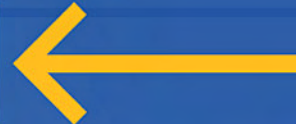


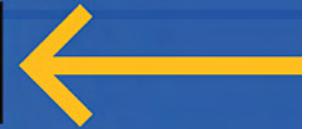
Interoperability Standards for Managing Clouds

Winston Bumpus
President, DMTF
Co-Chair, DMTF Cloud Management Working Group



DMTF Alliance Partners

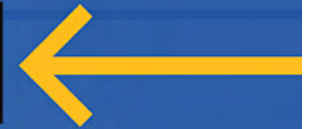




Agenda

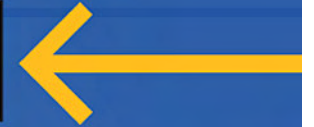
- Who is the DMTF?
- What part of cloud interoperability does your SDO see as its "charter"?
- How do your existing SDO standards and initiatives apply to the cloud?
- What new efforts might be initiated by your SDO in the cloud space?
- What publications are currently (or will soon be) available?



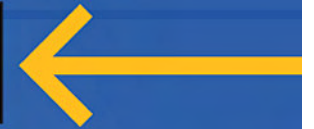


Who is the DMTF

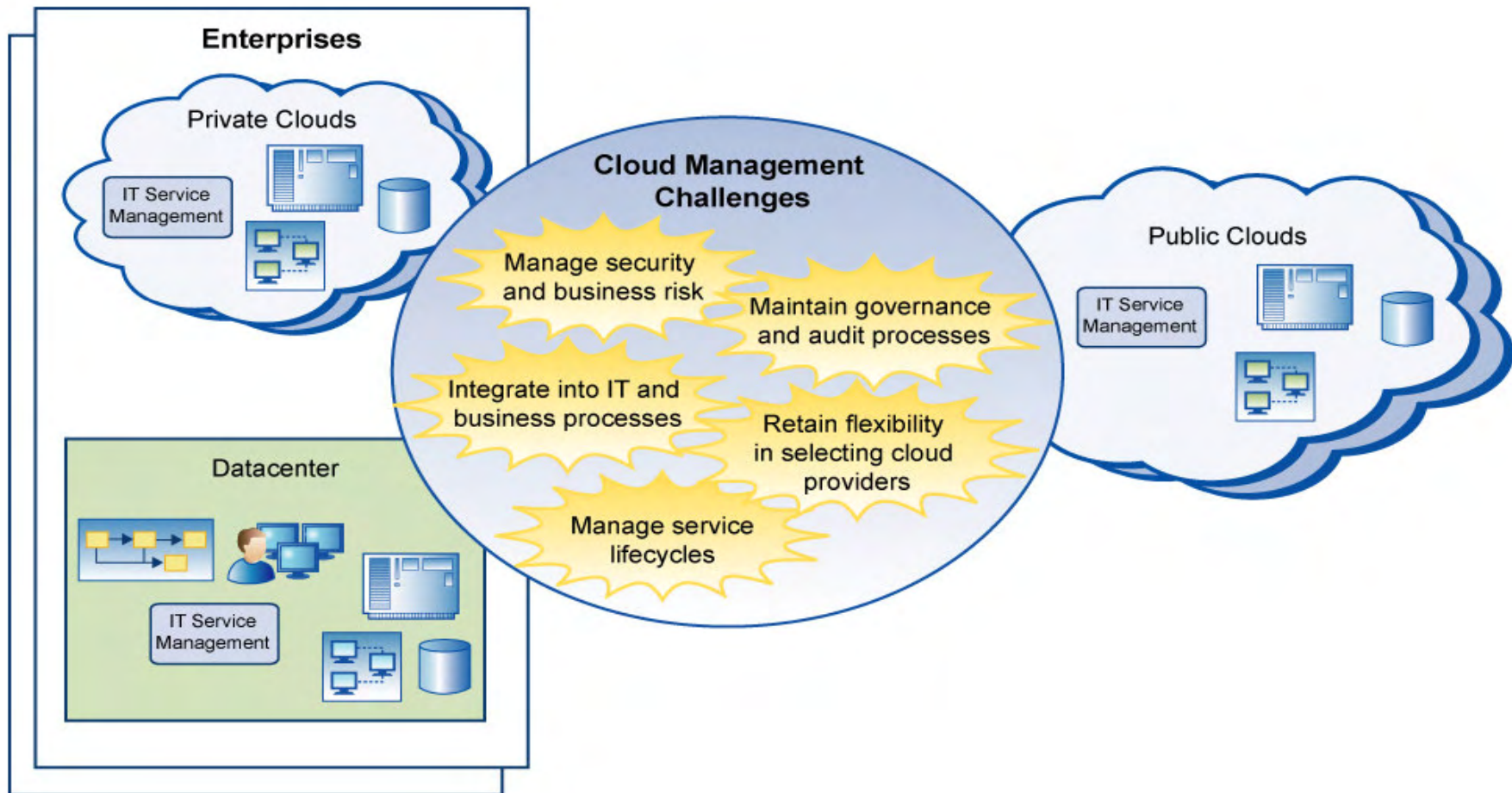
- DMTF enables more effective management of millions of IT systems worldwide by bringing the IT industry together to collaborate on the development, validation and promotion of systems management standards.
- The group spans the industry with 160 member companies and organizations, and more than 4,000 active participants crossing 43 countries.
- The DMTF board of directors is led by 15 innovative, industry-leading technology companies. They include Advanced Micro Devices (AMD); Broadcom Corporation; CA Technologies.; Cisco; Citrix Systems, Inc.; EMC; Fujitsu; HP; Huawei; IBM; Intel Corporation; Microsoft Corporation; Oracle; RedHat and VMware, Inc.

