

Open Software Defined Data Center

DMTF Incubator Whitepaper



SDDC VISION

 "At the core of the software-defined datacenter is an abstracted and pooled set of shared resources. But the secret sauce is in the automation that slices up and allocates those shared resources on-demand, without manual tinkering " – Forrester

Software Defined Data Center

- An emerging area of technology
- Revolutionizing IT
- Software Defined Networks and Storage emerging as well
- Need a standard architecture & Definitions

Open Software Defined Data Center Incubator

- A clear definition and scope of the SDDC concept.
- New work items to existing chartered working groups.
- Expanded scope to existing chartered groups
- Creation of new working groups if needed.

Deliverables

• Use Cases

- Data Center Administrator View
- Data Center User View

• Taxonomy and Terminology

- What all is part of a Data Center (Power & Cooling? Apps and Middleware?)
- Define components: Software Defined Storage, Software Defined Networking

High-level Architecture

- Where does the automation happen?
- What part of the automation itself is standardized (i.e. Policy)
- Standards Gap Analysis
 - What is the role of existing DMTF standards: CIM. WBEM, SMASH, etc. ?
- White Paper
 - SDDC Definition DSP-IS0501 V1.0.1a

DMTF OSDDC Incubator Definition

- Software Defined Data Center (SDDC): a pool of compute, network, storage and other resources that can be dynamically discovered, provisioned and configured based on workloads.
- SDDC provides a programmatic abstraction that enables policy-driven orchestration of workloads as well as measurement and management of resources consumed.
- SDDC is comprised of a set of features that include:
 - a. A pool of compute, network, storage and other resources
 - b. Discovery of resource capabilities
 - c. Automated provisioning of logical resources based on workload requirements
 - d. Measurement and management and of resources consumed
 - e. Policy-driven orchestration of resources to meet SLOs of the workloads

Role of Virtualization

- *Virtualization* has separated the applications from the underlying physical resources
- *Management* of these virtualized resource services has become more powerful as a result:
 - Ability to pool resources, allocating on demand without physical intervention
 - Finer grained control over service levels
 - Automated maintenance of service levels (fail-over, auto-scaling, security fencing)
- Utilization of resources becomes more efficient

Roles (Administrative)

Data Center Administrator

- Data Center Cloud Service Administrator/Architect
- Application Admins
- DataBase Admins
- Server Admins
- Hardware Admins
- Security Admins
- Networking Admins
- Storage Admins
- Facilities Managers
- Service Architects
- Service Admins

Orchestration

- Orchestration is targeted at achieving the Business Goals of the Organization
- These Goals are realized by the *Applications and Services*
- Monitor/Meter/Maintain service level objectives
- Management Automation Software
 - performance, availability, security.
- Standardized Agent Interfaces on resources
- DMTF has standardized a large portion of these needed interfaces
 - CIM, WBEM, SMASH, VMAN, NETMAN....
- Alliance Partners have leveraged this
 - Storage, Printers, Power and Cooling

Foundational Elements : SDDC Resources

- Software Defined Data Center (SDDC) resources
 - physical resources
 - software that virtualizes them, and
 - software that instruments and manages other resources.



Datacenter Abstraction

- Provides a set of standards to abstract this complexity:
 - Use Existing DMTF Standards
 - Group these standards into Datacenter Abstraction Layer (DAL)
 - Interface for Orchestration & Provisioning





Inside the Datacenter Abstraction Layer (DAL)



The Software Defined Data Center

- SDDC is management automation software.
- Scripts and COTS tools.
- Uses DAL provided set of standards for Orchestration & Provisioning



User Interaction

- The CIMI standard, for example, for laaS Clouds.
- Need a pool management interface



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Cloud Data Center

Administrato

Providing Services

Infrastructure services are also part of the SDDC, providing characteristics such as:

- Provisioning
- Protection
- Availability
- Performance
- Security, and
- Energy Consumption metering



SDDC Big Picture



For More Information

OSDDC Wiki http://wiki.dmtf.org/mediawiki/index.php/OSDDC OSDDC White Paper http://dmtf.org/sites/default/files/standards/documents/DSP-IS0501_1.0.1a.pdf OSDDC Incubator http://members.dmtf.org/apps/org/workgroup/osddc



Questions, Additional Ideas, Thoughts?

