NVIDIA UFM Enterprise REST API Guide v6.18.0

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About This Manual

This document provides information about all available REST API calls supported by NVIDIA ® UFM ® Enterprise . Every REST API includes the following:

- Short description
- Full URL path of the request
- Output example of the response

Intended Audience

UFM customers: end users, OEMs, Integrators, Customer Support Engineers, Field Application Engineers, and R&D.

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Glossary

Abbreviation	Description
API	Application Programming Interface
REST	Representational State Transfer
UFM	Unified Fabric Manager—centralized application for managing InfiniBand fabrics

Related **Documentation**

Info

The following documents are posted in this central location.

- UFM End User License Agreement
- NVIDIA UFM Enterprise User Manual
- NVIDIA UFM Enterprise Release Notes
- NVIDIA UFM Enterprise Multisite Portal Documentation
- NVIDIA UFM Enterprise Quick Start Guide
- NVIDIA UFM Enterprise REST SDK Guide

REST API Complementary Information

The section provides complementary information with regard to all UFM REST APIs.

Exposing site_name field in REST API

In addition to the existing REST API, users can configure the UFM to expose the site_name (configurable) field in all the supported REST APIs. The site_name field can be used to identify the current InfiniBand fabric that is managed by the UFM Enterprise.

To expose the site_name field, perform the following:

- In gv.cfg and in the [Server] section, set a value for "site_name"
- In gv.cfg and in the [Server] section, set "expose_site_name" to "true"
- Restart UFM for the changes to take effect

Examples of REST APIs Using Various Authentication Types

Basic Authentication

For basic authentication, run:

```
curl -k https://<ufm-ip>/ufmRest/resources/systems -u <username>:<password>
```

Session-Based Authentication

For session-based Authentication, follow the below instructions:

1. Run the below command to log in and store the session in a cookie file.

```
curl -k -f -X POST -c cookies.txt -d "httpd_username=<user>" -d "httpd_password=<password>" https://<ufm-ip>/dologin
```

2. Use the session saved earlier to make as many ufmRestV2 requests as needed, for instance:

```
curl -k –cookie cookies.txt https://<ufm-ip>/ufmRestV2/reources/systems
```

Token-Based Authentication

For token-based authentication, follow the below instructions

1. Create an access token using either the user's credentials or session:

```
curl -k -X POST https://<ufm-ip>/ufmRest/app/tokens -u username:password
```

2. Access ufmRestV3 using the access token generated earlier:

```
curl -k https://<ufm-ip>/ufmRest/resources/systems -H "Authorization:Basic <access_token>"
```

Monitoring REST API

- **Description** – APIs for managing monitoring sessions data and monitoring templates data
- **Request URL** – /ufmRest/monitoring
- **Main Operations**
- Monitoring sessions:
    - Create a monitoring session
    - Delete a monitoring session
    - Get data of a monitoring session
    - Monitoring session snapshot
    - Request data of a monitoring session's attributes
    - Get all monitoring available attributes
    - Get traffic/congestion map
- Monitoring templates:
    - Create a monitoring template
    - Update a monitoring template
    - Get a monitoring template
    - Get all monitoring templates
    - Delete a monitoring template

Possible Attribute Values

The below are all the available values of the Monitoring attributes.

- **Monitor Class** – the selected object type for monitoring
- **Monitor Attributes** – the selected attributes (counters) for monitoring the monitored objects
- **Monitor Functions** – list of optional functions to apply for the monitored objects data

Attribute	Value	Description
Monitoring class	"Device"	General device in the fabric (can be switch/ host/bridge, etc.)
	"Port"	Represents a physical port in the fabric
Monitor attributes	"Infiniband_MBOut" "Infiniband_MBOutRate"*	Total number of data octets, divided by 4, transmitted on all VLs from the port, including all octets between (and not including) the start of packet delimiter and the VCRC, and may include packets containing errors. All link packets are excluded. Results are reported as a multiple of four octets
	"Infiniband_MBIn" "Infiniband_MBInRate"*	Total number of data octets, divided by 4, received on all VLs at the port. All octets between (and not including) the start of packet delimiter and the VCRC are excluded, and may include packets containing errors. All link packets are excluded. When the received packet length exceeds the maximum allowed packet length specified in C7-45, the counter may include all data octets exceeding this limit. Results are reported as a multiple of four octets
	"Infiniband_PckOut" "Infiniband_PckOutRate"*	Total number of packets transmitted on all VLs from the port, including packets with errors, and excluding link packets
	"Infiniband_PckIn" "Infiniband_PckInRate"*	Total number of packets, including packets containing errors and excluding link packets, received from all VLs on the port
	"Infiniband_RcvErrors" "Infiniband_RcvErrors_D	Total number of packets containing errors that were received on the port including:

Attribute	Value	Description
	elta"**	• Local physical errors (ICRC, VCRC, LPCRC, and all physical errors that cause entry into the BAD PACKET or BAD PACKET DISCARD states of the packet receiver state machine). • Malformed data packet errors (LVer, length, VL). • Malformed link packet errors (operand, length, VL). • Packets discarded due to buffer overrun (overflow).
	"Infiniband_XmtDiscards" "Infiniband_XmtDis-cards_Delta"**	Total number of outbound packets discarded by the port when the port is down or congested for the following reasons: • Output port is not in the active state • Packet length has exceeded NeighborMTU • Switch Lifetime Limit exceeded • Switch HOQ Lifetime Limit exceeded, including packets discarded while in VLStalled State
	"Infiniband_SymbolErrors" "Infiniband_SymbolErrors_Delta"**	Total number of minor link errors detected on one or more physical lanes
	"Infiniband_LinkRecovers" "Infiniband_LinkRecovers_Delta"**	Total number of times the Port Training state machine has successfully completed the link error recovery process
	"Infiniband_LinkDowned" "Infiniband_LinkDowned_Delta"**	Total number of times the Port Training state machine has failed the link error recovery process and downed the link
	"Infiniband_LinkIntegrityErrors" "Infiniband_LinkIntegrity	The number of times that the count of local physical errors exceeded the threshold specified by LocalPhyErrors

Attribute	Value	Description
	Errors_Delta"**	
	"Infiniband_RcvRemotePhysErrors" "Infiniband_RcvRemotePhysErrors_Delta"**	Total number of packets marked with the EBP delimiter received on the port
	"Infiniband_XmtConstraintErrors" "Infiniband_XmtConstraintErrors_Delta"**	Total number of packets not transmitted from the switch physical port for the following reasons: • FilterRawOutbound is true and packet is raw. • PartitionEnforcementOutbound is true and packet fails partition key check or IP version check
	"Infiniband_RcvConstraintErrors" "Infiniband_RcvConstraintErrors_Delta"**	Total number of packets received on the switch physical port that are discarded for the following reasons: • FilterRawInbound is true and packet is raw • PartitionEnforcementInbound is true and packet fails partition key check or IP version check
	"Infiniband_ExcBufOverrunErrors" "Infiniband_ExcBufOverrunErrors_Delta"**	The number of times that OverrunErrors consecutive flow control update periods occurred, each having at least one overrun error
	"Infiniband_RcvSwRelayErrors" "Infiniband_RcvSwRelayErrors_Delta"**	Total number of packets received on the port that were discarded when they could not be forwarded by the switch relay for the following reasons: • DLID mapping • VL mapping • Looping (output port = input port)

Attribute	Value	Description
	"Infiniband_VL15Dropped" "Infiniband_VL15Dropped_Delta"**	Number of incoming VL15 packets dropped because of resource limitations (e.g., lack of buffers) in the port
	"Infiniband_XmitWait"	The number of ticks during which the port selected by PortSelect had data to transmit but no data was sent during the entire tick because of insufficient credits or of lack of arbitration
	"Infiniband_CumulativeErrors"	The sum of several error counters indicating link integrity issues
	"Infiniband_CBW"	Congestion bandwidth rate, measure the rate of congestion measured by XmitWait counter
	"Infiniband_Normalized_MBOut"	Effective port bandwidth utilization in % XmitData incremental/Link Capacity
	"Infiniband_Normalized_CBW"	Amount of bandwidth that was suppressed due to congestion (XmitWait incremental/Time) * Link Capacity Separate counters are used for Tier 4 ports and for the rest of the ports
	"Infiniband_Normalized XW"	Congestion in relation to packets transmitted over the link XmitWait incremental / XmitPackets incremental. This event is calculated only for the port directly connected to receiving hosts. Separate counters are used for Tier 4 ports and for the rest of the ports
Monitor functions	"RAW"	Raw data values of selected monitoring objects
	"AVG"	Average value of all selected monitoring objects
	"SUM"	Sum value of all selected monitoring objects
	"MIN"	Minimum value of all selected monitoring objects
	"MAX	Maximum value of all selected monitoring objects

Note

* Rate Counter – Counter value that is calculated based on the delta from the previous sampled value divided by elapsed time from previous sample (the ratio between two sequential samples).

