



# Redfish and OCP Profile

## OCP Hardware Management

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<sup>1</sup>Scalable Platform Mgmt Forum (Redfish)



## Disclaimer

- The information in this presentation represents a snapshot of work in progress within the DMTF.
- This information is subject to change. The Standard Specifications remain the normative reference for all information.
- For additional information, see the Distributed Management Task Force (DMTF) Web site.



[www.dmtf.org](http://www.dmtf.org)



## The Distributed Management Task Force

- **An Industry Standards Organization**
  - Developing manageability standards for 24 years (est. 1992)
  - Membership includes 65 companies and industry organizations
  - With active chapters in China and Japan
- **Allied with**
  - 14 standard development organizations (alliance partners)
  - 80+ universities and research organizations (academic alliance partners)
- **Focused on manageability standards**
  - For the management of on-platform, off-platform, network services and infrastructure domains
  - Which are recognized nationally (ANSI/US) and internationally (ISO)



## Redfish™ Specification



Redfish

- A DMTF standard
  - Redfish v1.0 released (August 2015)
  - Subsequent schema released to add models for managing: *BIOS, disk drives, memory, storage, volumes, endpoint, fabric, switch, PCIe device, zone, FW inventory and update, and host interface*
  - Translated into Chinese and Japanese, by regional working groups
- Leveraged by other standard organizations
  - SNIA released model for managing network storage and services (Swordfish) in Aug 2016
  - DMTF established work registers with UEFI Forum and OCP<sup>1</sup>



Swordfish™



OPEN  
Compute Project

<sup>1</sup>[dmtf.org/sites/default/files/OpenComputeProject\\_Work\\_Reg\\_1\\_0.pdf](http://dmtf.org/sites/default/files/OpenComputeProject_Work_Reg_1_0.pdf)



## Redfish: Why a New Interface?



- Market shifting to scale-out solutions
  - Datacenters have a sea of simple servers; reliability via software
- Customers exhausting basic IPMI functionality
  - Security and encryption support no longer meet requirements
  - New system architectures cannot be modeled with IPMI specification
  - Fragmentation of IPMI, as proprietary extensions proliferated
  - IPMI clients limited to using “common denominator” of capabilities
- Customers asking for a modern interface
  - CIM was not an option – tool chain is too complex
  - Demand for standards-based, multi-vendor deployments
  - Interface should use cloud & web protocols, structures and security model

## Criterion for a Modern Manageability Interface

- Leverage existing Internet standards and tool chains
- Usable by professions and amateurs
- Deployable on existing management controllers
- Able to manage scale-out solutions
- Meets OCP Remote Machine Management requirements

### HTTP

```
GET https://<ip_addr>/redfish/v1/Systems/1
```

### Client Python code

```
rawData = urllib.urlopen('https://<ip_addr>/redfish/v1/Systems/1')  
jsonData = json.loads(rawData)  
print( jsonData[ 'SerialNumber' ] )
```

