

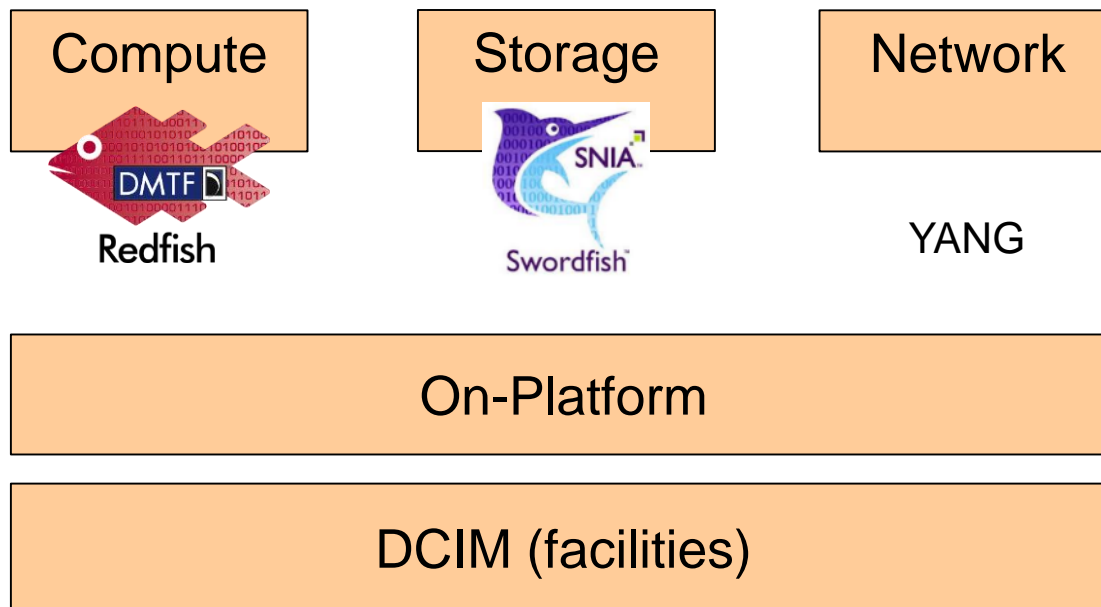


Redfish Model for an Ethernet Switch Phase 2

DMTF Redfish Forum

Using Redfish to manage the Network domain

- ✓ **Compute** - the DMTF released models to manage the compute platform and service (Redfish)
- ✓ **Storage** - SNIA released models to manage networked storage and storage services (Swordfish)
- **Network**
 - YANG modules represent the consensus of networking industry experts
 - Converting YANG to Redfish would leverage this expertise
 - Focus on managing an Ethernet switch

