AGENDA

- **Overview of Gen-Z**
  - What you need to know about Gen-Z for today

- **Gen-Z & the Universal Fabric Manager**
  - Overview of the Gen-Z fabric management architecture and its relationship to UFM
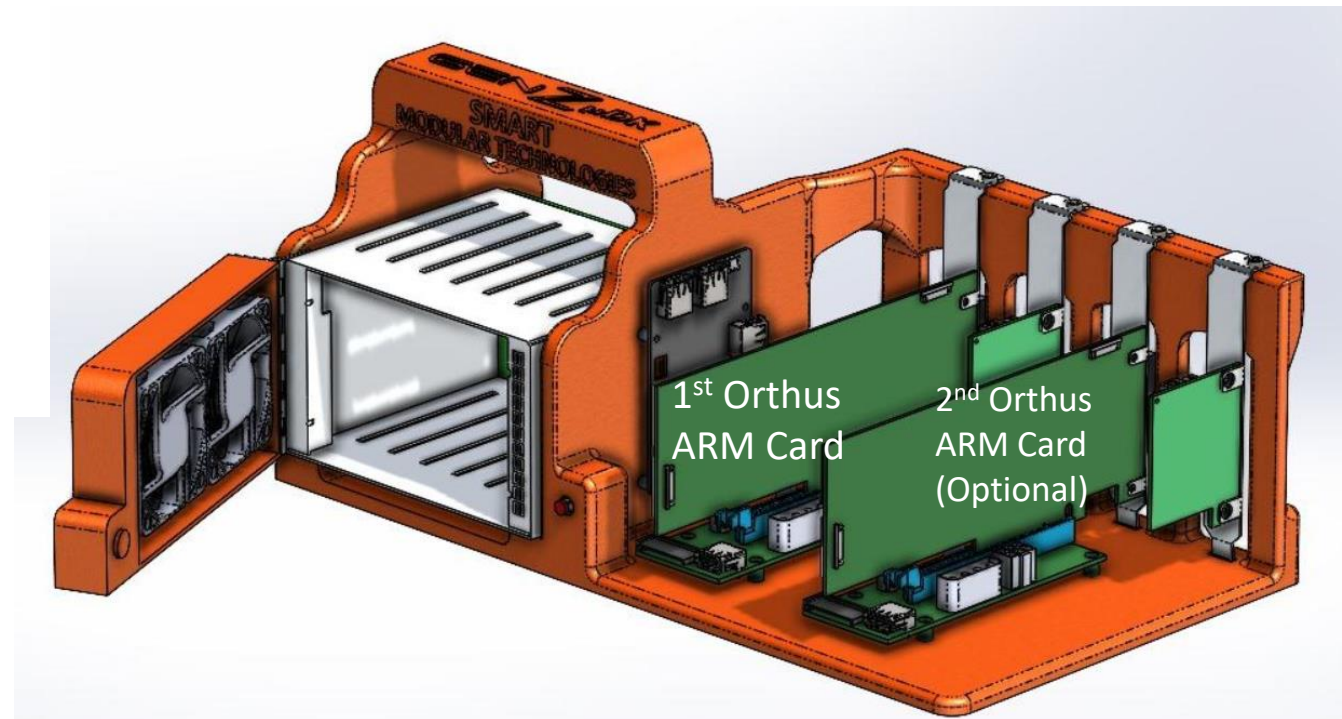
- **What's Next?**
  - Joint effort with OFA

GEN-Z CONSORTIUM

What you can find on the Gen-Z Consortium website: https://genzconsortium.org/

- Published Specifications

- Training

- Whitepapers

- Press Releases

- Presentations

- List of members

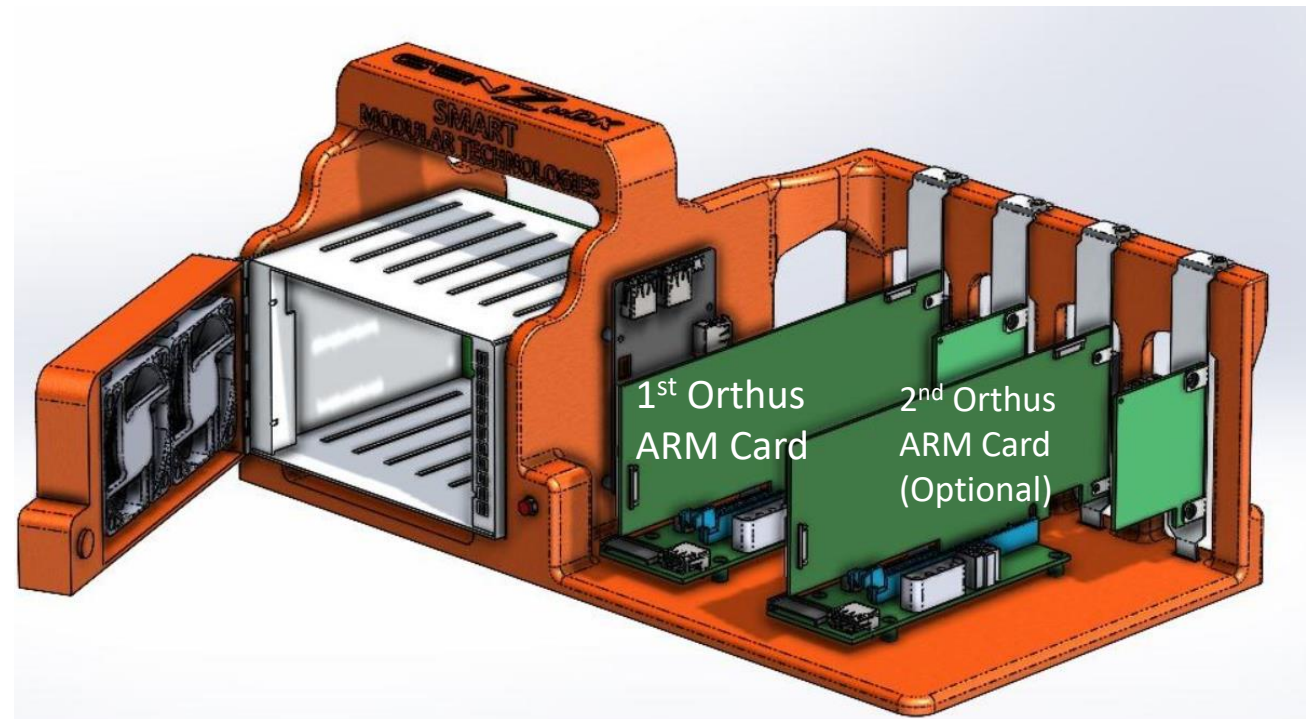- Draft Gen-Z Fabric Management Specification v0.7 Draft