### Output

```
1A87CA442K
```

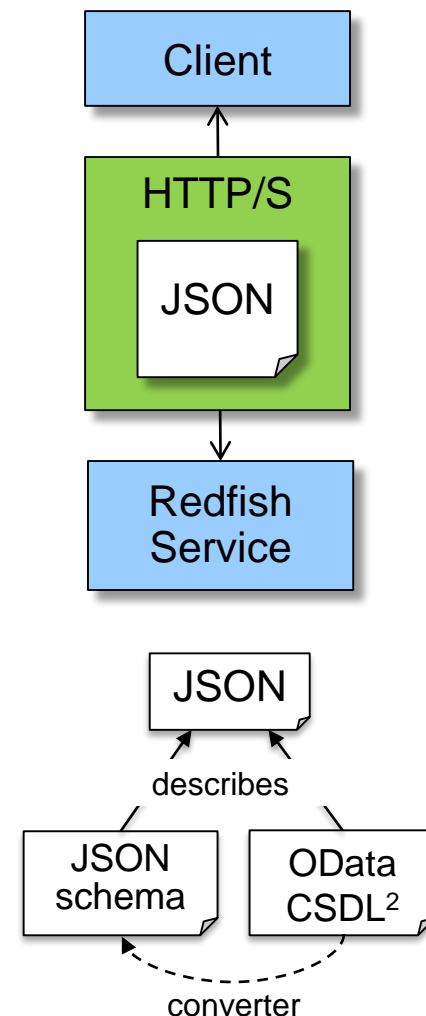


# DMTF Redfish Technology

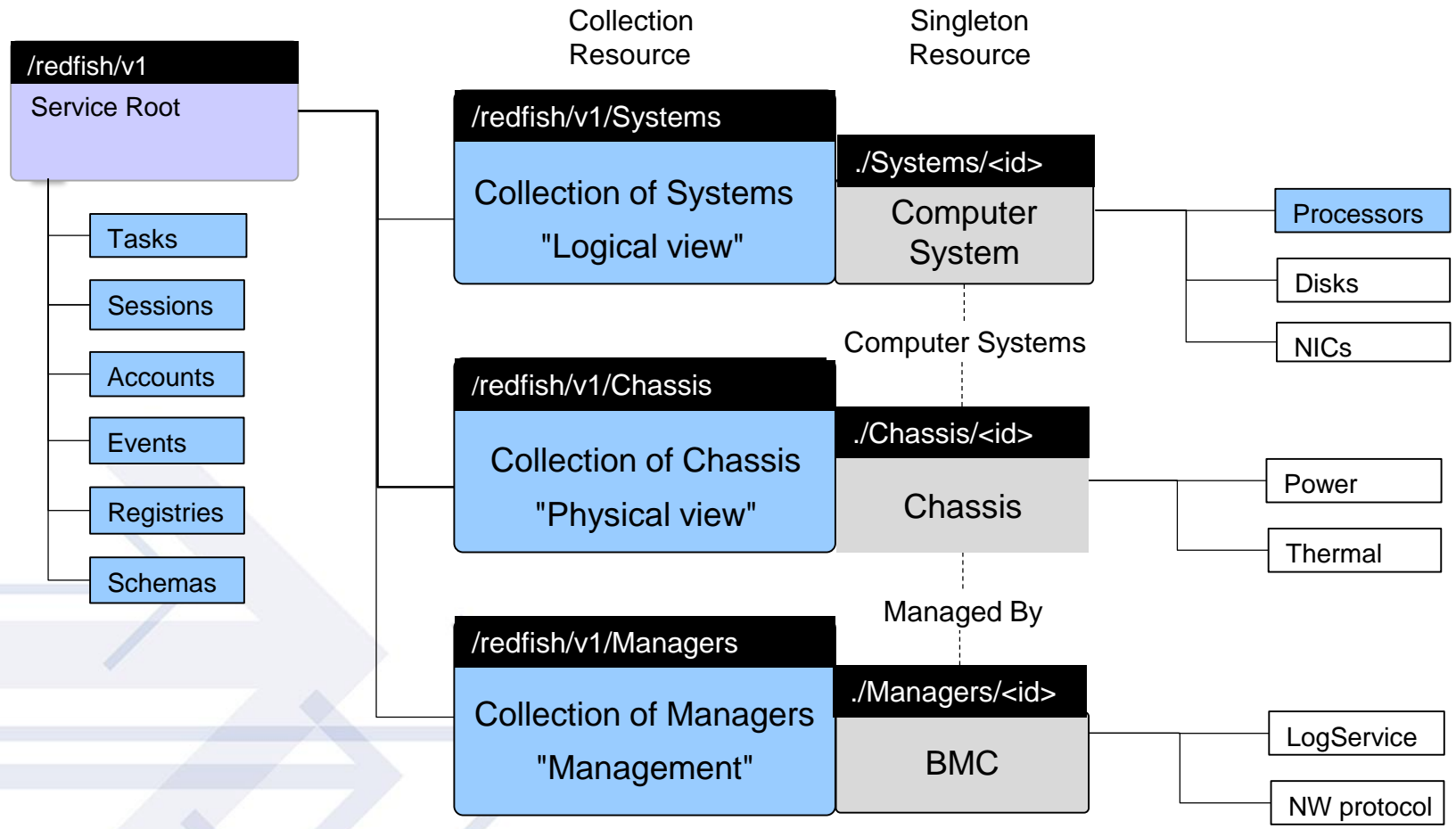
- Redfish Interface (RESTful)
  - HTTP/HTTPS - protocol
  - JSON – format of content
- Redfish Models
  - OData<sup>1</sup> – schema describing JSON content
  - Models for managing compute, storage and network platforms and services