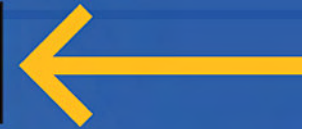


What part of cloud interoperability
does your SDO see as its "charter"?

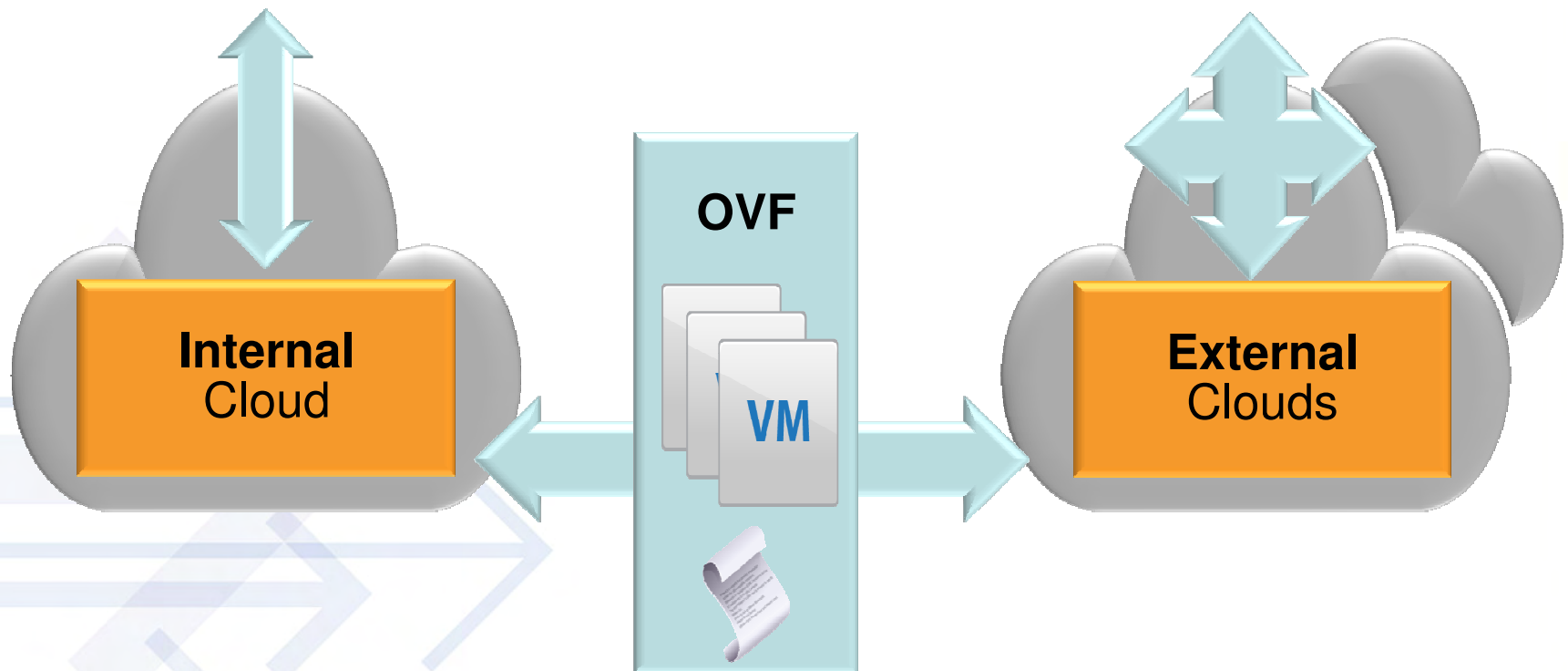


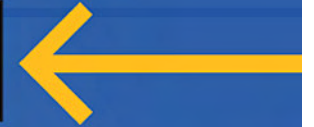
Cloud Adoption Challenges



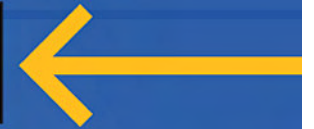


APIs: Programmatic Access to Resources



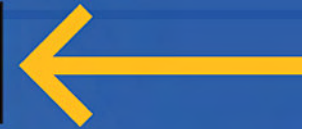


How do your existing SDO standards and initiatives apply to the cloud?

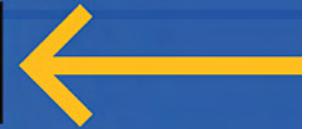


Cloud Management Activities

- Cloud Incubator (2009-2010) published informational specifications
 - "Interoperable Clouds" white paper
 - Architecture and interfaces
 - Use cases and resource interaction model
- Cloud Management Working Group replaced incubator July 2010
 - Writing formal specifications
 - Focus on IaaS
 - Leverage other standards, e.g., OVF (Open Virtualization Format)
 - 34 actively involved companies + 10 academic or alliance members
- Virtualization and Cloud Management Forum
 - Interoperability and compliance testing
 - Cloud, OVF, and virtualization management

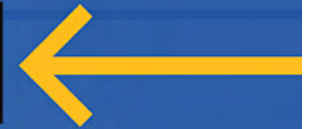


What new efforts might be initiated
by your SDO in the cloud space?