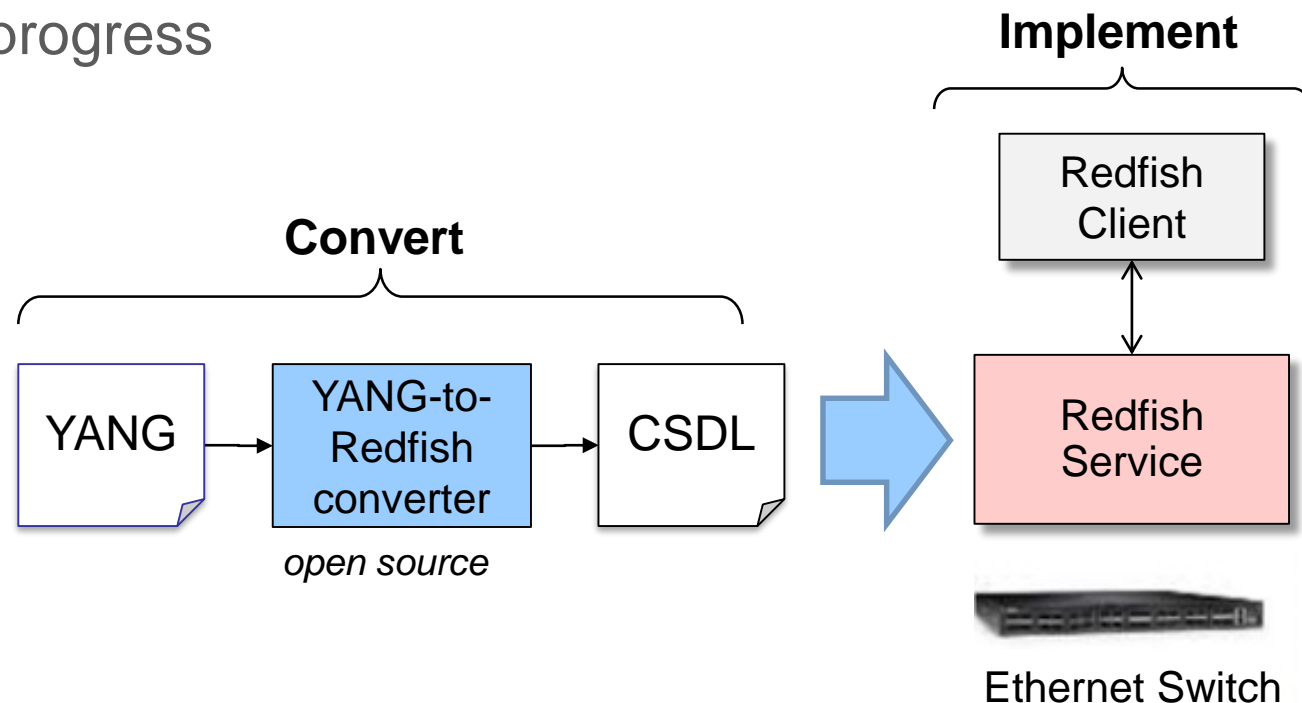


Ethernet Switch – Converting YANG modules

- Phase 1 - YANG modules sufficient to manage a network device
 - See DSP-IS00004 v0.9 work-in-progress
- Phase 2 - YANG modules sufficient to manage an Ethernet Switch
 - DSP-IS00004 v0.9b work-in-progress

