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J. White
D. Black
Dell EMC
J. Leung
Intel Corporation
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YANG Data Center Baseline Switch Profile
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Abstract

[Insert abstract here]

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1. Introduction

Disclaimer - this is a -00 draft.

This is a normative profile for Baseline Switch Profile (send into IETF RTG) intended to be published as RFC on completion of DMTF spec to wrap Baseline Switch Profile.

2. What is a Redfish Baseline Switch?

The baseline switch profile contains basic system, interface, L2, and L3 configuration elements sufficient to set up the device for use in a controller based converged infrastructure environment.

The following list of IETF drafts, RFCs, and Redfish models will constitute the management interface to the baseline switch.

3. Core YANG RFCs

RFC6020 [1] provides the YANG modeling language definition.

RFC6991 [2] provides the Common YANG Data Types used by many other IETF YANG modules.

Interface management requires at set of RFCs to provide all relevant capabilities:

<https://tools.ietf.org/html/rfc7223>
<https://tools.ietf.org/html/rfc7277>
<https://tools.ietf.org/html/rfc7224>
<https://tools.ietf.org/html/rfc7317>

3.1. RFC7223 provides:

```

+--rw interfaces
|   +--rw interface* [name]
|   |   +--rw name                string
|   |   +--rw description?        string
|   |   +--rw type                identityref
|   |   +--rw enabled?            boolean
|   |   +--rw link-up-down-trap-enable? enumeration
+--ro interfaces-state
  +--ro interface* [name]
  |   +--ro name                string
  |   +--ro type                identityref
  |   +--ro admin-status        enumeration
  |   +--ro oper-status         enumeration
  |   +--ro last-change?        YANG:date-and-time
  |   +--ro if-index            int32
  |   +--ro phys-address?       YANG:phys-address
  |   +--ro higher-layer-if*    interface-state-ref
  |   +--ro lower-layer-if*    interface-state-ref
  |   +--ro speed?              YANG:gauge64
  |   +--ro statistics
  |   |   +--ro discontinuity-time  YANG:date-and-time
  |   |   +--ro in-octets?          YANG:counter64
  |   |   +--ro in-unicast-pkts?    YANG:counter64
  |   |   +--ro in-broadcast-pkts?  YANG:counter64
  |   |   +--ro in-multicast-pkts?  YANG:counter64
  |   |   +--ro in-discards?        YANG:counter32
  |   |   +--ro in-errors?          YANG:counter32
  |   |   +--ro in-unknown-protos?  YANG:counter32
  |   |   +--ro out-octets?         YANG:counter64
  |   |   +--ro out-unicast-pkts?   YANG:counter64
  |   |   +--ro out-broadcast-pkts? YANG:counter64
  |   |   +--ro out-multicast-pkts? YANG:counter64
  |   |   +--ro out-discards?       YANG:counter32
  |   |   +--ro out-errors?         YANG:counter32

```

3.2. RFC7277 adds:

```

+--rw if:interfaces
  +--rw if:interface* [name]
  |   ...
  |   +--rw ipv4!
  |   |   +--rw enabled?            boolean
  |   |   +--rw forwarding?        boolean
  |   |   +--rw mtu?                uint16
  |   |   +--rw address* [ip]
  |   |   |   +--rw ip                inet:ipv4-address-no-zone
  |   |   |   +--rw (subnet)
  |   |   |   |   +--:(prefix-length)

```



```

    |   +-ro prefix-length      uint8
    |   +-ro origin?           ip-address-origin
    |   +-ro status?          enumeration
+-ro neighbor* [ip]
    +-ro ip                   inet:ipv6-address-no-zone
    +-ro link-layer-address?  YANG:phys-address
    +-ro origin?             neighbor-origin
    +-ro is-router?         empty
    +-ro state?             enumeration

```

3.3. RFC7224 provides:

The set of YANG identity statement for the IANA defined interface types.