New Cloud Management Activities

- Software License Management Incubator December 2010
 - The representation of the identity of a licensable product (virtual machine instance, on premise product, etc)
 - How it is associated with an instance or operating system
 - Who and what (device) are assessing that instance, and
 - The ability to discover if and where the licensable product is running.

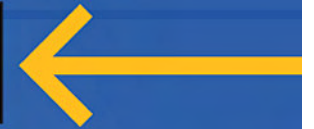


New Cloud Management Activities

- Cloud Auditing Data Federation Working Group April 2011
 - Cloud Auditing Event Data Model Specification
 - Including Resource, Action and Outcome Taxonomies
 - Including Guidance and Best Practices for Use of the Data Model.
 - Cloud Auditing Event API Specification
 - Including an exemplary Component Model
 - Including Use Cases
 - Profiles of the Cloud Auditing Event Data Model and Event API Specifications which the CADF deems necessary.
 - Protocol requirements delivered to the CMWG (or other groups if they exist)
 - Other documents and whitepapers which the Cloud Auditing Data Federation Working Group deems necessary.



What publications are currently (or will soon be) available?



Current DMTF Cloud Related Specifications

DSP-IS0101 1.0.0 Interoperable Clouds

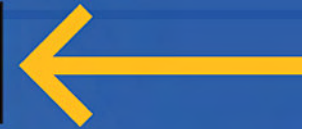
DSP-IS0102 1.0.0 Architecture for Managing Clouds

DSP-IS0103 1.0.0 Use Cases and Interactions for Managing Clouds

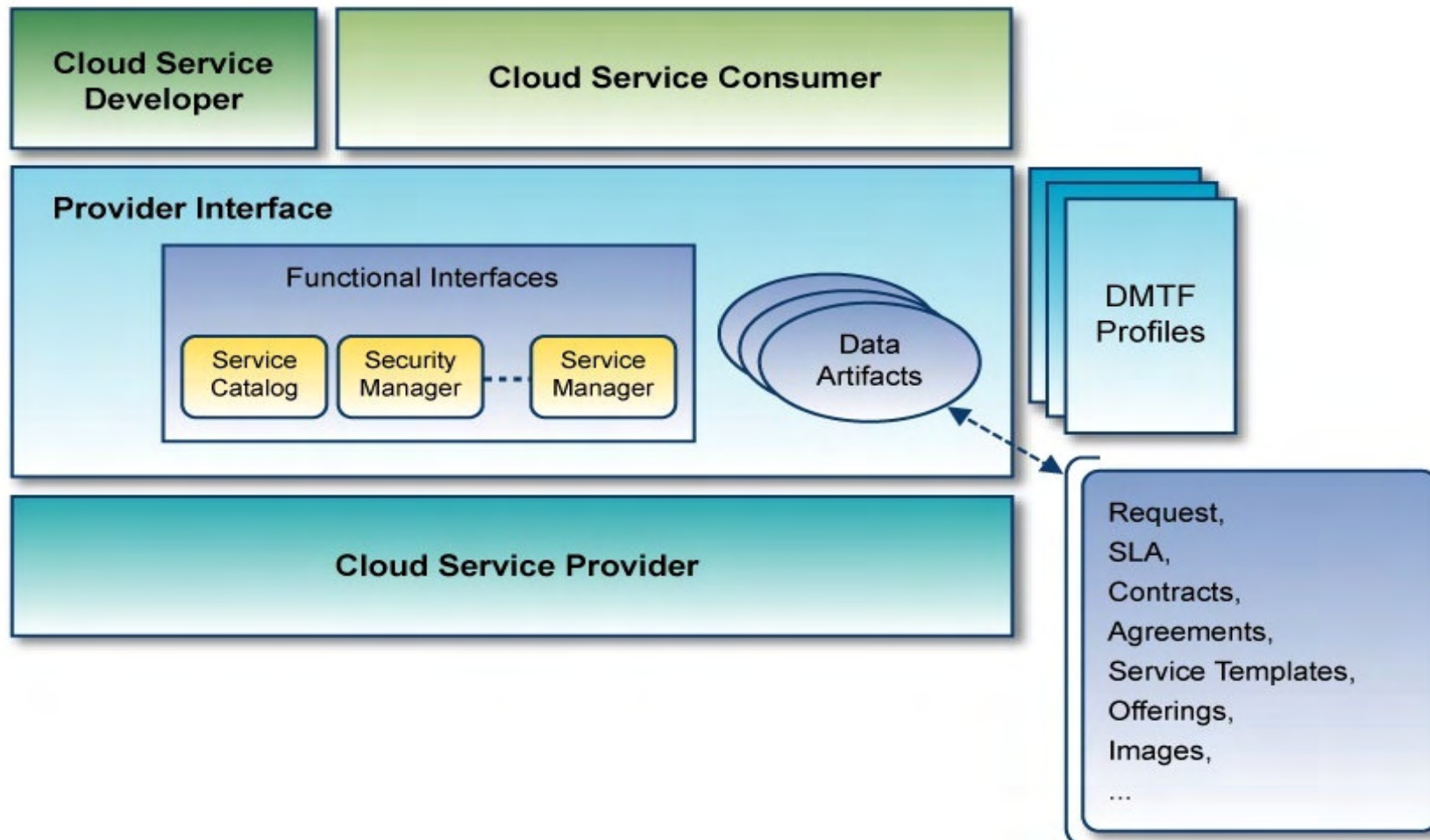
DSP0243 1.1.0 Open Virtualization Format (INCITS ANSI 2010-469)

