Software Unit Managed Object ... 9
7.3.3 Operations on the Software Unit Managed Object ... 10
7.4 Executable Software managed object ... 10
7.4.1 Additional states for the Executable Software Managed Object ... 11
7.4.2 Additional operations for the Executable Software Managed Object ... 11
7.5 Software Distributor Managed Object ... 11
7.5.1 Operations on the Software Distributor Managed Object ... 11
7.5.2 States of the Software Distributor Managed Object ... 12
7.6 Relationships ... 12
8 Generic definitions ... 12
8.1 Managed objects ... 12
8.1.1 Software ... 12
8.1.2 Software Unit ... 13
8.1.3 Executable Software ... 13
8.1.4 Software Distributor ... 14
8.2 Attributes ... 14
8.2.1 appliedPatches ... 14
8.2.2 checkSum ... 14
8.2.3 dateDelivered ... 14
8.2.4 dateInstalled ... 14
8.2.5 dateOfCreation ... 15
8.2.6 dateOfLastModification ... 15
8.2.7 fileLocation ... 15
8.2.8 fileSize ... 15
8.2.9 fileType ... 15
8.2.10 futureAutoBackupDestination ... 15
8.2.11 futureAutoBackupTriggerThreshold ... 15
8.2.12 futureAutoRestoreAllowed ... 15
8.2.13 futureAutoRestoreSource ... 15
8.2.14 identityOfCreator ... 15
8.2.15 identityOfLastModifier ... 15
8.2.16 lastBackupDestination ... 16
8.2.17 lastBackupTime ... 16
8.2.18 lastRestoreSource ... 16
8.2.19 lastRestoreTime ... 16
8.2.20 noteField ... 16
8.2.21 softwareDistributorId ... 16
8.3 Actions ... 16
8.3.1 backup ... 16
8.3.2 deliver ... 16
8.3.3 execute program ... 17
8.3.4 install ... 17

8.3.5 restore ... 17
8.3.6 revert ... 17
8.3.7 terminateValidation ... 17
8.3.8 validate ... 18
8.4 Notifications ... 18
8.4.1 autoBackupReport ... 18
8.4.2 autoRestoreReport ... 18
8.4.3 deliverResultNotification ... 18
8.5 Parameters ... 18
8.5.1 alarmEffectOnServiceParameter ... 18
8.5.2 softwareProcessingFailureParameter ... 19
8.6 Name bindings ... 19
8.6.1 Software distributor – Subsystem ... 19
8.6.2 Software distributor – System ... 19
8.6.3 Software unit – Subsystem ... 19
8.6.4 Software unit – System ... 19
9 Service definitions ... 19
9.1 Introduction ... 19
9.2 Backup service ... 19
9.3 Deliver service ... 19
9.4 Execute program service ... 21
9.5 Install service ... 21
9.6 Restore service ... 21
9.7 Revert service ... 22
9.8 Terminate validation service ... 23
9.9 Validate service ... 23
9.10 Auto backup report service ... 23
9.11 Auto restore report service ... 23
9.12 Deliver result notification service ... 25
10 Functional units ... 26
11 Protocol ... 26
11.1 Elements of procedure ... 26
11.1.1 Backup procedure ... 26
11.1.2 Deliver procedure ... 27
11.1.3 Execute program procedure ... 27
11.1.4 Install procedure ... 28
11.1.5 Restore procedure ... 28
11.1.6 Revert procedure ... 29
11.1.7 Terminate validation procedure ... 29
11.1.8 Validate procedure ... 30
11.1.9 Auto backup report procedures ... 30
11.1.10 Auto restore report procedures ... 31
11.1.11 Deliver result notification procedures ... 31
11.2 Abstract syntax ... 32
11.2.1 Objects ... 32
11.2.2 Packages ... 32
11.2.3 Attributes ... 33
11.2.4 Notifications ... 33

