DMTF Technologies and Alliances Update
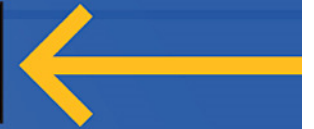
Hemal Shah, DMTF Senior VP of Technology & TC Chair
Broadcom Limited
John Leung, DMTF VP of Alliances
Intel Corporation
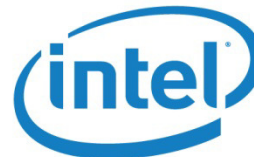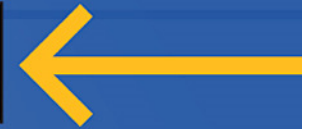**July 26, 2017**

www.dmtf.org

Executive Summary

WHO	Led by innovative, industry-leading companies, DMTF has a global presence with members from 43 countries and local bodies in China and Japan.
WHAT	DMTF standards support implementations that enable the management of diverse traditional and emerging technologies including cloud, virtualization, network, servers and storage.
WHY	Internationally recognized by ANSI and ISO, DMTF standards enable **a more integrated and cost effective approach to management through interoperable solutions**.
JOIN	Membership offers opportunity to impact the industry by participating in the process of defining standards and programs. DMTF maintains itself as the ideal forum for industry leading companies to come together in a collegial and established environment to collaborate on relevant interoperable management standards.

DMTF

DMTF Board Member Companies

BROADCOM®

ca technologies

DELL

Hewlett Packard Enterprise

HITACHI Inspire the Next

hp

intel

Lenovo

NetApp®

software AG

VERTIV

vmware®

DMTF - International Standards Leader

DMTF continues to grow its global presence

- Local bodies in China and Japan
- Capitalizing on the reach of members from 43 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 Background

- Distributed Management Task Force: Formed in 1992 with a focus on desktop management
- Evolved from desktop management to web based enterprise management

Desktop Management Interface (DMI)
Common Information Model (CIM)
Directory Enabled Networks (DEN)
Web Based Enterprise Management (WBEM)
System Management BIOS (SMBIOS)
Alerting Standards Format (ASF)

1990s
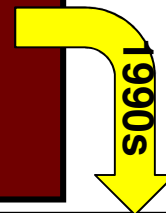
Common Diagnostics Model (CDM)
System Management Architecture for Server Hardware (SMASH)
Desktop and Mobile Architecture for System Hardware (DASH)
Platform Management Components Intercommunication (PMCI): NC-SI, MCTP, PLDM
Open Virtualization Format (OVF), Virtualization Management (VMAN) & WS-Management
Configuration Management Database Format (CMDBf)

2000-09

Cloud Initiative/Incubator
Cloud Audit Data Format (CADF)
Cloud Infrastructure Management Interface (CIMI), Software Licensing Model (SLM), MRP, VPP
Software Defined Data Center (SDDC), Network Management (NETMAN)
Redfish for Scalable Platform Management