** Delta Counter – Counter value that is calculated based on the delta from the previous counter value.

Monitoring Sessions REST API

Create Monitoring Session

- Description – creates and starts a monitoring session
- Request URL – POST /ufmRest/monitoring/start
- Request Content Type – application/json
- Request Data Format

```
{
    "scope_object": MonitorClass,
    "monitor_object": MonitorClass,
    "objects":    [ "object_id" ],
    "counters":   [ MonitorAttributes ],
    "functions":  [ "MonitorFunctions" ],
    "interval":2
}
```

Note

Refer to the table in "Possible Attribute Values" for possible values for monitor class, monitor attributes, and monitor functions.

- Request Data Example

```
{
    "attributes": ["Infiniband_MBOut", "Infiniband_MBIn"],
    "functions": ["RAW"],
    "scope_object": "Site",
    "interval": 2,
    "monitor_object": "Device",
    "objects": ["Grid.default"]
}
```

- Request Data Example -Creates and starts a monitoring session on top of Group of Devices.

```
{
  "interval": 15,
  "functions": [
    "RAW"
  ],
  "scope_object": "Group",
  "monitor_object": "Device",
  "attributes": [
    "Infiniband_MBOutRate"
  ],
  "objects": [
    "Grid.default.groups.<group_name>"
  ]
}
```

```
400 BAD_REQUEST
201 CREATED
```

- Response Format

```
/ufmRest/monitoring/session/<session_id>
```

- Response Example

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 Final//EN">
<title>Redirecting...</title>
<h1>Redirecting...</h1>
<p>You should be redirected automatically to target URL: <a
href="/ufmRest/monitoring/session/3">/ufmRest/monitoring/session/3</a>.
If not click the link.
```

- Note – the resource ID can be found by parsing the location header.
- Status Codes
    - 201 – created

Delete Monitoring Session

- Description – deletes a monitoring session
- Request URL – DELETE /ufmRest/monitoring/<session>/<session_id>
- Request Data Format – not required
- Response – N/A

- Status Codes
    - 202 – accepted

Get Monitoring Session Data

- Description – returns monitoring session data
- Request URL – GET /ufmRest/monitoring/<session>/<session_id>/data

> **Note**
>
> http://localhost:4300/ufmRestV2/telemetry?type=history&membersType=Device&attributes=[Infiniband_PckInRate]&function=RAW&result_format=Port&members=[ec0d9a03007d7f0a]&start_time=-5min&end_time=-0min

- Request Data Format – not required
- Response Format

```
{
  timestamp: {
    monitor_object: {
      name: {
        "statistics": {
          counter1...counter2.........
        },
        dname: ...,
        last_updated:
      }
    }
```

```
    }
```

- Response Example


```
{
    "2020-10-27 18:52:42": {
        "Device": {
            "98039b030000e456": {
                "dname": "r-dmz-ufm128",
                "last_updated": "2020-10-27 18:52:14",
                "statistics": {
                    "Infiniband_PckIn": 22035108156,
                    "Infiniband_PckOut": 330352264,
                    "Infiniband_PckOutRate": 0.06599832808486128,
                    "Infiniband_PckInRate": 0.06599832808486128
                }
            },
            "0c42a103008b3bd0": {
                "dname": "r-dmz-ufm131",
                "last_updated": "2020-10-27 18:52:14",
                "statistics": {
                    "Infiniband_PckIn": 1297449,
                    "Infiniband_PckOut": 1286924,
                    "Infiniband_PckOutRate": 0.13199665616972256,
                    "Infiniband_PckInRate": 0.13199665616972256
                }
            },
            "0c42a103008b40d0": {
                "dname": "r-dmz-ufm134",
                "last_updated": "2020-10-27 18:52:14",
                "statistics": {
                    "Infiniband_PckIn": 4681865,
                    "Infiniband_PckOut": 3223445,
                    "Infiniband_PckOutRate": 2.2109439908428525,
```

```
                "Infiniband_PckInRate": 2.309941482970145
            }
        },
        "248a0703002e61da": {
            "dname": "r-dmz-ufm137",
            "last_updated": "2020-10-27 18:52:14",
            "statistics": {
                "Infiniband_PckIn": 333267757,
                "Infiniband_PckOut": 22034474531,
                "Infiniband_PckOutRate": 0.13199665616972256,
                "Infiniband_PckInRate": 0.13199665616972256
            }
        },
        "0002c903007b78b0": {
            "dname": "r-dmz-ufm-sw49",
            "last_updated": "2020-10-27 18:52:14",
            "statistics": {
                "Infiniband_PckIn": 22374553061,
                "Infiniband_PckOut": 22380620225,
                "Infiniband_PckOutRate": 3.5309105525400772,
                "Infiniband_PckInRate": 3.6299080446673697
            }
        }
    }
  }
}
```


- Note – UFM default session which collects all port statistics every 30 seconds (by default) can be queried by using session ID 0 (zero): GET /ufmRest/monitoring/session/0/data

- Status Codes

    - 200 – OK

Get Default Monitoring Session Data by PKey Filtering

- Description – returns default monitoring session data by Pkey filtering
- Request URL – GET /ufmRest/monitoring/session/<session_id>/data?pkey=<pkey name>
- Request Data Format – not required
- Response Format

```
{
  timestamp: {
    monitor_object: {
      name: {
        "statistics": {
          counter1...counter2.........
        },
        dname: ...,
        last_updated:
      }
    }
  }
```

- Response Example

```
{
    "2022-10-19 13:23:11": {
        "Ports": {
            "b8599f03000a7768_1": {
                "dname": "default / Computer: r-ufm77 / HCA-1/1",
                "last_updated": "2022-10-19 13:23:11",
                "statistics": {
                    "raw_ber": 0,
                    "dev_temperature": 0,
```

```
                "Infiniband_PckOutRate": 1.1333333333333333,
                "Infiniband_PckInRate": 1.1333333333333333,
                "Infiniband_MBInRate": 0.0,
                "Infiniband_MBOutRate": 0.03333333333333333,
                "Infiniband_MBOut": 26165,
                "Infiniband_MBIn": 26126,
                "Infiniband_PckOut": 95263867,
                "Infiniband_PckIn": 95123933,
                "Infiniband_SymbolErrors": 0,
                "Infiniband_LinkRecovers": 0,
                "Infiniband_LinkDowned": 12,
                "Infiniband_RcvErrors": 0,
                "Infiniband_RcvRemotePhysErrors": 0,
                "Infiniband_RcvSwRelayErrors": 0,
                "Infiniband_XmtDiscards": 440,
                "Infiniband_XmtConstraintErrors": 0,
                "Infiniband_RcvConstraintErrors": 0,
                "Infiniband_LinkIntegrityErrors": 0,
                "Infiniband_ExcBufOverrunErrors": 0,
                "Infiniband_VL15Dropped": 0,
                "Infiniband_XmitWait": 0,
                "Infiniband_CBW": 0,
                "Infiniband_Normalized_CBW": 0,
                "Infiniband_Normalized_MBOut": 2.61104e-6
            }
        },
        "b8599f03000a7769_2": {
            "dname": "default / Computer: r-ufm77 / HCA-1/2",
            "last_updated": "2022-10-19 13:23:11",
            "statistics": {
                "raw_ber": 0,
                "dev_temperature": 0,
                "Infiniband_PckOutRate": 0.13333333333333333,
                "Infiniband_PckInRate": 0.13333333333333333,
                "Infiniband_MBInRate": 0.0,
                "Infiniband_MBOutRate": 0.0,
```

