



DMTF Overview

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DMTF – An Industry Standards Organization

WHO

Led by innovative, industry-leading companies, DMTF has a global presence with members in multiple countries.

WHAT

DMTF standards support diverse emerging and traditional IT infrastructures including cloud, virtualization, network, servers and storage. A complete list is available at www.dmtf.org/standards.

WHY

Nationally and internationally recognized by ANSI and ISO, DMTF standards enable a **more integrated and cost-effective approach to management through interoperable solutions.**

HOW

Simultaneous development of Open Source and Open Standards is made possible by DMTF, which has the support, tools and infrastructure for efficient development and collaboration.



DMTF Board Member Companies



DMTF - International Standards Leader

DMTF continues to grow its global presence

- DMTF has a global presence with members in multiple countries
- Members on:
 - ✓ ISO JTC1/SC 38 representation
 - ✓ ISO PAS submitter (only one of nine organizations in the world)

Open and Collaborative

- Industry input on standards welcome via the DMTF Feedback Portal
- Open source development enabled within GitHub - DMTF invites review and contributions to its tools in public GitHub repositories
- Standards adopted by open source projects, including Java WBEM Services, Open Linux Management Infrastructure (OpenLMI), Open Management Interface (OMI), OpenBMC, OpenDRIM, OpenPegasus, OpenStack Ceilometer, OpenStack Ironic, Small Footprint CIM Broker (SFCB), and more



DMTF Alliance Partnership

DMTF and its Alliance Partners develop a common dialogue and work together for the good of the industry, avoiding overlap and helping ensure interoperability. Current work registers can be found here - <https://www.dmtf.org/about/registers>