<sup>1</sup>OData is an OASIS Standard

<sup>2</sup>CSDL = Common Schema Definition Language



# Redfish Resource Map



**GET <http://<ip-addr>/redfish/v1/Systems/{id}/Processors/{id}>**

Explore example resource map at [redfish.dmtf.org/redfish/v1](http://redfish.dmtf.org/redfish/v1)





## Initial Redfish Capabilities (v1.0+)

### Discovery

- Chassis
- Computer systems
- Managers

### Server Information

- Server identification and asset info
- Host Network MAC addresses
- Local storage
- Power supply and fans
- State and Status

### Common Manageability

- Change boot order / device
- Reboot / power cycle server
- Power usage and thresholds
- Temperature
- Config serial console access via SSH

### BMC Infrastructure

- View / configure BMC network settings
- Manage local BMC user accounts

### Access and Notification

- Subscribe/publish event model
- Access logs

### New Manageability

- BIOS
- Memory
- Disk drives, Storage & Volume
- Endpoints & fabric
- PCIe switch, device & zone
- Software inventory & Update



# Required OCP Capabilities

## Discovery

- Chassis
- Computer systems
- Managers

## Server Information

- [Server identification and asset info](#)
- [Host Network MAC addresses](#)
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## BMC Infrastructure

- [View / configure BMC network settings](#)
- [Manage local BMC user accounts](#)

