Introduction to Swordfish: Extending Redfish for Scalable Storage Management

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Disclaimer

- The information in this presentation represents a snapshot of work in progress within SNIA
- This information is subject to change without notice.
- For additional information, see the SNIA website: www.snia.org/swordfish

What are the Drivers for Swordfish?

- Customers (and vendors) asking for improvements in storage management APIs
  - Make them simpler to implement and consume
  - Improve access efficiency
    - Fewer transactions, with more useful information in each
  - Provide useful access via a standard browser
  - Expand coverage to include converged, hyper-converged, and hyper-scale
  - Provide compatibility with standard DevOps environments

The Swordfish Approach

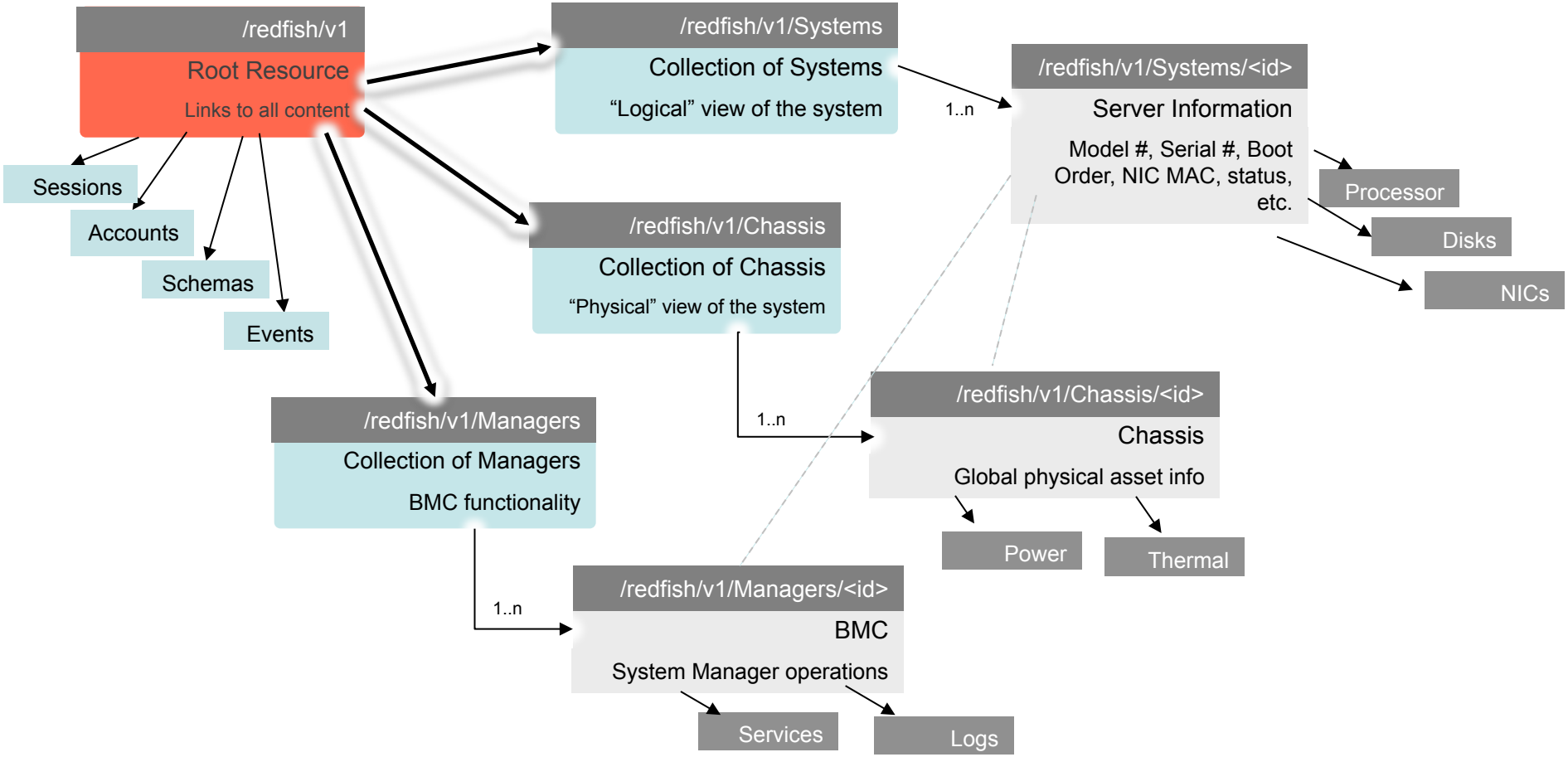
- ***The What:***
  - Refactor and leverage SMI-S schema into a simplified model that is client oriented
  - Move to Class of Service based provisioning and monitoring
  - Cover block, file and object storage
  - Extend traditional storage domain coverage to include converged environments (covering servers, storage and fabric together)
- ***The How:***
  - Leverage and extend DMTF Redfish Specification
  - Build using DMTF's Redfish technologies
    - RESTful interface over HTTPS in JSON format based on OData v4
  - Implement Swordfish as an extension of the Redfish API

