

SNIA Swordfish™ : Expanding to NVMe/NVMe-oF and Storage Fabric Management

Richelle Ahlvers, SSM TWG Chair, SMI Chair and SNIA Board Director
Storage Technology Enablement Architect, Intel Corporation

Q&A Session “Your Questions Answered on Storage Management”

Agenda

Speaker
Photo Will
Be Placed
Here

This presentation provides a broad look at the Redfish and Swordfish ReSTful hierarchies, maps these to some common applications, and details the most recent functionality that being added to Swordfish, covering NVMe and NVMe-oF integration, as well as the expansion to cover fabrics management.

What are Redfish and Swordfish?

DMTF Redfish™ covers server, data center, fabric management

REST API with JSON payloads; choice of CSDL, JSON and YAML schema for development

SNIA Swordfish™: Storage Management Specification with REST Based API

Extends DMTF's Redfish Specification

Swordfish adds storage management to all of these use cases, plus storage fabric management:

Covers block, file, and object storage

Extend traditional storage domain coverage to include converged environments (server, storage and fabric together)

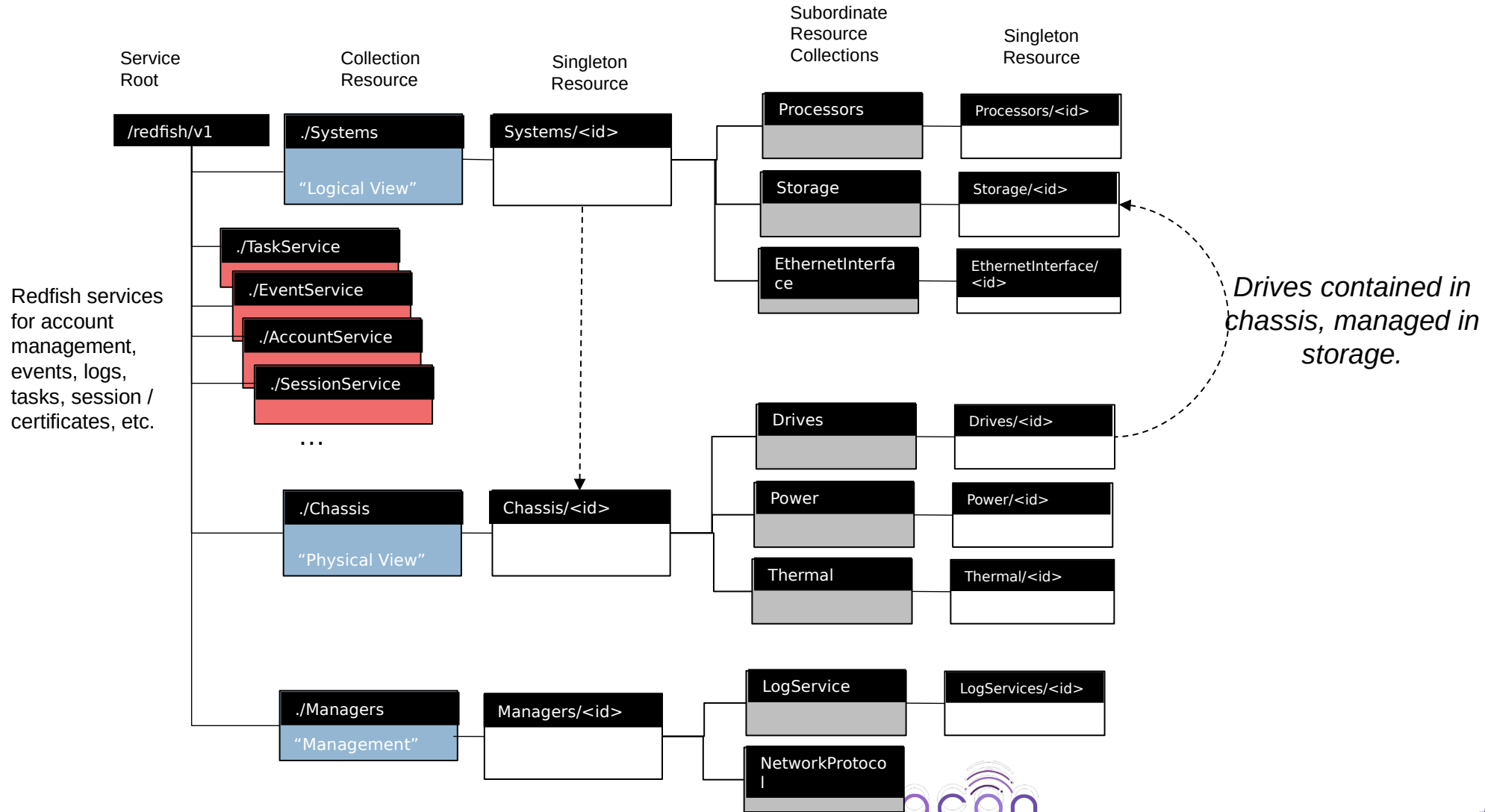
Provides the option for implementation to utilize Class of Service (intent or service level) based provisioning, management, and monitoring