## Access and Notification

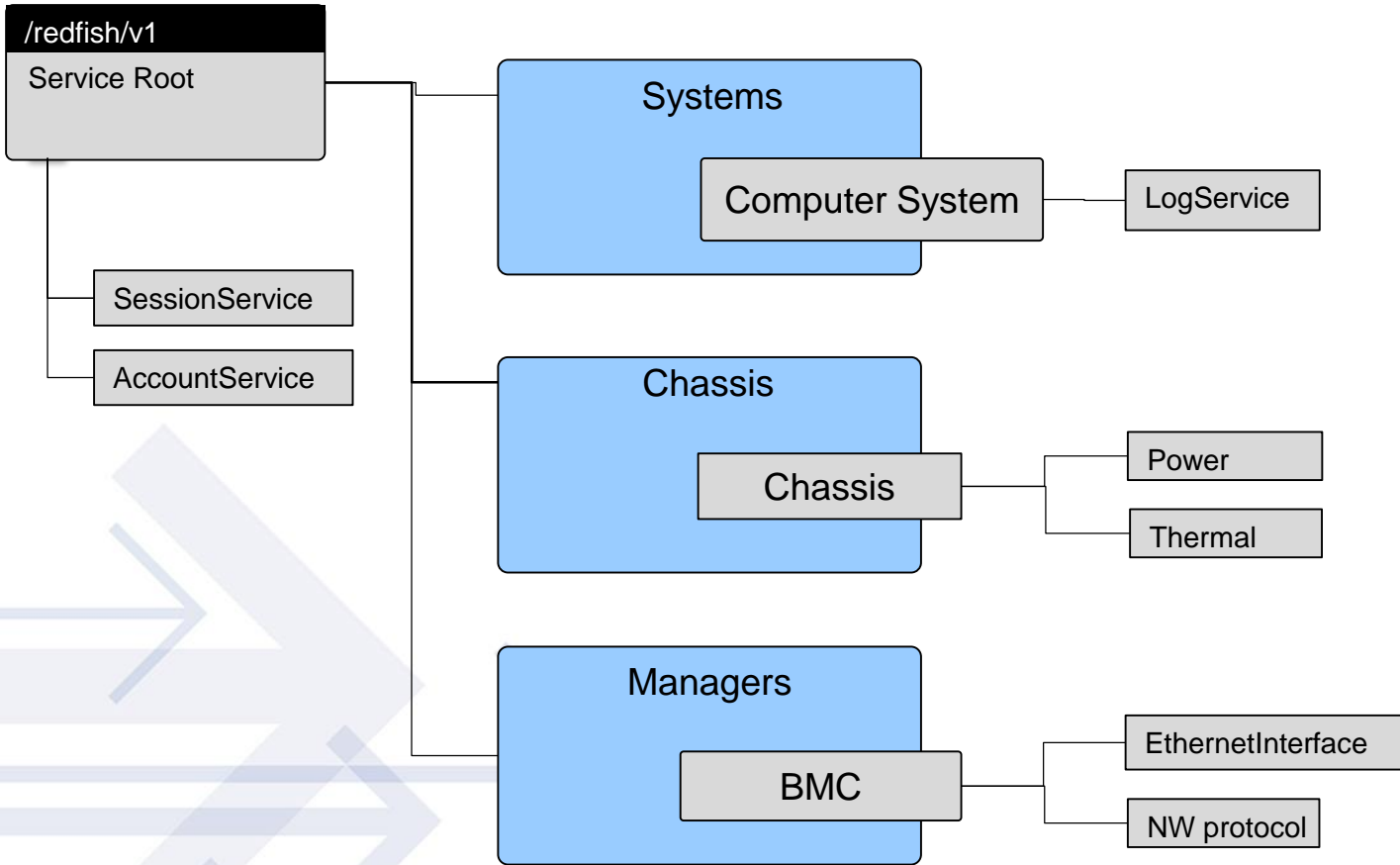
- [Subscribe/publish event model](#)
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## New Manageability

- BIOS
- Memory
- Disk drives, Storage & Volume
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# OCP Resource Map



**GET <http://<ip-addr>/redfish/v1/Systems/{id}>**  
 See Proposed OCP Profile at [redfish.dmtf.org/redfish/v1](http://redfish.dmtf.org/redfish/v1)