Functionality Targeted for the Swordfish v1.0 API Specification

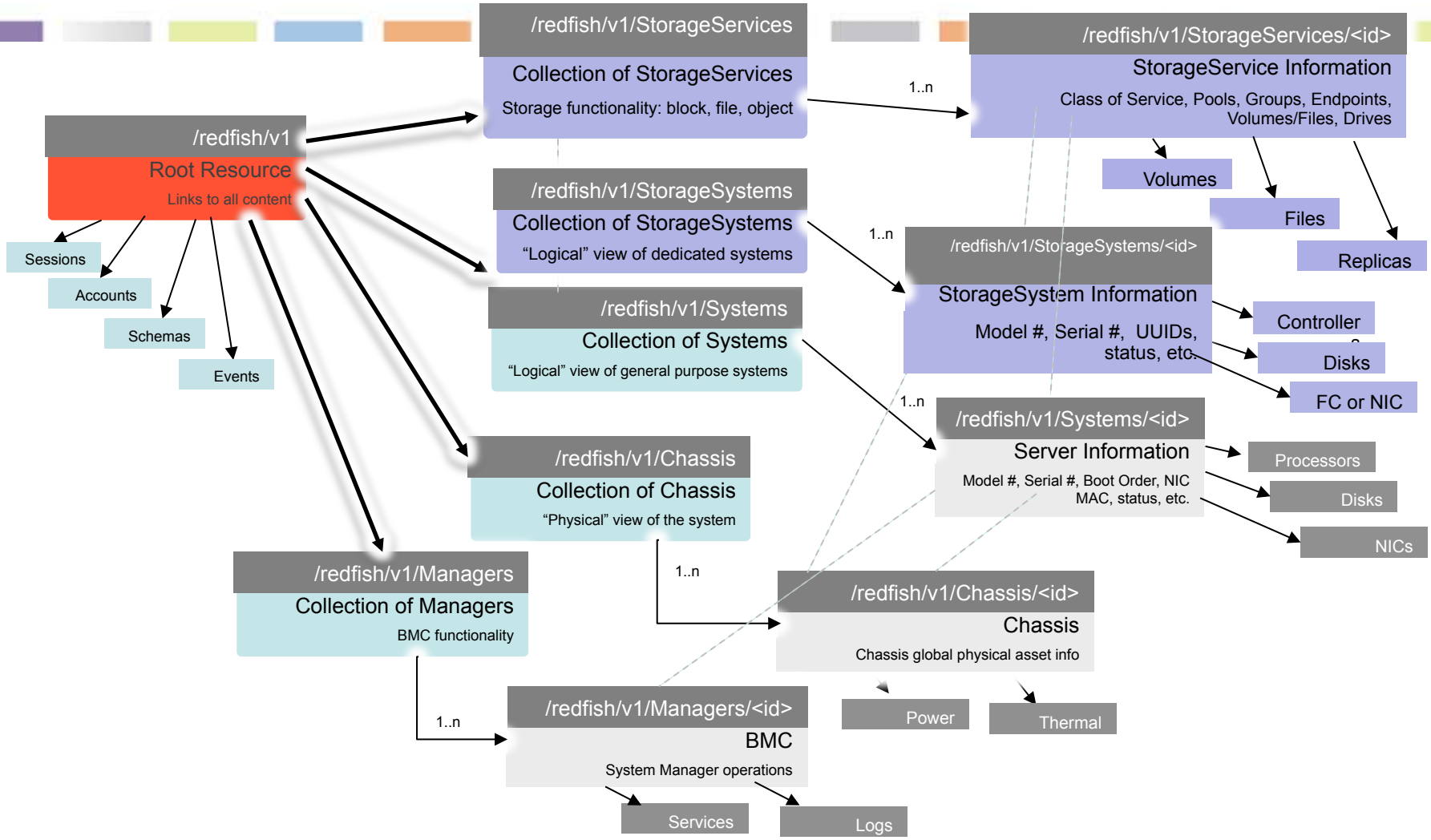
- Block storage
  - Provisioning with **class of service** control
  - Volume Mapping and Masking
  - Replication
  - Capacity and health metrics
- File system storage
- Additional content
  - Object drive storage