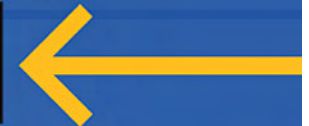
DSP2021 1.0.0 Open Virtualization Format Examples

DSP2017 1.0.0 Open Virtualization Format White Paper

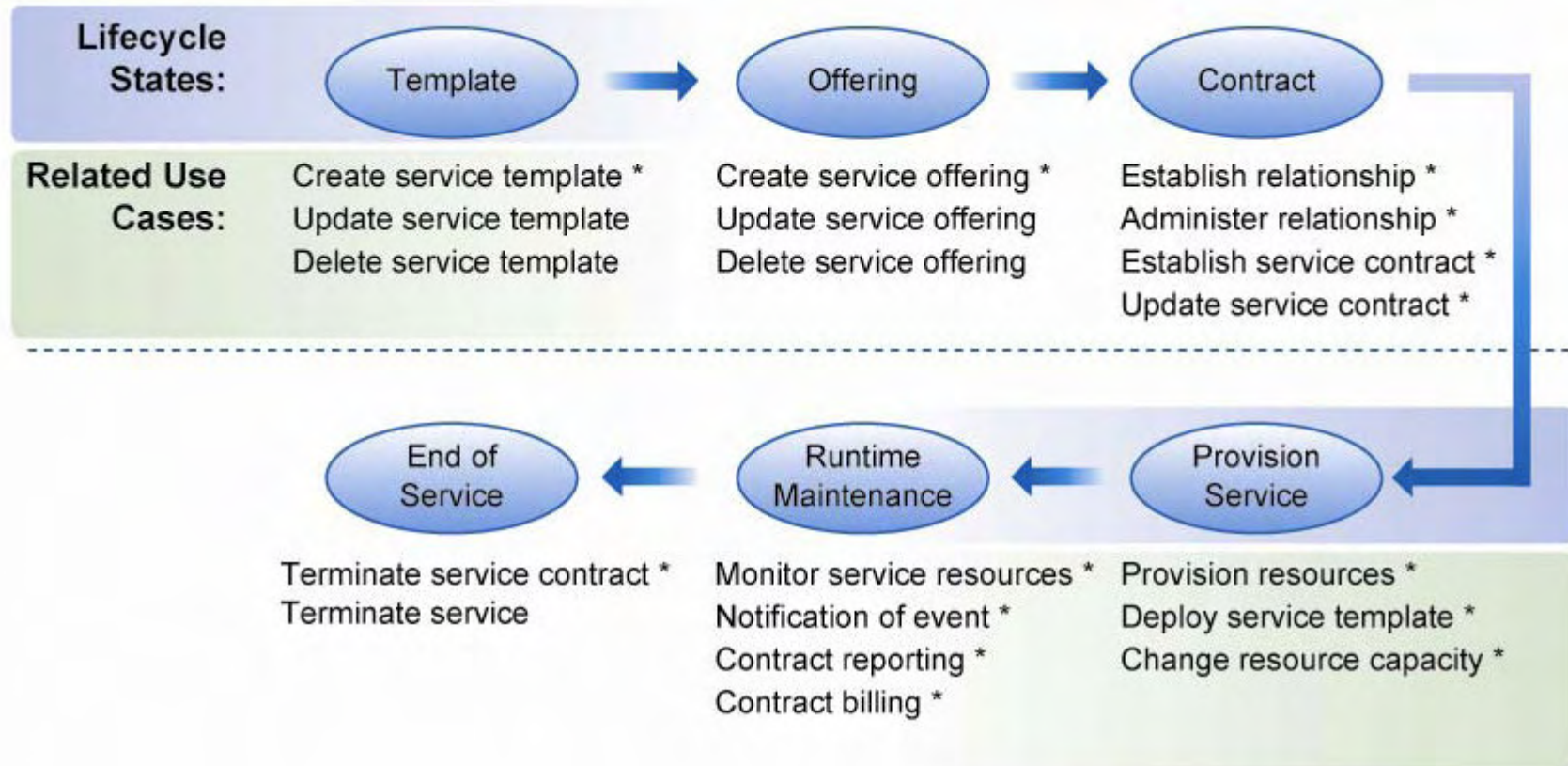


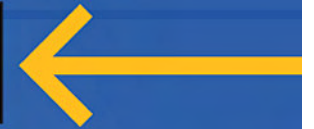