6/11/2020

GEN-Z MICRO DEVELOPMENT KIT

- The Gen-Z Micro Development Kit (µDK) includes an ARM-based Linux host card which can perform load/store native Gen-Z access to a Gen-Z Memory Module (ZMM).

- The Linux ARM host and ZMM are connected with a backplane and cable.
    - The µDK backplane with additional cables allows the Linux ARM host to access up to three ZMMs.

1st Orthus ARM Card

2nd Orthus ARM Card (Optional)

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- Gen-Z Consortium has approved making the µDK available to non-members for development only

- E-mail Arthur Sainio Arthur.Sainio@smartm.com to request details, availability, and quotes
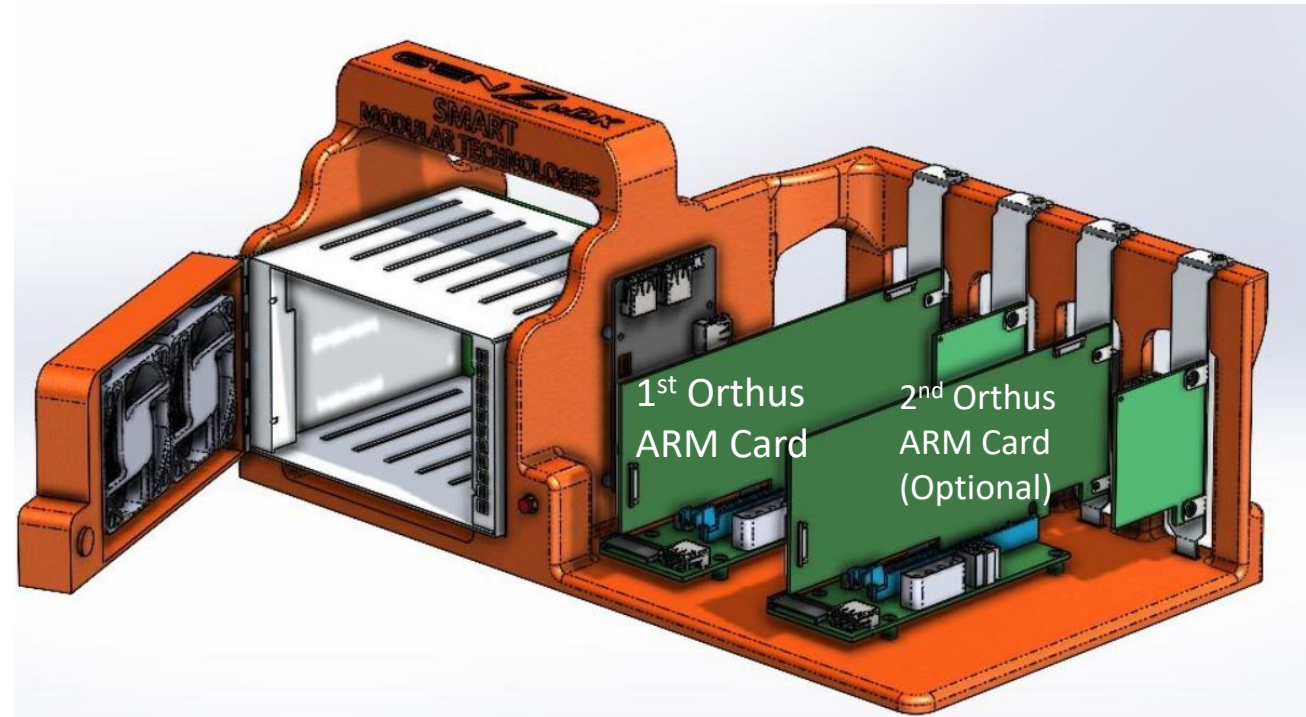
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GEN-Z REVIEW
(what you need to know today)

Gen-Z IS:

• Multi-host, memory semantic fabric for composable, shared, multi-host resources