```
                "Infiniband_MBOut": 3197,
                "Infiniband_MBIn": 3197,
                "Infiniband_PckOut": 11642100,
                "Infiniband_PckIn": 11642006,
                "Infiniband_SymbolErrors": 0,
                "Infiniband_LinkRecovers": 0,
                "Infiniband_LinkDowned": 2,
                "Infiniband_RcvErrors": 0,
                "Infiniband_RcvRemotePhysErrors": 0,
                "Infiniband_RcvSwRelayErrors": 7,
                "Infiniband_XmtDiscards": 80,
                "Infiniband_XmtConstraintErrors": 0,
                "Infiniband_RcvConstraintErrors": 0,
                "Infiniband_LinkIntegrityErrors": 0,
                "Infiniband_ExcBufOverrunErrors": 0,
                "Infiniband_VL15Dropped": 0,
                "Infiniband_XmitWait": 0,
                "Infiniband_CBW": 0,
                "Infiniband_Normalized_CBW": 0,
                "Infiniband_Normalized_MBOut": 3.07182e-7
            }
        },
        "f452140300383a01_1": {
            "dname": "default / Computer: r-ufm51 / HCA-1/1",
            "last_updated": "2022-10-19 13:23:11",
            "statistics": {
                "raw_ber": 0,
                "dev_temperature": 0,
                "Infiniband_PckOutRate": 0.06666666666666667,
                "Infiniband_PckInRate": 0.06666666666666667,
                "Infiniband_MBInRate": 0,
                "Infiniband_MBOutRate": 0,
                "Infiniband_MBOut": 3050,
                "Infiniband_MBIn": 3050,
                "Infiniband_PckOut": 11106861,
                "Infiniband_PckIn": 11106856,
```

```
                "Infiniband_SymbolErrors": 0,
                "Infiniband_LinkRecovers": 0,
                "Infiniband_LinkDowned": 0,
                "Infiniband_RcvErrors": 0,
                "Infiniband_RcvRemotePhysErrors": 0,
                "Infiniband_RcvSwRelayErrors": 0,
                "Infiniband_XmtDiscards": 0,
                "Infiniband_XmtConstraintErrors": 0,
                "Infiniband_RcvConstraintErrors": 0,
                "Infiniband_LinkIntegrityErrors": 0,
                "Infiniband_ExcBufOverrunErrors": 0,
                "Infiniband_VL15Dropped": 0,
                "Infiniband_XmitWait": 0,
                "Infiniband_CBW": 0,
                "Infiniband_Normalized_CBW": 0,
                "Infiniband_Normalized_MBOut": 2.74269e-7
            }
        },
        "f452140300383a02_2": {
            "dname": "default / Computer: r-ufm51 / HCA-1/2",
            "last_updated": "2022-10-19 13:23:11",
            "statistics": {
                "raw_ber": 0,
                "dev_temperature": 0,
                "Infiniband_PckOutRate": 0.06666666666666667,
                "Infiniband_PckInRate": 0.06666666666666667,
                "Infiniband_MBInRate": 0.0,
                "Infiniband_MBOutRate": 0.0,
                "Infiniband_MBOut": 3064,
                "Infiniband_MBIn": 3064,
                "Infiniband_PckOut": 11156319,
                "Infiniband_PckIn": 11156290,
                "Infiniband_SymbolErrors": 0,
                "Infiniband_LinkRecovers": 0,
                "Infiniband_LinkDowned": 0,
                "Infiniband_RcvErrors": 0,
```

```
                    "Infiniband_RcvRemotePhysErrors": 0,
                    "Infiniband_RcvSwRelayErrors": 0,
                    "Infiniband_XmtDiscards": 0,
                    "Infiniband_XmtConstraintErrors": 0,
                    "Infiniband_RcvConstraintErrors": 0,
                    "Infiniband_LinkIntegrityErrors": 0,
                    "Infiniband_ExcBufOverrunErrors": 0,
                    "Infiniband_VL15Dropped": 0,
                    "Infiniband_XmitWait": 0,
                    "Infiniband_CBW": 0,
                    "Infiniband_Normalized_CBW": 0,
                    "Infiniband_Normalized_MBOut": 2.74269e-7
                }
            }
        }
    }
}
```


- Status Codes
  - 200 – OK
  - 400 - PKey is not found

Monitoring Session Snapshot

- Description – creates a one-time monitoring session and receives data
- Request URL – POST /ufmRest/monitoring/snapshot
- Request Content Type – application/json
- Request Data Format

```
{
```

```
    "scope_object": MonitorClass,
    "monitor_object": MonitorClass,
    "objects": [ "object_id" ],
    "counters": [
        MonitorAttributes
                    ],
    "functions": [ "MonitorFunctions" ],
    "interval":2
}
```

> **Note**
>
> Refer to the table in "Possible Attribute Values" for possible values for monitor class, monitor attributes, and monitor functions.

- Request Data Example

```
{
    "attributes": ["Infiniband_MBOut", "Infiniband_MBIn"],
    "functions": ["RAW"],
    "scope_object": "Site",
    "interval":2,
    "monitor_object": "Device",
    "objects": ["Grid.default"]
}
```

- Response Format

```
{
  timestamp: {
```

```
      monitor_object: {
          name: {
              "statistics":{
         counter1...
         counter2...
                    ...
                    ...
         },
         dname:
     }
   }
}
```

- Response Example

```
{
    "2017-01-17 13:41:29": {
        "Device": {
            "0002c903001c6740": {
                "dname": "l-qa-150 HCA-3",
                "statistics": {
                    "Infiniband_MBIn": 0,
                    "Infiniband_MBOut": 0
                }
            },
            "f45214030042ccd0": {
                "dname": "MTX6000-Interop",
                "statistics": {
                    "Infiniband_MBIn": 0,
                    "Infiniband_MBOut": 0
                }
            },
            "0002c90300b71030": {
                "dname": "MT4113 ConnectIB Mellanox Technologies",
```

```
                "statistics": {
                    "Infiniband_MBIn": 0,
                    "Infiniband_MBOut": 0
                }
            },
            "f452140300289f80": {
                "dname": "sqadell49 HCA-3",
                "statistics": {
                    "Infiniband_MBIn": 0,
                    "Infiniband_MBOut": 0
                }
            },
            "f452140300188900": {
                "dname": "sqadell47 HCA-6",
                "statistics": {
                    "Infiniband_MBIn": 0,
                    "Infiniband_MBOut": 0
                }
            },
            "f452140300188840": {
                "dname": "sqadell49 HCA-6",
                "statistics": {
                    "Infiniband_MBIn": 0,
                    "Infiniband_MBOut": 0
                }
            },
            "f45214030028a020": {
                "dname": "l-qa-150 HCA-2",
                "statistics": {
                    "Infiniband_MBIn": 0,
                    "Infiniband_MBOut": 0
                }
            }
        }
    }
}
```

- Status Codes
  - 200 – OK

Request Monitoring Session Attributes Data

- Description – requests the data that was used to create the monitoring session
- Request URL – GET /ufmRest/monitoring/<session>/<session_id>
- Request – not required
- Response Format

```
{
    "scope_object": MonitorClass,
    "monitor_object": MonitorClass,
    "objects": [ "object_id" ],
    "counters": [ MonitorAttributes ],
    "functions": [ "MonitorFunctions" ],
    "interval": 2
}
```

> **Note**
>
> Refer to the table in "Possible Attribute Values" for possible values for monitor class, monitor attributes, and monitor functions.

- Response Example

```
{
    "attributes": [
        "Infiniband_PckIn",
        "Infiniband_PckOutRate",
        "Infiniband_PckInRate"
    ],
    "functions": [
        "RAW"
    ],
    "scope_object": "Device",
    "interval": 2,
    "monitor_object": "Device",
    "objects": [
        "Grid.default.ec0d9a03007d7d0a",
        "Grid.default.98039b030000e456",
        "Grid.default.0c42a103008b3bd0",
        "Grid.default.0c42a103008b40d0"
    ]
}
```

- Status Codes
    - 200 – OK

Get All Monitoring Available Attributes

- Description – returns all possible values of monitoring metadata (counters, classes, and functions)
- Request URL – GET /ufmRest/monitoring/attributes
- Request Data – not required
- Response Format

```
{
    "functions":[ MonitorFunctions],
    "classes":[ MonitorClass],
    "counters":[ MonitorAttributes]
}
```

> **Note**
>
> Refer to the table in "Possible Attribute Values" for possible values for monitor class, monitor attributes, and monitor functions.

- Response Example

```
{
    "functions": [
        "RAW",
        "AVG",
        "SUM",
        "MIN",
        "MAX"
    ],
    "classes": [
        "Port",
        "Device",
        "Switch",
        "Bridge",
        "Computer",
        "LogicalServer",
        "Site",
        "PortsGroup"
```