- Evolving work includes
  - DMTF Management Initiatives, Protocols (Web Services), Profile Development, Schema Evolution, Internal Interfaces, Operations, Messages, Registries, Federation & more.
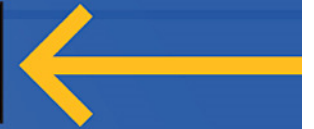
DMTF Management Technologies
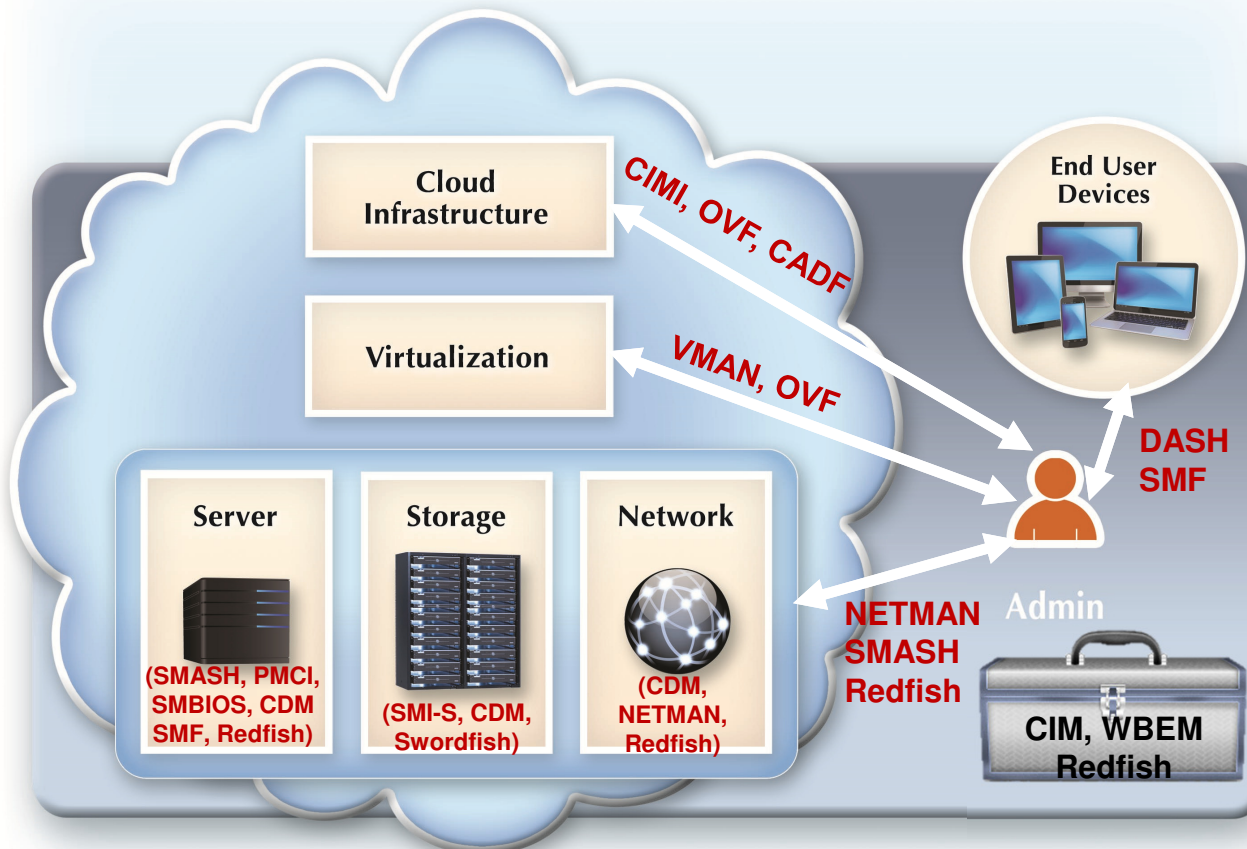
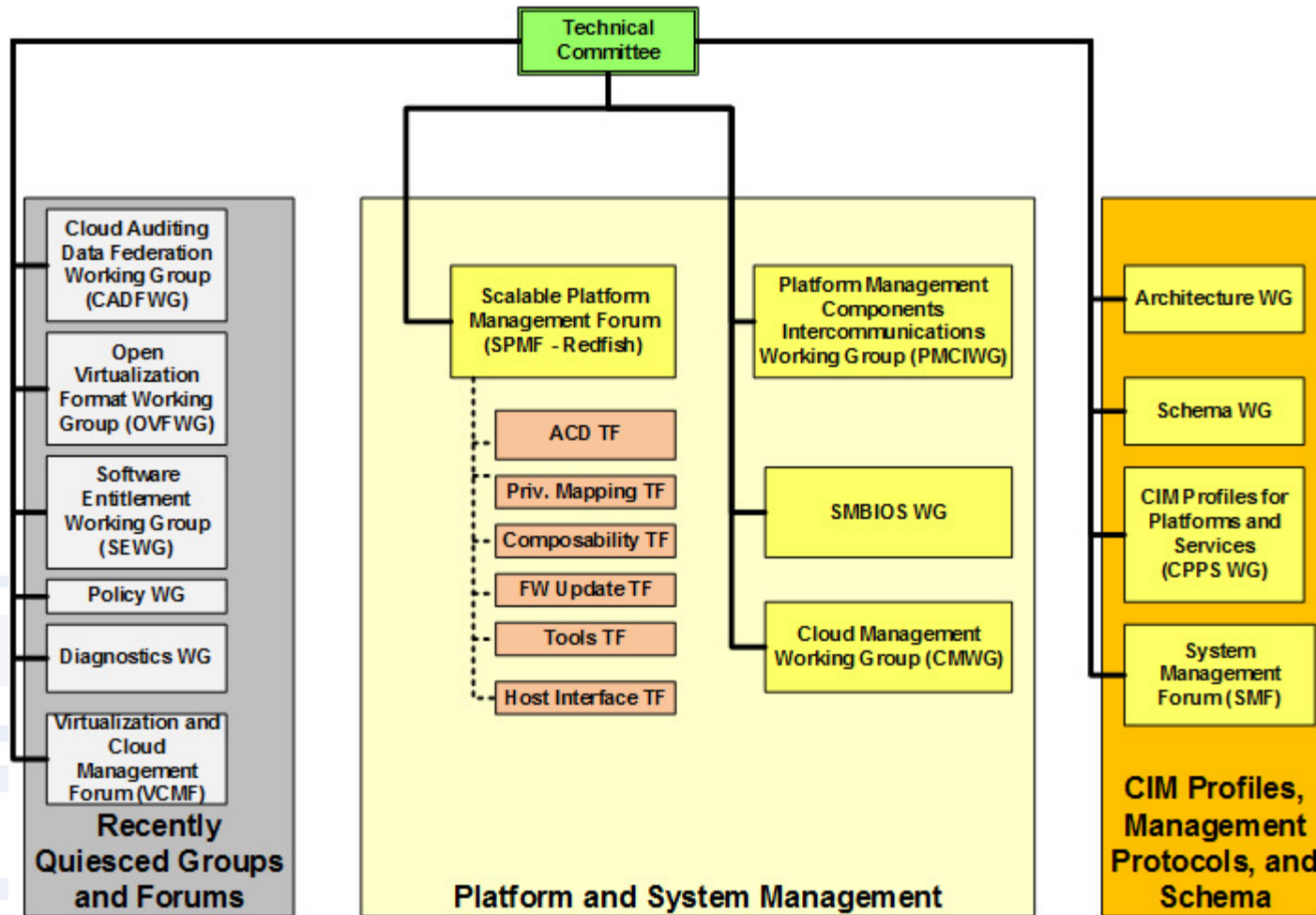**Infrastructure Management**
- Cloud
- Virtualization
- Data Center