Cloud Management Architecture



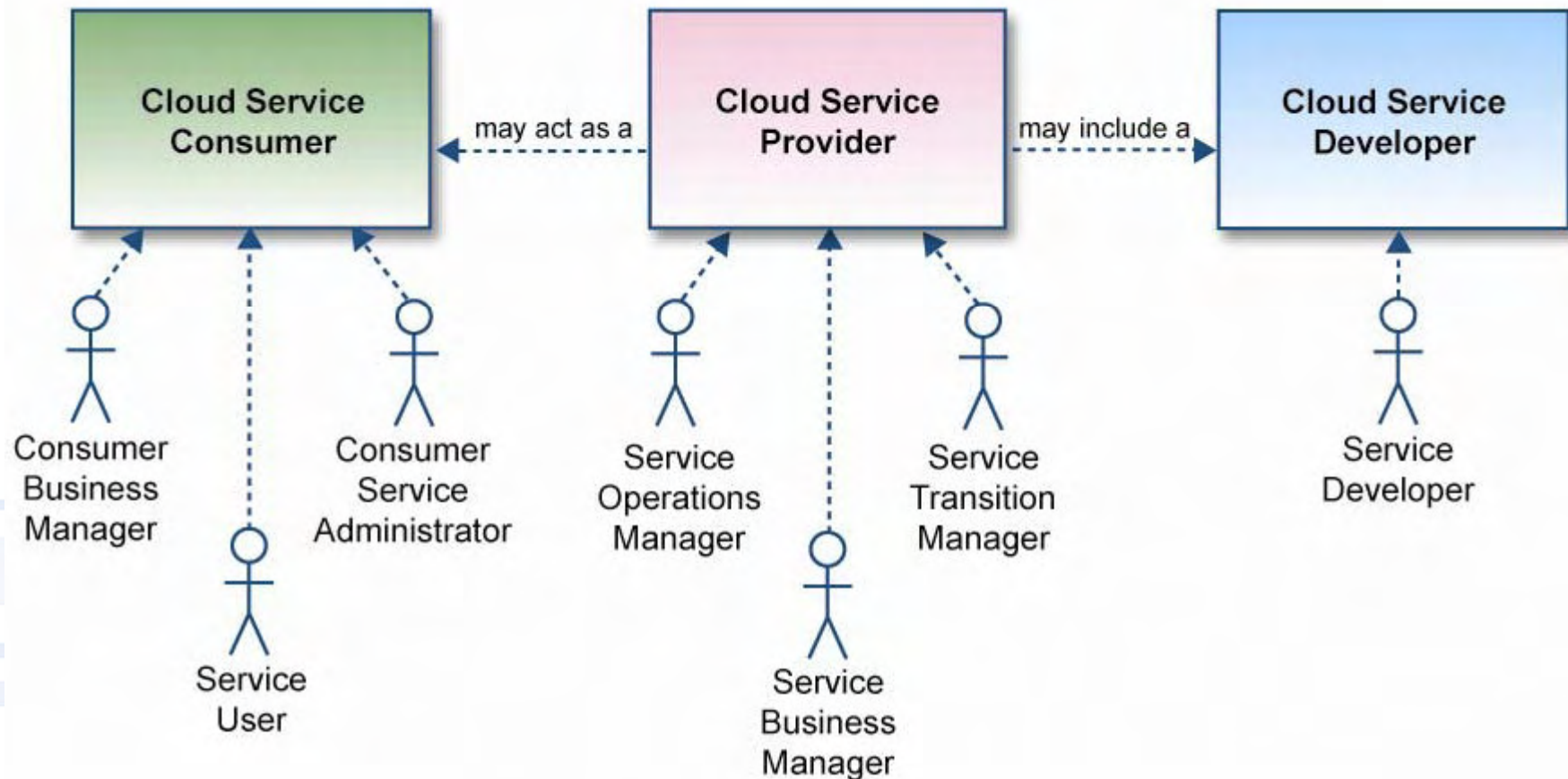


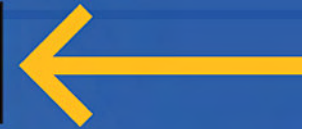
Cloud Service Life Cycle & Use Cases



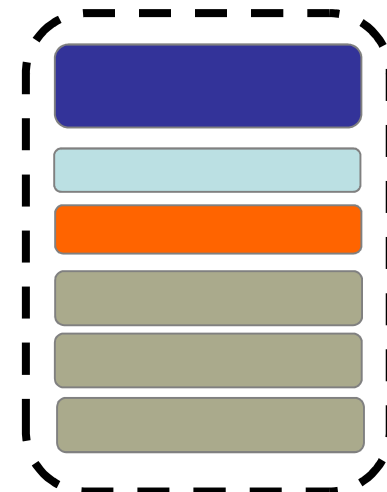
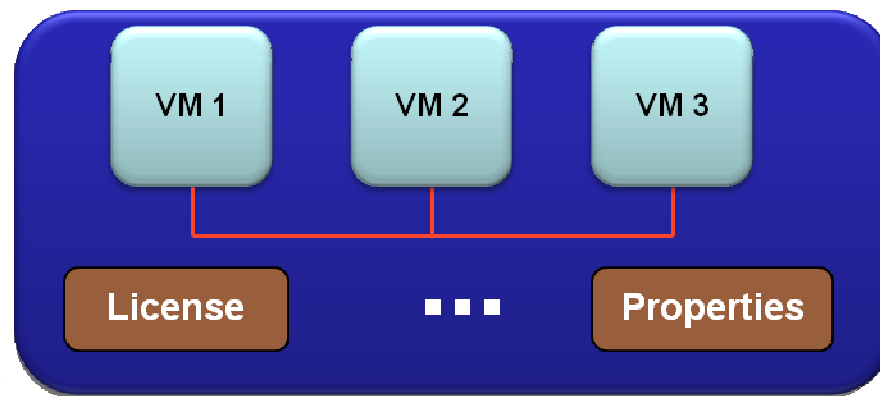