11.2.5 Actions 33
11.2.6 Name bindings 34
11.3 Negotiation of functional units 34
12 Relationship with other functions 34
13 Conformance 34
13.1 Static conformance 34
13.2 Dynamic conformance 35
13.3 Management implementation conformance statement requirements 35
Annex A – Definition of management information 36
A.1 Managed Object Classes 36
A.1.1 Software 36
A.1.2 softwareUnit 36
A.1.3 executableSoftware 37
A.1.4 softwareDistributor 37
A.2 Packages 37
A.2.1 appliedPatchPackage 37
A.2.2 checkSumPackage 38
A.2.3 executeProgramPackage 38
A.2.4 fileInformationPackage 38
A.2.5 filePackage 38
A.2.6 informationAutoBackupPackage 38
A.2.7 informationAutoRestorePackage 38
A.2.8 informationBackupPackage 39
A.2.9 informationRestorePackage 39
A.2.10 installPackage 39
A.2.11 noteFieldPackage 39
A.2.12 processingErrorAlarmOnServicePackage 39
A.2.13 revertPackage 39
A.2.14 terminateValidationPackage 39
A.2.15 usageStatePackage 40
A.2.16 validationPackage 40
A.3 Attributes 40
A.3.1 appliedPatches 40
A.3.2 checkSum 40
A.3.3 dateDelivered 40
A.3.4 dateInstalled 41
A.3.5 dateOfCreation 41
A.3.6 dateOfLastModification 41
A.3.7 fileLocation 41
A.3.8 fileSize 42
A.3.9 fileType 42
A.3.10 futureAutoBackupDestination 42
A.3.11 futureAutoBackupTriggerThreshold 42
A.3.12 futureAutoRestoreAllowed 43
A.3.13 futureAutoRestoreSource 43
A.3.14 identityOfCreator 43
A.3.15 identityOfLastModifier 43
A.3.16 lastBackupDestination 44
A.3.17 lastBackupTime 44
A.3.18 lastRestoreSource 44
A.3.19 lastRestoreTime 44
A.3.20 noteField 45
A.3.21 softwareDistributorId 45

A.4 Name Bindings 45
A.4.1 softwareDistributor-subsystem 45
A.4.2 softwareDistributor-system 45
A.4.3 softwareUnit-subsystem 46
A.4.4 softwareUnit-system 46
A.5 Actions 46
A.5.1 deliver 46
A.5.2 executeProgram 46
A.5.3 install 47
A.5.4 revert 47
A.5.5 terminateValidation 48
A.5.6 validate 48
A.6 Notifications 48
A.6.1 autoBackupReport 48
A.6.2 autoRestoreReport 49
A.6.3 deliverResultNotification 49
A.7 Parameters 49
A.7.1 alarmEffectOnServiceParameter 49
A.7.2 softwareProcessingFailureParameter 50
A.8 Supporting Productions 50
A.9 Backup and Restore Actions 53
A.9.1 backup 53
A.9.2 restore 53
A.9.3 Backup Restore Supporting Productions 54
Annex B – MCS proforma 55
B.1 Introduction 55
B.1.1 Purpose and structure 55
B.1.2 Instructions for completing the MCS proforma to produce an MCS 55
B.1.3 Symbols, abbreviations and terms 55
B.1.4 Table format 55
B.2 Identification of the implementation 56
B.2.1 Date of statement 56
B.2.2 Identification of the implementation 57
B.2.3 Contact 57
B.3 Identification of the Recommendations | International Standards in which the management information is defined 57
B.3.1 Technical corrigenda implemented 57
B.3.2 Amendments implemented 57
B.4 Management conformance summary 57
Annex C – MICS proforma 61
C.1 Introduction 61
C.2 Instructions for completing the MICS proforma to produce an MICS 61
C.3 Symbols, abbreviations and terms 61
C.4 Statement of conformance to the management information 61
C.4.1 Attributes 61
C.4.2 Actions 63
C.4.3 Notifications 68
C.4.4 Create and delete management operations 78
Annex D – MOCS proforma 79
D.1 Introduction 79
D.2 Instructions for completing the MOCS proforma to produce an MOCS 79
D.3 Symbols, abbreviations and terms 79
D.4 Software unit managed object class 79
D.4.1 Statement of conformance to the managed object class 79

D.4.2 Packages ... 80
D.4.3 Attributes ... 81
D.4.4 Attribute groups ... 83
D.4.5 Actions ... 83
D.4.6 Notifications ... 87
D.4.7 Parameters ... 95
D.5 Executable software managed object class ... 95
D.5.1 Statement of conformance to the managed object class ... 95
D.5.2 Packages ... 96
D.5.3 Attributes ... 97
D.5.4 Attribute groups ... 99
D.5.5 Actions ... 100
D.5.6 Notifications ... 105
D.5.7 Parameters ... 114
D.6 Software distributor managed object class ... 114
D.6.1 Statement of conformance to the managed object class ... 114
D.6.2 Packages ... 115
D.6.3 Attributes ... 115
D.6.4 Attribute groups ... 115
D.6.5 Actions ... 116
D.6.6 Notifications ... 117
D.6.7 Parameters ... 119
Annex E – MRCS proforma for name binding ... 120
E.1 Introduction ... 120
E.2 Instructions for completing the MRCS proforma for name binding to produce an MRCS ... 120
E.3 Symbols, abbreviations and terms ... 120
E.4 Statement of conformance to the name binding ... 120
Annex F – MIDS proforma ... 122
F.1 Actions ... 122
Annex G – Recommendation M.3100 Software Object Class ... 123
G.1 Software Object Class ... 123
G.2 Packages ... 123
G.2.1 Administrative Operational States Package ... 123
G.2.2 Affected Object List Package ... 124
G.2.3 Attribute Value Change Notification Package ... 124
G.2.4 Create Delete Notifications Package ... 124
G.2.5 Current Problem List Package ... 124
G.2.6 Software Processing Error Alarm Package ... 124
G.2.7 State Change Notification Package ... 124
G.2.8 User Label Package ... 124
G.2.9 Vendor Name Package ... 124
G.2.10 Version Package ... 125
G.3 Attributes ... 125
G.3.1 Affected Object List ... 125
G.3.2 Alarm Status ... 125
G.3.3 Current Problem List ... 125
G.3.4 Software Id ... 126
G.3.5 User Label ... 127
G.3.6 Vendor Name ... 127
G.3.7 Version ... 127
Annex H – POSIX and Software Management Model Mapping ... 128