Gen-Z speaks the language of compute
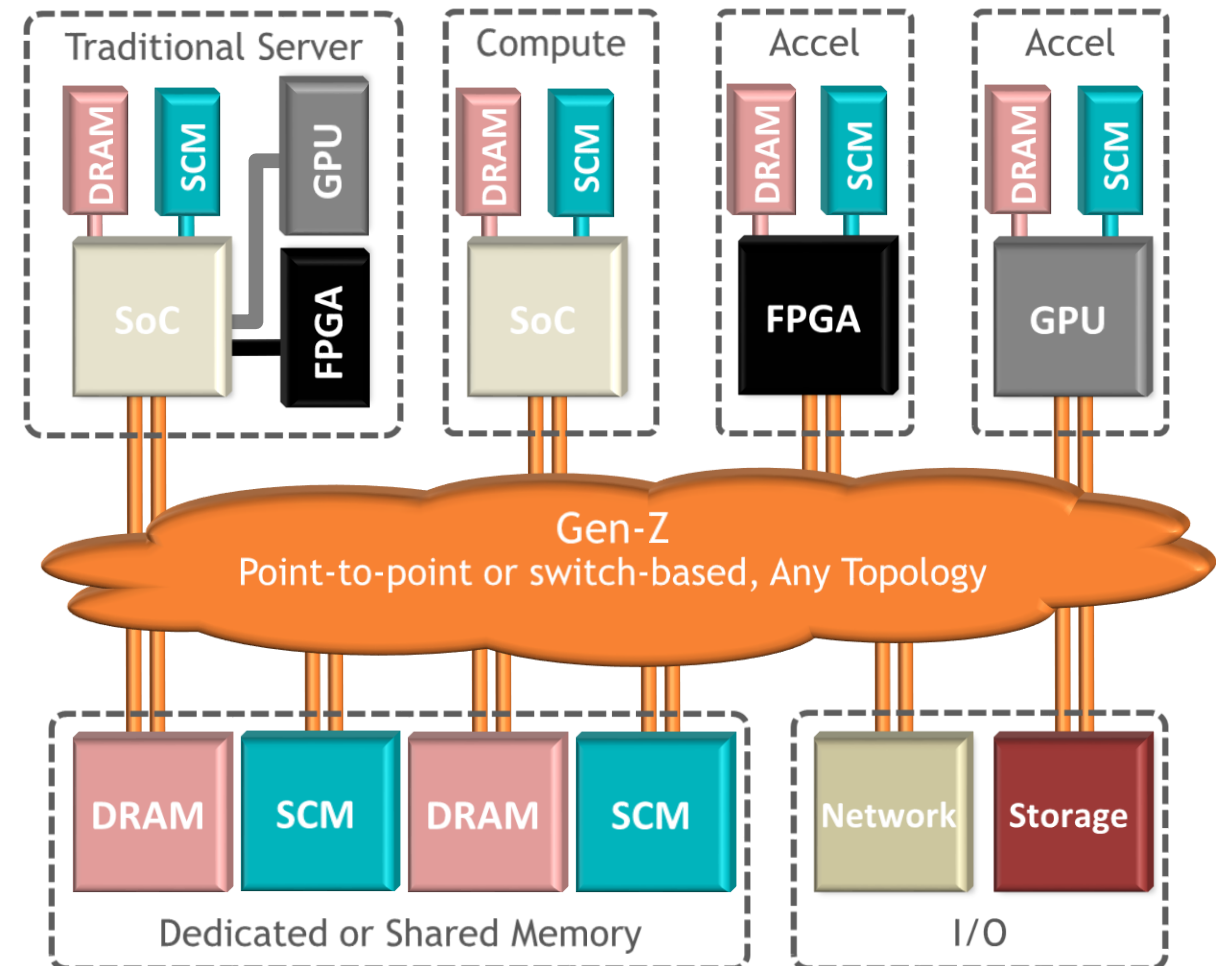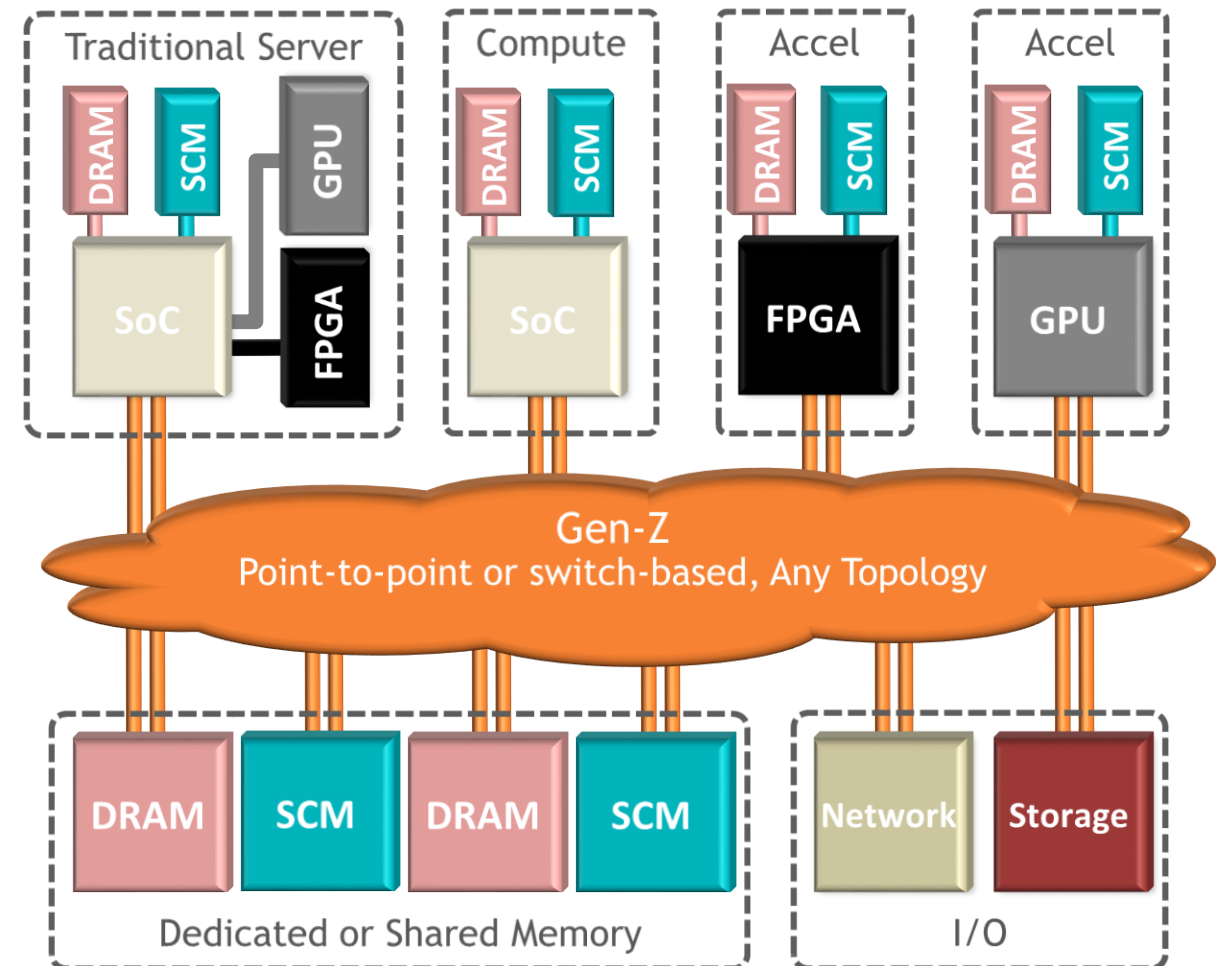
GEN-Z REVIEW
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- Large scale fabric features
  - Congestion management
  - End to End retry
  - Multi-pathing
  - Multiple Hardware Managers

