



Why Storage Management Standards Matter in Complex Virtualized Environments

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About the Presenter



Richelle Ahlvers

Vice Chair, SNIA Board of Directors

Richelle is a Storage Technology Enablement Architect at Intel, where she promotes and drives enablement of new technologies and standards strategies. Richelle has spent over 25 years in Enterprise R&D teams in a variety of technical roles, leading the architecture, design and development of storage array software, storage management software user experience projects including mobility, developing new storage industry categories including SAN management, storage grid and cloud, and storage technology portfolio solutions.

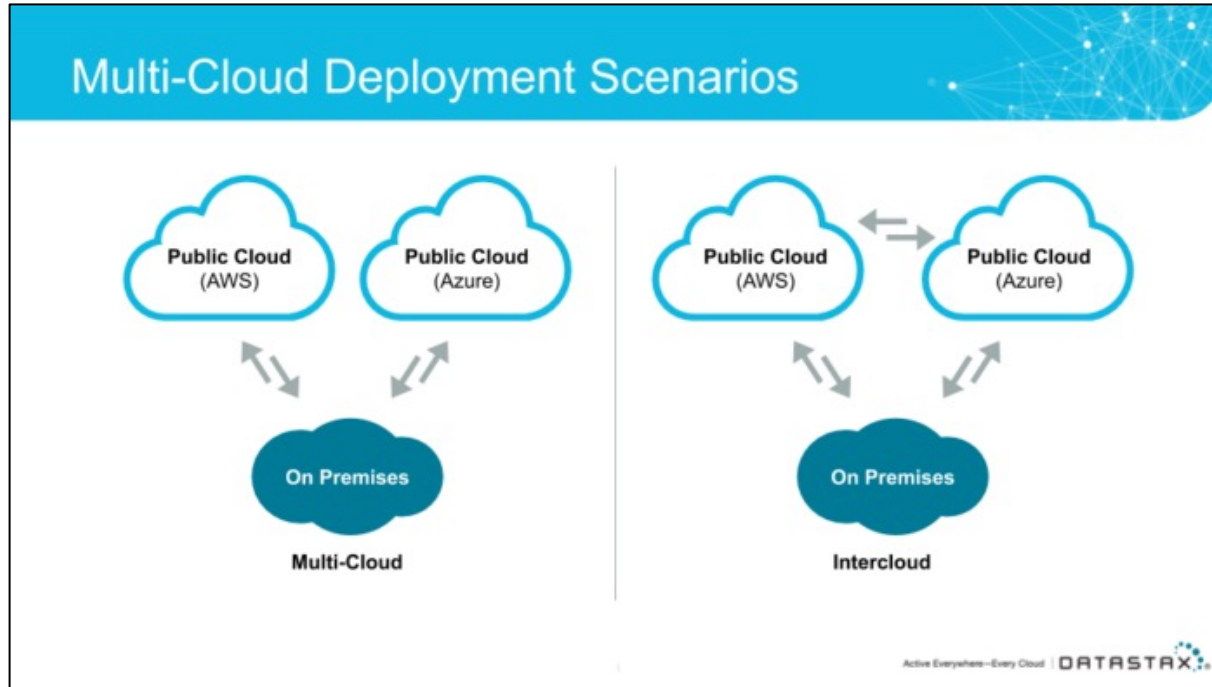
Richelle has been engaged with industry standards initiatives for many years and is actively engaged with many groups supporting manageability including SNIA, DMTF, NVMe, OFA and UCIe. She is Vice-Chair of the SNIA Board of Directors, Chair of the Storage Management Initiative, leads the SSM Technical Work Group developing the Swordfish Scalable Storage Management API, and has also served as the SNIA Technical Council Chair and been engaged across a breadth of technologies ranging from storage management, to solid state storage, to cloud, to green storage. She also serves on the DMTF Board of Directors as the VP of Finance and Treasurer.

Abstract

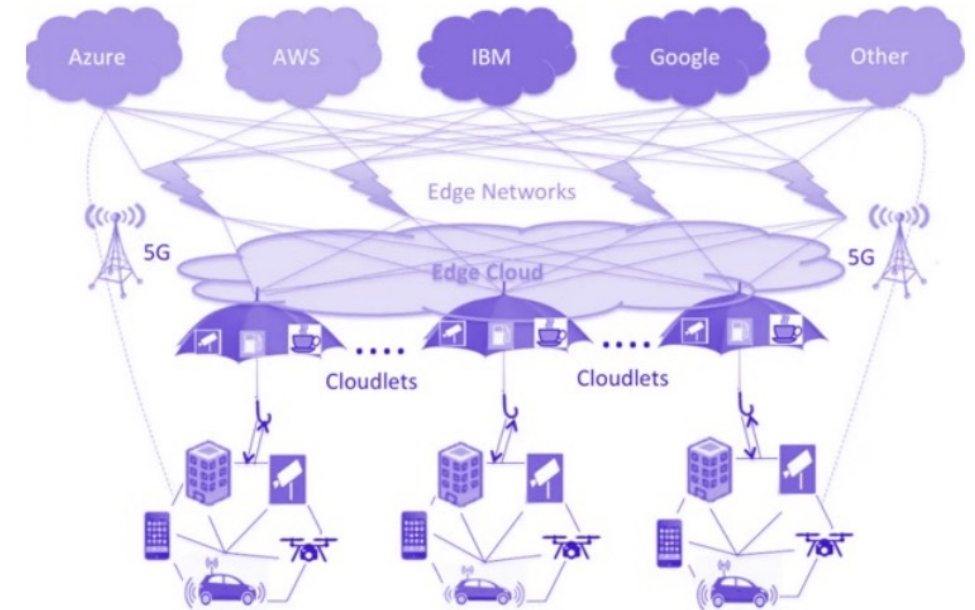
- With the proliferation of different technologies and multiple vendors, standards-based management is more critical than ever to successfully develop, integrate, deploy, and manage systems and storage at scale.
- This session will provide an overview of:
 - The latest technologies in storage for virtualization, acceleration, and fabrics
 - The organizations delivering standards-based management
 - A discussion of open-source projects delivering value-add using standards-based management