Redfish



Cloud/CIM



Standards Development Organization



SPDM

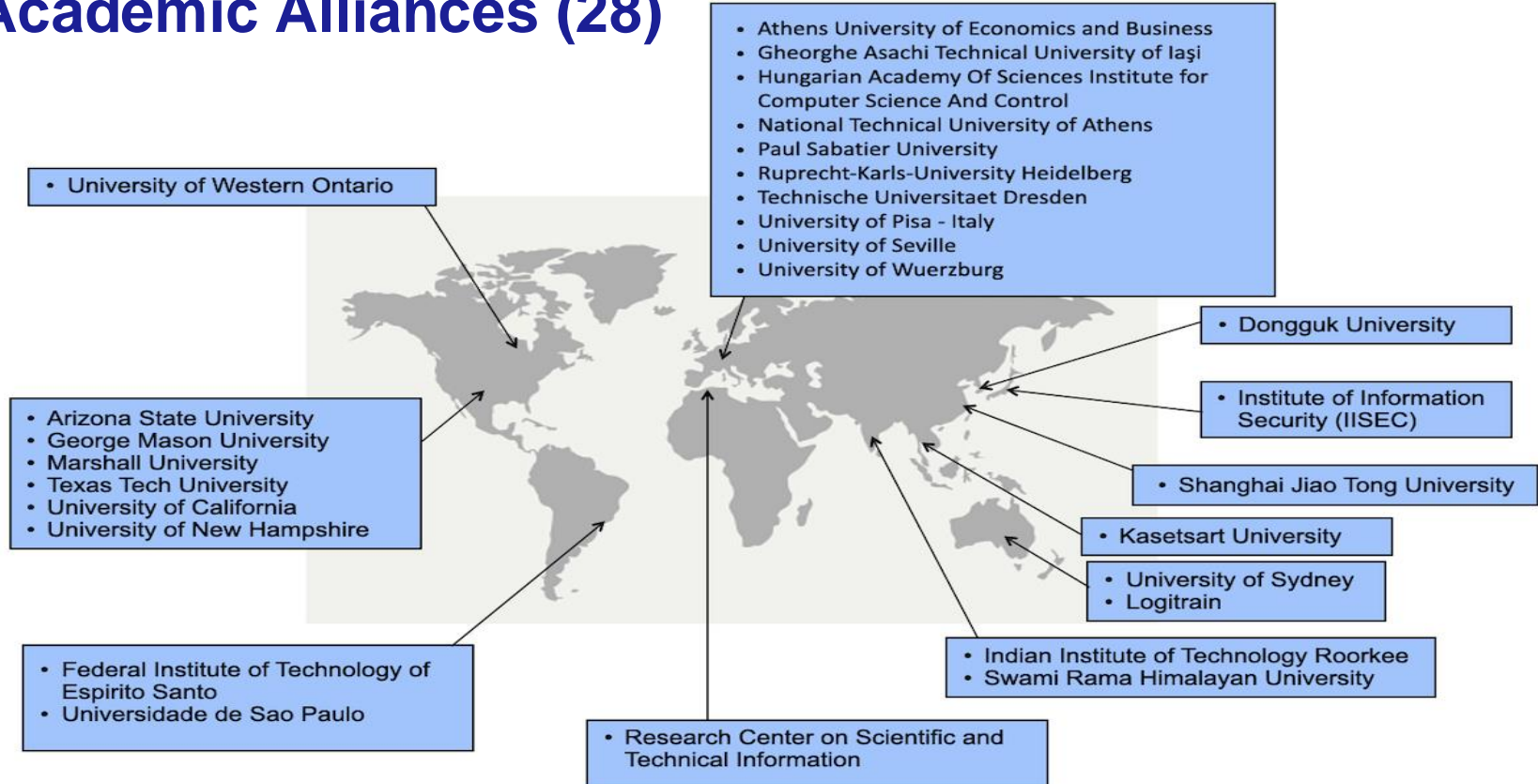


MCTP/PLDM





Academic Alliances (28)



Efficient and Agile

- DMTF has the support, tools and infrastructure for efficient and cost-effective development and collaboration of open standards and open source
- Alignment across all aspects of the organization increases efficiencies and overall agility – process overhead is the lowest of any recognized standards body, second to none
- Well-established IP policies and a streamlined approval process for specifications minimizes time to market and promotes early adoption
 - With administrative support and other resources necessary to operate and promote new standards, DMTF's portals for Technology Submission and Community Publication simplify the submission and sharing processes

DMTF Standards and Technologies

- Formed in 1992, DMTF creates open manageability standards spanning diverse emerging and traditional IT infrastructures including cloud, virtualization, network, servers and storage
- Evolved from desktop management to web-based data center management

Active Standards

CADF - Cloud Auditing Data Federation – 2011

CIMI - Cloud Infrastructure Management Interface – 2012

CIM - Common Information Model – 1996

DASH - Desktop & Mobile Architecture for System Hardware – 2006

MCTP - Management Component Transport Protocol –2009 - Including NVMe-MI™, I2C/SMBus and PCIe® Bindings – 2010

NC-SI - Network Controller Sideband Interface – 2010

OVF - Open Virtualization Format – 2008

PLDM - Platform Level Data Model – 2009 - Including Firmware Update, Redfish Device Enablement (RDE)