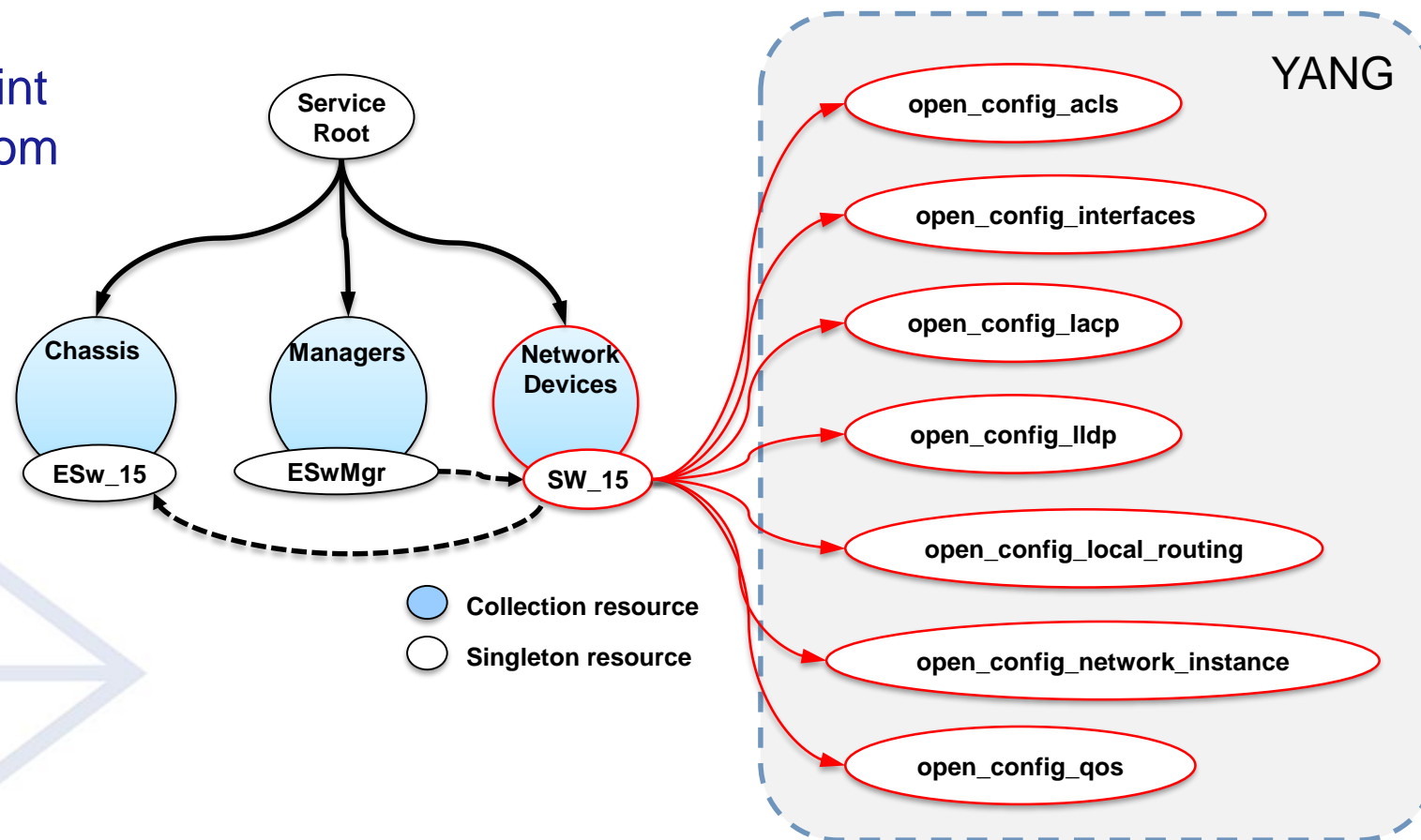
YANG modules in Phase 2

- openconfig-acl
- openconfig-interfaces
- openconfig-lacp (link aggregation)
- openconfig-lldp (link layer discovery)
- openconfig-local-routing
- openconfig-qos (quality of service)



The NetworkDevice Resource

- The NetworkDevice resource (SW_15) is the attachment point for Redfish models mapped from the YANG modules





A NetworkDevice Resource

Client Request

HTTP GET /redfish/v1/NetworkDevices/SW_15

If the proposed model is released as Standard, the schema for JSON responses will be available in

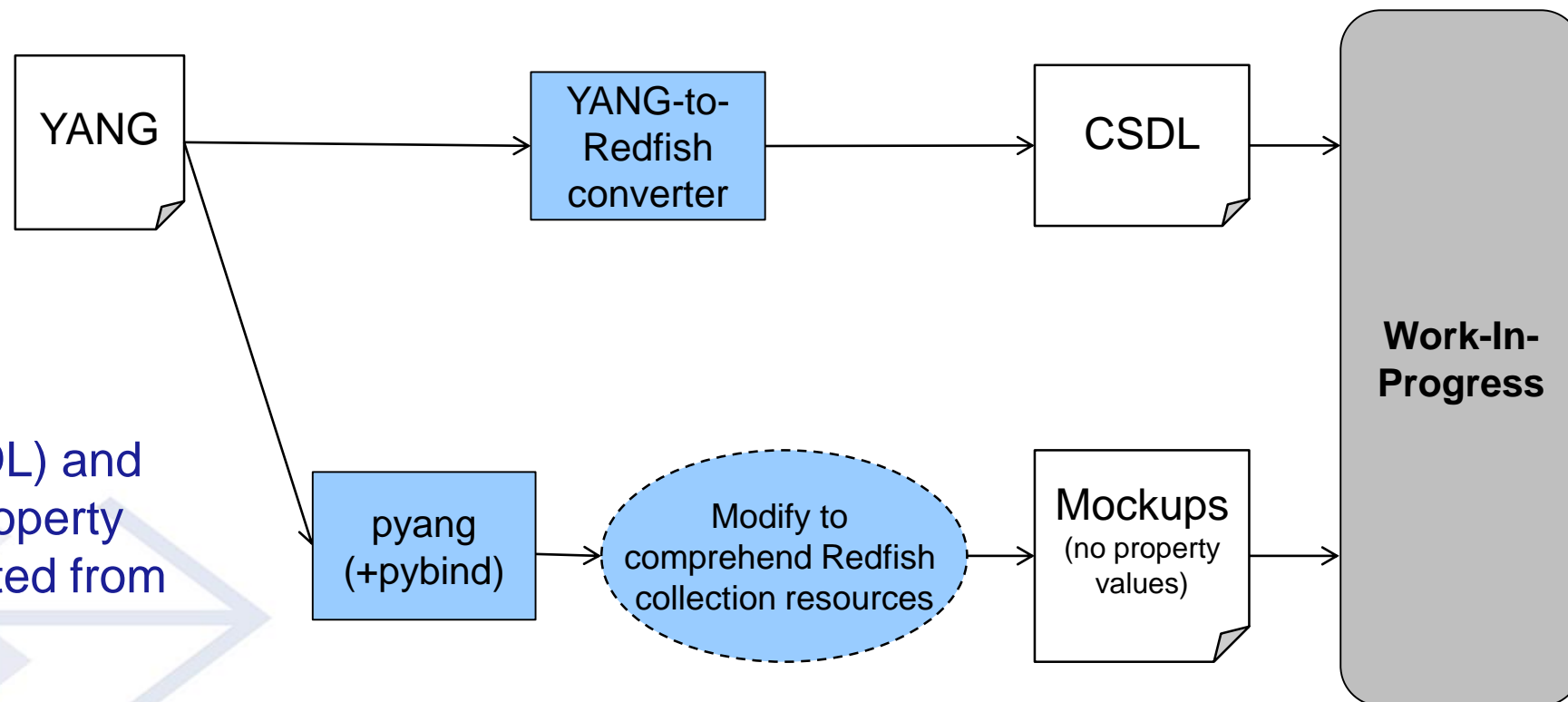
- OpenAPI (i.e. swagger)
- json-schema
- CSDL