Where is the Data?

Centrally Managed?

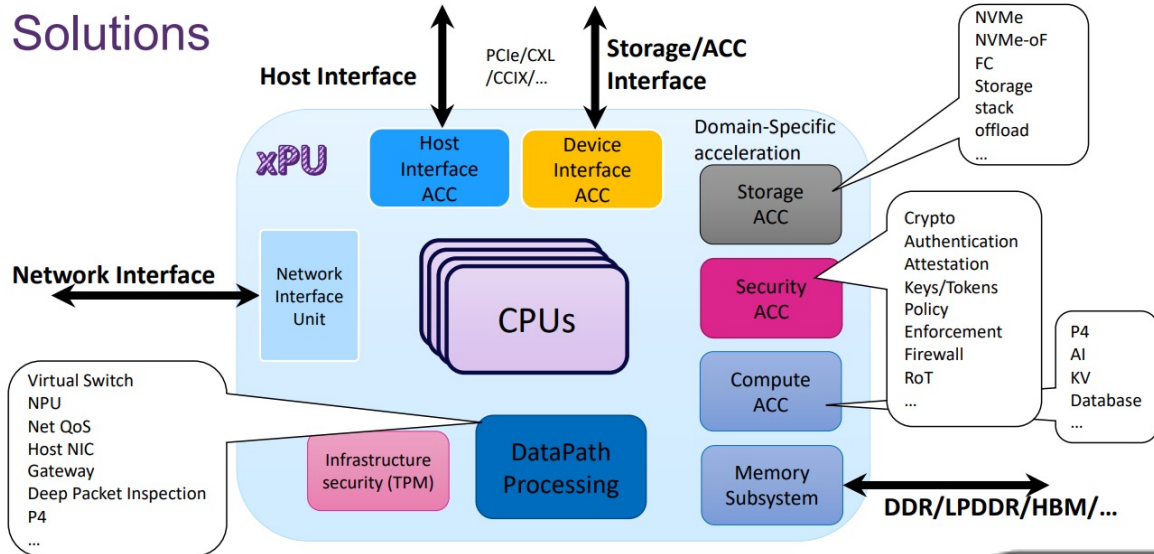


Edge?