```
    ],
    "counters": [
        "Infiniband_MBIn",
        "Infiniband_PckIn",
        "Infiniband_MBOut",
        "Infiniband_PckOut",
        "Infiniband_MBInRate",
        "Infiniband_PckInRate",
        "Infiniband_MBOutRate",
        "Infiniband_SymbolErrors",
        "Infiniband_LinkRecovers",
        "Infiniband_LinkDowned",
        "Infiniband_RcvErrors",
        "Infiniband_RcvRemotePhysErrors",
        "Infiniband_RcvSwRelayErrors",
        "Infiniband_XmtDiscards",
        "Infiniband_XmtConstraintErrors",
        "Infiniband_RcvConstraintErrors",
        "Infiniband_LinkIntegrityErrors",
        "Infiniband_ExcBufOverrunErrors",
        "Infiniband_VL15Dropped",
        "Infiniband_SymbolErrors_Delta",
        "Infiniband_LinkRecovers_Delta",
        "Infiniband_LinkDowned_Delta",
        "Infiniband_RcvErrors_Delta",
        "Infiniband_RcvRemotePhysErrors_Delta",
        "Infiniband_RcvSwRelayErrors_Delta",
        "Infiniband_XmtDiscards_Delta",
        "Infiniband_XmtConstraintErrors_Delta",
        "Infiniband_RcvConstraintErrors_Delta",
        "Infiniband_LinkIntegrityErrors_Delta",
        "Infiniband_ExcBufOverrunErrors_Delta",
        "Infiniband_VL15Dropped_Delta",
        "Infiniband_CBW",
        "Infiniband_Normalized_CBW",
        "Infiniband_Normalized_MBOut",
```

```
            "Infiniband_XmitWait",
            "Infiniband_NormalizedXW",
            "Infiniband_CumulativeErrors"
        ]
}
```

- Status Codes
    - 200 – OK

Get Traffic/Congestion Map

- Description – returns traffic and congestion information on the different tiers in the fabric.
- Request URL – GET /ufmRest/monitoring/congestion
- Content Type – Application/json
- Response

```
{
    "1": {
        "traffic": {
            "max": 0,
            "avg": 0,
            "min": 0
        },
        "cong": {
            "max": 0,
            "avg": 0,
            "min": 0
        }
    },
    "3": {
```

```
            "traffic": {
                "max": 0,
                "avg": 0,
                "min": 0
            },
            "cong": {
                "max": 0,
                "avg": 0,
                "min": 0
            }
        },
        "2": {
            "traffic": {
                "max": 0,
                "avg": 0,
                "min": 0
            },
            "cong": {
                "max": 0,
                "avg": 0,
                "min": 0
            }
        },
        "4": {
            "traffic": {
                "max": 0,
                "avg": 0,
                "min": 0
            },
            "cong": {
                "max": 0,
                "avg": 0,
                "min": 0
            }
        }
}
```

- Status Codes
    - 200 – OK

Get Port Groups Traffic/Congestion Map

- Description – returns traffic and congestion information for all port groups.
- Request URL – GET /ufmRest/monitoring/port_groups
- Content type – Application/json
- Response

```
{
    <group_name>: {
        "traffic": {
            "max": 0,
            "avg": 0,
            "min": 0
        },
        "cong": {
            "max": 0,
            "avg": 0,
            "min": 0
        }
}
```

- Status Codes
    - 200 – OK

Monitoring Templates REST API

Create Monitoring Template

- Description – Creates and starts a new monitoring template
- Request URL – POST /ufmRest/app/monitoring
- Content type – Application/json
- Request Data Format

```
{
    "interval": 5,
    "functions": [
        "RAW"
    ],
    "scope_object": "Device",
    "monitor_object": "Device",
    "attributes": [
        "attribute "
    ],
    "objects": [
        "object_id"
    ],
    "name": "template",
    "description": "",
    "view_type": "Line"
}
```

Note

Refer to the table in "Possible Attribute Values" for the list of attributes.

- Request Data Example

```
{
    "interval": 5,
    "functions": [
        "RAW"
    ],
    "scope_object": "Device",
    "monitor_object": "Device",
    "attributes": [
        "Infiniband_XmtConstraintErrors"
    ],
    "objects": [
        "Grid.default.e41d2d0300167ee0"
    ],
    "name": "template",
    "description": "",
    "view_type": "Line"
}
```

- Response

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 Final//EN">
<title>Redirecting...</title>
<h1>Redirecting...</h1>
<p>You should be redirected automatically to target URL: <a
href="/ufmRest/app/monitoring/template">/ufmRest/app/monitoring/template</
If not click the link..
```

- Status Codes
  - 201 – created successfully
  - 403 – bad request

Update Monitoring Template

- Description – updates an existing monitoring template
- Request URL – PUT /ufmRest/app/monitoring
- Content type – Application/json
- Request Data

```
{
  "interval": <interval>,
  "functions": [
    "<function>"
  ],
  "scope_object": "Device",
  "monitor_object": "Device",
  "attributes": [
    "attribute "
  ],
  "objects": [
    "object_id"
  ],
  "description": "",
  "view_type": "<view_type>"
}
```

Note

Refer to the table in "Possible Attribute Values" for the list of attributes.

- Status Codes
  - 201 – updated successfully
  - 403 – bad request

Get Monitoring Template

- Description – retrieve information on an existing monitoring template
- Request URL – GET ufmRest/app/monitoring/<template_name>
- Content type – Application/json
- Request Data


```
{
    "functions": [
        "RAW"
    ],
    "description": "N/A",
    "view_type": "Line",
    "template_name": "jhgljlj",
    "interval": 5,
    "objects": [
        "Grid.default.e41d2d0300167ee0"
    ],
    "scope_object": "Device",
    "attributes": [
        "Infiniband_XmtDiscards",
        "Infiniband_RcvErrors",
        "Infiniband_RcvRemotePhysErrors",
```

```
            "Infiniband_RcvConstraintErrors"
        ],
        "monitor_object": "Device",
        "name": "admin_jhgljlj"
}
```

> **Note**
>
> Refer to the table in "Possible Attribute Values" for the list of attributes.

- Status Codes
  - 200 – OK
  - 404 – not found

Get All Monitoring Templates

- Description – returns a list of all existing monitoring templates
- Request URL – GET ufmRest/app/monitoring
- Content type – Application/json
- Response

```
[
        "template_name1",
        "template_name2",

]
```

- Status Codes
    - 200 – OK

Delete Monitoring Template

- Description – remove an existing monitoring template
- Request URL – DELETE ufmRest/app/monitoring/<template_name>
- Content type – Application/json
- Status Codes
    - 200 – OK
    - 404 – not found

Templates REST API

- Description – API for using provisioning templates in UFM (getting, adding and refreshing templates)
- Request URL – /ufmRest/templates
- Main Operations
    - Get all templates
    - Get template
    - Add template
    - Remove template
    - Refresh templates list

Get All Templates

- Description – this interface is used to retrieve all templates
- Request URL – GET /ufmRest/templates
- Optional Request Parameters

"tags"	Comma seperated list of tags. For example: .../templates?tags="switch,Mellanox"
"profile"	Profile of the template. For example: .../templates?profile="ib"
"system_type"	Type of system. For example: .../templates?system_type=Mellanox Switch

- Request Data – N/A
- Response

```
[ {
    "matchingValidationTemplate" : null ,
    "description" : "Shows SNMP settings and status" ,
    "filePath" : "/opt/ufm/files/templates/pre-defined/Mellanox/Show-SNMP" ,
    "validationTemplate" : null ,
    "portProvisioning" : null ,
    "systemProfile" : "" ,
    "parsingScript" : null ,
    "systemType" : "Mellanox Switch" ,
    "owner" : "*system*" ,
    "title" : "Show-SNMP" ,
    "tags" : "switch,Mellanox"
} ,
{
    "matchingValidationTemplate" : null ,
    "description" : "Displays health report." ,
    "filePath" : "/opt/ufm/files/templates/pre-defined/Mellanox/Show-Health-Report" ,
    "validationTemplate" : null ,
    "portProvisioning" : null ,
    "systemProfile" : "" ,
    "parsingScript" : null ,
    "systemType" : "Mellanox Switch" ,
    "owner" : "*system*" ,
    "title" : "Show-Health-Report" ,
    "tags" : "switch,Mellanox"
} ,
.
.
.
```


