Fabrics Configuration And Routing

Redfish

www.dmtf.org

Agenda

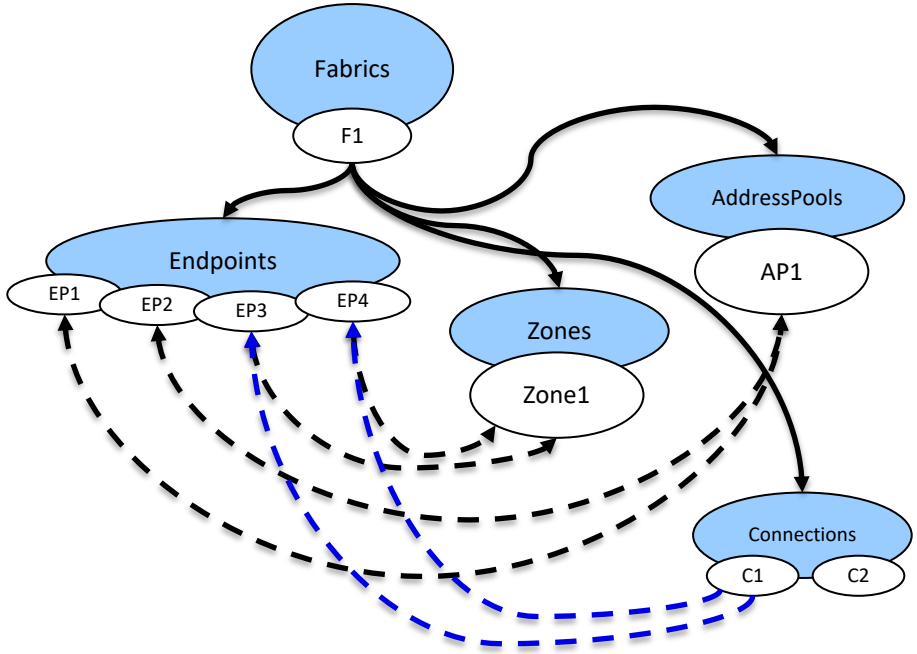
- Fabric configuration and routing
  - Fabric model hierarchy
  - Zones
  - Address pools
  - Connections

Fabric Model Resources

- Switches, ports, and adapters are used to model physical topology
- Zones and address pools are used to control routing in a fabric
- Connections are used to control access rules for fabric connected devices

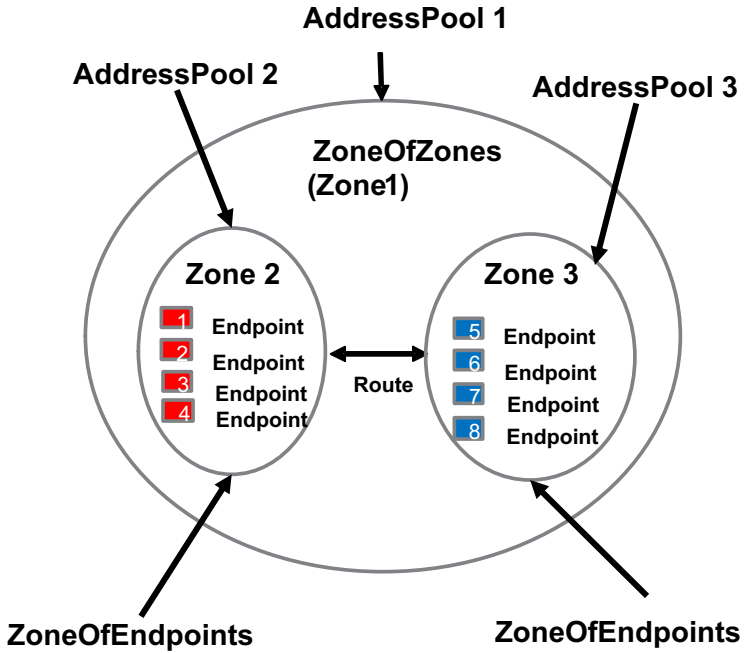
Fabric Zones, Connections, Address Pools

- Represents the customer intent of the fabric
  - Provides mechanisms to constrain traffic in the fabric
  - Defined by a fabric administrator
  - Models which endpoints can communicate with other endpoints



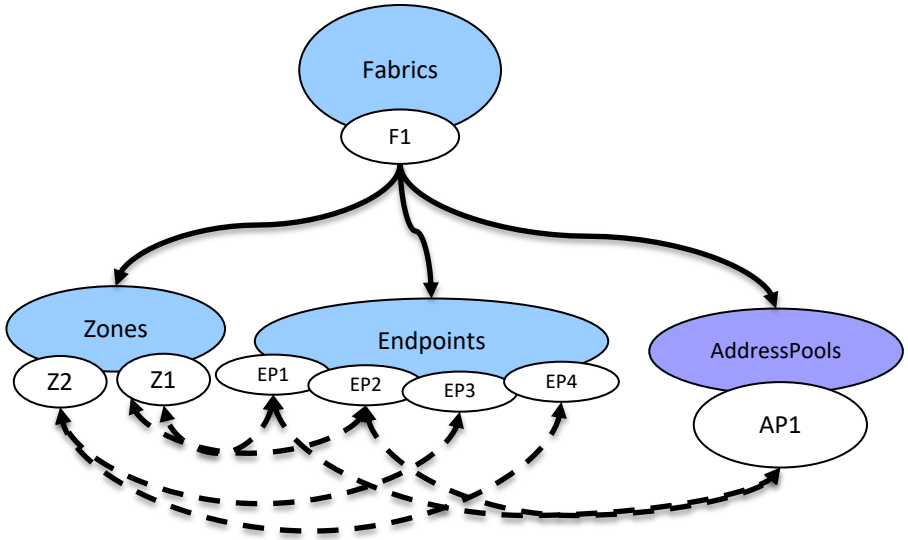
Fabric Zones

- Expresses routing constraints in a fabric
  - Provides isolation of groups of endpoints
    - Enables multi-tenant access on the fabric
    - Communication is limited to the zone
  - "Default zone" defined for entire fabric
    - New endpoints are added to the default zone
  - Zone of zones
    - Fabrics can provide zone-to-zone connectivity via zone of zones
    - Allows for scalability for large fabrics
    - Can only contain zones of endpoints