Redfish® – Including Protocols, Schema, Host Interface, Profiles – 2015

SMASH - System Management Architecture for Server Hardware – 2005

SMBIOS - System Management BIOS – 1999

SPDM - Security Protocol and Data Model - 2019

For a complete list of standards and initiatives, visit www.dmtf.org/standards

DMI – 1994

DEN – 1997

WBEM – 1998

ASF – 2001

CDM – 2005

OVF – 2008

VMAN – 2009

WS-MAN – 2008

CMDBf – 2009

CADF – 2011

OSDDC – 2015

NETMAN – 2013

DMTF Management Technologies

**Cloud
Infrastructure**

Virtualization

Server

Storage

Network

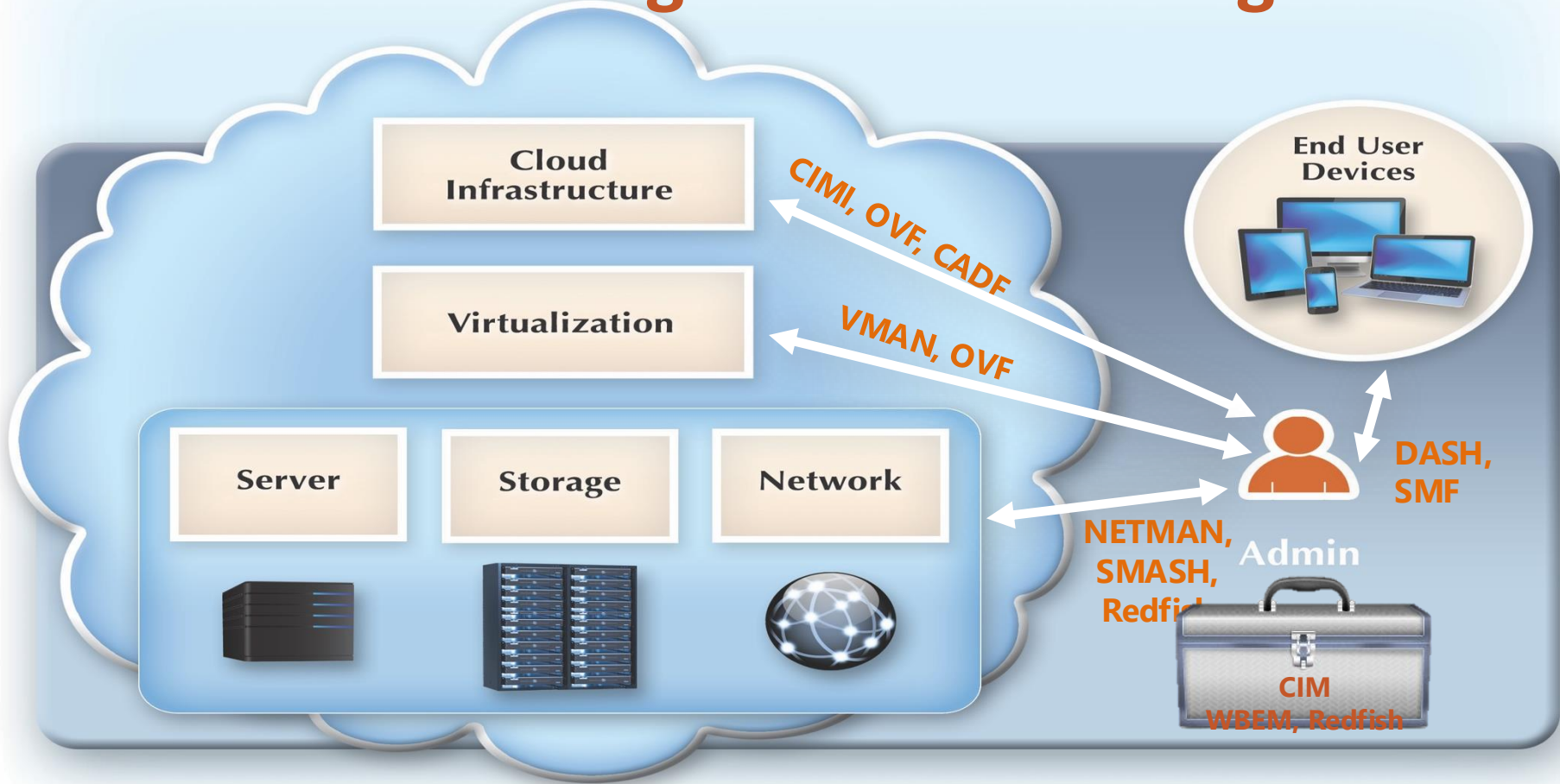


**End User
Devices**

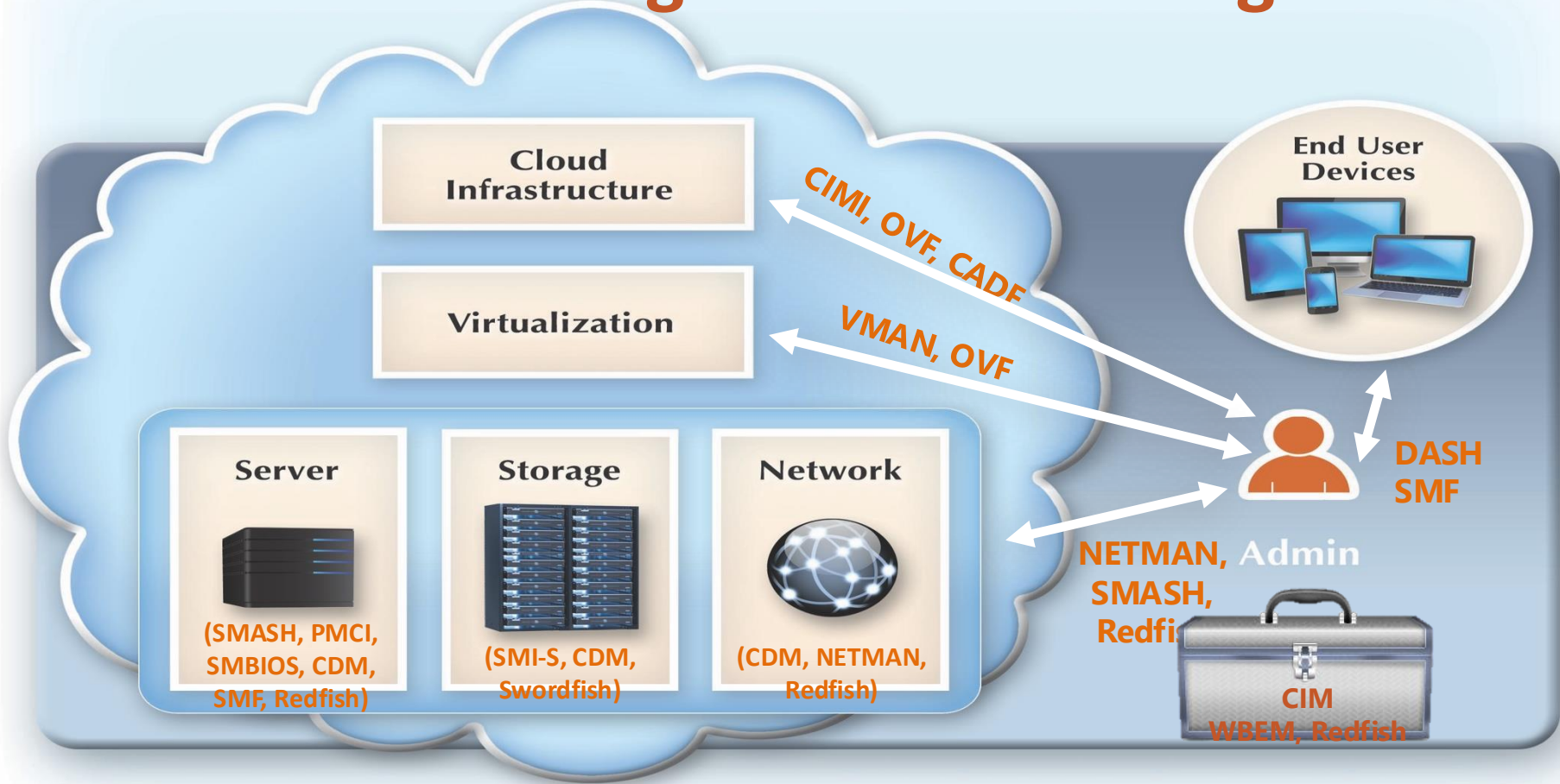


Admin

DMTF Management Technologies



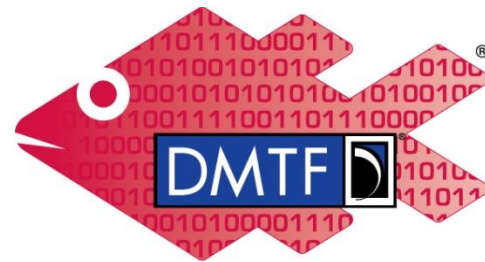
DMTF Management Technologies





What is Redfish?

- **Industry Standard Software Defined Management for Converged, Hybrid IT**
 - HTTPS in JSON format based on OData v4
 - Schema-backed but human-readable
 - Equally usable by Apps, GUIs and Scripts
 - Extensible, Secure, Interoperable
- **Initial release in 2015 focused on Servers**
 - A secure, multi-node capable replacement for IPMI-over-LAN
 - Represent full server category: Rackmount, Blades, HPC, Racks, Future
 - Intended to meet OCP Remote Machine Management requirement
- **Expand scope since then to the rest of IT infrastructure**
 - Additional features coming out approximately every 4 months
 - Working with SNIA to cover more advanced Storage (Swordfish)
 - Working with The Green Grid & ASHRAE to cover Facilities (DCIM)
 - Adapt IETF & other models to cover some level of Ethernet Switching
 - Work with Gen-Z & others to cover Fabrics