# Backup



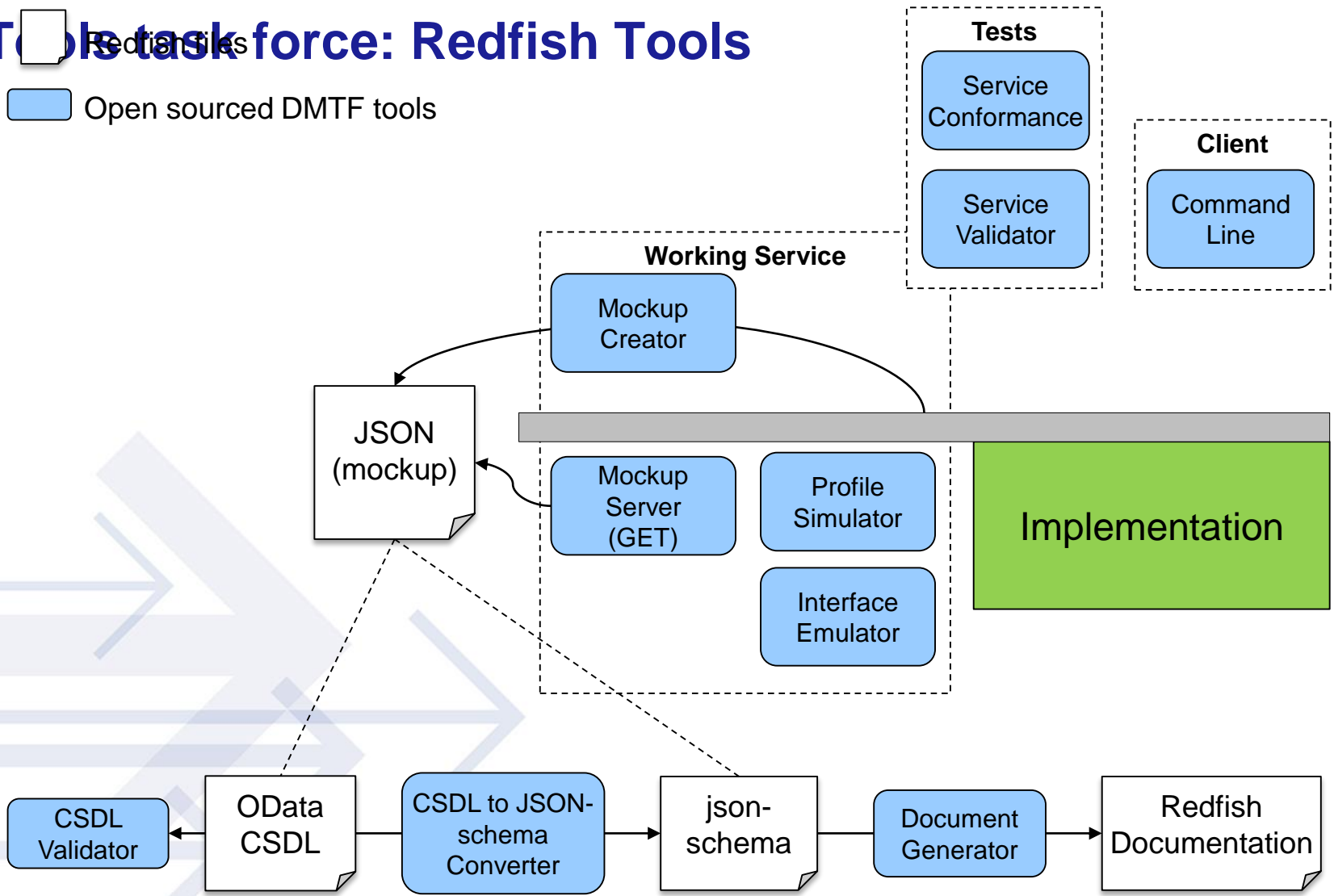
# Tools task force: Redfish Tools



Redfish files



Open sourced DMTF tools



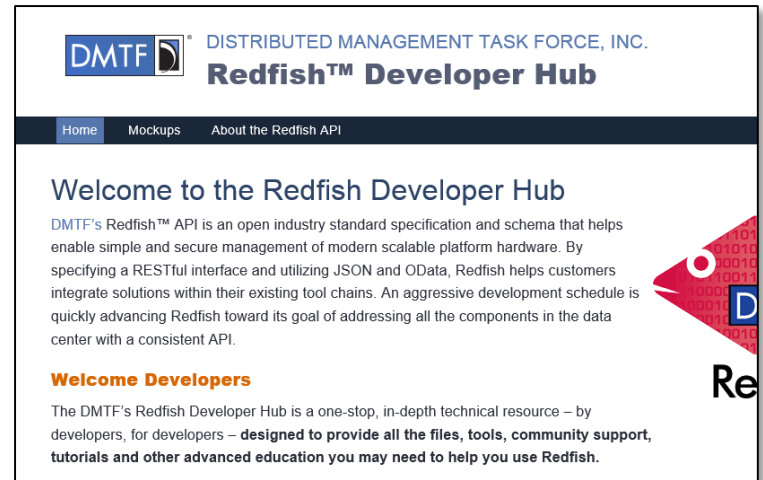


# Redfish Developer Hub<sup>1</sup>

- Resources
  - Schema Index
  - Specifications
  - GitHub for Redfish Tools
- Mockups
  - Simple Rack-mounted Server
  - Bladed System
  - Proposed OCP Redfish Profile
- Education/Community
  - Redfish User Forum<sup>2</sup>
  - Whitepapers, Webinars, Presentations