CSDL = Common Schema Definition Language
(oasis-open.org)

```
{
  "@odata.type": "#NetworkDevice.v1_0_0.NetworkDevice",
  "@odata.id": "/redfish/v1/NetworkDevices/SW_15",
  "Id": "SW_15",
  "Name": "Ethernet Switch",
  "NetworkDeviceType": "BaselineEthernetSwitch",
  "Manufacturer": "Manufacturer Name",
  "Model": "Model Name",
  "SerialNumber": "2M220100SL",
  "PartNumber": "76-88883",
  "FirmwareVersion": "1.2.4",
  "Status": { "State": "Enabled", "Health": "OK", "HealthRollup": "OK" },
  "LogServices": { "@odata.id": "/redfish/v1/NetworkDevices/SW_15/LogServices" },
  "Acl": { "@odata.id": "/redfish/v1/NetworkDevices/SW_15/openconfig_acl" },
  "Interfaces": { "@odata.id": "/redfish/v1/NetworkDevices/SW_15/openconfig_interfaces" },
  "Lacp": { "@odata.id": "/redfish/v1/NetworkDevices/SW_15/openconfig_lacp" },
  "Lldp": { "@odata.id": "/redfish/v1/NetworkDevices/SW_15/openconfig_lldp" },
  "Local_Routing": { "@odata.id": "/redfish/v1/NetworkDevices/SW_15/openconfig_local_routing" },
  "Network_Instance": { "@odata.id": "/redfish/v1/NetworkDevices/SW_15/openconfig_network_instance" },
  "QoS": { "@odata.id": "/redfish/v1/NetworkDevices/SW_15/openconfig_qos" },
  "Links": {
    "Chassis": [ { "@odata.id": "/redfish/v1/Chassis/EthernetSwitch_15" } ],
    "ManagedBy": [ { "@odata.id": "/redfish/v1/Managers/EthernetSwitchManager" } ]
  },
  "Actions": {
    "#NetworkDevice.Reset": {
      "target": "/redfish/v1/NetworkDevices/SW_15/Actions/NetworkDevice.Reset",
      "@Redfish.ActionInfo": "/redfish/v1/NetworkDevices/SW_15/ResetActionInfo"
    }
  }
}
```



Process to create mockups



- Both the schema (CSDL) and a blank mockup (no property values) can be generated from a YANG module file

SW_15 = no property values
SW_16 = example usage
SW_17 = example usage



Contents of the Work-in-Progress

./metadata

RedfishYangExtension_v1.xml
openconfig_acl_v1.xml
openconfig_interfaces_v1.xml
openconfig_lacp_v1.xml
openconfig_lldp_v1.xml
openconfig_local_routing_v1.xml
openconfig_qos_v1.xml

references...

./mockups/public_ethernet_switch

./Chassis/EthernetSwitch_15
./Managers/EthernetSwitchManager
./NetworkDevices/SW_15
./NetworkDevices/SW_16
./NetworkDevices/SW_17

openconfig_alarm_types_v1.xml
openconfig_extensions_v1.xml
openconfig_if_aggregate_v1.xml
openconfig_if_ethernet_v1.xml
openconfig_if_types_v1.xml
openconfig_inet_types_v1.xml
openconfig_network_instance_v1.xml
openconfig_packet_match_v1.xml
openconfig_platform_*_v1.xml
openconfig_policy_types_v1.xml
openconfig_transport_types_v1.xml
openconfig_vlan_types_v1.xml
openconfig_yang_types_v1.xml
et al

cpu
ext
fan
linecard
port
psu
tranceiver
types



Additional Documentation

- YANG-to-Redfish Mapping Specification (DMTF work-in-progress)
 - Specifies how to convert a YANG model to a Redfish model
 - http://www.dmtf.org/sites/default/files/standards/documents/DSP0271_0.5.6.pdf
- YANG-to-Redfish-Converter
 - Open source repository for converter
 - <https://github.com/DMTF/YANG-to-Redfish-Converter>
- OpenConfig YANG modules
 - <https://github.com/openconfig/public/tree/master/release/models>