Starting with Redfish: An Overview

Redfish Resource Map

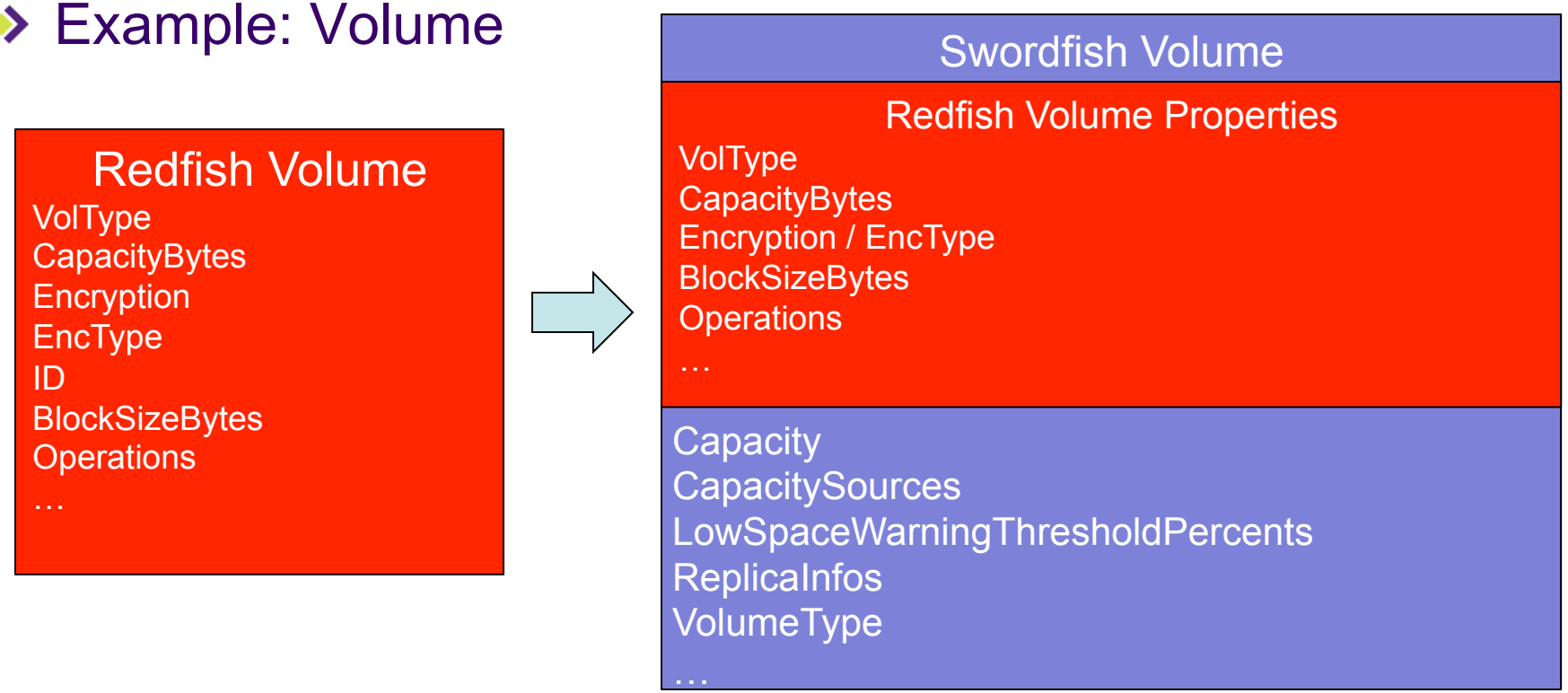


Adding Storage to Redfish:
Swordfish



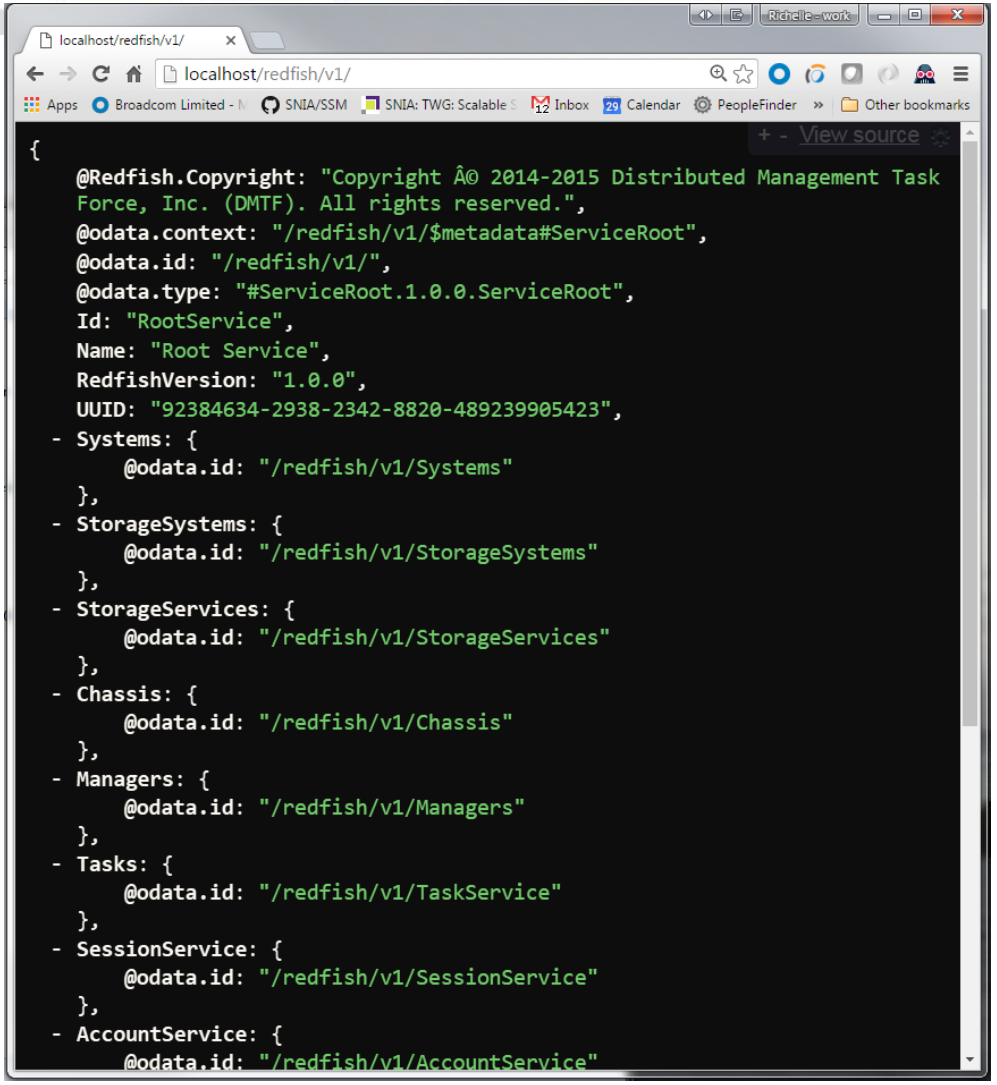
Seamless Extension of Redfish

- Make Swordfish a seamless extension of Redfish local storage schema
- Example: Volume



Overview of Swordfish Mockups

- Explore “mockups” of the Swordfish data model in a typical implementation
- Navigate via links through the model to various resources
- SNIA mockups show two examples of block storage systems
  - Simple: A small external array
  - Complex: all of the elements in the block storage model, with remote replication
- .. and an example of a file server with multiple file shares