Through an Alliance partnership with NVM Express®, RF/SF (Redfish and Swordfish) have added NVMe / NVMe oF manageability

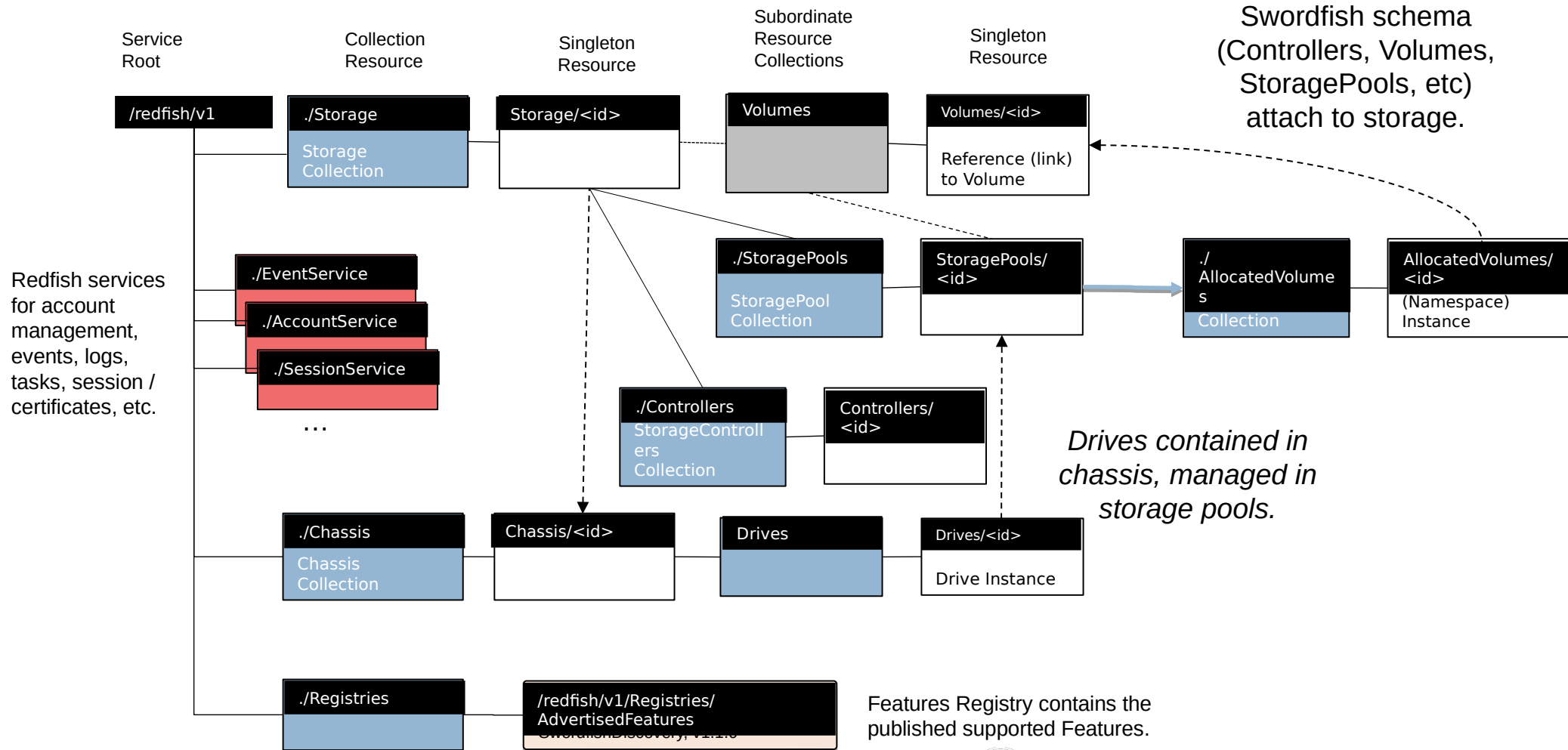
An alliance partnership with OFA is expanding support in RF/SF for fabrics and storage fabrics management