3.4. RFC7317 provides:

- o System Identification
- o System Time Date
- o NTP
- o DNS Client

System Identification

```

+-rw system
|   +-rw contact?           string
|   +-rw hostname?        inet:domain-name
|   +-rw location?        string
+-ro system-state
    +-ro platform
        +-ro os-name?      string
        +-ro os-release?   string
        +-ro os-version?   string
        +-ro machine?      string

```

System Time

```

+--rw system
|
|  +--rw clock
|  |
|  |  +--rw (timezone)?
|  |  |
|  |  |  +--:(timezone-name)
|  |  |  |  +--rw timezone-name?      timezone-name
|  |  |  +--:(timezone-utc-offset)
|  |  |  |  +--rw timezone-utc-offset?  int16
|  |  |
|  |  +--rw ntp!
|  |  |
|  |  |  +--rw enabled?      boolean
|  |  |  +--rw server* [name]
|  |  |  |  +--rw name      string
|  |  |  |  +--rw (transport)
|  |  |  |  |  +--:(udp)
|  |  |  |  |  |  +--rw udp
|  |  |  |  |  |  |  +--rw address  inet:host
|  |  |  |  |  |  |  +--rw port?    inet:port-number
|  |  |  |  |  +--rw association-type? enumeration
|  |  |  |  +--rw iburst?      boolean
|  |  |  |  +--rw prefer?      boolean
|  |  |
|  |  +--ro system-state
|  |  |
|  |  |  +--ro clock
|  |  |  |  +--ro current-datetime?  YANG:date-and-time
|  |  |  |  +--ro boot-datetime?    YANG:date-and-time

```

DNS Client

```

+--rw system
|
|  +--rw dns-resolver
|  |
|  |  +--rw search*      inet:domain-name
|  |  +--rw server* [name]
|  |  |
|  |  |  +--rw name      string
|  |  |  +--rw (transport)
|  |  |  |  +--:(udp-and-tcp)
|  |  |  |  |  +--udp-and-tcp
|  |  |  |  |  |  +--rw address  inet:ip-address
|  |  |  |  |  |  +--rw port?    inet:port-number
|  |  |  +--rw options
|  |  |  |  +--rw timeout?      uint8
|  |  |  |  +--rw attempts?    uint8

```

User Authentication

```
  +--rw system
    +--rw authentication
      +--rw user-authentication-order*  identityref
      +--rw user* [name]
        +--rw name          string
        +--rw password?    ianach:crypt-hash
        +--rw authorized-key* [name]
          +--rw name        string
          +--rw algorithm   string
          +--rw key-data    binary
```

4. Additional YANG models

In addition to the above RFCs, the baseline switch models needs to cover:

- o VLANs
- o ACLs
- o Syslog

The following lists of IETF drafts sets our recommendation to cover the above three areas.

4.1. VLAN and interface extensions:

To handle VLANs and with related interface configuration the following YANG models are under evaluation.

- o <https://tools.ietf.org/html/draft-ietf-netmod-intf-ext-yang-03>
- o <https://tools.ietf.org/html/draft-wilton-intf-vlan-yang-00.txt> ## ACL To handle ACL configuration the following YANG model is under consideration.
- o <https://tools.ietf.org/html/draft-ietf-netmod-acl-model-09>

4.2. Syslog

To handle configuration and access to syslog the following YANG model is under consideration.

- o <https://tools.ietf.org/html/draft-ietf-netmod-syslog-model-11>

5. Applicable Redfish system management models

The following standard Redfish systems management models apply to the baseline network switch profile. Reference: Redfish schema index [3]. The use of these Redfish management models allows a converged infrastructure manager to have a consistent view of server, storage and network systems.

- o Chassis
- o ComputerSystem
- o Manager
- o ManagerAccount
- o Power
- o Thermal
- o SoftwareInventory plus UpdateService
- o Event configuration using Event, EventDestination, and Event Service
- o Access to logs using LogEntry, and LogService
- o Management interface configuration using EthernetInterface and related
- o Console configuration using SerialInterface
- o PrivilegeRegistry and Privileges

Where YANG and Redfish overlap, the commonality of YANG vs Redfish is TBD.

6. Overall Baseline Switch Profile Structure

```
./redfish/v1/Systems
./redfish/v1/Chassis
./redfish/v1/NetworkDevices/BaselineSwitch/...
... other redfish resource blocks...
(resource from RFCs and Redfish bullet list, above)
```

7. References

7.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

7.2. URIs

- [1] <https://tools.ietf.org/html/rfc6020>
[2] <https://tools.ietf.org/html/rfc6991>
[3] http://redfish.dmtf.org/redfish/schema_index

Authors' Addresses

Joseph White
Dell EMC

Email: joseph.l.white@dell.com

David Black
Dell EMC

Email: david.black@dell.com

John Leung
Intel Corporation

Email: john.leung@intel.com