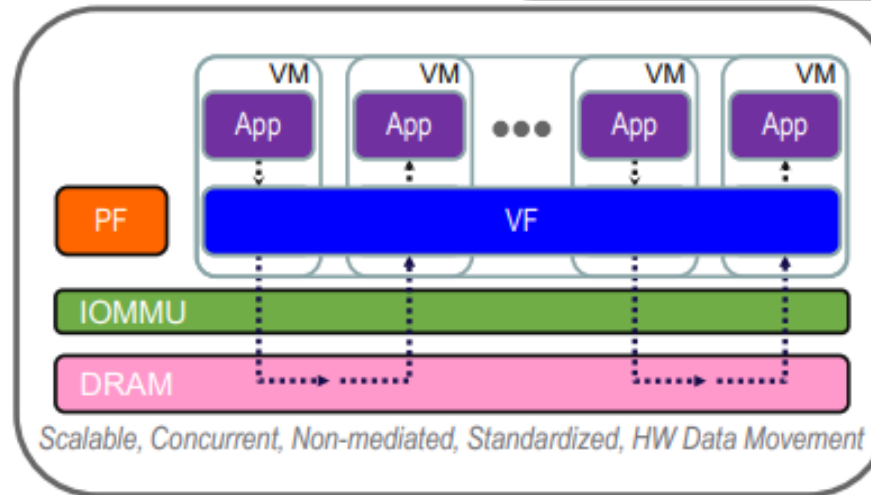
Co-locating Processing with Data

xPU Solutions



- Different flavors of xPUs vary in their specific block diagram

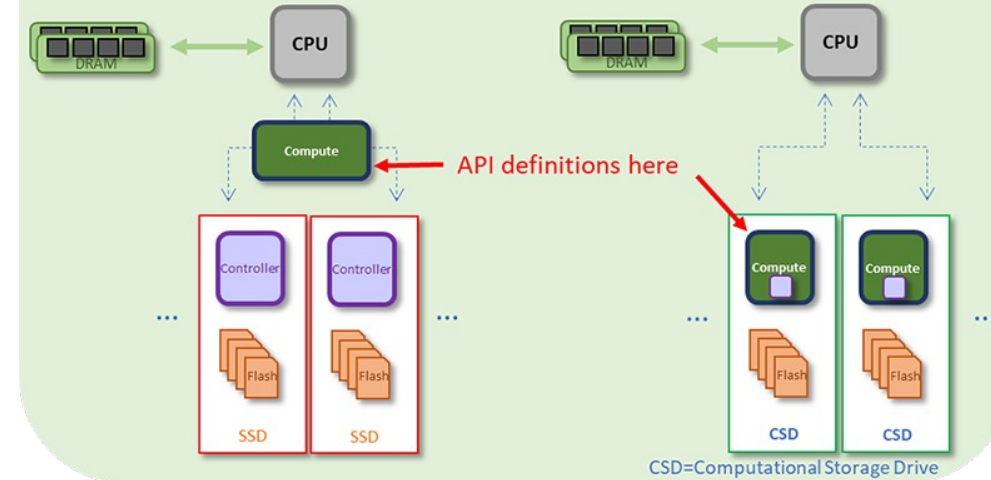
Data Accelerators



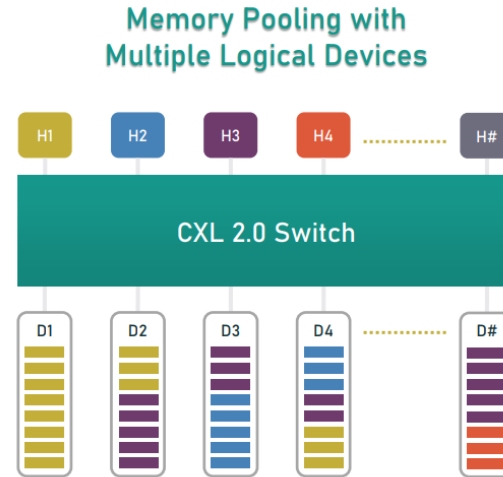
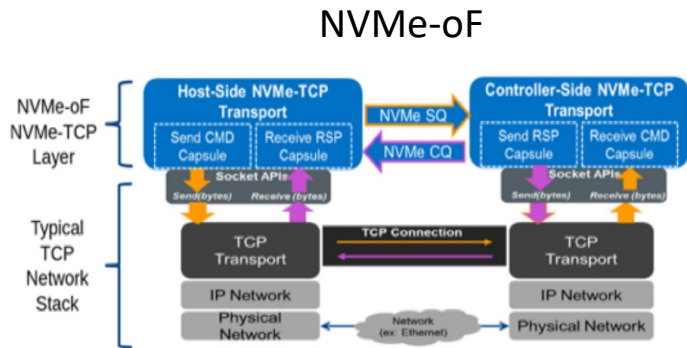
Computational Storage