<sup>1</sup>redfish.dmtf.org/redfish

<sup>2</sup>redfishforum.com



DMTF DISTRIBUTED MANAGEMENT TASK FORCE, INC.  
**Redfish™ Developer Hub**

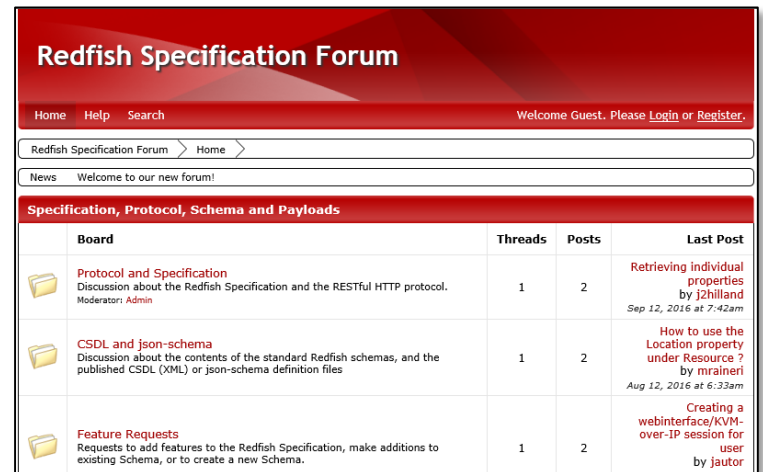
Home Mockups About the Redfish API

## Welcome to the Redfish Developer Hub

DMTF's Redfish™ API is an open industry standard specification and schema that helps enable simple and secure management of modern scalable platform hardware. By specifying a RESTful interface and utilizing JSON and OData, Redfish helps customers integrate solutions within their existing tool chains. An aggressive development schedule is quickly advancing Redfish toward its goal of addressing all the components in the data center with a consistent API.

**Welcome Developers**

The DMTF's Redfish Developer Hub is a one-stop, in-depth technical resource – by developers, for developers – **designed to provide all the files, tools, community support, tutorials and other advanced education you may need to help you use Redfish.**






## Redfish Specification Forum

Home Help Search Welcome Guest. Please [Login](#) or [Register](#).

Redfish Specification Forum > Home

News Welcome to our new forum!

Specification, Protocol, Schema and Payloads			
Board	Threads	Posts	Last Post
 <b>Protocol and Specification</b> Discussion about the Redfish Specification and the RESTful HTTP protocol. Moderator: Admin	1	2	Retrieving individual properties by j2hilland Sep 12, 2016 at 7:42am
 <b>CSDL and json-schema</b> Discussion about the contents of the standard Redfish schemas, and the published CSDL (XML) or json-schema definition files	1	2	How to use the Location property under Resource ? by mralneri Aug 12, 2016 at 6:33am
 <b>Feature Requests</b> Requests to add features to the Redfish Specification, make additions to existing Schema, or to create a new Schema.	1	2	Creating a webinterface/KVM-over-IP session for user by jautor Aug 16, 2016 at



## Summary

- The DMTF has made rapid progress on a modern interface for data center management
  - Rapid advances in the interface
  - Expediting the tool-chain for extensions and usage
- The industry (standards orgs, companies) have reacted favorably
  - Alliance partnerships with SNIA, UEFI, OCP
- Academic research is underway
  - DMTF is engaged with the Cloud and Autonomic Computing Center at Texas Tech University