Use Case Actors Taxonomy





Open Virtualization Format (OVF)



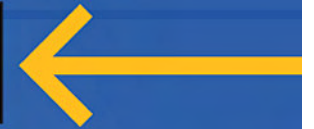
myApp.ovf

import



vmware[®]

CITRIX[®]



OVF – Open Virtualization Format

- **Summary**

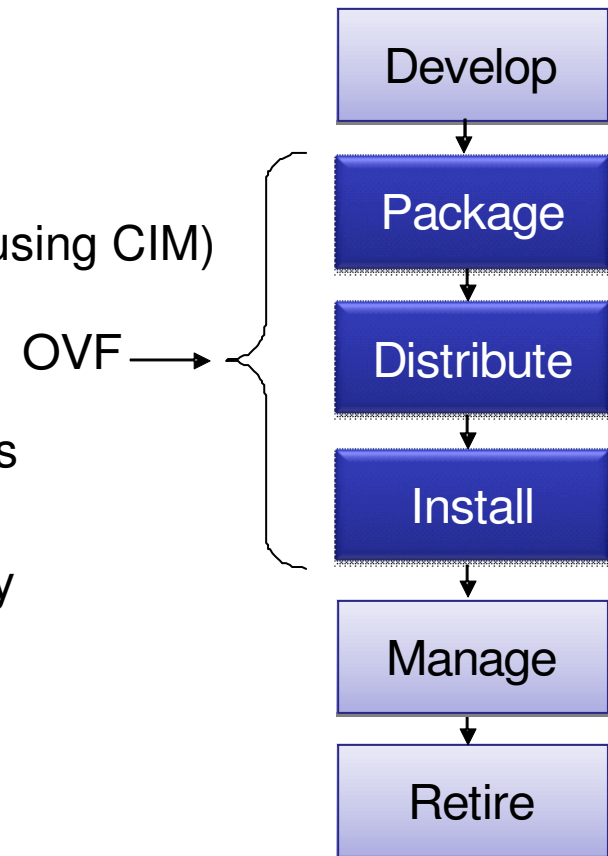
- Packaging format for virtual appliances
- Metadata describing environment requirements (using CIM)
- Activation logic and artifacts

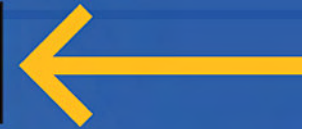
- **Benefits**

- Deliver software through portable virtual machines
- Streamlined installations
- Virtualization platform independence and flexibility
- Single-system and multiple-system services

- **History**

- OVF 1.0 & 1.1: published 2009 & 2010
- ANSI – INCITS 469-2010
- OVF 2.0: under development





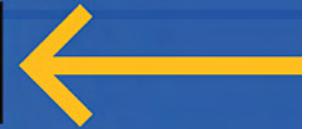
Currently Planned DMTF Cloud Related Specifications

Q4 2011 - DSP0258 1.0.0 Cloud Management Logical Model

Q4 2011 - DSP0259 1.0.0 Cloud Management REST Mapping

Q4 2011 – DSPIS0301 1.0.0 Software License Management White Paper

Q2 2012 – DSP0260 1.0.0 Cloud Management WS-Management



Contact DMTF

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Portland, OR 97204
Tel +1.503.220.1655
Fax +1.503.296.2432
president@dmtof.org



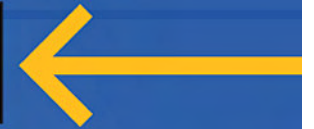
www.dmtf.org

www.dmtf.org/cloud



BACKUP





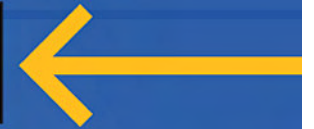
DMTF Board Companies



DMTF Leadership Companies

Bechtel
BMC Software
Brocade Communications
Cloudsoft Corporation
Compuware Corporation
Dell

Hitachi, LTD.
Lenovo
Novell
Rackspace
SunGard
Virtualstream, Inc.
WBEM Solutions



Participating Members

1E Ltd
Acer Inc.
American Megatrends, Inc.
Arquimedes Automacao e Informatica Ltda
Avocent
Blazent, Inc.
China Mobile Research Institute
CORADIR S.A.
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Quest Software, Inc.
R P Infosystems Pvt. Ltd.
Realtek Semiconductor
Renesas Technology America
Sai InfoSystem (India) Ltd.
SAP AG
Savvis
SEMP TOSHIBA INFORMATICA LTDA
ServerEngines LLC
Solarflare Communications
SolarWinds
Standard Microsystems
Telecom Italia
Telefonica
US Department of Defense
VIA Technologies, Inc.
VKernel
Wave Systems Corp.
Wipro Limited