Computational Storage Architecture

Move Compute Closer to Storage

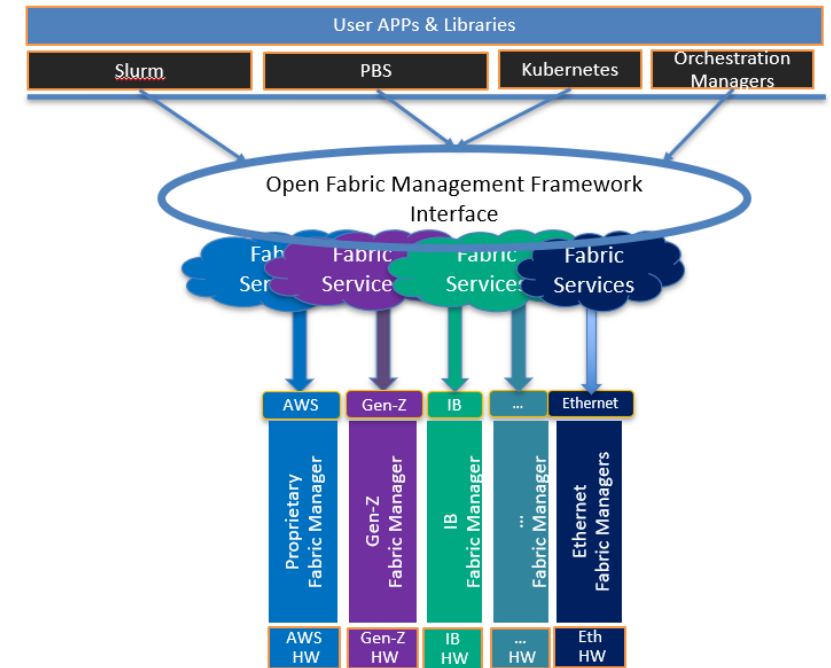


Expanding Storage Fabric Technologies



Cache coherent disaggregation:
Memory, Accelerators,
memory-based storage

Managing across technologies:
dedicated fabrics to shared fabrics



New Ways to Manage Storage: AI

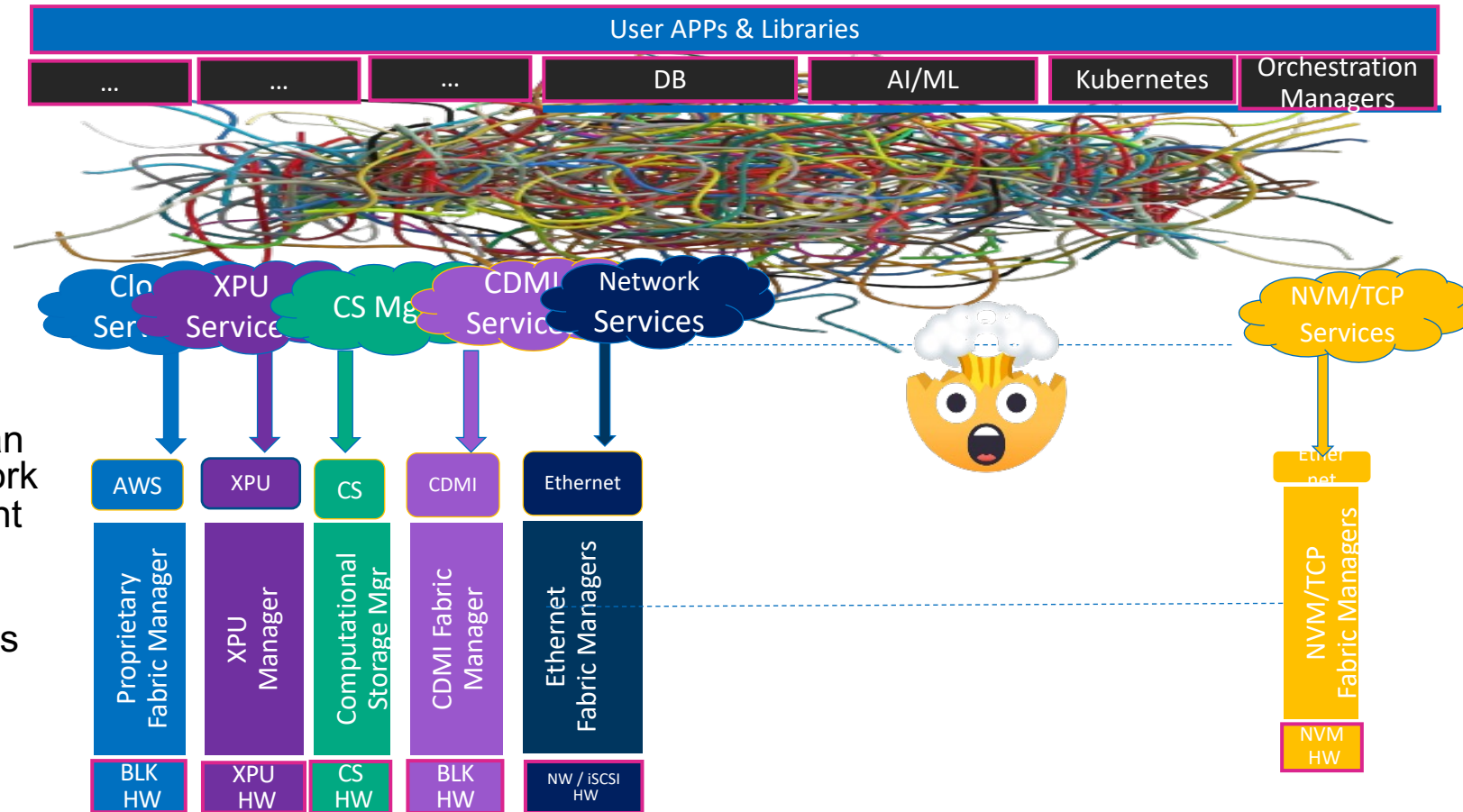
- Challenges with AI storage management:
 - Single vendor
 - Self-proliferating (creates more data to manage)
 - Cloud connectivity an issue for dark sites
 - New technology, poorly understood algorithms



