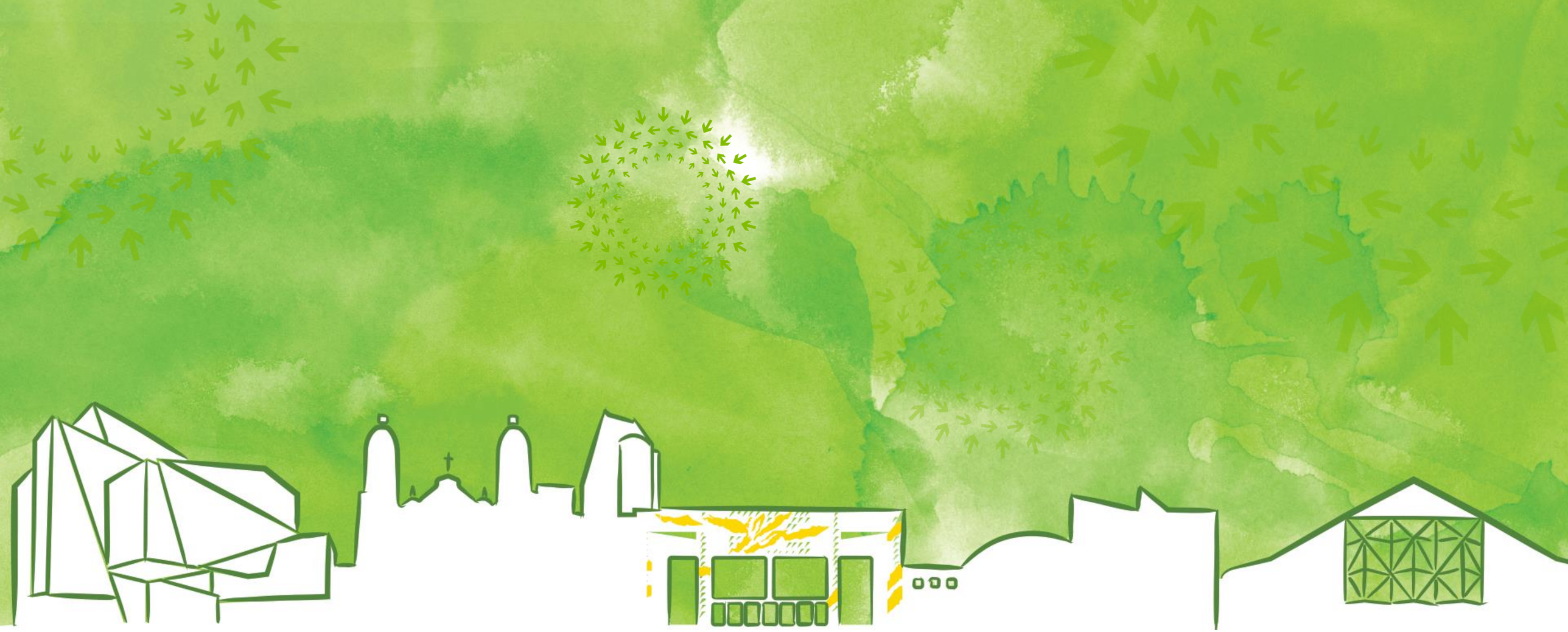

OCP U.S. SUMMIT 2016

March 9-10 | San Jose, CA

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Redfish and OCP Topics

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Disclaimer

- The information in this presentation represents a snapshot of work in progress within the DMTF.
- This information is subject to change without notice. The standard specifications remain the normative reference for all information.
- For additional information, see the Distributed Management Task Force (DMTF) website.