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- Enables composition of total solutions
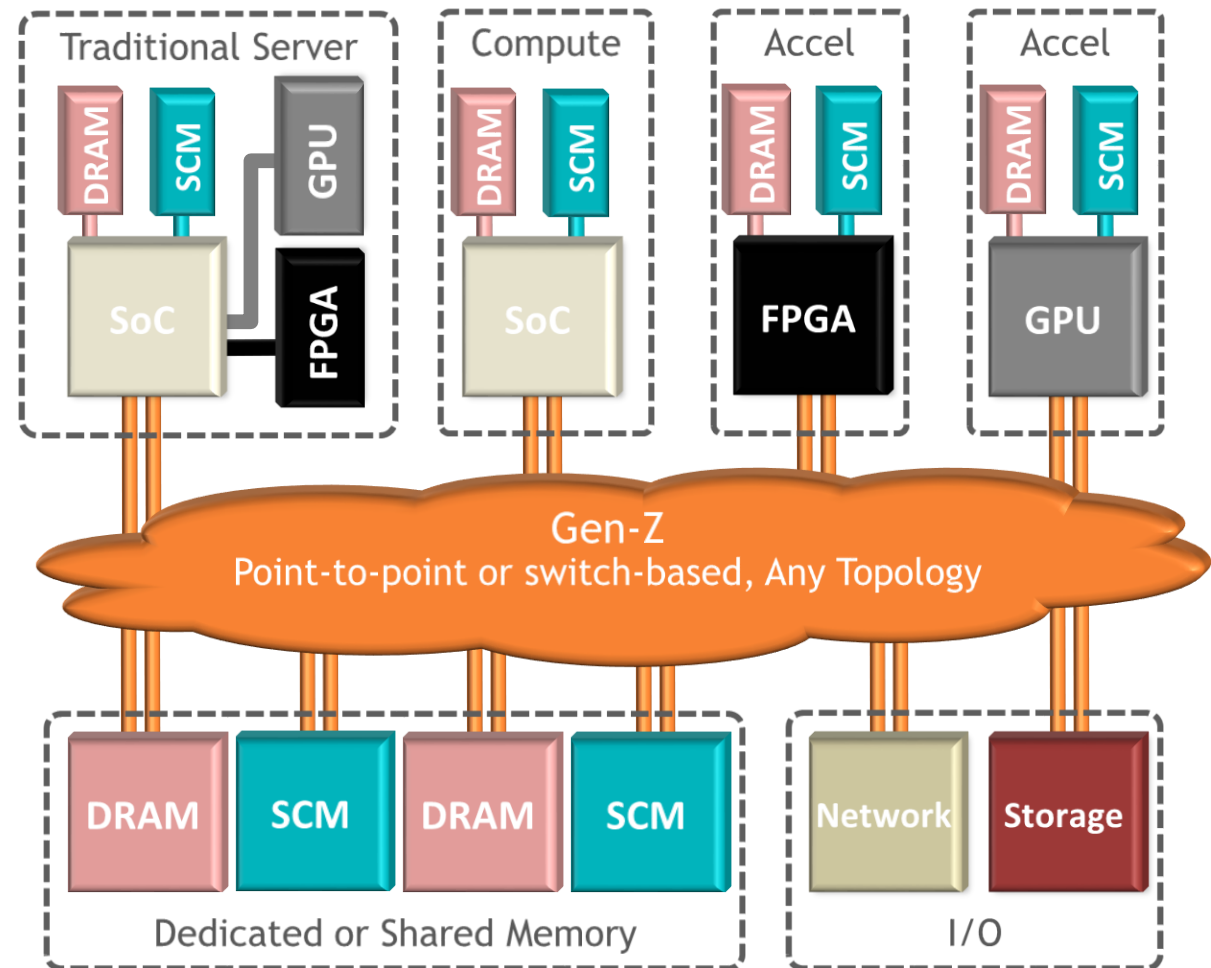 - Needs a tool stack to match