Platform Management
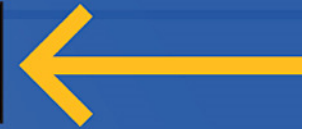- Server & Network
- Storage (SNIA)
- Desktop & Mobile

Services Management
- Network services
- Software Entitlement
- Security & audit

Protocols & Data Models
- WS-Man/CIM-XML
- REST (Redfish & CIM-RS)
- CIM & Diagnostics
- PLDM, MCTP, NC-SI

Cloud Infrastructure
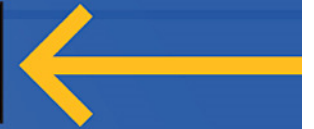
CIMI, OVF, CADF

Virtualization

VMAN, OVF

End User Devices

DASH SMF

Server
(SMASH, PMCI, SMBIOS, CDM SMF, Redfish)

Storage
(SMI-S, CDM, Swordfish)

Network
(CDM, NETMAN, Redfish)

NETMAN SMASH Redfish

Admin

CIM, WBEM Redfish

TC Organization

www.dmtf.org

Technical Committee Accomplishments 2016

- **Continued <u>wide acceptance of DMTF standards</u> in industry, Examples:**
  - 2 Billion+ platforms with SMBIOS implementation
  - 127+ certified products in DASH 1.0 conformance registry