Scalable Platforms Management Forum

Created in September 2014 – now 22 member companies

Co-Chairs: Jeff Autor (HPE), Paul Vancil (Dell)

Promoters: Broadcom Limited, Dell, EMC, Emerson, Hewlett Packard Enterprise, Intel, Lenovo, Microsoft, Supermicro, VMWare

Supporters: AMI, Fujitsu, HGST, Huawei, IBM, Insyde Software, Mellanox, NetApp, Oracle, Microsemi, Qualcomm, Seagate

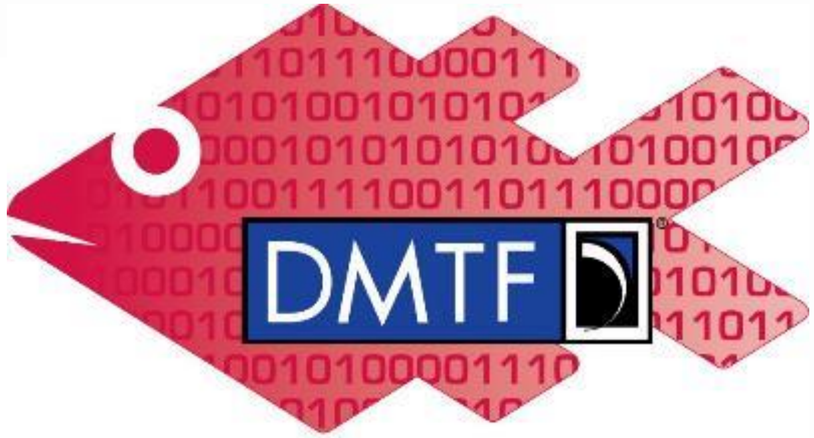
Charter: *Create and publish an open industry-standard specification and schema that meets the expectations of Cloud and Web-based IT professionals for scalable platform hardware management utilizing existing tool chains as well as being usable by personnel with minimal experience.*

Alliance Partnerships

- OpenCompute Project
- UEFI - Collaborating on Firmware Update and Host Interface work
- SNIA – Collaborating on Storage modeling / alignment between SSM and Redfish

Redfish Specification

- RESTful interface over HTTPS in JSON format based on OData v4
- Usable by client applications and browser-based GUIs
- A secure, multi-node capable replacement for previous interfaces
- Schema-backed human-readable output
- Covers popular use cases and customer requirements
- Intended to meet OCP Remote Machine Management requirements



Redfish

Redfish v1.0 Specification & Schema

Retrieve “IPMI class” data

- Basic server identification and asset info
- Health state
- Temperature sensors and fans
- Power supply, power consumption and thresholds

Discovery

- Service endpoint (network-based discovery)
- System topology (rack/chassis/server/node)

Basic I/O infrastructure data

- Host NIC MAC address(es) for LOM devices
- Simple hard drive status / fault reporting

Security

Perform Common Actions

- Reboot / power cycle server
- Change boot order / device
- Set power thresholds

Access and Notification

- Serial console access via SSH
- Event notification method(s)
- Logging method(s)

BMC infrastructure

- View / configure BMC network settings

Redfish releases

- v1.00 Released August 2015
  - Specification and Schema files
- v1.01 Errata Release November 2015
  - Clarifications to specification, corrected errors in schemas
- v1.10 Schema release November 2015
  - Additions to ComputerSystem, Chassis
- v1.02 Errata – *in Progress*
  - Will correct schema naming issues (all schemas will be revised)
  - Clarifications to specification
  - Expected in Spring 2016 (March/April)
- **Releases planned for Schema and Specification**
  - **Summer 2016 (July/August)**
  - **Fall 2016 (November)**

SPMF Work in Progress

Significant expansion to data model coverage

- PCIe devices
- Storage subsystems
- Network Adapters / Controllers
- DIMM / NV-DIMM inventory

“Task Force” sub-groups created to tackle specific topics

- Host (OS) Interface to Redfish – working with DMTF PMCI
- Firmware Update – working with UEFI and DMTF PMCI
- Storage – working with SNIA
- Privilege Mapping

“Integration recipe” target for Redfish implementations

- Strong desire for an OCP HW Management conforming property list
- Other groups welcome to suggest target recipes

Redfish Ecosystem – Tool Development underway

Github public repository

- Coming soon!