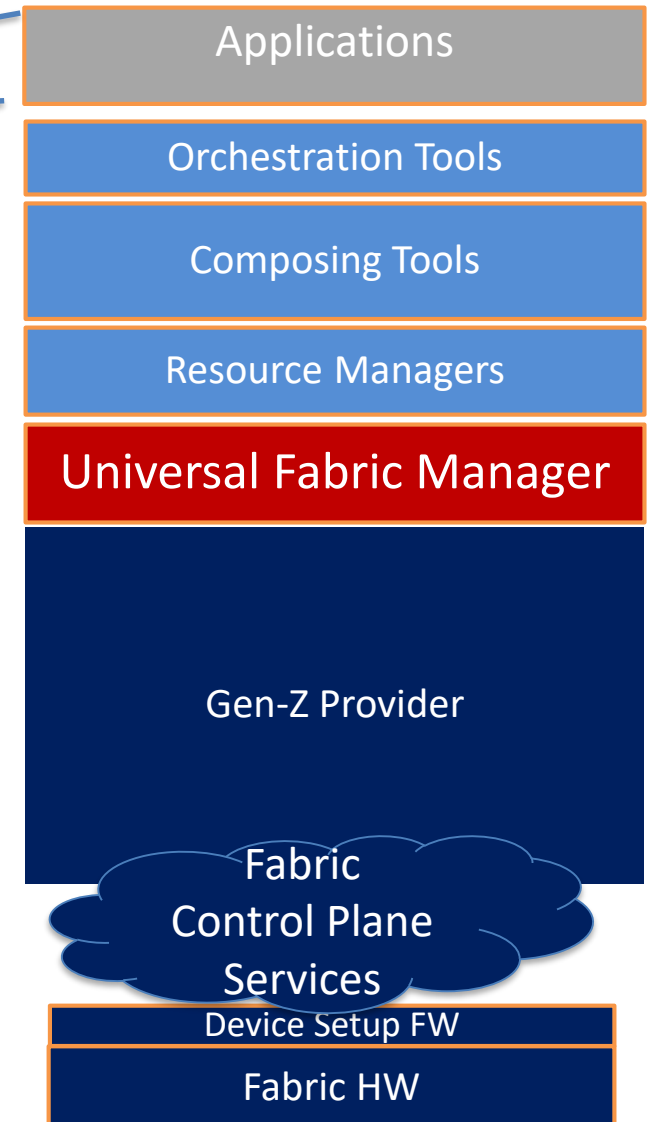Gen-Z speaks the language of compute

GEN-Z FABRIC MANAGEMENT AND THE UFM

THE COMPOSABLE FABRIC MANAGEMENT STACK
who cares about what?

The Client: the end user of a total solution package

Cares about the applications

Applications

Orchestration Tools

Composing Tools

Resource Managers

Universal Fabric Manager

Gen-Z Provider

Fabric Control Plane Services

Device Setup FW

Fabric HW

THE COMPOSABLE FABRIC MANAGEMENT STACK
who cares about what?

The Client: the end user of a total solution package

Cares about the applications

The Solution Provider: Integrates the application with suitable infrastructure and delivers the solution to the Client

Cares about orchestration tools

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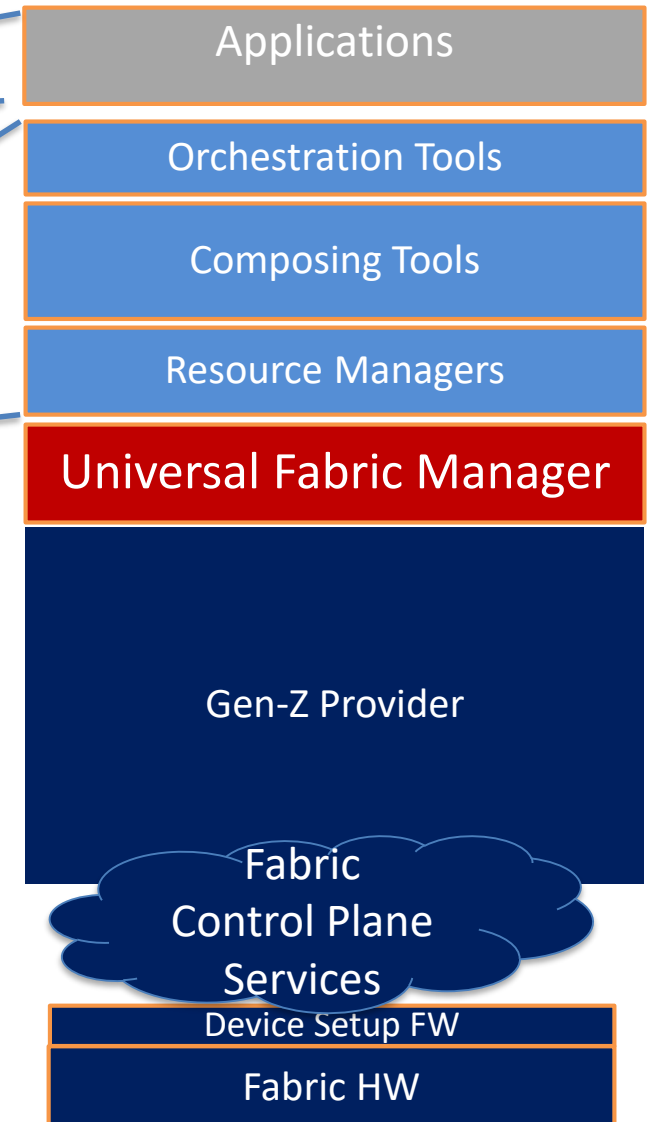Fabric HW

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The Solution Provider: Integrates the application with suitable infrastructure and delivers the solution to the Client

Cares about orchestration tools

The Fabric Admin: produces the fabric specific layers of the

fabric management stack

Cares about the fabric management framework

Applications
Orchestration Tools
Composing Tools
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Universal Fabric Manager

Gen-Z Provider

Fabric
Control Plane
Services

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UNIVERSAL FABRIC MANAGER
(meets the needs of a Gen-Z composable fabric)

The Universal Fabric Manager

- provides a north bound interface to describe the fabric and its resources and services (model)

- allows clients to control host, fabric, and endpoint resources (actions applied to model)