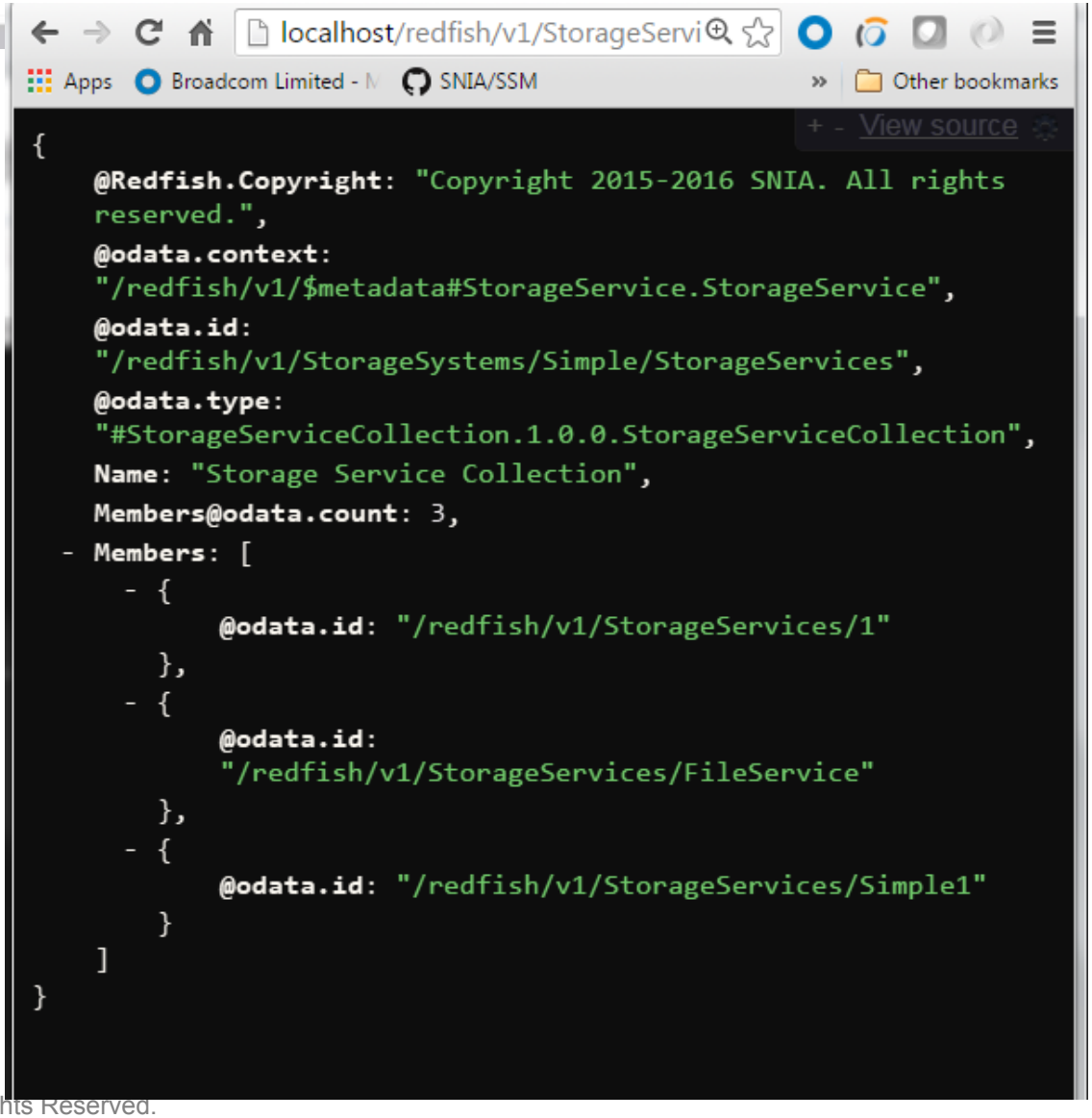


Navigating through the Mockups…

- Select the …./redfish/v1/Storage/Services link to see the "Collection" of Storage Services