These Trends Lead to ... a Manageability Headache

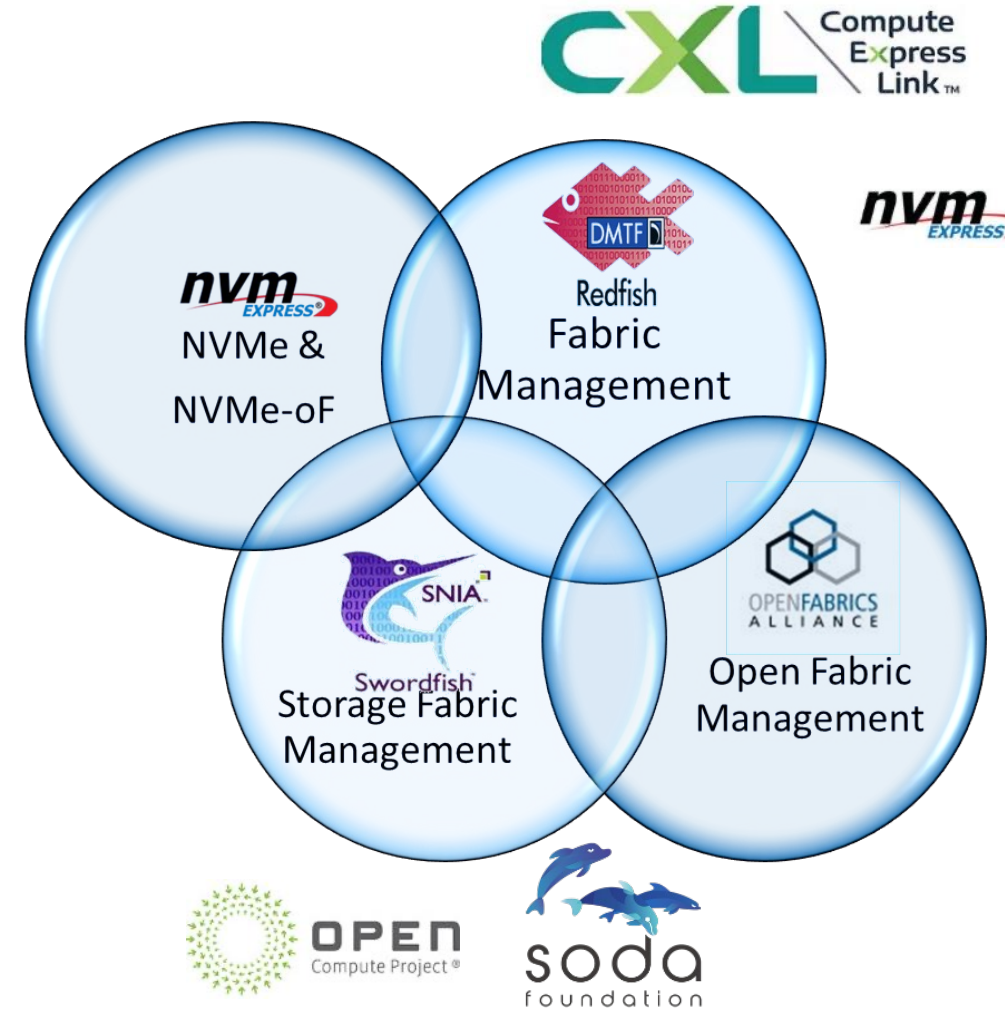
Administrative Management Challenges

- Adding additional virtualization and acceleration technologies presents more flexibility and options to build a custom configuration but doing so increases the management challenges exponentially.
- Workload management and optimization is different for each type of technology, device, and vendor. Sometimes, even per version.
- Administrators are being asked to manage an increasingly heterogenous device and network infrastructure, each with its own management standard and model. DevOps, instead of specialized management domains.
- With the proliferation of different technologies and multiple vendors, standards-based management is more critical than ever to successfully develop, integrate, deploy, and manage systems and storage at scale

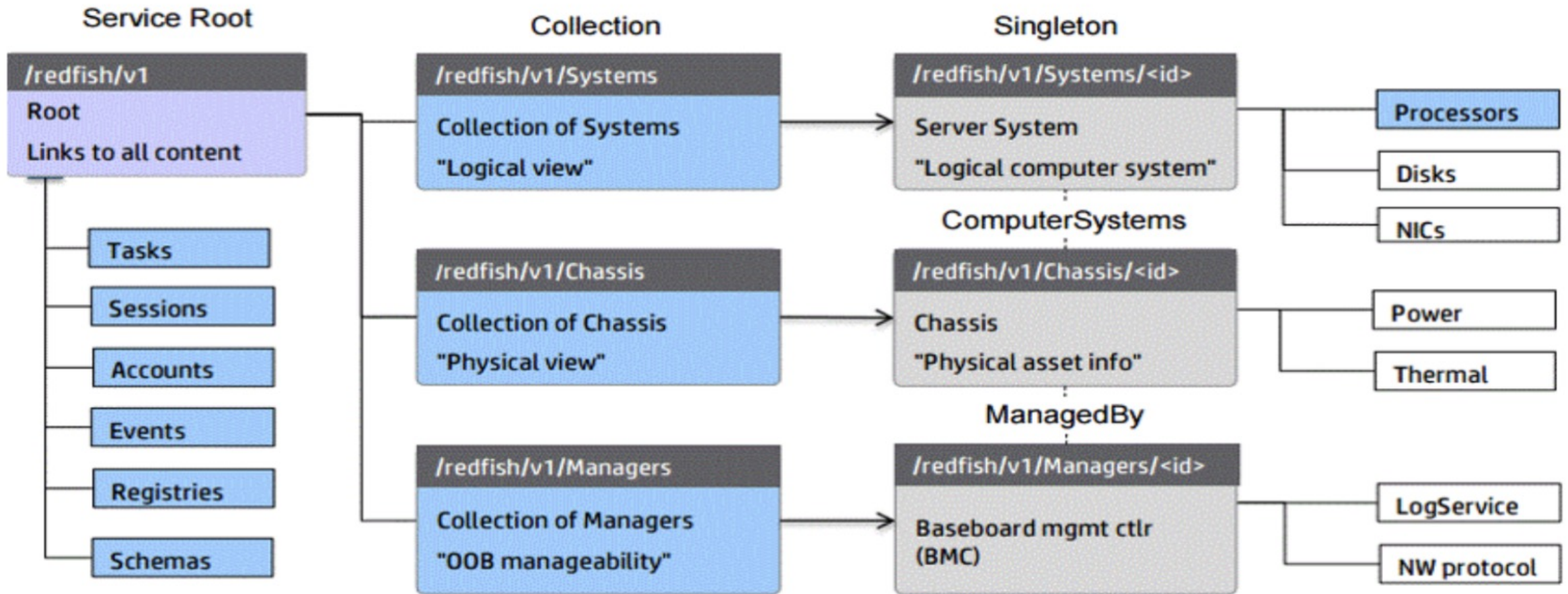


Organizations working on standards-based management

- Developing Management Standards
 - DMTF – DMTF Redfish®
 - SNIA – SNIA Swordfish®
 - NVM Express – NVMe-MI®
- Using Standards
 - OFA – OpenFabrics Management Framework
 - SODA Foundation – Service-based orchestration
- Partner Groups Refining the Standards:
 - OCP, CXL Consortium, UCle