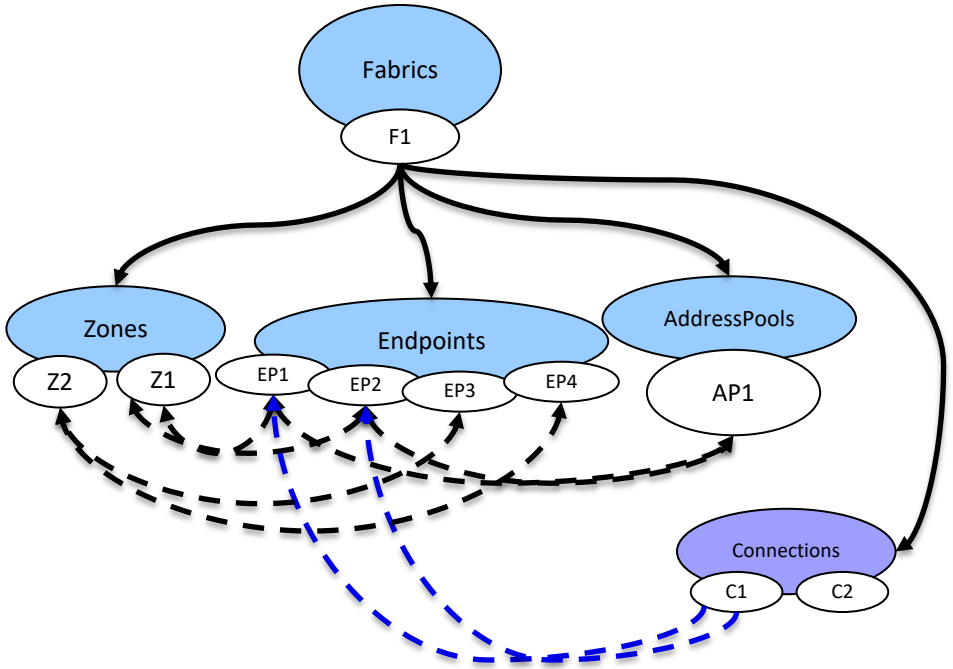
Fabric Address Pools

- Constrains control plane-specific pools of addresses and configuration
  - Example: In Ethernet fabrics, address pools can contain subnet, default gateway, VLAN, BGP underlay, and EVPN information
- Can be applied to entire fabric or specific zones



Fabric Connections

- Contains access permissions for resources once endpoints establish a communication channel
- Connections are between initiators and targets, or groups
- Does not define routing between the endpoints



Example Zone

```
"Id": "Zone1",
"Status": {
    "State": "Enabled",
    "Health": "OK"
},
"ZoneType": "ZoneOfEndpoints",
"DefaultRoutingEnabled": true,
"Links": {
    "Endpoints": [
        { "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/1" },
        { "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/2" },
        { "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/3" }
    ],
    "AddressPools": [
        {
            "@odata.id": "/redfish/v1/Fabrics/GenZ/AddressPools/AP1"
        }
    ]
},
```

Traffic routing is enabled between the endpoints in this zone

Zone type is “ZoneOfEndpoints”; routing between nodes within the zone is enabled

Endpoints participating in this zone

Addressing constraints for this zone

Example Address Pool

```
"Id": "AP1",
    "Name": "AddressPool 1",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Ethernet": {
        "IPv4": {
            "VLANIdentifierAddressRange": {
                "Lower": 1,
                "Upper": 100
            },
            "FabricLinkAddressRange": {
                "Lower": "192.168.1.1",
                "Upper": "192.168.3.254"
            },
            "SystemMACRange": {
                "Lower": "AA:BB:CC:DD:EE:00",
                "Upper": "AA:BB:CC:DD:EE:FF"
            }
        }
    }
```

All endpoints within this address pool must conform with the constraints provided in this address pool

Ethernet fabric; IPv4 addressing constraints

Upper and lower bounds for VLAN IDs

Constraints on system MAC IDs

Example Connection

Endpoint 5 is allowed to read or write the memory chunk provided by endpoint 4

```
"Id": "24",
"Name": "Connection 24",
"ConnectionType": "Memory",
"MemoryChunkInfo": [
    {
        "MemoryChunk": { "@odata.id": "/redfish/v1/Chassis/GenZ/MemoryDomains/2/MemoryChunks/1" },
            "AccessCapabilities": [
                "Read",
                "Write"
            ],
            "AccessState": "Optimized"
        },
    "Links": {
        "InitiatorEndpoints": [
            { "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/5" }
        ],
        "TargetEndpoints": [
            { "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/4"}
        ]
    },
```

Connection type and resource info

Connected resource and access information

Initiator and target endpoints affected by this connection

Thank you!

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