- Click the "…/StorageServices/Simple" link to see the details of the Simple mockup or …

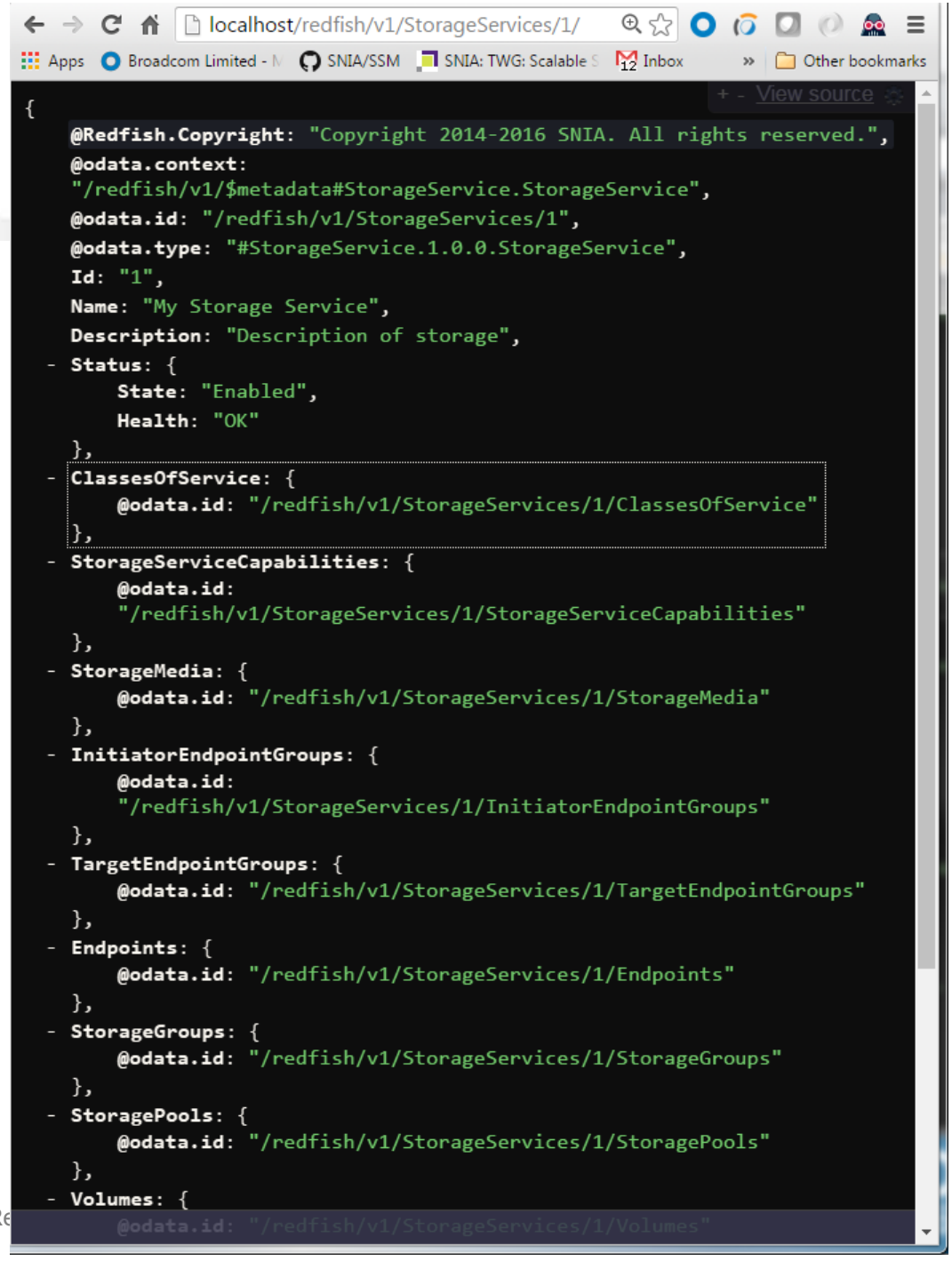
  "…/StorageServices/1" to see the details of the complex storage service mockup