Client Library

- Common utility support functions
  - Discovery, Enumeration, etc.
  - Event subscription
- Typical tasks
  - Power on/off/reboot
  - Gather thermal data
- Languages under consideration
  - Python
  - Java
  - PowerShell
  - Other possibilities…

Command Line Utility

- Similar to IPMItool
- Designed for end users
- Calls Client library

Conformance Test Suite

- Schema-aware tool for testing
- Checklist for vendors and customers
- Avoid spec interpretation conflicts

Schema Dev Tools

- CSDL Validator
- CSDL to JSON-Schema converter

“Catfish” Mockup for OCP

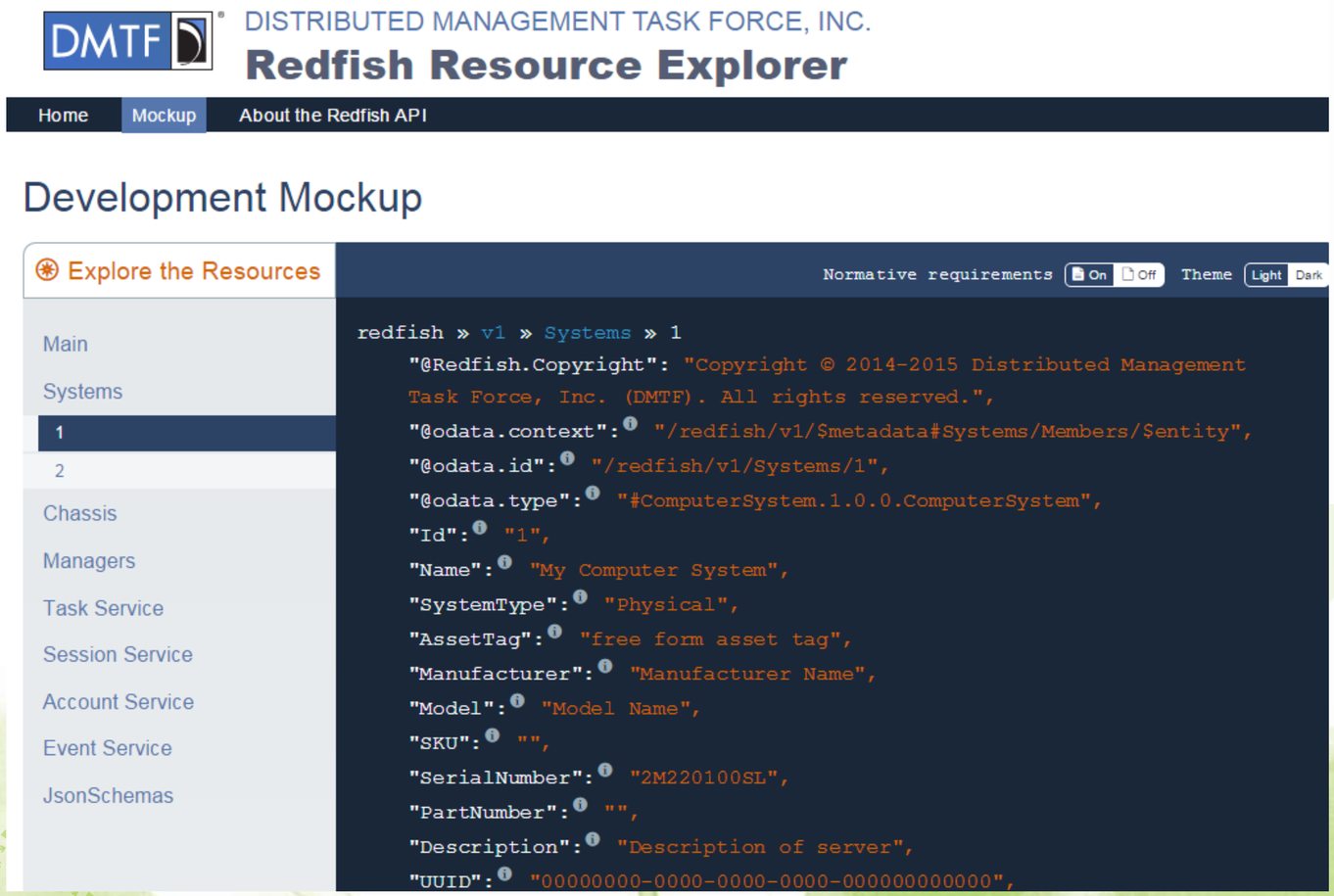
- Mockup of a monolithic server with a Redfish implementation aligned with OCP Remote Machine Management Spec 1.01
  - One ComputerSystem
  - One Chassis
  - One Manager
- Provides basic management features :
  - Power-on/off/reset
  - Boot to Pxe, HDD, BIOSsetup (boot override)
  - 4 temp sensors per DCMI (CPU1, CPU2, Board, Inlet)
  - Simple Power Reading, and DCMI Power Limiting
  - Fan Monitoring w/ redundancy
  - Set asset tag and Indicator LED
  - Basic inventory (serial#, model, SKU, Vendor, BIOSver…)
  - User Management
  - BMC management: get/set IP, version, enable/disable protocols