- Status Codes
    - 200 – successful operation

Get Template

- Description – this interface is used to retrieve the content of a specific template
- Request URL – GET /ufmRest/<templates>/<template_name>
- Request Data – N/A
- Response


```
{
    "matchingValidationTemplate": null,
    "description": "Shows SNMP settings and status",
    "filePath": "/opt/ufm/files/templates/pre-defined/Mellanox/Show-SNMP",
    "validationTemplate": null,
    "portProvisioning": null,
    "systemProfile": "",
    "content": [
    "#!desc: Shows SNMP settings and status\n",
    "#!system_profile:\n",
    "#!system_type: mlnxos_switch\n",
    "#!update_conf: false\n",
    "#!owner: *system*\n",
    "show snmp\n"
],
    "parsingScript": null,
    "systemType": "Mellanox Switch",
    "owner": "*system*",
    "title": "Show-SNMP",
    "tags": "switch,Mellanox"
}
```


- Status Codes
    - 200 – successful operation

- 400 – template <template_name> does not exist

Add Template

- Description – this interface is used to add/create a new user-defined template
- Request URL – POST /ufmRest/<templates>
- Request Data

```
{
    "title" :  "tenplate_title" ,
    "systemType" :  "Mellanox Switch" ,
    "content" : [ "the content of the template" ] ,
    "description" :  "template_description"
}
```

- Response – HTTP Response Location Header will contain URI with template name created for running the CLI command on the specified switches
- Status Codes
    - 201 – created
    - 409 – template with a name 'template_title' already exists. Please select a different name.
    - 400 – missing attribute(s) : attr_name

Delete Template

- Description – this API is used to remove an existing template
- Request URL – DELETE /ufmRest/<templates>/<template-id>
- Request Data – N/A
- Response – N/A
- Status Codes

- 204 – no content

Refresh Templates List

- Description – this interface is used to refresh the templates list, after a new user-defined template was created
- Request URL – POST /ufmRest/<templates>/refresh
- Request Data – N/A
- Response – N/A
- Status Codes
  - 200 – OK

All Available Templates for Mellanox Switches

General Templates

Available Templates	Description	Arguments	
		Globals	Locals
Disable-SNMP	Disables SNMP on the switch		
Disable-SNMP-V3	Disables SNMP v3	user_name - username to use	
Disable-Telnet	Disables the telnet service on the switch		
Enable-SNMP	Enables SNMP and defines 'public' community string	community_name - community name to enable	
Enable-SNMP-V3	Creates an SNMP v3 user 'admin' with predefined authentication and privacy passwords	• user_name – username to use • authentication_password –	

Available Templates	Description	Arguments	
		authentication password • user_name – username to use	
Enable-Telnet	Enables the telnet service on the switch		
Install-License	Installing Switch license	license_key – license key to install	
Remove-SNMP-Host	Removes a trap-receiver	IP_address – IP address of SNMP host to remove	
Reset-Counters	Clears all the counters		
Set-CLI-Logout	Sets default CLI log-out interval	auto_logout_timeout – auto-logout timeout value (in minutes)	
Set-Email-Notifications	Sets up an email server and a recipient for email notifications	• email_address – recipient e-mail address • IP_address – IP address of mail server	
Set-Hostname	Sets hostname of the switch		switch_hostname – hostname to set
Set-NTP-Server	Sets up an NTP server, sets the time zone and synchronizes the date	• NTP_server_IP – NTP server address • time_zone – timezone name	
Set-SNMP-	Adds a trap-receiver for SNMP v2c traps with given community	• community_name – community name to use	

Available Templates	Description	Arguments	
V2c-Traps		• IP_address – address of trap receiver	
Set-SNMP-V3-Traps	Adds a trap-receiver for SNMP v3 traps with username and predefined authentication and privacy passwords	• private_password – privacy password to use • user_name – username to use • authentication_password – authentication password to use • IP_address – address of traps receiver	
Show-Running-Config	Shows the running configuration of the switch		
Show-SNMP	Shows SNMP settings and status		
Show-SNMP-Host	Shows list of trap-receivers		
Show-SNMP-User	Shows the list of SNMP users		
Show-Power	Displays power supplies and power usage		
Show-Fan	Displays fans status and speed		
Show-Health-Report	Displays health report		
Show-	Displays power supplies voltage		

Available Templates	Description	Arguments	
Voltage	level		
Show-Protocols	Displays all protocols enabled in the system		

InfiniBand Templates

Available Templates	Description
Disable-SM	Disables subnet manager
Enable-SM	Enables subnet manager

UFM Version REST API

- Description – retrieve the current UFM version number
- Request URL – GET /ufmRest/app/ufm_version
- Request Content Type – Application/json
- Response

```
{
    "opensm": "5.20.0_ef1f438",
    "sharp": "3.8.0-rc5",
    "ibdiagnet": "2.18.0.MLNX20240804.a435258",
    "telemetry": "1.18.2-17094707",
    "mft": "4.29.0-131",
    "ufm_webui": "6.18.0-3",
    "ufm_release_version": "6.18.0-5",
    "plugins": {}
}
```

- Status Codes
    - 200 – OK

Actions REST API

Provisioning

- Description – provisioning allows users to perform actions on a specific switch in UFM.
- Request URL – /ufmRest/actions
- Main Operations
    - Run Explicit CLI commands
    - Run a predefined template using the template name

Running Explicit CLI Commands

- Description – perform a provisioning job on a switch using explicit CLI commands
- Request URL – POST /ufmRest/actions
- Request Content Type – Application/json
- Request Data

```
{
        "action": "run_cli",
        "identifier": "identifier",
        "params": {
            "commandline": ["<CLI_COMMAND_LINE1>",
                "<CLI_COMMAND_LINE2>"
            ],
            "arguments": {
                "globals": {
                    "<global_arg1>": "<global_arg_val1>"
```

```
                                        },
                                        "devices": {
                                                "<system_IP>": {
                                                        "<local_arg1>": "
<local_arg_val1>"
                                                }
                                        }
                                }
                        },
                        "description": "",
                        "object_ids": ["<object ips/ids>"],
                        "object_type": "object_type"
}
```

> **Note**
>
> The "identifier" field specifies whether to search for the object using its IP or its ID. Group objects have IDs (name) only. However, for switch provisioning, both identifiers may be used.

- Response – the HTTP Response Location Header will contain URI with Job ID created for running the CLI command on the specified switches
- Status Codes
  - 202 – successful operation
  - 400 – bad request

Running Predefined Template Using Its Name

- Description – perform a Provisioning Job on a switch using the template's name
- Request URL – POST /ufmRest/actions/provisioning/<template_name>

- Request Content Type – Application/json
- Request Data

```
{
        "identifier": "identifier",
        "params": {
                "arguments": {
                        "globals": {
                                "<global_arg1>": "<global_arg_val1>"
                        },
                        "devices": {
                                "<system_IP>": {
                                        "<local_arg1>": "
<local_arg_val1>"
                                }
                        }
                }
        },
        "description": "",
        "object_ids": ["<objects_ips/ids>"],
        "object_type": "object_type "
}
```

> **Note**
>
> The "identifier" field specifies whether to search for the object using its IP or its ID. Group objects have IDs (name) only. However, for switch provisioning, both identifiers may be used.

- Response – the HTTP Response Location Header will contain URI with Job ID created for running the CLI command on the specified switches

- Status Codes
    - 202 – successful operation
    - 400 – bad request

Set Node Description

- Description – setting a node description for unmanaged switches
- Request URL – POST /ufmRest/actions
- Request Content Type – Application/json
- Request Data

```
{
    "action": "set_node_description",
    "identifier": "id",
    "params": {
        "arguments": {
            "devices": {
                "ec0d9a03000b2640": {"description": "NodeDesc"}}
        }
    },
    "description": "Set Node Decription",
    "object_ids": [
        "ec0d9a03000b2640"
    ],
    "object_type": "System"
}
```

- Response – the HTTP Response Location Header will contain URI with Job ID created for running the CLI command on the specified switches

- Note – when the node description is set, OpenSM will not be aware of this change, unless the fabric discovery is refreshed using the action detailed in "Fabric Discovery Refresh REST API".