  "…/StorageServices/FileService" to see the filesystem mockup



What's in a Storage Service? (Block)

- Available Classes Of Service
- Volumes
- Pools
- Groups
- Endpoints
- …
- Pointer to resources (system, chassis, drives)



What's in a Storage Service? (File)

Same structure:

- Available Classes Of Service
- ***File systems***
- Pools
- Groups
- Endpoints
- …
- Pointer to resources (system, chassis, block service or drives)

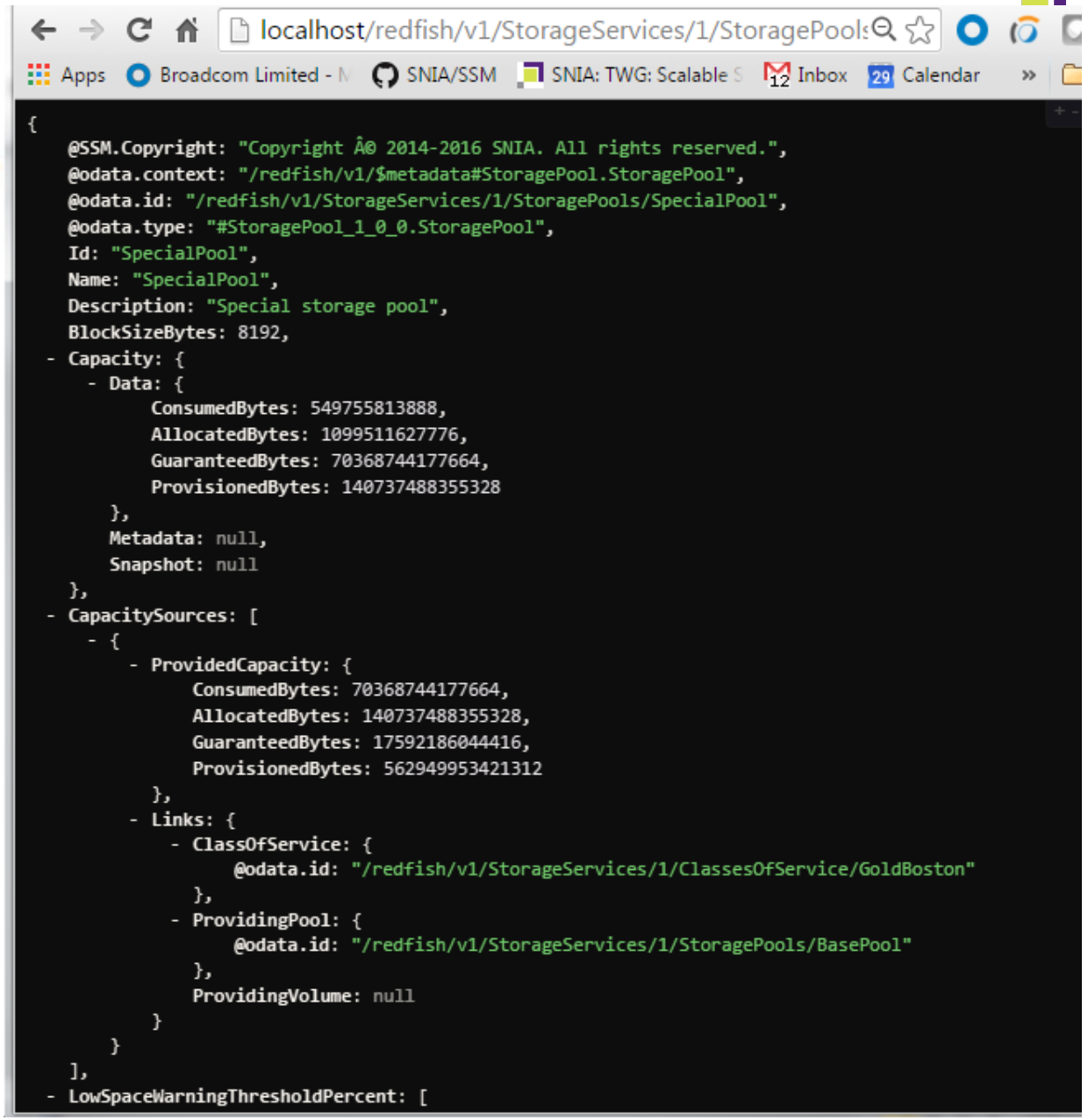
Discovery…

Let's discover something:

- Do I have space to…?

Check the capacity in a storage pool

- Navigate down into one of the storage pools and check it's remaining capacity



Progress towards the Swordfish v1.0 Release

- v0.5 Work in Progress released March 2016
  - Initial WIP release
- v0.6 Work in Progress released May 2016
  - **Completed Block and start documentation:**
  - Extension of Redfish simple storage
- v0.8 Work in Progress (July 2016)
  - **Seamless alignment with Redfish:** integration with Redfish schema: ServiceRoot, ComputerSystem, Storage / StorageService
  - File Systems, Object Drive (Chassis Type)
  - Capacity and Health Metrics (in progress)
- V0.9 Work in Progress (August 2016)
