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Information technology – Storage management – Part 5: Filesystems

ISO/IEC 24775-5:2014-12(en)

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INFORMATION TECHNOLOGY –

STORAGE MANAGEMENT –

Part 5: Filesystems

FOREWORD

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International Standard ISO/IEC 24775-5 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This International Standard, together with ISO/IEC 24775-1 to ISO/IEC 24775-4 and ISO/IEC 24775-6 to ISO/IEC 24775-8, replaces ISO/IEC 24775, second edition, published in 2011, and constitutes a technical revision.

This edition includes the following significant tecnical changes with respect to the previous edition.

The list of all currently available parts of the ISO/IEC 24775 series, under the general title *Information technology – Storage management*, can be found on the IEC web site.

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.

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IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.

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Introduction

The Filesystems part of ISO/IEC 24775 contains profiles and other clauses for management of devices and programs that support filesystems. A filesystem is a specific formatting of storage for storing and accessing files on external storage. This part describes how filesystems are created, modified and deleted, as well as how they can be found and reported. This part also describe modeling for how filesystems are exported for access from remote systems. The filesystem profiles use information from other parts of ISO/IEC 24775. Specifically, they reference profiles in the Common Profiles and the Block Devices parts of the standard. This part describes how these profiles are used in filesystem profiles.

Parts of this Standard

This International Standard is subdivided into the following parts:

- *Information technology – Storage management – Part 1: Overview*
- *Information technology – Storage management – Part 2: Common architecture*
- *Information technology – Storage management – Part 3: Common profiles*
- *Information technology – Storage management – Part 4: Block devices*
- *Information technology – Storage management – Part 5: Filesystems*
- *Information technology – Storage management – Part 6: Fabric*
- *Information technology – Storage management – Part 7: Host elements*
- *Information technology – Storage management – Part 8: Media libraries*

Changes since the Last Edition

This third edition cancels and replaces the second edition published in 2011 and constitutes a technical revision. This edition includes the following significant changes with respect to the previous edition. The changes fall into three broad categories:

- **Improved organization**. The International Standard has been reorganized into eight parts to provide more information more easily. The parts are:
  - *Part 1 Overview*: The overview book provides a high level overview of the standard.
  - *Part 2 Common Architecture*: This part covers general information about the interface, such as security and protocols.
  - *Part 3 Common Profiles*: This part covers component profiles that extend profiles in other books, such as target ports and job control.
  - *Part 4 Block Devices*: This part covers storage profiles that support various forms of disk storage.
  - *Part 5 Filesystems*: This part covers profiles that support filesystems, such as NAS (Network Attached Storage).
  - *Part 6 Fabric*: This part covers profiles that deal with interconnection of host servers and storage devices, such as switches.
  - *Part 7 Host Elements*: This part covers profiles for storage software on host servers, such as disk partitioning and Host Hardware RAID controllers.
  - *Part 8 Media Libraries*: This part covers profiles that deal with removable media such as tape libraries.
- **Maturity identification.** As material is added to the standard it goes through various stages of maturity. The initial stage is *Experimental*, which is material that has not yet been implemented and is subject to change. The other stages indicate the degree of implementations. The stages are:
  - **Experimental**: Full design review, no commercial implementations.
  - **Implemented**: Initial implementations available, may be removed at minor revision.

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  - **Stable**: Three or more vendors have implemented the identified material, backward compatibility assured, removed only at major revision.
  - **Finalized**: Relies solely on Finalized content, deprecated only at major revision.
  - **Deprecated**: Obsolete material, may be removed in future revisions.

    For a more detailed explanation of each maturity level and its typographical indication, see Clause 4 Typographical Conventions.

- **Expanded scope.** The range of SAN components modeled by the profiles defined in the parts has been greatly expanded.
  - New profiles include:
    - *Part 3 Common Profiles:* Serial Attached SCSI (SAS) Target Port, Serial ATA (SATA) Target Ports, SB Target Port, SAS Initiator Ports, ATA Initiator Ports, FC-SB-x Initiator Ports, FCoE Initiator Ports, Power Supply, Fan, Sensors, Base Server, Media Access Device, Storage Enclosure, Software Inventory, Profile Registration, Proxy Server System Management, Operational Power.
    - *Part 4 Block Devices:* Block Storage Views, CKD Block Services, Erasure, Storage Server Asymmetry, Volume Composition, Storage Element Protection, Replication Services, Pools from Volumes, Group Masking and Mapping, Thin Provisioning.
    - *Part 5 Filesystems:* File Export, File Server Manipulation, File Storage, Filesystem, Filesystem Copy Services, Filesystem Performance, Filesystem Quotas, NAS Network Port, Host Filesystem, Filesystem Remote Copy Services.
    - *Part 6 Fabric:* Fibre Channel Security, Fabric Views, Virtual Fabrics, Switch Partitioning, SAS Expander, N Port Virtualizer, Inter Fabric Routing.
    - *Part 7 Host Elements:* Storage HBA, Host Hardware RAID Controller.
    - *Part 8 Media Libraries:* Partitioned Tape Library, Virtual Tape Library, Virtual Tape Library Copy and Library Views.
  - The following experimental profiles were removed from the International Standard:
    - *Part 3 Common Profiles:* Security, 3rd Party Authentication, Authorization, Credential Management, Identity Management, Security Role Based Access Control and Security Resource Ownership.
    - *Part 4 Block Devices:* Pool Management Policy.
  - The following profiles were deprecated:
    - *Part 3 Common Profiles:* Cascading (replaced by direct use of cascading classes).
    - *Part 4 Block Devices:* Volume Management (and not replaced).
    - *Part 6 Fabric:* Router (and not replaced).
    - *Part 7 Host Elements:* FC HBA (replaced by Storage HBA), SB Multipath Management (and not replaced).
    - *Part 8 Media Libraries:* InterLibraryPort Connection (and not replaced).
  - In addition, many of the existing profiles have been enhanced.

This International Standard was prepared by the SNIA (Storage Networking Industry Association)[1]. The standard is often referred to as ***SMI-S*** (*Storage Management Initiative Specification*).

1. Storage Networking Industry Association, 425 Market Street, Suite 1020, San Francisco, CA 94105, U.S.A., http://www.snia.org