- enables fabric specific providers to program to a common set of APIs

Applications

Orchestration

Composition

Redfish Standardized Interface

Universal Fabric Manager

Gen-Z Provider
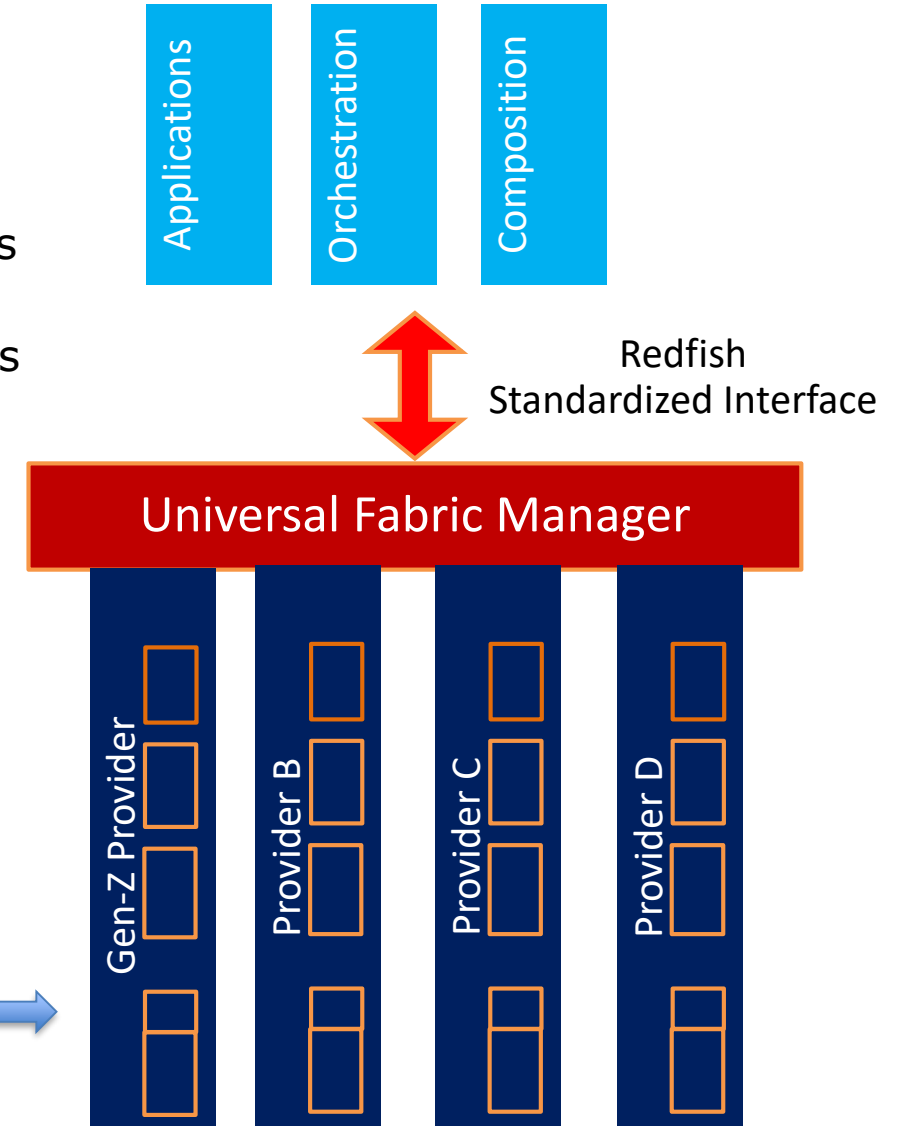
Provider B

Provider C

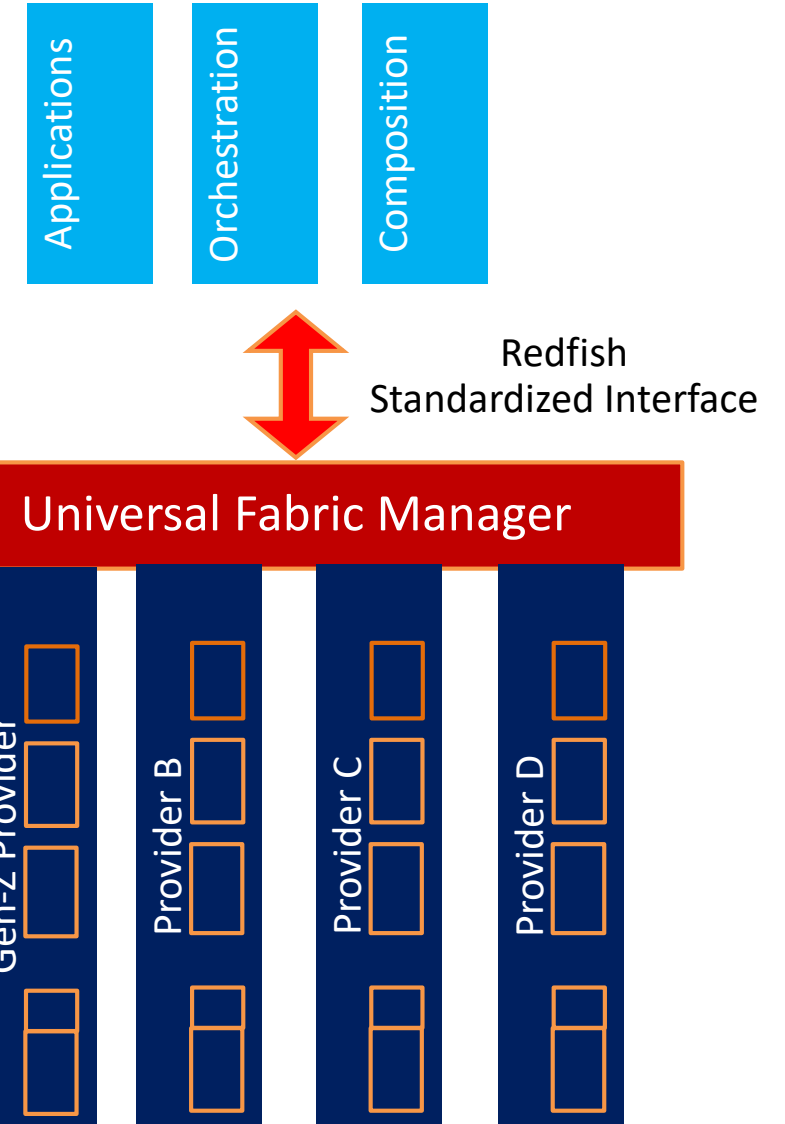Provider D

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Common functionality required in the northbound API:

- **Crawl fabric, discover and enumerate resources**
- **Publish the resource inventory,**
- **Service the client requests for resource configurations**
- **Provide methods to Enable / Disable Access**
- **Create / Delete Mappings of Resources to the Fabric**
- **Create Routes (endpoint A to endpoint B)**
- **Enable QoS, resiliency, etc. as given**

Applications

Orchestration

Composition

Redfish
Standardized Interface

Universal Fabric Manager

Gen-Z Provider

Provider B

Provider C

Provider D

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ROLES OF GEN-Z MANAGEMENT STACK

(In context of a composable fabric environment)

- ■ **Applications and Orchestration tools**
  - Don't deal with fabric details, not in scope
- ■ **Composability Manager**
  - Keeper of the user intent (grand plan)
  - Initial owner of all fabric resources
  - Authorizer of all requests for binding resources
- ■ **Resource Managers and Services**
  - Allocation and mapping of physical resources to virtual
  - Resource specific algorithms
  - Ex: Storage and FAM pool managers
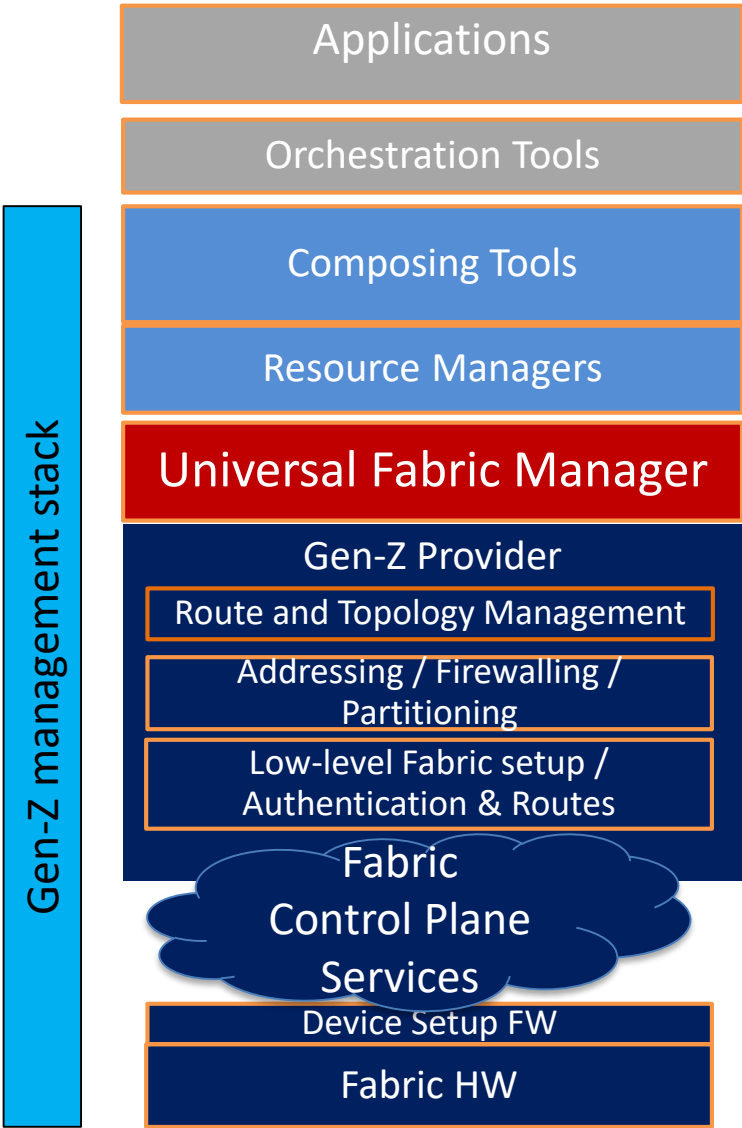
Applications

Orchestration Tools

Composing Tools

Resource Managers

Universal Fabric Manager

Gen-Z Provider

Route and Topology Management

Addressing / Firewalling / Partitioning

Low-level Fabric setup / Authentication & Routes

Fabric Control Plane Services

Device Setup FW

Fabric HW

Gen-Z management stack

ROLES OF GEN-Z MANAGEMENT STACK

(In context of a composable fabric environment)

- **Composability Manager**
- **Resource Managers**

- **Fabric Manager**
  - Framework interface / provider architecture
  - Redfish as a standard north bound interface
  - Standard functionality: Enumeration, Discovery, Inventory, Routing, Addressing
  - Gen-Z specific low-level implementations
- **HW Prep**
  - Low-level Fabric setup, authentication and routing
  - Device Power up and Hardware defaults
  - Link Training