Academic Alliances

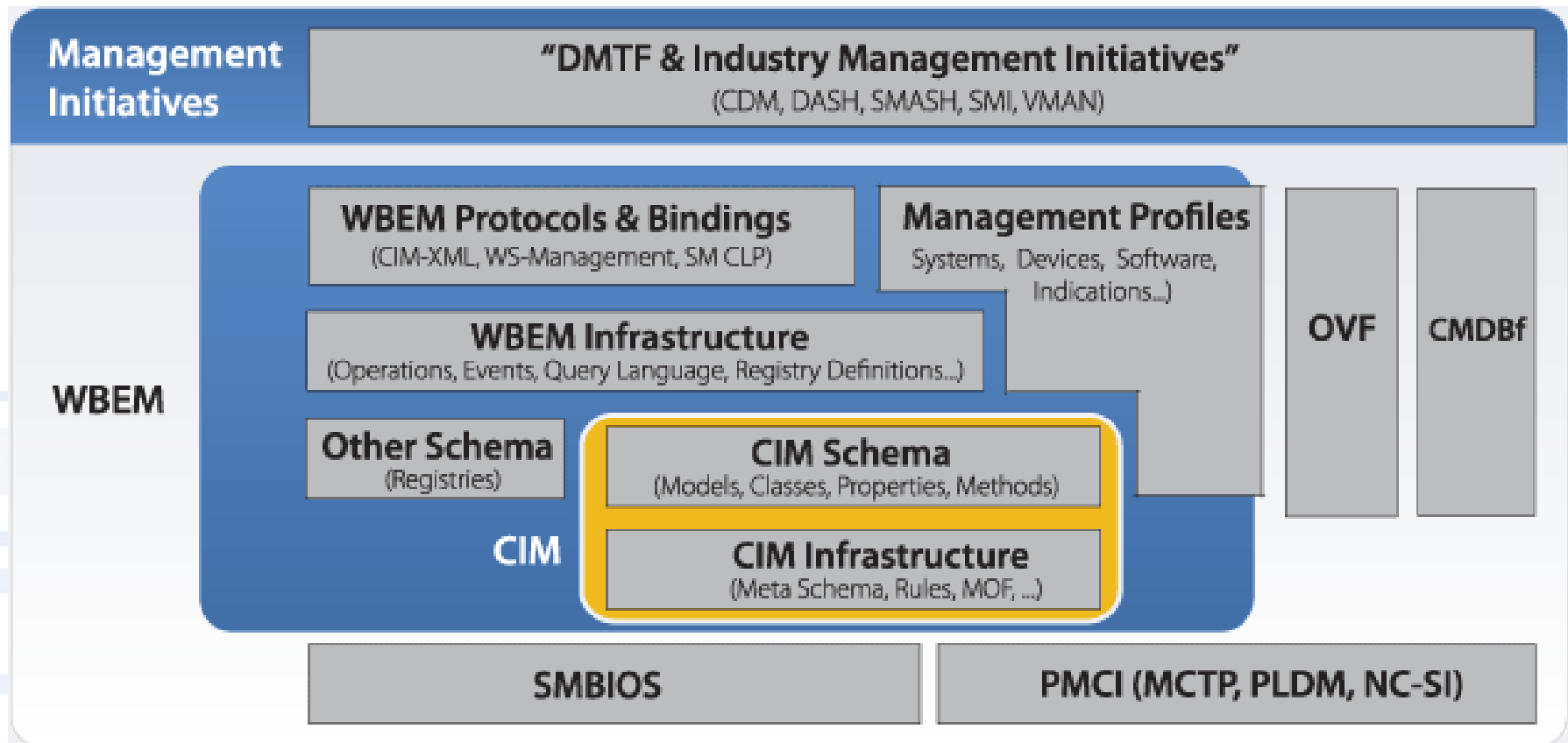
Alexandria University
 Athens University of Economics and Business
 Balarussian State University
 Bharathidasan University
 ENST Bretagne
 Fudan University
 George Mason University
 Goethe University Frankfurt
 Hangzhou Dianzi University
 HOSEI Univ
 Huazhong University of Science and Technology
 Imperial College of Science Technology and Medicine
 Indian Institute of Technology Roorkee
 Indian Institute of Technology, Bombay
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 Kasetsart University
 Laurentian University
 Leibniz Supercomputing Center
 Ludwig Maximilians Universit
 Lund Institute of Technology
 Madrid Technical University
 Marshall University
 Modern College of Engineering, University of Pune
 Munich University of Technology
 Nanjing University
 Nanyang Technological University
 National Technical University of Athens
 North Carolina State University
 Northwestern University
 Paul Sabatier University
 Peking University
 Penn State University
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 Pontifical Catholic University of Rio Grande do Sul
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 Saint-Petersburg University for Aerospace Instrumentation
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 TU Muenchen
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 University Joseph Fourier of Grenoble
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 University of California
 University of California-Irvine
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 University of Illinois
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 University of Leipzig
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 University of Milano-Bicocca
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 University of Murcia (Spain)
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 University of Southampton
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 University of Sydney
 University of Teesside
 University of Texas Health Science
 University of the Federal Armed Forces Munich
 University of Tuebingen
 University of Twente
 University of Western Ontario
 University of Wuerzburg
 Vellore Institute of Technology
 Vienna University of Technology



