Open Fabrics Management Framework Demonstration

Management of Fabric Attached Memory via the OFMF

Erich Hanke  Intelliprop
Russ Herrell  HPE
Jim Hull  Intelliprop
Simple Gen-Z Linux System Diagram w/ in-band Fabric Mgmt

- zMM = GenZ Memory Module
- Compute Host
  - Also may export GenZ Memory
- Switch: GenZ fabric switch
  - may be made of multiple devices
- Zephyr SoC: GenZ Fabric Manager host
  - Zephyr is Linux GenZ fabric manager
- Admin Systems: Virtual Machines running our OFMF demo code and managing the Gen-Z fabric resources over Ethernet
Simple Gen-Z Linux System Diagram w/in-band Fabric Mgmt

- **Admin/FAM mgr / Composition Mgr**
- **Admin CLI**
- **OFMF Services**
- **Redfish model**
- **Redfish agent**
- **proprietary**
- **Redfish translations**

**OOB ethernet**

**Switch**

**Redfish Endpoint ID**
**Redfish System ID**
**Redfish Switch ID**
**Redfish Media Ctrl ID**

**Ethernet communication path**

**In-fabric communication path**

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IT’S A SIMPLE REQUEST
Find 20 GiB of Fabric Attached Memory for Two Servers to Share

Bindings
Redfish Connections
Allocated, bound resources

Unbound, available resources

Servers

20 GiB Memory

Free Memory

Memory Pool
THANK YOU
THANK YOU
OPEN FABRIC MANAGEMENT FRAMEWORK
ARCHITECTURE

Clients

Application Domain
Administration Domain

abstract manipulations

FAM Resource Manager
Kubernetes
SLURM

create shared memory region
Create connection to shared memory region

CLI based admin tool

Peer Address Lookup
Resource Inventory
Partition Mgmt
Authentication
Events & Logs

Redfish Model
Native Model

Framework

OFMF Domain

OFMF Services

Providers
Slingshot
Gen-Z
IB

Fabric managers
Zephyr GenZ FM for Linux

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create connection to shared memory region

create shared memory region

Create Memory Chunk
Create Connection
Create Connection
Create Connection
Create Connection

FAM Resource Manager

Application Domain

Administration Domain
Redfish Physical Fabric Model

Insights

• Fabric itself (the connectivity) is modeled as **ports and endpoints**
• Physical fabric connections (eg. Cables) are **always between ‘Ports’**
• Ports are traced back to the fabric devices that drive the ports
• Fabric devices trace back to physical or logical infrastructure (what controls the fabric device) AND to the ‘**Endpoint**’ object associated with the fabric device
• Discovery of physical and logical resources accessible via the fabric is a fabric-specific operation.

Role of Redfish in the OFMF effort

• Use Redfish objects and schema to create an abstract model of the resources found on a given fabric
• Use this abstract model to inform clients of the OFMF about resources available
• Allow clients to manage these resources by manipulating the Redfish models