



BSI Standards Publication

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

National foreword

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The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by A1 A1.

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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.

INTRODUCTION to Amendment 1

This amendment adds the following content to ISO/IEC 18598:2016:

- updates to the data exchange model;
- an Annex E which addresses the optional application of AIM systems to cabling supporting remote powering in accordance with IEEE 802.3bt-2018;
- an Annex F which addresses formatting of data from field test equipment.

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.

A1 For AIM systems providing support functionality for remote powering as an option, this International Standard addresses additional administration requirements and recommendations. **A1**

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

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

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  cord  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

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

3.1.31

work order

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



3.1.32

Power over Ethernet

PoE

remote powering in accordance with ISO/IEC/IEEE 8802-3

3.1.33

remote powering

power delivery from power sources to terminal equipment or powered devices over telecommunications cabling

EXAMPLE Power over Ethernet in accordance with ISO/IEC/IEEE 8802-3 

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
 PD	powered device
PSE	power supply equipment 

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.

 AIM systems that provide support functionality for remote powering to conform to this International Standard shall conform with the requirements of Annex E in addition to the conformance requirements above. 

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.

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.