Applications

Orchestration Tools

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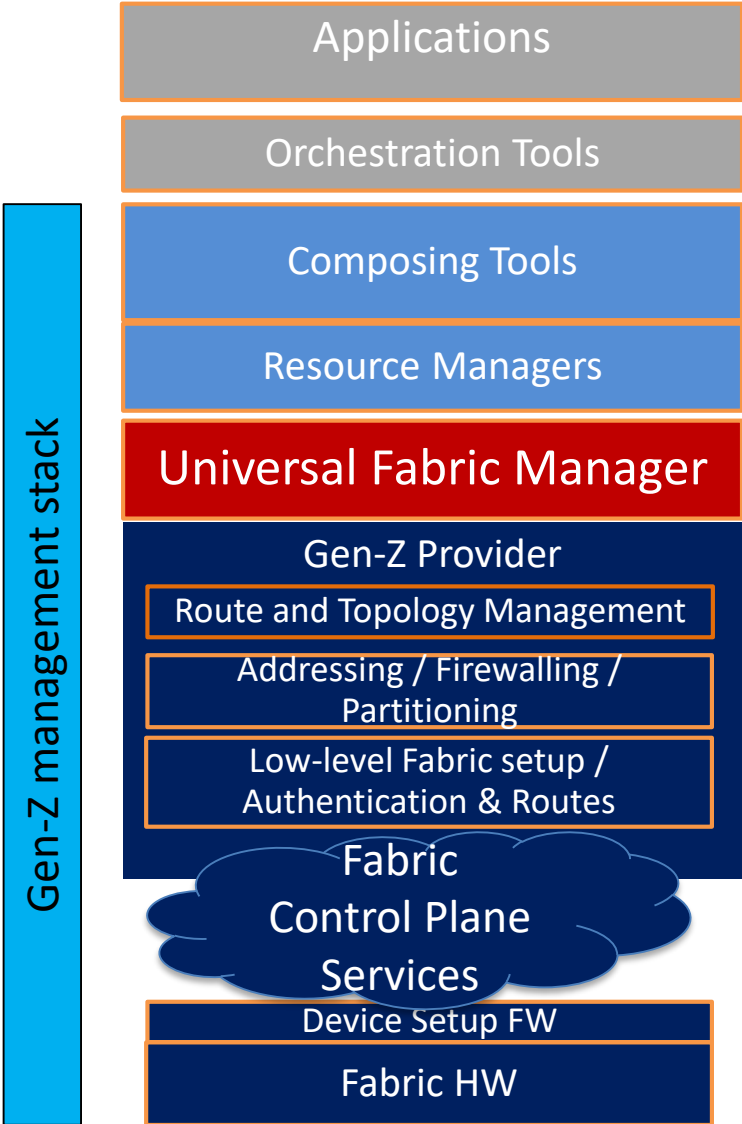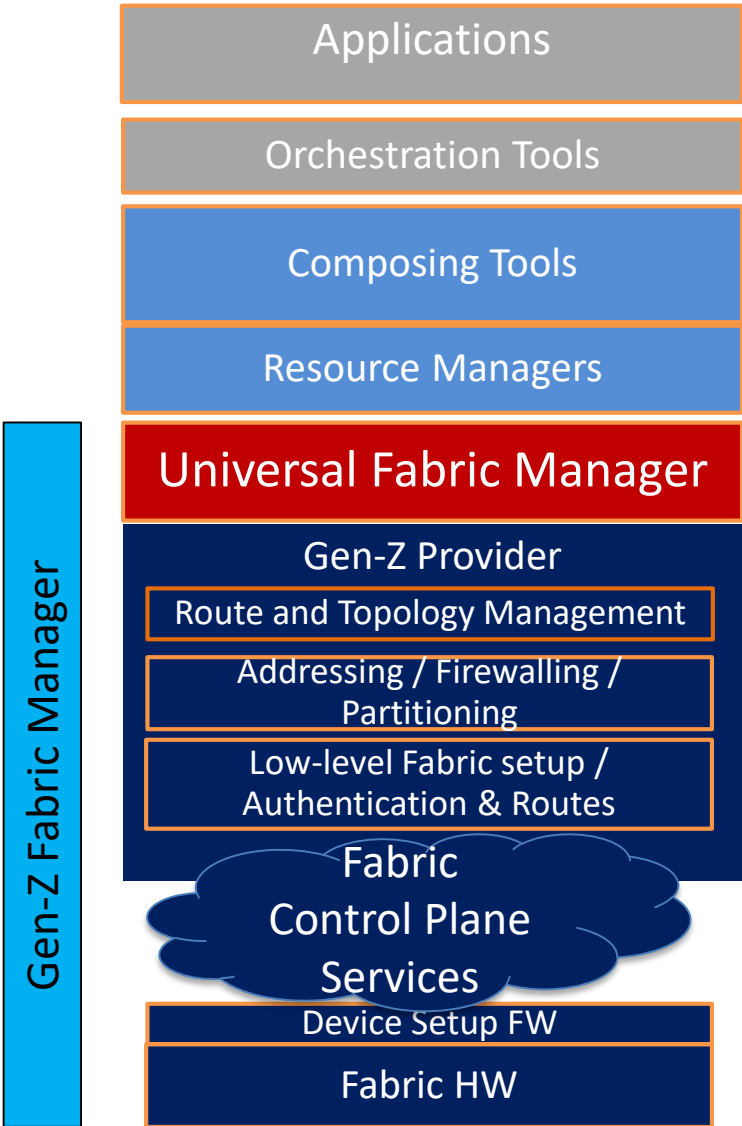Fabric HW

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Gen-Z Fabric Management Specification is the blueprint for a UFM provider

Applications
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Gen-Z Fabric Manager

GEN-Z IS BUILDING RELATIONSHIPS

to support a standardized end-to-end approach to networking

The OFA is contemplating the development of an "abstract fabric manager" built on the concepts of Redfish.

The intention is to use Gen-Z as a strawman target for such a fabric manager.

Similar to libfabric, such a universal fabric manager would likely be built on a 'framework/provider' architecture.

DMTF and Gen-Z working together to extend Redfish fabric model

OFA and Gen-Z organizations have agreed to collaborate

CXL and Gen-Z organizations have formed a 'bridging' workgroup

The two groups also will create and maintain extensions to DMTF's Redfish API to support Gen-Z management

The MOU outlines the formation of common workgroups between both organizations to provide clear cooperation, defining bridging between the protocols while leveraging the strengths of both technologies.

NEXT STEPS

- Express your opinion about the Universal Fabric Manager at the Birds of Feather session later today

- Review the Gen-Z Fabric Management Specification and provide feedback

- Take a look at the Gen-Z Micro Development Kit

- Support the formation of the Universal Fabric Manager work group and contribute

2020 OFA Virtual Workshop

THANK YOU

Russ Herrell

Hewlett Packard Enterprise