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INTERNATIONAL STANDARD

Information technology – Automated infrastructure management (AIM) systems – Requirements, data exchange and applications

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INFORMATION TECHNOLOGY –

Automated infrastructure management (AIM) systems – Requirements, data exchange and applications

FOREWORD

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International Standard ISO/IEC 18598 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This International Standard has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

INTRODUCTION

This International Standard is intended for

- premises owners and facility managers,
- suppliers of AIM solutions,
- planners of network infrastructures,
- network operation managers,
- data centre operation managers,
- IT process managers,
- suppliers of management system software,
- software integrators.

This International Standard is one of a number of documents prepared in support of International Standards and Technical Reports produced by ISO/IEC JTC 1/SC 25.

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INFORMATION TECHNOLOGY –

Automated infrastructure management (AIM) systems – Requirements, data exchange and applications

1 Scope

This International Standard specifies the requirements and recommendations for the attributes of automated infrastructure management (AIM) systems.

This International Standard explains how AIM systems can contribute to operational efficiency and deliver benefits to

a) cabling infrastructure and connected device administration,

b) facilities and IT management processes and systems,

c) other networked management processes and systems (e.g. intelligent building systems),

d) business information systems covering asset tracking and asset management together with event notifications and alerts that assist with physical network security.

This International Standard specifies a framework of requirements and recommendations for data exchange with other systems

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2 Normative references

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There are no normative references in this document.

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
AIM-enabled port
port which is able to automatically detect the insertion and removal of a cord and process that event as part of an automated infrastructure management system

3.1.2
AIM hardware
combination of patch panels and controllers that are designed to automatically detect the insertion or removal of cords, to record connectivity information, and to exchange connectivity information with AIM software

3.1.3
AIM system
integrated hardware and software system that automatically detects the insertion or removal of cords, documents the cabling infrastructure including connected equipment enabling management of the infrastructure and data exchange with other systems

3.1.4
alarm
event of sufficient importance to be highlighted within the AIM system

3.1.5
application programming interface
API
set of commands, functions and protocols that specify how software components should interact

3.1.6
basic connectivity configuration
list of information including, but not restricted to, number and type of ports, number of slots, expansion cards, MAC and IP address

3.1.7
business information system
system that is used to analyse and facilitate strategic and operational activities for an organization

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3.1.8
building management system
BMS
computer-based control system installed in a building that controls and monitors mechanical and electrical equipment such as heating, ventilation and air-conditioning (HVAC), power systems and access control systems

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3.1.9
cabling connectivity information
combination of connection information automatically detected by AIM and additional cabling infrastructure information from various sources

3.1.10
cabling infrastructure
cables, connecting hardware, panels and other closures, cabinets, frames, racks together with pathways and spaces providing their accommodation

3.1.11
circuit
series of electromagnetically connected components or devices

3.1.12
closure
fixture or fitting of either open or closed construction intended to contain connecting hardware

[SOURCE: ISO/IEC 14763-2:2012, 3.1.11]

3.1.13
command
defined method which either provides data or performs an internal operation within an AIM system based on a request

Note 1 to entry: A command may contain zero or more parameters.

3.1.14
configuration management database
repository of information related to all the components of an information system

3.1.15
connecting hardware
device or combination of devices used to connect cables or cable elements

[SOURCE: ISO/IEC 11801:2002, 3.1.17, modified]

3.1.16
connection information
record of an event generated by the insertion or removal of a connector at an AIM-enabled port

3.1.17
cord
cable, cable unit or cable element with a minimum of one termination

[SOURCE: ISO/IEC 11801:2002, 3.1.20]

3.1.18
data
value or set of values that describes information within an AIM system

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3.1.19
data exchange
ability of an AIM system and other systems to work together reliably

3.1.20
discoverable equipment
equipment with a network address

Note 1 to entry: Discoverable equipment could be treated as non-discoverable equipment according to end user choice.

3.1.21
end device
equipment that is either the source or the destination of a message on a networked system

3.1.22
event
change in state of an element within the AIM system

3.1.23
information security management system
part of the overall management system, based on a business risk approach, that establishes, implements, operates, monitors, reviews, maintains and improves information security

Note 1 to entry: The management system includes organizational structure, policies, planning activities, responsibilities, practices, procedures, processes and resources.

3.1.24
interoperability
ability for two or more independent systems to exchange data or information

3.1.25
managed network distribution equipment
discoverable network distribution equipment that uses communications protocols such as the simple network management protocol (SNMP) to exchange management information

3.1.26
network distribution equipment
electronic equipment that provides connectivity and supports data exchange between end devices

3.1.27
non-discoverable equipment
equipment without a network address

3.1.28
patch panel
closure designed to be mounted in a cabinet, frame or rack

3.1.29
permissions
set of rules which describe what a user or group of users may access or control within an AIM system

3.1.30
telecommunications infrastructure
cabling infrastructure together with the network distribution equipment, end devices and their accommodation

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3.1.31
work order
set of one or more actions that should be performed by a technician or user of the system

3.2 Abbreviations

For the purposes of this document, the following abbreviations apply.

AIM	automated infrastructure management
API	application programming interface
BMS	building management system
CMDB	configuration management database
DCIM	data centre infrastructure management
HVAC	heating, ventilation and air-conditioning
HTTP	hypertext transfer protocol
IP	internet protocol
IT	information technology
ITIL	Information Technology Infrastructure Library
JSON	JavaScript object notation
MAC	media access control
PC	personal computer
PoE	power over Ethernet
REST	representational state transfer
SNMP	simple network management protocol
SOAP	simple object access protocol

WAP wireless access point

XML extensible markup language

4 Conformance

For an AIM system to conform to this International Standard, it shall

a) comprise hardware and software components which together meet the requirements of Clause 5,

b) meet the requirements of Clause 7,

c) be implemented in accordance with the requirements of Annex C.

5 Automated infrastructure management (AIM) systems

5.1 Functional elements

An AIM system shall include the following two functional elements:

a) hardware that automatically detects the insertion and removal of cords;

b) software that

- collects and stores the resulting connection information,
- relates the connection information to cabling connectivity information,
- relates the cabling connectivity information to information from other sources,
- makes the connection information accessible to either an authorized user or to other systems.

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It is important to note that although the initial detection of connectivity is generally accomplished through electrical, electronic, electro-mechanical or optical means, the different functions and features using this data are implemented in software.

The software used for AIM systems shall include either application programming interfaces (APIs) or data exchange formats as described in Clause 7 to allow data from the AIM system to be shared with other systems used by the organization. This is an important aspect for enhancing and automating the management and operational functions in the building and data centres.

5.2 System requirements

An AIM system shall be able to

a) automatically detect connectivity between AIM-enabled panel ports,

b) automatically detect connectivity between AIM-enabled panel ports and other equipment (with AIM-enabled ports) or document and/or infer connectivity between AIM-enabled panel ports and other equipment (without AIM-enabled ports),

c) monitor the connections and disconnections of a) and b).

5.3 Functional requirements

5.3.1 Documentation and maintenance of information within AIM software

Once configured, an AIM system shall be able to

a) accommodate the chosen identification scheme for the items to be documented within the AIM software (including identification schemes in accordance with IEC 81346-1 and ISO/IEC 14763-2 – an implementation of which is described in ISO/IEC TR 14763-2-1),

b) record the connections between elements within the cabling infrastructure,