- **<u>Increased adoption</u> of DMTF standards <u>in open source</u>, Examples:**
  - OpenStack ceilometer, Open Linux Management Infrastructure (OpenLMI), Open Management Interface (OMI), OpenStack – Redfish in Ironic, OpenPegasus – CIM, Java CIMOM, OpenDRIM, Java Web Services, OpenBMC
  - SPMF tools: https://github.com/DMTF/spmf-tools

- **<u>Expansion of scope</u> continues in the DMTF**
  - REST based APIs (SPMF Redfish), ETSI-NFV mapping and coordination

- **<u>38 standards</u> and 14 work-in-progress <u>published in 2016</u>**

- **<u>International acceptance of DMTF standards</u> via ISO and ANSI adoption**
  - **1 completed ANSI** standard in 2016 (10 already published **ANSI standards**)
  - 1 standard in the approval process at JTC 1 (2 PAS submissions planned for 2017)
  - 4 already published **ISO standards**
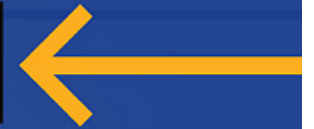
- **<u>Three</u> CIM Schema Releases – 2.46, 2.47, 2.48**

How to Work with the DMTF

- Join the DMTF
  - Scope of the DMTF is clear: it's all about management
  - Drive specifications through TC, conformance through the Interoperability Committee, messaging through the Marketing Committee and ground breaking areas through Incubators and International partnerships through Alliance and Regional Chapters

- Members
  - Active participation brings about standards based on best practices
  - Drive standards through participation
  - Consider bringing work into the DMTF

- Alliance Partners
  - DMTF Originated Work
    - Feedback from the DMTF
      - DSP Acquisition
      - Work In Progress Release capability
    - Feedback into the DMTF
      - Alliance Liaison
      - Joint Member (companies that are members of both organizations).
      - The DMTF Technology Adoption Policy
      - The DMTF Feedback Portal
  - Alliance Partner Originated Work
    - Similar mechanisms would speed things along if you wish DMTF input

- Academic Partners

Alliance Partner Program

- The Alliance Partner program
  - The DMTF values working with affiliated industry organizations
  - The program is a way for the DMTF to:
    - To formalize synergistic relationships with other standards groups
    - Is helping unify management initiatives
  - The program is strictly for not-for-profit organizations in the standards arena
- Alliance Partners members may
  - Participate the DMTF Marketing Committee, Technical Committee and the appropriate DMTF Working Groups as a non-voting member
  - Access to the DMTF members-only web site and member email lists

DMTF Alliance Partners

DMTF and its Alliance Partners develop a common dialogue and work together to avoid overlap and help ensure interoperability

American Society of Heating, Refrigerating and Air-Conditioning Engineers

China Communications Standards Association (CCSA)[1]

China Electronics Standardization Institute (CESI)[1]

Cloud Standards Customer Council (CSCC)

ETSI-Network Function Virtualization (ETSI-NFV)

The Green Grid (TGG)

Open Compute Project (OCP)

Open Data Center Alliance (ODCA)

Open Data Center Committee (ODCC)[1]

Open Grid Forum (OGF)

The Open Group (TOG)

OpenStack Foundation

Storage Networking Industry Assoc. (SNIA)

TeleManagement Forum (TMF)

Unified Extensible Firmware Interface (UEFI)

[1]Relationship via DMTF China Chapter

Manageability Domains of Alliance Partners

Cloud

CIMI

Telecom

ITU

Server

Redfish

Storage

SNIA
Swordfish

Network

IETF
ETSI

On-Platform

DCIM (facilities)

ASHRAE
the green grid

DCIM = Data Center Infrastructure Management

OPEN Compute Project

opendatacenter.cn

Alliance Partners
- ASHRAE
- CSCC
- ETSI/NFV
- OCP
- ODCC
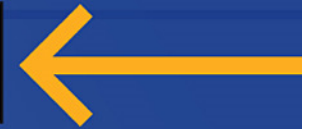- OpenStack
- SNIA
- TGG
- UEFI Forum