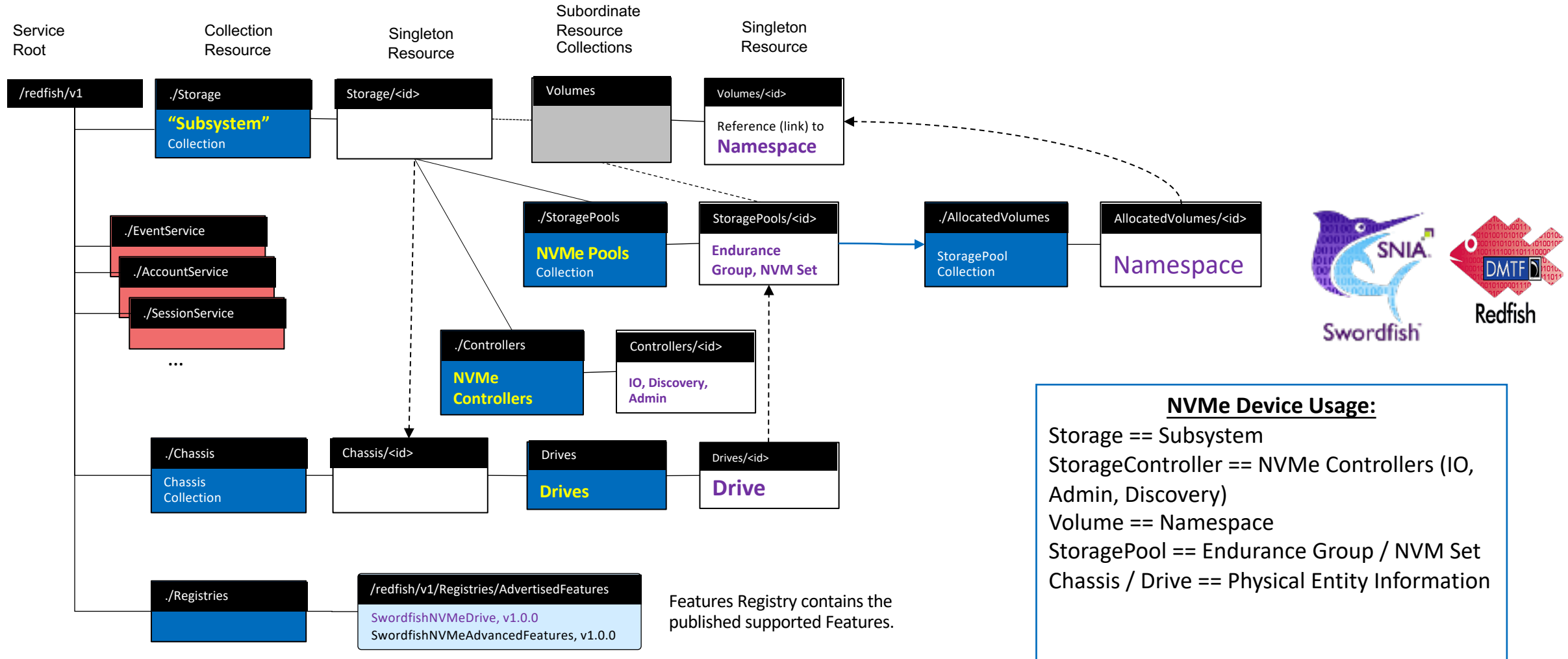


Redfish RESTful Resource Map

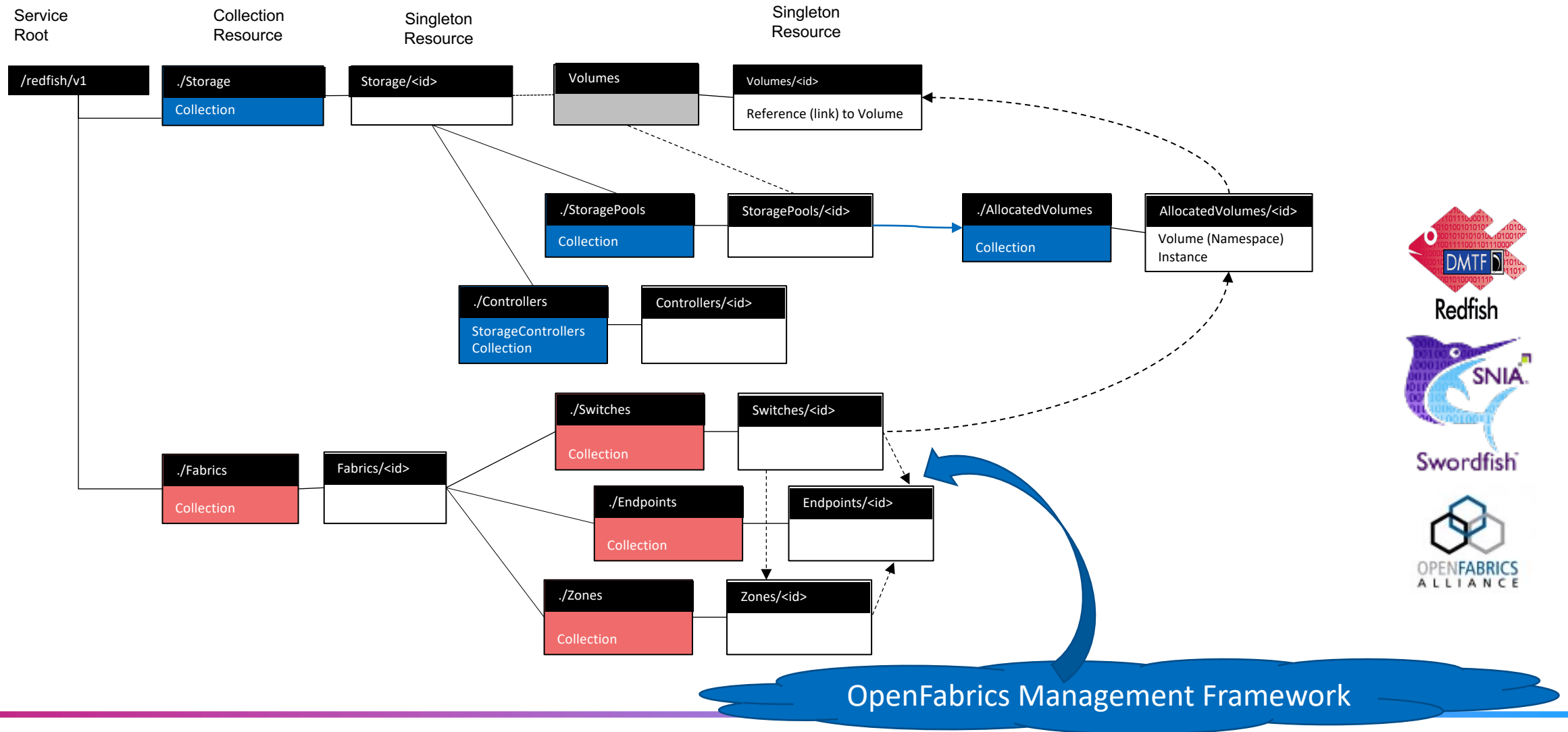


Swordfish: Extending Redfish