Redfish Hierarchy



Redfish Hierarchy: Adding Swordfish Advanced Storage



Redfish



Adding NVMe and NVMe-oF

Swordfish versions 1.2.x support NVMe and NVMe-oF (latest version: v1.2.2a)

NVMe and NVMe-oF management models:
Models reflect a unified view of all NVMe device types (universal model).

Mapping between NVMe specifications and RF/SF specifications: “Swordfish NVMe Model Overview and Mapping Guide”

Mockups: swordfishmockups.com

Profiles: (Available) NVMe Drives, Ethernet-attached drives; (Future) *BOF (JBOF, EBOF), NVMe arrays

Profiles feed Swordfish Conformance Test Program

CTP Testing available for NVMe Drives

New releases tracking new NVM Express features

Available mockups

- [Default Endurance Group / Default Set Mockup](#)
- [Single Endurance Group / Single Set Mockup](#)
- [JBOF Mockup](#)
- [Fabric Attach Array Mockup](#)
- [Opaque Array Mockup](#)

Subsystem (Fabric) Model – NVMe-oF

- [Fabric-attached subsystem Mockup](#)
- [Simple SSD with NVMe-oF Attach Mockup](#)

Available NVMe-specific profiles

[SwordfishNVMeDrive.json](#)

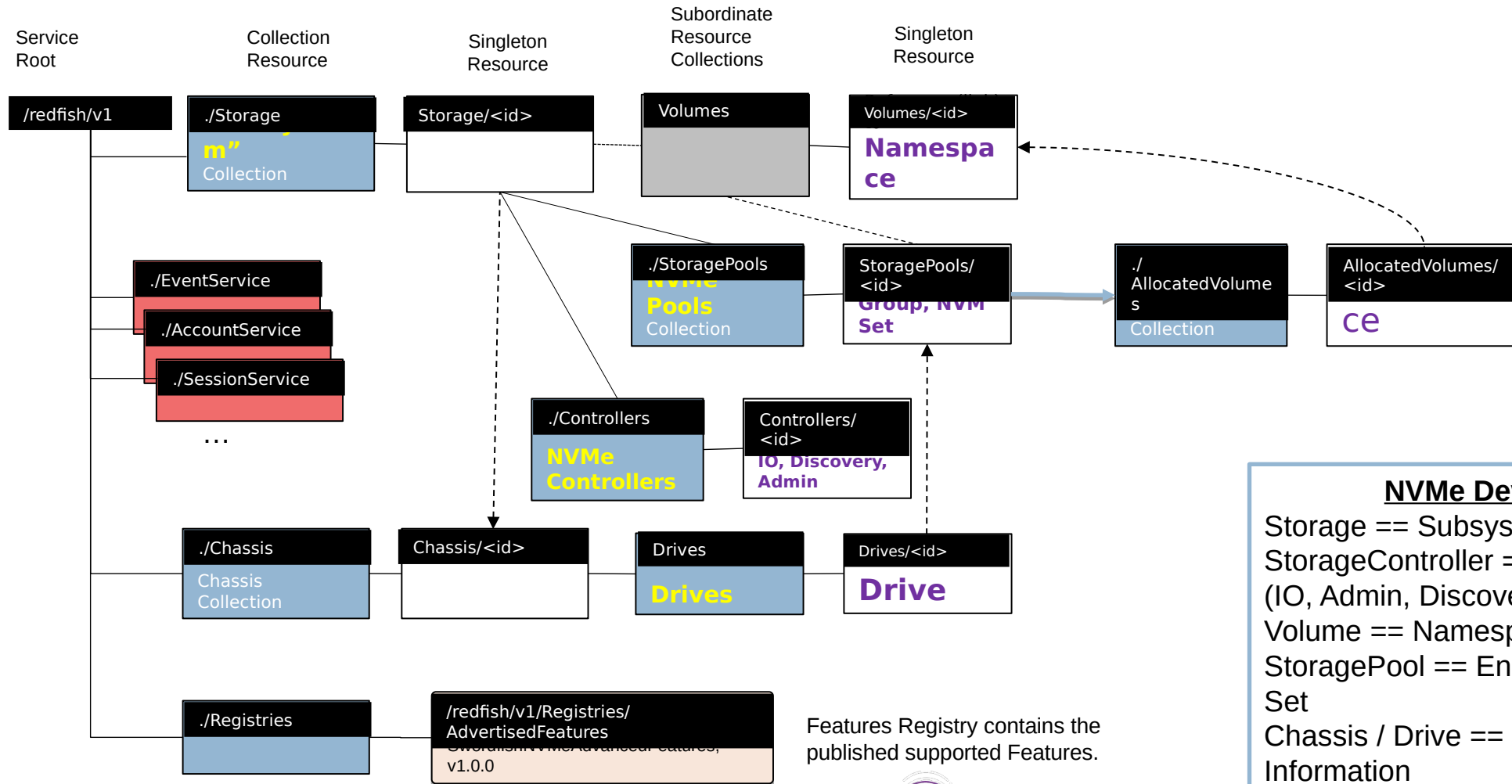
[SwordfishNVMeDriveAdvancedFeatures.json](#)