- Status Codes

  - 202 – successful operation

  - 400 – bad request

Set Hostname Provisioning Example

- Description – sets hostname of the switch

- Request URL – POST ufmRest/actions/provisioning/Set-Hostname

- Arguments

Name	Type	Description
switch_hostname	Local (per device)	Hostname to set

- Request Data

```
{
        "identifier": "ip",
        "params": {
                "arguments": {
                        "globals": {},
                        "devices": {
                                "10.209.24.39": {
                                        "switch_hostname": "r-smg-
sw18"
                                }
                        }
                }
        },
        "object_ids": ["10.209.24.39"],
        "object_type": "System"
```

```
}
```

In-Band Reboot

- Description – allows users to run in-band reboot in UFM. In-band reboot supports unmanaged switches only.
- Request URL – POST /ufmRest/actions/inband_reboot
- Request Content Type – application/json
- Request Data

```
{
"identifier": "id",
"object_ids": ["<system1_id>", "<system2_id>"] / ["group_id"],
"object_type": "System" / "Group"
}
```

> **Note**
>
> This is a synchronized action (no job will be created).

- Response – N/A

> **Note**
>
> The response will be empty unless an error has taken place. A successful response (one without errors) indicates that the

reboot command was successfully sent to the switch, not that the device is rebooted.

- Status Codes
  - 202 – accepted. Reboot command was sent successfully.
  - 400 – bad request (bad or missing parameters)

Software Upgrade

- Description – allow users to run sw_upgrade in UFM
- Request URL – POST /ufmRest/actions
- Request Content Type – application/json
- Request Data

```
{
    "action": "sw_upgrade",
    "identifier": "id",
    "object_ids": [
        "<system1_id>",
        "<system2_id>"
    ] / [
        "group_id"
    ],
    "object_type": "System" / "Group",
    "params": {
        "protocol": "scp,ftp",
        "server": "server_ip",
        "username": "<username>",
        "password": "password",
        "image": "image",
        "path": "path"
    },
```

```
    "description" : "<description>"
}
```

- Notes
  - Switches SW images should be .img
  - Hosts SW images should be .tgz
  - This action is supported for both switches and hosts that have ufmagent. Job will be successfully completed once the upgrade procedure is done.
  - For the switch SW upgrade to take effect, make sure to reboot the switch.
- Response – the HTTP Response Location Header will contain URI with job ID created for running the action
- Status Codes
  - 202 – accepted. Job ID created successfully.

    400 – Bad request (bad or missing parameters)

Firmware Upgrade

- Description – allows users to run fw_upgrade in UFM
- Request URL – POST /ufmRest/actions
- Request Content Type – application/json
- Request Data

```
{
    "action" : "fw_upgrade",
    "identifier" : "id",
    "object_ids" : [
        "<system1_id>",
        "<system2_id>"
```

```
    ] / [
        "group_id"
    ] ,
    "object_type" :  "System" / "Group" ,
    "params" :  {
        "protocol" :  "ftp" ,
        "server" :  "server_ip" ,
        "username" :  "<username>" ,
        "password" :  "password" ,
        "image" :  "image" ,
        "path" :  "path"
    } ,
    "description" :  "<description>"
}
```

- Notes
    - FW images should be placed under /path/<PSID> where the PSID is the PSID of the device, with the name “fw_image”
    - This action is supported for both switches and hosts that have ufmagent. Job will be successfully completed once the upgrade procedure is done.
- Response – the HTTP Response Location Header will contain URI with job ID created for running the action
- Status Codes
    - 202 – accepted. Job ID created successfully.

      400 – bad request (bad or missing parameters)

Reboot

- Description – allows users to reboot switches/hosts in UFM
- Request URL – POST /ufmRest/actions
- Request Content Type – application/json

- Request Data

```
{
    "action": "reboot",
    "identifier": "id",
    "object_ids": [
        "<system1_id>",
        "<system2_id>"
    ] / [
        "group_id"
    ],
    "object_type": "System" / "Group",
    "description": "<description>"
}
```

- Note – this action is supported for switches and hosts that have ufmagent. Job will be successfully completed once the upgrade procedure is done.
- Response – the HTTP Response Location Header will contain URI with job ID created for running the action
- Status Codes
    - 202 – accepted. Job ID created successfully.

      400 – bad request (bad or missing parameters)

Burn HDR Active Fiber Cable Transceivers

> **Note**
>
> This feature is supported for cables with the OPN MFS1S00-HxxV only. This feature is supported for MFS1S00-HxxV cables with NVIDIA® ConnectX®-6 HCAs and NVIDIA Quantum devices.

- Description – allow user to burn MFS1S00-HxxV cables on NVIDIA Quantum switches using the LinkX tool which is part of Flint.
- Request URL – POST /ufmRest/actions
- Request Content Type – application/json

```
{
    "params" : {"image" : "hercules2.bin"},
    "action" : "burn_cables_transceivers",
    "object_ids" : ["0002c9030060dc20"],
    "object_type" : "System",
    "description" : "",
    "identifier" : "id"
}
{
    "params" : {"image" : "hercules2.bin"},
    "action" : " burn_cables_transceivers ",
    "object_ids" : ["switches"],
    "object_type" : "Group",
    "description" : "",
    "identifier" : "id"
}
```

- Response – the HTTP Response Location Header will contain a URI with a job ID created for running the action
- Status Codes
    - 202 – accepted, job ID created successfully
    - 400 – bad request (bad or missing parameters)
    - 404 – host/systems not found

Get List of Available Images

- Description – allows users to get all availebe images that could be applied on device.

- Request URL – GET /ufmRest/app/images/cables
- Request Content Type – Application/json
- Request Data:

```
[
    "hercules2.bin",
    "hercules3.bin"
]
```

- Status Codes
    - 200 – updated successfully
    - 400 – bad request (bad or missing parameters)
    - 404 – not found.

Upload New Cable Image

- Description – allows users to upload a new cable image before applying the burn MFS1S00-HxxV transceiver action.
- Request URL – POST /ufmRest/app/images/cables
- Request Content Type – Application/json
- Request Data:

```
{
    "file" :  "hercules2.bin"
}
```

- Status Codes

- 200 – updated successfully
- 400 – bad request (bad or missing parameters)
- 404 – not found.

Delete Cable Image

- Description – allows users to delete an uploaded cable image.
- Request URL – DELETE /ufmRest/app/images/cables/<image_name>
- Request Content Type – Application/json
- Status Codes
  - 200 – updated successfully
  - 400 – bad request (bad or missing parameters)
  - 404 – not found.

Activate Cables Transceivers Firmware Action

- Description – Allows users to activate burned image onto list of devices.
- Request URL – POST /ufmRest/actions
- Request Content Type – Application/json
- Request Data:

```
{
"action" : "activate_cables_transceivers_fw" ,
"object_ids" : [ "0002c9030060dc20" ] ,
"object_type" : "System" ,
"description" : "" ,
```

```
    "identifier" : "id"
}

{
    "action" : "activate_cables_transceivers_fw" ,
    "object_ids" :  [ "switches" ] ,
    "object_type" : "Group" ,
    "description" : "" ,
    "identifier" : "id"
}
```

- Status Codes:
    - 202 – Accepted
    - 400 – bad request (bad or missing parameters)
    - 404 – not found.

Get Active Firmware Versions

- Description – This API will return a dictionary of active FW versions transceivers for the given list of devices, each active FW version transceiver will provide the following:
    - list of uploaded binary images that are compatible for FW version transceiver.
    - list of devices that have the above transceiver FW version active on them.
- Request URL – POST /ufmRest/app/images/cables/fw_versions
- Request Content Type – Application/json
- Request Data:
    - Example one:

```
{
"object_ids": ["0c42a1030079a66c", "248a0703008a850a"],
  "object_type": "System"
}
```

- Example two:

```
{
"object_ids": ["Devices"],
"object_type": "Group"
}
```

- Response -

```
{
        "38.100.057": {
                "supported_images": [
                        "hercules2-38_100_059.bin",
                        "hercules2-38_100_057.bin"
                ],
    "transceiver_type": "Hercules2",
                "devices": [
                        {
                                "system_name": "sw-ufm-qm01",
                                "guid": "0x0c42a1030079a66c",
                                "ip": "10.209.224.32"
                        },
                        {
                                "system_name": "r-ufm77",
                                "guid": "0x248a0703008a850a",
                                "ip": "11.4.3.175"
```

```
                }
            ]
        },
        "38.100.059": {
            "supported_images": [
                "hercules2-38_100_059.bin",
                "hercules2-38_100_057.bin"
            ],
"transceiver_type": "Bagheera",
            "devices": [
                {
                    "system_name": "sw-ufm-qm01",
                    "guid": "0x0c42a1030079a66c",
                    "ip": "10.209.224.32"
                },
                {
                    "system_name": "r-ufm77",
                    "guid": "0x248a0703008a850a",
                    "ip": "11.4.3.175"
                }
            ]
        },
        "46.120.00348": {
            "supported_images": [
                "sec_issu_46_120_00348_dev_signed.bin"
            ],
"transceiver_type": "Louie_did",
            "devices": [
                {
                    "system_name": "sw-ufm-qm01",
                    "guid": "0x0c42a1030079a66c",
                    "ip": "10.209.224.32"
                },
                {
                    "system_name": "r-ufm77",
                    "guid": "0x248a0703008a850a",
```

```
                    "ip": "11.4.3.175"
                }
            ]
        }
}
```

- Status Codes:
  - 202 – Accepted
  - 400 – bad request (bad or missing parameters)
  - 404 – not found.