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.

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.

International Standard ISO/IEC 10164-18 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 21, *Open systems interconnection, data management and open distributed processing*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.744.

ISO/IEC 10164 consists of the following parts, under the general title *Information technology — Open Systems Interconnection — Systems Management*:

— *Part 1: Object management function*

— *Part 2: State management function*

— *Part 3: Attributes for representing relationships*

— *Part 4: Alarm reporting function*

— *Part 5: Event report management function*

— *Part 6: Log control function*

— *Part 7: Security alarm reporting function*

— *Part 8: Security audit trail function*

— *Part 9: Objects and attributes for access control*

— *Part 10: Usage metering function for accounting purposes*

— *Part 11: Metric objects and attributes*

— *Part 12: Test management function*

— *Part 13: Summarization function*

— *Part 14: Confidence and diagnostic test categories*

— *Part 15: Scheduling function*

— *Part 16: Management knowledge management function*

— *Part 17: Change over function*

— *Part 18: Software management function*

— *Part 19: Management domain and management policy management functions*

— *Part 20: Time management function*

— *Part 21: Command sequencer*

— *Part 22: Response time monitoring function*

Annexes A to F form an integral part of this part of ISO/IEC 10164. Annexes G and H are for information only.

Introduction

Operations Systems (OS) Network Elements (NE) and other systems will occasionally be subject to software changes. These changes may include program code, such as a new version of some call processing related programme or revised routeing tables. The need within a network is to be able to manage software that can be changed or modified by some remote OS. In this context management can include: control over the downloading process for transfer of a software product from an OS to another system such as an OS or NE; control of installing downloaded software into the suite existing at the system; and the ability to check the version of software installed in a system. This Recommendation | International Standard provides a standard X.700 message based means to mange this software process to meet these needs. The method of software transfer between an OS and another system is not specified or constrained in any way by this Recommendation | International Standard but practically could include file transfer, electronic mail or postal services with floppy disks. The role of this Recommendation | International Standard in this transfer is to mange the start of delivery to another system by maintaining information about the start of a software delivery and relating this to actual receipt, resulting from a notification by the receiving system of successful delivery.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – SYSTEMS MANAGEMENT: SOFTWARE MANAGEMENT FUNCTION

1 Scope

The Software Management Function includes management of a system for delivery of software and also management of software within a system.

There are two aspects of software that need to be considered separately. These two aspects can be described as the "dormant" view and the "active" view of software.

The dormant view of software is related to the data that is stored in a managed system and the way in which it is delivered and installed. In general, the data is stored information, such as data files and tables, but may also be files containing executable code. The scope of this Recommendation | International Standard includes the dormant view of software.

The active view of software is related to the management of resources that utilize the software. There is no real difference between this view and the normal view of management of resources. The scope of this Recommendation | International Standard does not include the active view of software. However, the relationship between managed objects representing resources that utilize software, and the managed objects representing the software that they are using (i.e. dormant view of software) is within the scope of this Recommendation | International Standard.

The scope of this Recommendation | International Standard includes:

- initiation of transfer of software;
- post transfer control of software;
- software activation (includes version update and patching);
- software de-activation;
- software reversion change;
- software validation;
- software enquiry;
- software backup;
- software restore.

  NOTE 1 – Backup and restore are defined in a generic way so that they can apply to resources other than software.

The scope of this Recommendation | International Standard does not include:

- transfer mechanism of software;
- physical storage of software (mapping of software to physical file store, such as to a floppy disk, hard disk, etc.);
- formatting of software;
- naming of software products;
- sequencing of software management commands;
- software monitoring;
- management of processes running in a system.