Example: NVMe Drive Model



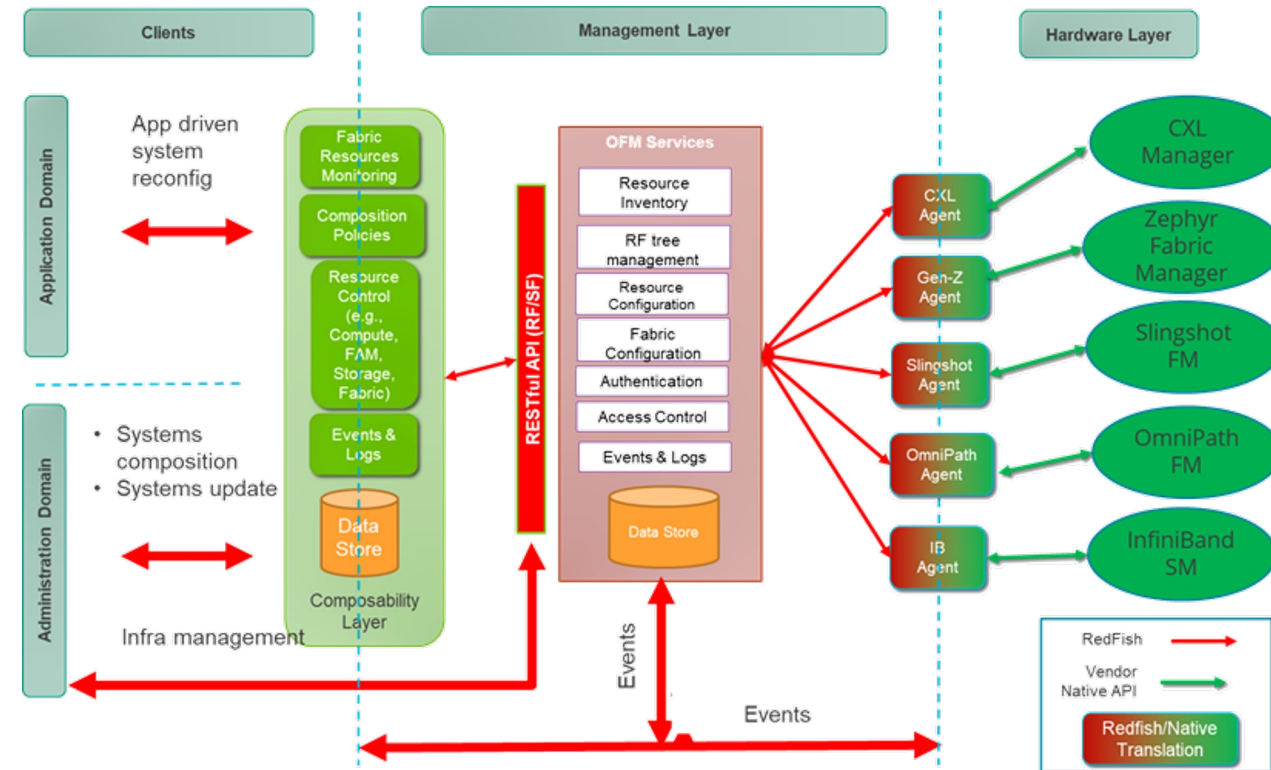
Extending Fabric Management with Redfish and Swordfish Interfaces