DMTF Technologies

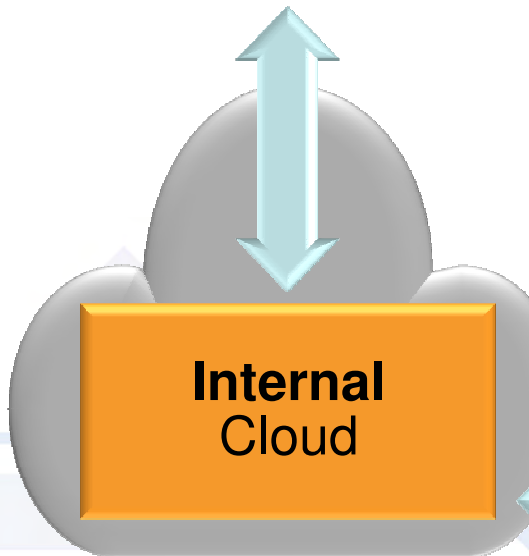
DMTF standards provide well-defined, interoperable interfaces that build upon each other





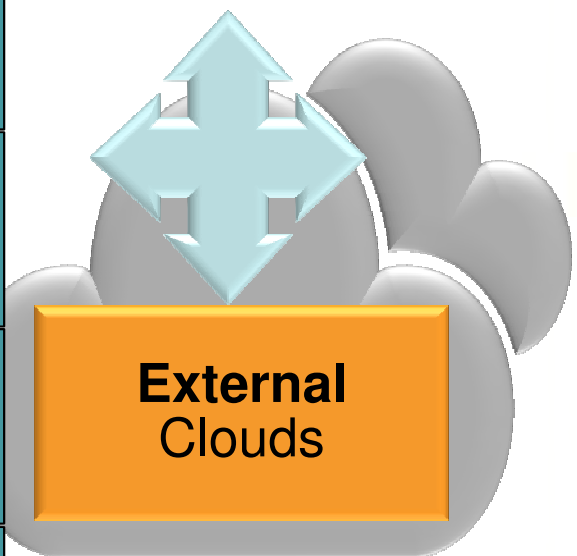
APIs: Pro

sources

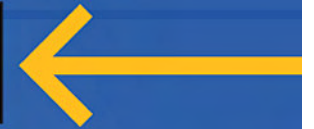


**Internal
Cloud**

- September 2009 VMware Submits vCloud API to DMTF
- November 2009 Fujitsu Submits its Cloud API to DMTF
- January 2010 HP Submits to DMTF
- March 2010 Telefonica Submits TCloud API to DMTF
- July 2010 Oracle Submit APIs to DMTF
- August 2010 Red Hat Submits DeltaCloud API to DMTF
- OVF: First National Standard Cloud Workload



**External
Clouds**



Cloud Audit Data Federation (CADF) Update

Scope / Objectives

Develop Standards for the Federation of Cloud Audit Data

By Specifying a Normative, Prescriptive Audit Event Data Format along with Interface Definitions and a compatible Component and Interaction model.

The **Data Model** will include support for:

Classification by Extensible Event Taxonomies – normative, prescriptive taxonomies used to categorize cloud provider IT **Resources**, event **Actions** and **Outcomes**.

Federation of Customized Audit Reports and Logs - event data will support federation and be composable into customizable reports and logs.

The **Interface Model** includes:

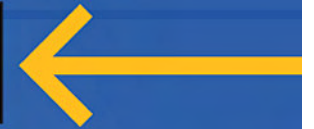
Definition of Service Methods to Manage and Federate the Data Model's Events, Logs and Reports

Interfaces will support audit data Submission, Import and Export, Query and Subscription.

The **Component and Interaction Model** will

Demonstrate how the Interfaces and Data Format can be used by Cloud Providers and Consumers to Support Cloud Auditing use cases.

Future work may include **Profiles** that extend the core data and interface specifications to accommodate particular methods of consumption



Cloud Audit Data Federation (CADF) Update

Working Group Current Status

Reviewing of Liaison Group Cloud Audit Related Activities including:

CSA's Cloud Audit WG

Update, 6 Month Roadmap, GRC Toolkit Examples (AtomPub, Manifest)

The Open Group's (TOG)

Distributed Audit Services (DAS) v2 Update Project

Accepting / Reviewing Member Use Cases and Requirements

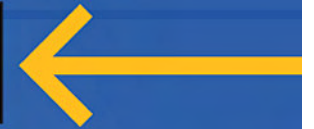
as input for forthcoming data format and interface model development, including:

IBM Cloud Audit Use Cases

Novell / DAS v2 Use Cases

Discussing Deliverables and Timeline

Primarily around a Federated Cloud Audit Data Format Specification



Software License Management (incubator)

This Incubator will develop whitepaper(s) which focus on the challenges listed above to enable the industry to manage licensed software product(s) and product usage, and to move closer to interoperable solutions. For each of these challenges the Incubator will identify real world use cases and scenarios, and create a taxonomy of existing or proposed solutions to identify licensed software products and product usage. Where existing standards can address these challenges, they shall be enumerated. Where they do not exist, the Incubator shall establish requirements and make recommendations to fill in gaps required to address these challenges.

The white paper(s) may also recommend a solution to these challenges by leveraging or defining extensions to existing work. The purpose of this document is to define the technical aspects required to address the requirements, use cases, scenarios and solutions identified. For example:

- The representation of the identity of a licensable product (virtual machine instance, on premise product, etc)
- How it is associated with an instance or operating system
- Who and what (device) are assessing that instance, and
- The ability to discover if and where the licensable product is running.