[SwordfishNVMeEthernetAttach.json](#)



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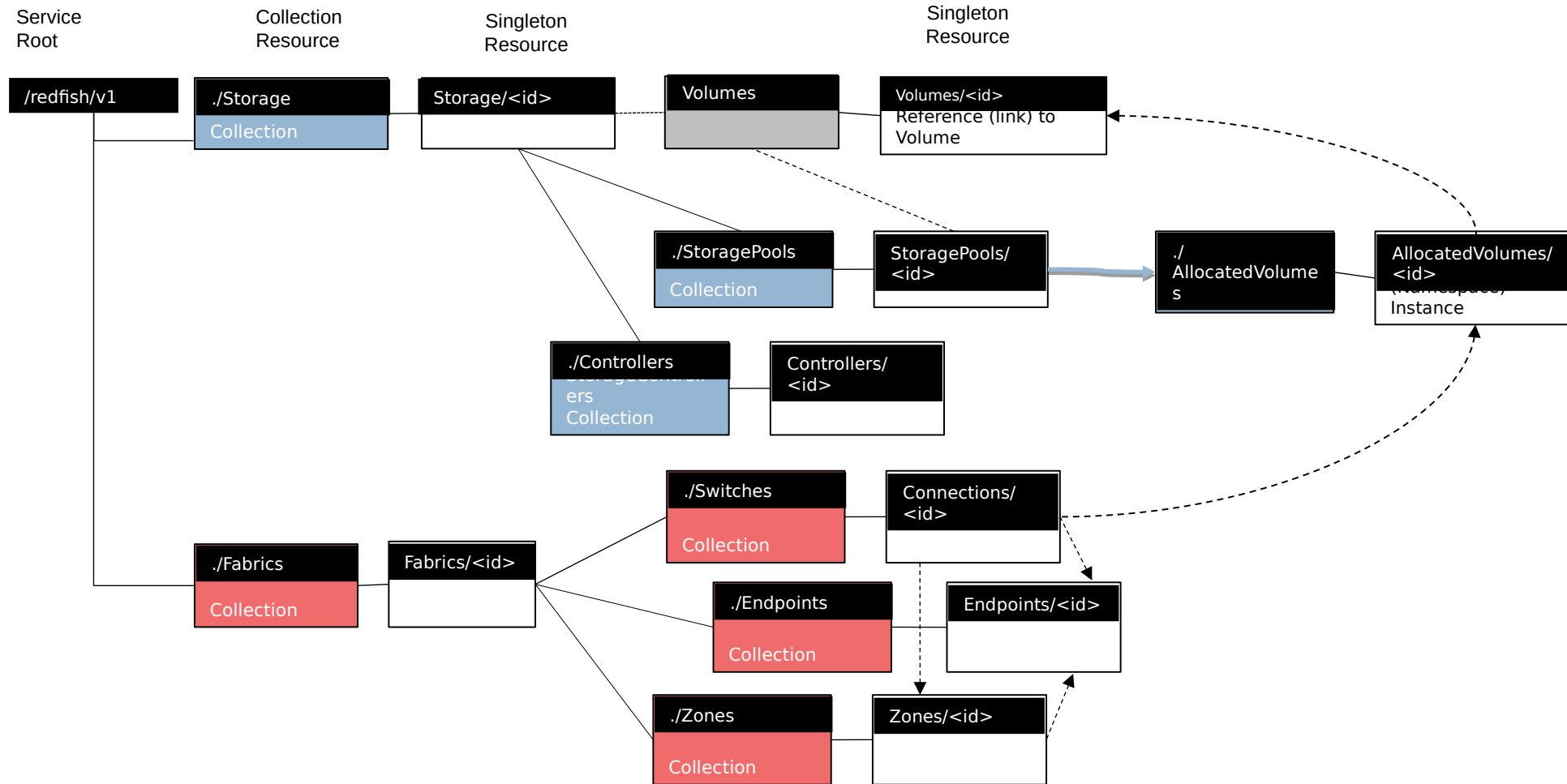
Implementing an NVMe Drive in RF / SF