Redfish



Timeline of Redfish® Specification



• The DMTF Redfish technology

- Sep 2014: SPMF Formed in DMTF.
- Aug 2015: Redfish Specification with base models (v1.0)
- 2016: BIOS, storage, memory, fabrics, PCIe, update service, adv. comms devices, host interface, privilege registry
- 2017: Composability, location, PDUs, OCP & profiles
- 2018: LDAP/AD, SSE, assembly, OpenAPI, telemetry, jobs, certificates, common sensor model, FPGAs
- 2019: Host console updates, Syslog, multipart FW Update, SNMP and SMTP configuration, Gen-Z support
- 2020: UEFI Secure Boot, aggregation, connection and storage controller for NVMe-over-Fabrics™, revised power/thermal model
- 2021: Manifest-driven composability, OAuth 2.0, license management, batteries, power shelves, device attestation
- 2022: SSH key-related properties, VLAN creation with EthernetInterface, Security Policy resource, MFA and client certificate-based authentication, CXL Support, Heater model
- 2023: Coolant distribution units (CDU), cooling loops, host software modeling (operating systems, applications, containers), CXL dynamic capacity devices (DCD) extensions, Redfish over Websockets for cloud-based services, resolutions for conditions/events
- 2024.1: addition of *ResetMetrics* to PortMetrics, NetworkAdapterMetrics, and NetworkDeviceFunctionMetrics schemas
- 2024.2: additions of TargetConfigurationLockLevel support, NVMe, and BlockSecurityIDEnabled to Drive, and TargetConfigurationLockLevel support and SetControllerPassword to Storage.
- 2024.3: additions of Username and UserAuthenticationSource to Event, LogEntry, Message, and Resource for event auditing and generalized Time-based One-Time Password properties and actions to AccountService and ManagerAccount.
- 2024.4: New **StorageMetrics** schema for reporting storage subsystem statistics, Standard properties in **CoolantConnector** to manage setpoints for CDUs, Standard actions in **Pump** to control operating modes of pumps in CDUs, Standard messages to support liquid cooling equipment

• Alignment with other standard organizations

- Aug 2016: SNIA releases first model for network storage services (**Swordfish**)
- Working open YANG Redfish mapping algorithm for Ethernet Switch
- DMTF created work registers with UEFI, TGG, OCP, ASHRAE, Broadband Forum, ETSI-NFV, NVMe, PICMG, Gen-Z, ODCC for work on Redfish



the green grid™



I E T F





Redfish Developer Hub: redfish.dmtf.org

Resources

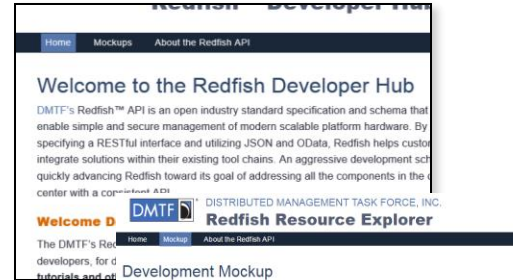
- Schema Index
- Specifications
- GitHub for Redfish Tools
- Registries
- Other Documentation

Mockups

- Simple Rack-mounted Server
- Bladed System
- Proposed OCP Redfish Profile
- More being added

Education/Community

- Redfish User Forum
- Whitepapers, Presentations
- YouTube shorts & Webinars



Board	Threads	Posts	La
Protocol and Specification	1	2	Retrieving in pr by Sep 12, 2014 #
Discussion about the Redfish Specification and the RESTful HTTP protocol.			
CSDL and json-schema	1	2	How to Location of under Res by Aug 12, 2014 #
Discussion about the contents of the standard Redfish schemas, and the published CSDL (XML) or json-schema definition files			
Feature Requests			On webinterfa over-IP sen

Benefits of Standards

For vendors and developers

- Creates a common framework from which to innovate
- Creates an ecosystem of interoperability that increases customer awareness and drives market adoption
- Reduces development costs
- Supports government policies and regulation for national (ANSI, ETSI) and international (ISO) standards
- Visibility for companies who participate

For customers

- Achieve interoperability and portability
- Choose products based on feature innovation
- Standards-based best-practice solutions, where all vendors bring ideas to the table
- Reduced costs through increased ecosystem

Join DMTF

The work of the DMTF is funded through membership dues that are among the most cost effective in the industry

By joining the DMTF, companies gain a valuable return on investment through:

- Early access and insights into the creation of DMTF specifications and underlying technologies - impact the industry by participating in the process of defining standards and programs
- Reduced development, design and start-up costs with access to DMTF's collaborative development tools, experts and broad knowledge base
- Opportunities to work alongside and interact directly with the industry's top specialists in interoperable management standards
- Increased visibility through the DMTF's industry-wide marketing efforts and initiatives



**For more information,
visit dmtf.org**

**Learn about membership at
dmtf.org/join**

Thank you!