Disable/Enable/Reset Ports

- Description – allows users to performs the following actions on ports: enable, disable, and reset
- Request URL – POST /ufmRest/actions
- Request Content Type – application/json
- Request Data

```
{
    "params": {
        "port_id": "port_name"
    },
    "action": "enable,disable,reset",
    "object_ids": [
        "system_guid"
    ],
    "object_type": "System",
    "description": " description",
    "identifier": "id"
```

```
}
```

- Response – the HTTP Response Location Header will contain URI with job ID created for running the action
- Status Codes
  - 202 – accepted. Job ID created successfully.
  - 400 – bad request (bad or missing parameters)

In-Band FW Upgrade

- Description – allows users to run in-band FW upgrade in UFM.
- Request URL – POST /ufmRest/actions
- Request Content Type – application/json
- Request Data

```
{
        "action": "fw_upgrade",
        "identifier": "id",
        "object_ids": ["<system1_id>", "<system2_id>"] / ["group_id"],
        "object_type": "System"/"Group",
        "params": {
                "protocol": "inband",
        },
        "description": "<description>"
}
```

- Notes
  - FW images should be placed under /opt/ufm/files/userdata/fw/<PSID> where the PSID is the PSID of the device.

    - This action is supported for both switches and hosts. Job will be successfully completed after the upgrade procedure on the switch has successfully finished. After the upgrade, the following actions should be performed:
        - For hosts – restart the openibd driver
        - For switches – restart the switch
- Status Codes
    - 202 – accepted. Job ID created successfully.
    - 400 – bad request (bad or missing parameters)

Collect System Dump

- Description – allows users to collect system dump for switchs/hosts/groups/links in the fabric
- Request URL – POST /ufmRest/actions
- Request Content Type – Application/json
- Request Data Example –
    - For the hosts, switches, and groups

```
{
    "action": "collect_system_dump",
    "identifier": "id",
    "object_ids": ["<system1_id>", "<system2_id>"] / ["group_id"],
    "object_type": "System"/"Group",
    "description": "<description>"
}
```

    - For the link – POST /ufmRest/resources/links/collect_system_dump

```
{link_name: "<link_name>"}
```

- Notes
  - This action used predefine-profile to save the collect system file
  - This action is supported for switches/hosts/groups/links (it will collect system dump for the endpoints of the link). The job is successfully complete after the generated system dump is saved in the external storage.
  - The user can configure the external storage using the REST API for the profile
- Status Codes
  - 202 – accepted, job ID created successfully
  - 400 – bad request (bad or missing parameters)
  - 404 – host/systems not found

Collect System Dump Profile API

- Description – allows users to set remote locatino profile and external storage for System dump operation and IBDiagnet reports.
- Request URL – PUT /ufmRest/app/profile/system_dump
- Request Content Type – Application/json
- Request Data

```
{protocol: "scp/sftp", server: "<server>", path: "<path>", username: "<username>", password: "<password>"}
```

- Status Codes

- 200 – updated successfully
- 400 – bad request (bad or missing parameters)

Mark Device as Unhealthy

- Description – Mark device as unhealthy.
- Request URL –POST /ufmRest/actions
- Response - redirect to job id

  Payload:

```
{
    "params": {
                “action”: “isolate” or “no_discover”,
              “device_policy”: UNHEALTHY”
    }
   “action”: “mark_device_unhealthy”,
   “object_ids”:<Array of devices guid>,
   “object_type”: “System”,
   “identifier”:”id”
}
```

  - Status Codes
    - 200 – OK
    - 404 – NOT FOUND

Mark Device as Healthy

- Description – Mark device as healthy.
- Request URL – POST ufmRestV2/actions.

- Payload:

```
{
    "params": {
              “device_policy”: “HEALTHY”
    }
   “action”:” mark_device_healthy”,
   “object_ids”:<Array of devices guid>,
   “object_type”: “System”,
   “identifier”:”id”
}
```

  - Response - redirect to job id
  - Status Codes
    - 200 – OK
    - 404 – NOT FOUND

Mirroring REST API

- Description – allows performing mirroring actions on ports of FDR, HDR, QDR, and EDR Mellanox switches
- Request URL – /ufmRest/app/mirrorings
- Main Operations
    - Create a mirroring template
    - Update a mirroring template
    - Get a mirroring template
    - Delete a mirroring template
    - Port mirroring action

Create Mirroring Template

- Description – allows users to create a mirroring template that will be later applied on a specific port
- Request URL – POST /ufmRest/app/mirrorings
- Request Content Type – application/json
- Request Data

```
{
    "system_id" :  "<system_id>",
    "target_port" :  "<target_port_id>",
    "packet_size" : "<packet_size>",
    "service_level" : "<service_level>"
}
```

- Status Codes
    - 200 – mirroring template created successfully
    - 400 – bad request (bad or missing parameters)

Update Mirroring Template

- Description – allows users to update an existing mirroring template
- Request URL – PUT /ufmRest/app/mirrorings
- Request Content Type – application/json
- Request Data

```
{
    "system_id": "<system_id>",
    "target_port": "<target_port_id>",
    "packet_size":"<packet_size>",
    "service_level":"<service_level>"
}
```

- Status Codes
    - 200 – mirroring template created successfully
    - 400 – bad request (bad or missing parameters)

Get Mirroring Template

- Description – retrieves information on an existing mirroring template using system ID
- Request URL – GET /ufmRest/app/mirrorings/<system_id>
- Request Content Type – application/json
- Request Data

```
{
    "target_port": {
        "number": 9,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "0002c903000e0b73_1",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
        "guid": "e41d2d0300167ee0",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
        "severity": "Minor",
        "logical_state": "Armed",
        "capabilities": [
            "enable",
            "reset"
        ],
        "active_speed": "10.0 Gbps",
        "lid": 10,
        "description": "Switch IB Port",
        "supported_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
```

```
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "e41d2d0300167ee0",
            "tier": 4,
            "path": "default(2) / Switch: r-ufm-sw63 / NA / 9",
            "name": "e41d2d0300167ee0_9",
            "active_width": "4x",
            "dname": "9",
            "mtu": 4096,
            "external_number": 9
        },
"packet_size": 200,
"service_level": 5
}
```


- Status Codes
    - 200 – mirroring template created successfully
    - 400 – bad request (bad or missing parameters)

Delete Mirroring Template

- Description – allows users to delete an existing mirroring template using system ID
- Request URL – DELETE /ufmRest/app/mirrorings/<system_id>
- Request Content Type – application/json
- Status Codes
    - 200 – mirroring template created successfully
    - 400 – bad request (bad or missing parameters)

Port Mirroring Action

- Description – allows users to perform the mirroring action on a specific port
- Request URL – POST /ufmRest/app/mirrorings/action
- Request Content Type – application/json
- Request Data

```
{
    "port_id" :  "<port_id>",
    "action" :  "enable,disable",
    "rx" :  true , false ,
    "tx" :  true , false
}
```

- Status Codes
    - 200 – mirroring template created successfully
    - 400 – bad request (bad or missing parameters)

Fabric Discovery Refresh REST API

- Description – this action should be run after setting the node description, in order to notify OpenSM of this change
- Request URL – POST /ufmRest/actions/fabric_discovery_refresh
- Request Data – N/A
- Status Codes
    - 202 – accepted

Jobs REST API

- Description – these interfaces allow users to retrieve various sorts of jobs data in UFM
- Request URL – /ufmRest/jobs
- Main Operations