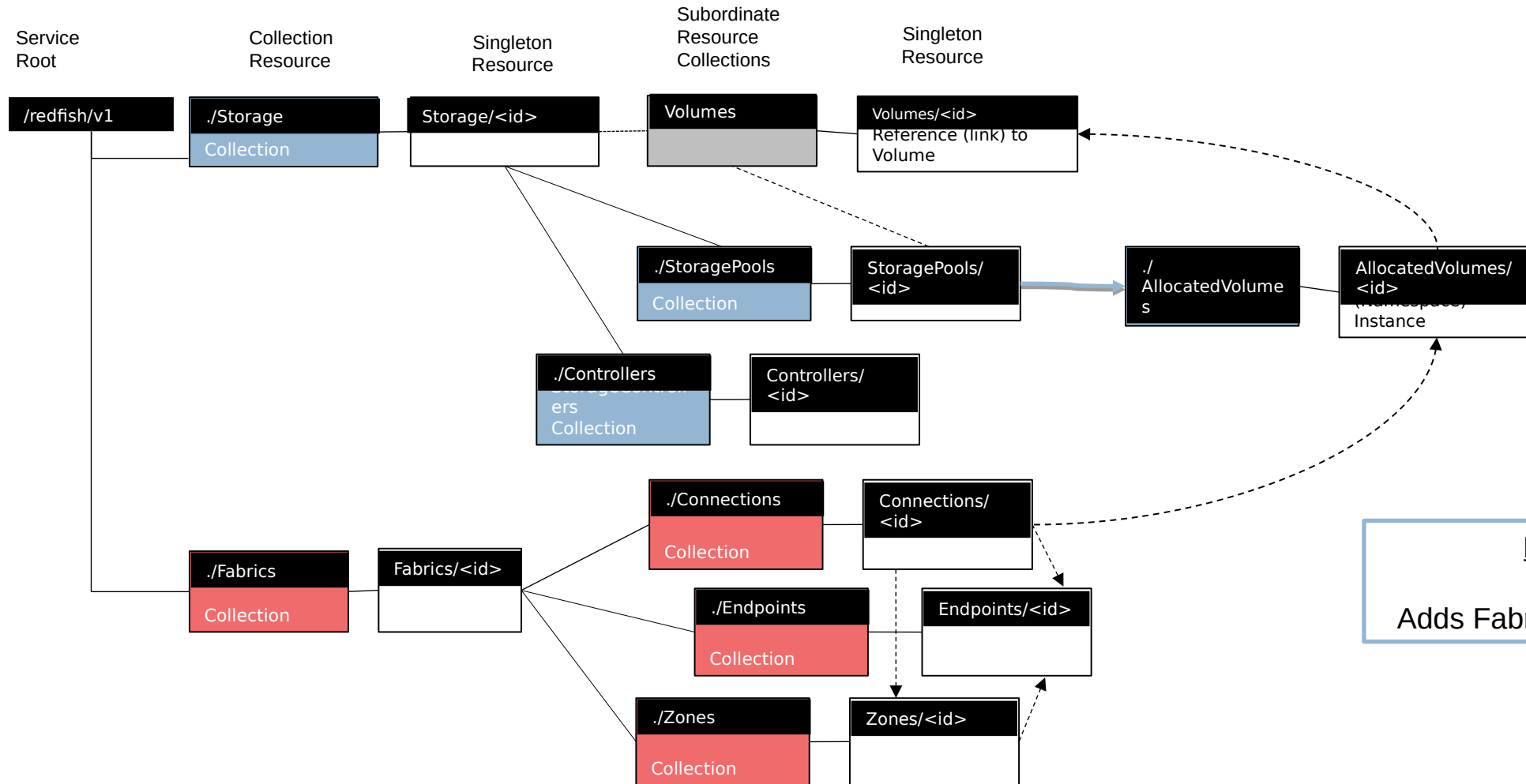
NVMe Device Usage:

Storage == Subsystem
 StorageController == NVMe Controllers
 (IO, Admin, Discovery)
 Volume == Namespace
 StoragePool == Endurance Group / NVM
 Set
 Chassis / Drive == Physical Entity
 Information

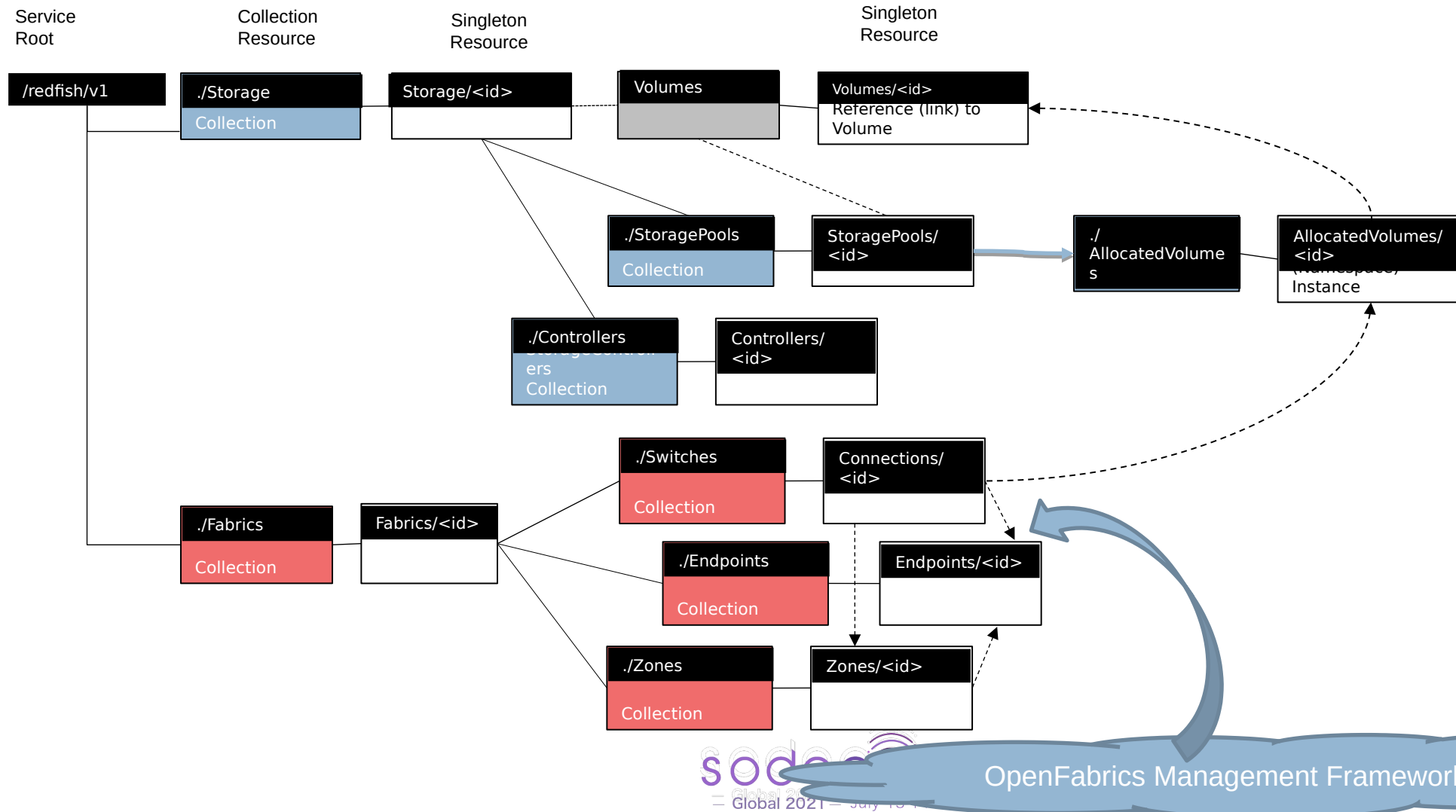
Redfish/Swordfish Hierarchy: Managing Extended Connectivity