Open Fabric Management Framework (OFMF)

Open, centralized, composable resource management interface to efficiently connect workloads with disaggregated resources over dynamic fabric infrastructure

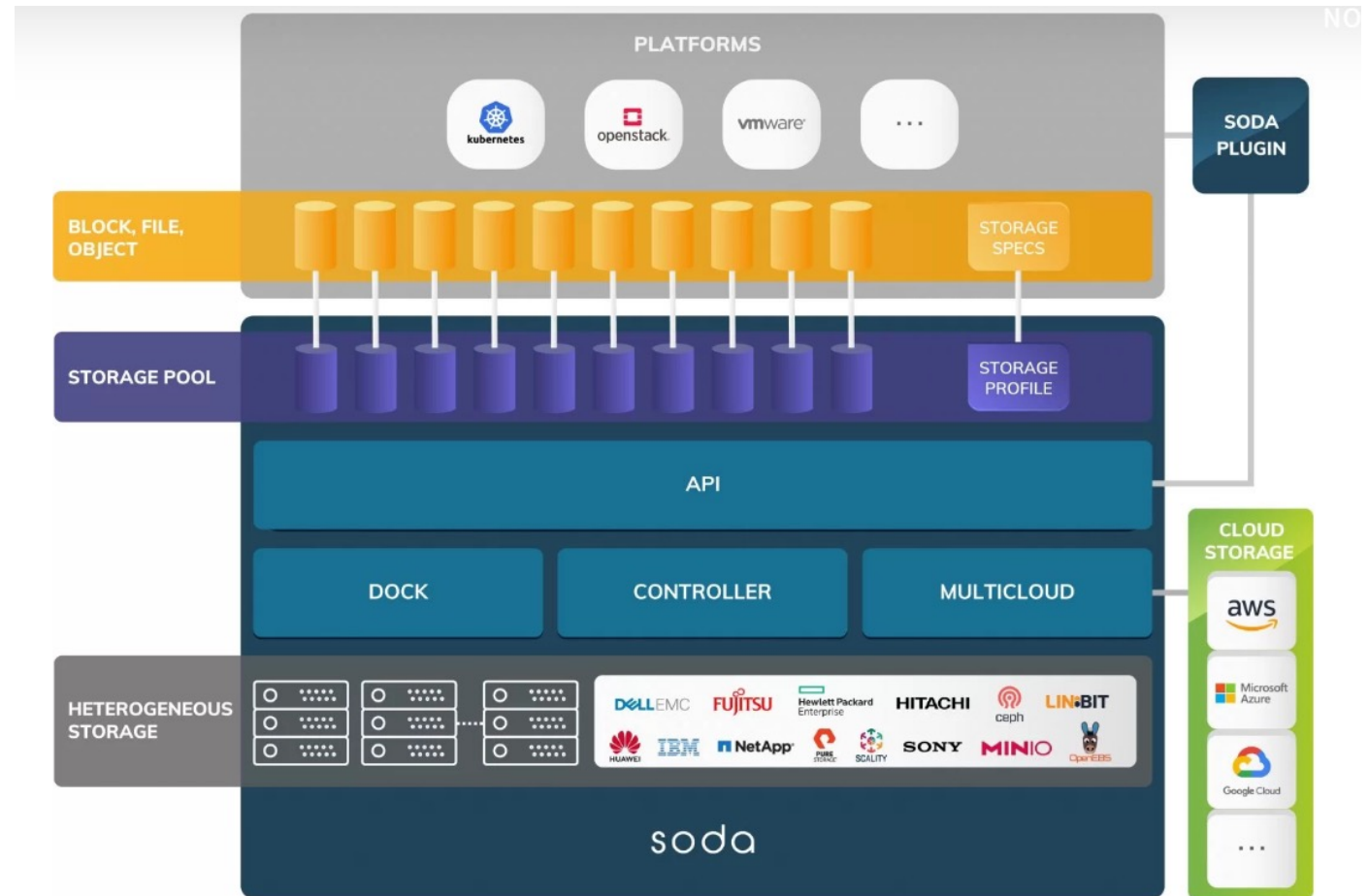
- Provides a common set of network and resource configuration, management, orchestration functions
- Simplifies the API for users, administrators, and client applications
- Provides a management security framework
- RESTful interface based on DMTF Redfish and SNIA Swordfish
- Enables common fabric services to monitor, aggregate, and subdivide resources and network fabrics
- Clients can use their own policies for composing and reconfiguring infrastructure according to workload needs
- Fabric specific providers make the actual changes



- Enables clients to apply their own policies to monitor, compose, and reconfigure their provisioned resources according to current workload needs.
- Allows fabric vendors to keep their fabric management intelligence proprietary and maintain their value-add / market advantage

SODA Key architecture tenets

- Application Platform agnostic
- Unified API for Data and Storage Management, which are scalable and can evolve
- The overall platform is microservice based
- Future ready-Unified Distributed Data Store
- Seamless vendor agnostic storage backends





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Thank You