Other SDOs
- IETF
- ITU-T

Activities in the
Compute and Storage Domains

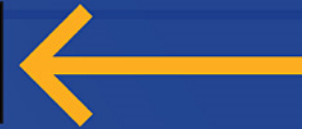| Cloud	Telecom
Server	Storage	Network
On-Platform		
DCIM (facilities)		

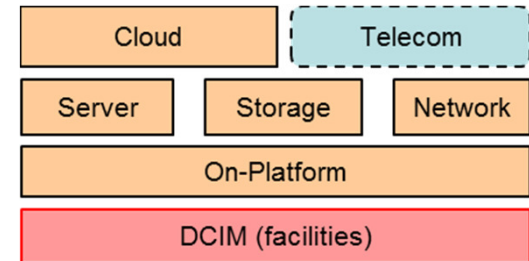| AP/SDO	Activities
ODCC	• Owns specifications for Project Scorpio • Interested in Redfish on servers and network, and SMBIOS • Formed alliance partnership in June 2017
OCP	• DMTF working closely with OCP HW Mgmt WG • DMTF released "OCP HW Mgmt using Redfish" as WIP • DMTF released OCP Profile as WIP
SNIA	• Released Swordfish specification

Activities in the
Network and On-platform Domains

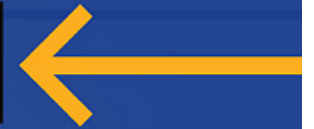| Cloud | Telecom |
Server	Storage	Network
On-Platform		
DCIM (facilities)		

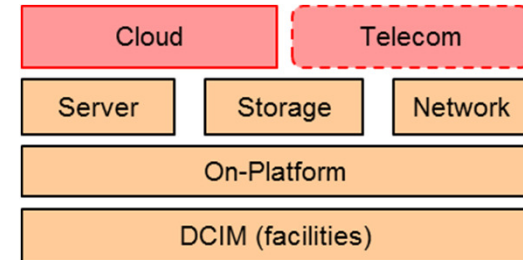| AP/SDO	Activities
ETSI/NFV ETSI	• Presented at ETSI/NFV Plenaries on Redfish progress and YANG-to-Redfish mapping efforts • Specified Redfish in Platform management spec
IETF I E T F	• Internet-drafts posted to IETF • "Redfish for Networking" and "Baseline Switch Model" • Presented at IETF Conference (May 2017) • Routing WG and OPS WG (added during conference)
UEFI Forum	• Integrating Redfish to support UEFI's Human Interface Infrastructure (HII) • Resolving Redfish issues to align models

Activities in the
Network and On-platform Domains

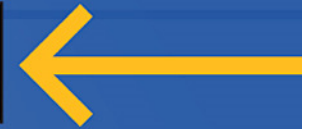| AP/SDO	Activities
ASHRAE	• TC9.9 WG approached DMTF regarding relationship • Already designated primary and alternate Liasison reps • Requested accelerated relationship to meet TC9.9 F2F • Interested in aligning with Redfish on sensor naming and definition • Formed alliance partnership in June 2017
TGG	• Formed RedfishAPI WG • Develop DCIM Redfish models • Submitting models to DMTF • TGG will publish whitepaper reference the Redfish models

Activities in the Cloud and Telecom

AP/SDO	Activities
CSCC	• Desired to release a "Practical Guide to Cloud Management Platforms" document • DMTF provide feedback on draft – add reference CIMI • Published in June
ITU-T	• Desired to update their "Y.3500-series Supplement on Cloud Computing standardization roadmap" • Requested DMTF update their sections • DMTF provided content covering SMASH, Redfish, OVF, CADF, and CIMI
OpenStack	• Marked pyCADF v2.6 open source as stable in June 2017

Summary

- Technology
    - **Expansion of scope** continues in the DMTF
    - Continued **wide acceptance of DMTF standards**
    - **Increased adoption** of DMTF standards **in open source**
    - **International acceptance of DMTF standards** via ISO and ANSI
- Alliance Partners
    - DMTF technologies are **leveraged** in **new management domains**
    - Potential **alliance partners** are now **approaching** the DMTF

Thank you