Redfish/Swordfish Hierarchy: Adding Multi-System Access Management



Next Steps: Developing the OpenFabrics Framework and Mapping to Redfish and Swordfish



Redfish and Swordfish have a Broad Open Source Tools ecosystem

Swordfish Open Source Tools

Swordfish PowerShell Toolkit

Swordfish to RestAPI Map

Swordfish PowerShell Provider Framework

Swordfish Emulator

Swordfish Mockup website

Swordfish API Emulator

Swordfish Basic Web Client

Swordfish DataDog Sample Dashboard Integration

Swordfish PowerBI Sample Integration

Swordfish GOLang Library (Gofish)



Redfish Open Source Tools:

Redfish Mockup Creator

Redfish Mockup Server

Python redfish library

Redfish Interface Emulator

Redfish Interop Validator

Redfish Service Conformance Check

Redfishtool (cli)

Redfish Usecase Checkers

YANG to Redfish Converter

Redfish Schema Creator

Redfish Service Validator

Redfish Tacklebox

Redfish Schema C Struct Generator

libredfish

Redfish URI Validator

Redfish Profile Simulator

Redfish Event Listener

Redfish Reference Checker

Redfish Json Schema Response Validator

Python redfish utility

Redfish Ansible Playbooks

Redfish Tools:

Odata Validator

CSDL to JSON Converter, JSON to OpenAPI

Converter

Doc Generator

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Where to find more info...

SNIA Swordfish™

Swordfish Standards

Schemas, Specs, Mockups, User and Practical Guide`s, ...

<https://www.snia.org/swordfish>

Swordfish Specification Forum

Ask and answer questions about Swordfish

<http://swordfishforum.com/>

Scalable Storage Management (SSM) TWG

Technical Work Group that defines Swordfish

Influence the next generation of the Swordfish standard

Join SNIA & participate:

https://www.snia.org/member_com/join-SNIA

Join the SNIA Storage Management Initiative

Unifies the storage industry to develop and standardize interoperable storage management technologies

<https://www.snia.org/forums/smi/about/join>

DMTF Redfish™

Redfish Standards

Specifications, whitepapers, guides,...

<https://www.dmtf.org/standards/redfish>

OpenFabrics Alliance: OFMF

OFMF Working Group (OFMFWG)

Description & Links

<https://www.openfabrics.org/working-groups/>

OFMFWG mailing list subscription

<https://lists.openfabrics.org/mailman/listinfo/ofmfwg>

Join the OpenFabrics Alliance

<https://www.openfabrics.org/membership-how-to-join/>