  - First draft of Specification and User's Guide
- v1.0 Specification (September 2016)
  - **Send Final Specification to SNIA Technical Council**

Who is Developing Swordfish?

- SNIA Scalable Storage Management Technical Work Group (SSM TWG)
  - SSM is the group, Swordfish is the Spec
  - Provisional TWG formed in October 2015 to investigate / scope work
  - Scalable Storage Management (SSM) TWG chartered in December 2015
- Companies Engaged in Technical Development:
  - ***Broadcom***, Brocade, Compellent / ***Dell***, ***EMC***, Fujitsu, ***HPE***, Huawei, IBM, ***Inova***, ***Intel***, ***Microsoft***, NEC, ***NetApp***, ***Nimble Storage***, Pure Storage, RedHat, SK Hynix, Tintri, Toshiba, VMTurbo, ***VMware***, WD

How to Participate

- Download the latest "Work in Progress" from the SNIA site:
  - http://www.snia.org/tech_activities/publicreview#swordfish
- Join the SSM TWG
  - By Joining the SNIA and SSM TWG, you can shape the standard: https://members.snia.org/apps/org/workgroup/ssmtwg
- Through the SNIA feedback portal, providing feedback on "Work In Progress"
  - As the group produces "Works In Progress", you can provide feedback at http://www.snia.org/feedback