“Catfish” mockup discussion

- What Catfish does not have that Redfish 1.0 model supports:
  - No PSUs in model (RMM spec did not include PSUs)
  - No ProcessorInfo, MemoryInfo, StorageInfo, System-EthernetInterfaceInfo
  - No Tasks
  - JsonSchema and Registries collections left out (since that is optional)
  - No EventService
    - Remote Machine Management spec used basic PET alerts
- Discussion
  - Opportunity to define some Redfish ‘Integration Recipes’ that specify
  - What APIs and properties are supported / required
  - How to capture

Redfish Resource Explorer

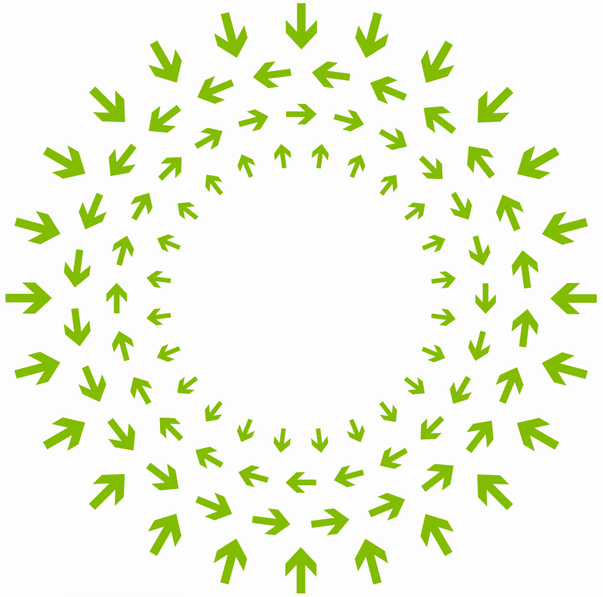
- Browser-based Educational tool part of the DMTF web site for Redfish
- Explore “mockups” of the Redfish data model
- Navigate via links through the model to various resources
- Text descriptions are taken directly from the schema files for consistency



http://redfish.dmtf.org

More information and Providing Feedback

- Download Specification and Schema: http://www.dmtf.org/redfish
- Redfish Developer Information Site: http://redfish.dmtf.org
- BrightTalk webinars: https://www.dmtf.org/education/webinars
  - Introduction to Redfish (25min)
  - Redfish Data Model Deep Dive (55min)
  - Modeling the Redfish Way (60min)
- Provide feedback through the DMTF feedback portal, on both published specification and “Work in Progress”: http://www.dmtf.org/standards/feedback
- **Coming Soon – public User Group / Forum**
- Join the SPMF
  - By Joining the DMTF and SPMF, you can shape the standard
  - http://www.dmtf.org/join/spmf



OPEN

Compute Project

Introduction to the Redfish data model

- All resources linked from a Service Entry point (root)
  - Always located at URL: /redfish/v1/
- Major resource types structured in ‘collections’ to allow for standalone, multi-node, or aggregated rack-level systems
  - Additional related resources fan out from members within these collections

- **ComputerSystem**: properties expected from an OS console
  - Items needed to run the “computer”
  - Roughly a logical view of a computer system as seen from the OS
- **Chassis**: properties needed to locate the unit with your hands
  - Items needed to identify, install or service the “computer”
  - Roughly a physical view of a computer system as seen by a human
- **Managers**: properties needed to perform administrative functions
  - aka: the systems management subsystem (BMC)

Resource map (highlights)