NOTE 2 – The support for license charging activities (i.e. billing, accounting) and software tracing (i.e. tracing execution of software for debugging) is outside the scope of this Recommendation | International Standard and is open for further study.

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and International Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and International 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.210 (1993) | ISO/IEC 10731:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: Conventions for the definition of OSI services.*
- CCITT Recommendation X.701 (1992) | ISO/IEC 10040:1992, *Information technology – Open Systems Interconnection – Systems management overview*[1)].
- CCITT Recommendation X.720 (1992) | ISO/IEC 10165-1:1993, *Information technology – Open Systems Interconnection – Structure of management information: Management Information Model.*
- CCITT Recommendation X.721 (1992) | ISO/IEC 10165-2:1992, *Information technology – Open Systems Interconnection – Structure of management information: Definition of management information.*
- CCITT Recommendation X.722 (1992) | ISO/IEC 10165-4:1992, *Information technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects.*
- ITU-T Recommendation X.723 (1993) | ISO/IEC 10165-5:1994, *Information technology – Open Systems Interconnection – Structure of management information: Generic management information.*
- ITU-T Recommendation X.724 (1993) | ISO/IEC 10165-6:1994, *Information technology – Open Systems Interconnection – Structure of management information: Requirements and guidelines for implementation conformance statement proformas associated with OSI management.*
- CCITT Recommendation X.730 (1992) | ISO/IEC 10164-1:1993, *Information technology – Open Systems Interconnection – Systems management: Object management function.*
- CCITT Recommendation X.731 (1992) | ISO/IEC 10164-2:1993, *Information technology – Open Systems Interconnection – Systems management: State management function.*
- CCITT Recommendation X.732 (1992) | ISO/IEC 10164-3:1993, *Information technology – Open Systems Interconnection – Systems management: Attributes for representing relationships.*
- ITU-T Recommendation X.738 (1993) | ISO/IEC 10164-13:1995, *Information technology – Open Systems Interconnection – Systems management: Summarization function.*
- ITU-T Recommendation X.739 (1993) | ISO/IEC 10164-11:1994, *Information technology – Open Systems Interconnection – Systems management: Metric objects and attributes.*
- CCITT Recommendation X.740 (1992) | ISO/IEC 10164-8:1993, *Information technology – Open Systems Interconnection – Systems management: Security audit trail function.*
- ITU-T Recommendation X.741 (1995) | ISO/IEC 10164-9:1995, *Information technology – Open Systems Interconnection – Systems Management: Objects and Attributes for Access Control.*
- ITU-T Recommendation X.742 (1995) | ISO/IEC 10164-10:1995, *Information technology – Open Systems Interconnection – Systems management: Usage metering function for accounting purposes.*
- ITU-T Recommendation X.745 (1993) | ISO/IEC 10164-12:1994, *Information technology – Open Systems Interconnection – Systems management: Test management function.*
- ITU-T Recommendation X.746 (1995) | ISO/IEC 10164-15:1995, *Information technology – Open Systems Interconnection – Systems management: Scheduling function.*

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1) As amended by ITU-T Rec. X.701/Cor.2 (1995) | ISO/IEC 10040/Cor.2:1995.

2.2 Paired Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.208 (1988), *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).*

- CCITT Recommendation X.209 (1988), *Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1).*

  ISO/IEC 8825:1990, *Information technology – Open Systems Interconnection – Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1).*

- ITU-T Recommendation X.291 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – Abstract test suite specification.*

  ISO/IEC 9646-2:1994, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 2: Abstract Test Suite specification.*

- ITU-T Recommendation X.296 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – Implementation conformance statements.*

  ISO/IEC 9646-7:1995, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 7: Implementation Conformance Statements.*

- CCITT Recommendation X.700 (1992), *Management framework for Open Systems Interconnection (OSI) for CCITT applications.*

  ISO/IEC 7498-4:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 4: Management framework.*

- CCITT Recommendation X.710 (1991), *Common management information service definition for CCITT Applications.*

  ISO/IEC 9595:1991, *Information technology – Open Systems Interconnection – Common management information service definition.*

- CCITT Recommendation X.711 (1991), *Common management information protocol specification for CCITT applications.*

  ISO/IEC 9596-1:1991, *Information technology – Open Systems Interconnection – Common management information protocol – Part 1: Specification.*

2.3 Additional references

- ITU-T Recommendation M.3100 (1995), *Generic network Information Model.*
- ITU-T Recommendation M.3101 (1995), *Managed object conformance statements for the "generic network Information Model".*
- ISO/IEC 15068-2[2)], *Information technology – Portable Operating System Interface POSIX System Administration – Part 2: Software Administration (IEEE P1387.2).*

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2) Currently at the stage of draft.