Operation	Request URL
All jobs	GET /ufmRest/jobs
Specific jobs	GET /ufmRest/jobs/<List of JobIDs>*
Job information	GET /ufmRest/jobs/job-id/info
Job information in JSON	GET /ufmRest/jobs/job-id/info?type=full_json
Sub jobs of a specific job	GET /ufmRest/jobs/job_Id?advanced_information=true
Parent jobs only	GET /ufmRest/jobs?parent_id=null
Jobs for system	GET /ufmRest/jobs?object_ids=<list_of_systems>*
Jobs for operation	GET /ufmRest/jobs?operation=operation_name
Jobs with a specific status	GET /ufmRest/jobs?status=job_status
Update job status	PUT /ufmrest/jobs/status=Aborted
Delete a job	DELETE /ufmRest/jobs/<job-id>
Abort all jobs	POST /ufmRest/jobs/abortall

> **Note**
>
> *Values are separated with commas. e.g.1,2,3

- Request Data – N/A

- Response Example


```
{
        "Status": "Completed",
        "Foreground": true,
        "Description": " Shows SNMP settings and status",
        "RelatedObjects": ["10.209.36.140"],
        "Created": "2017-04-25 14:50:29",
        "LastUpdated": "2017-04-25 14:50:36",
        "Summary": "show snmp\n\nSNMP enabled: yes\nSNMP port: 161\nSystem contact: \nSystem location:
        \n\nRead-only communities:\n public\n\nRead-write communities:\n (none)\n\nInterface listen
        enabled: yes\nNo Listen Interfaces.\n",
        "CreatedBy": "admin",
        "Progress": 100,
        JobsRESTAPIRev5.9MellanoxTechnologies35Note: Ifaninvalidoranon- existingsystemorjobIDwerespecified,
        anemptylistwillbereturned."Operation": "Provisioning",
        "ID": "1.1"
}
```


> **Note**
>
> If an invalid or a non-existing system or job ID were specified, an empty list is returned.

- Status Codes
  - 200 – successful operation
  - 404 – not found

Systems REST API

- Description – returns information about all or a specific system
- Request URL – GET /ufmRest/resources/systems
- Main Operations
    - Get all systems
    - Get a system by name
    - Get a system by IP
    - Get system/s with modules
    - Get system/s with ports
    - Set manual IP for system
    - Set manual name for system

Get All Systems

- Description – lists all systems in the fabric. Systems can be filtered using the filters listed in the table below
- Request URL – GET /ufmRest/resources/systems
- Request Content Type – Application/json
- Possible Filters - optional request parameters that can be used as filters:

Parameter	Value	Description
ip		System IP address
brief	true	Provides a brief response with essential information only (also available for Get All Ports REST API)

Parameter	Value	Description
type	switch/host/gateway/router	Get all switches/hosts
model	e.g. MSB7700	Specific model of a switch
role	core/tor/endpoint	◦ core – switch connected to another switch ◦ tor – switch connected to a host ◦ endpoint – host
peer_name	<device name>, device name>	List of peer devices, comma separated
chassis	true/false	◦ true – detailed modules description ◦ false – module names only
ports	true/false	◦ true – detailed port description ◦ false – port names only
in_rack	true/false	◦ true - gets all systems that belong to rack ◦ false - gets all systems that do not belong to any rack
computes	allocated/free	Returns all the systems that are allocated or not allocated to logical servers.

- Response


```
[
    {
        "cpus_number": 0,
        "ip": "2.2.2.2",
        "ram": 0,
        "fw_version": "2.42.5000",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": true,
        "technology": "Computer",
        "psid": "MT_1090120019",
        "guid": "0002c9030021f970",
        "severity": "Info",
```

```
        "script": "N/A",
        "capabilities": [
            "ssh",
            "view_configuration"
        ],
        "state": "active",
        "role": "endpoint",
        "type": "host",
        "sm_mode": "activeSM",
        "vendor": "Mellanox",
        "description": "server",
        "has_ufm_agent": false,
        "server_operation_mode": "HA_Active",
        "groups": [
            "Hosts"
        ],
        "total_alarms": 0,
        "temperature": "N/A",
                "uptime": "N/A",
        "system_name": "r-dmz-ufm134",
        "sw_version": "N/A",
        "system_guid": "0002c9030021f973",
        "name": "0002c9030021f970",
        "url": "",
        "modules": [
            "0002c9030021f970_0_00"
        ],
        "cpu_type": "any",
        "is_managed": true,
        "model": "Computer",
        "ports": [
            "0002c9030021f972_2",
            "0002c9030021f971_1"
        ]
    },
    {
```

```
"cpus_number": 0,
"ip": "10.209.37.228",
"ram": 0,
"fw_version": "12.25.1020",
"mirroring_template": false,
"cpu_speed": 0,
"is_manual_ip": true,
"technology": "Computer",
"psid": "MT_2190110032",
"guid": "248a0703002e6292",
"severity": "Info",
"script": "N/A",
"capabilities": [
        "reboot",
        "ssh",
        "fw_inband_upgrade",
        "view_configuration"
],
"state": "active",
"role": "endpoint",
"type": "host",
"sm_mode": "noSM",
"vendor": "Mellanox",
"description": "server",
"has_ufm_agent": false,
"server_operation_mode": "Not_UFM_Server",
"groups": [
        "Hosts"
],
"total_alarms": 0,
                "uptime": "N/A",
"temperature": "N/A",
                "uptime": "N/A",
"system_name": "r-dmz-ufm139",
"sw_version": "N/A",
"system_guid": "248a0703002e6292",
```

```
        "name": "248a0703002e6292",
        "url": "",
        "modules": [
            "248a0703002e6292_0_00"
        ],
        "cpu_type": "any",
        "is_managed": true,
        "model": "Computer",
        "ports": [
            "248a0703002e6293_2",
            "248a0703002e6292_1"
        ]
    },
    {
        "cpus_number": 0,
        "ip": "10.209.37.154",
        "ram": 0,
        "fw_version": "16.27.2026",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": true,
        "technology": "Computer",
        "psid": "MT_0000000008",
        "guid": "98039b030000e456",
        "severity": "Info",
        "script": "script_name",
        "capabilities": [
            "reboot",
            "ssh",
            "fw_inband_upgrade",
            "view_configuration"
        ],
        "state": "active",
        "role": "endpoint",
        "type": "host",
        "sm_mode": "noSM",
```

```
        "vendor": "Mellanox",
        "description": "server",
        "has_ufm_agent": false,
        "server_operation_mode": "Not_UFM_Server",
        "groups": [
            "Hosts"
        ],
        "total_alarms": 0,
                "uptime": "N/A",
        "temperature": "N/A",
        "system_name": "r-dmz-ufm128",
        "sw_version": "N/A",
        "system_guid": "98039b030000e456",
        "name": "98039b030000e456",
        "url": "www.google.com",
        "modules": [
            "98039b030000e456_0_00"
        ],
        "cpu_type": "any",
        "is_managed": true,
        "model": "Computer",
        "ports": [
            "98039b030000e456_1"
        ]
    },
    {
        "cpus_number": 0,
        "ip": "10.215.30.1",
        "ram": 0,
        "fw_version": "16.27.2008",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": true,
        "technology": "Computer",
        "psid": "MT_0000000008",
        "guid": "b8599f03000a77d0",
```

```
"severity": "Info",
"script": "N/A",
"capabilities": [
        "reboot",
        "ssh",
        "fw_inband_upgrade",
        "view_configuration"
],
"state": "active",
"role": "endpoint",
"type": "host",
"sm_mode": "noSM",
"vendor": "Mellanox",
"description": "server",
"has_ufm_agent": false,
"server_operation_mode": "Not_UFM_Server",
"groups": [
        "Hosts"
],
"total_alarms": 0,
                "uptime": "N/A",
  "temperature": "N/A",
"system_name": "r-dcs96",
"sw_version": "N/A",
"system_guid": "b8599f03000a77d0",
"name": "b8599f03000a77d0",
"url": "",
"modules": [
        "ec0d9a03007d7d0a_0_00",
        "b8599f03000a77d0_0_00"
],
"cpu_type": "any",
"is_managed": true,
"model": "Computer",
"ports": [
        "ec0d9a03007d7d0b_2",
```

```
                "b8599f03000a77d1_2",
                "ec0d9a03007d7d0a_1",
                "b8599f03000a77d0_1"
            ]
        },
        {
            "cpus_number": 0,
            "ip": "fcfc:fcfc:209:36:225:90ff:fe4e:2364",
            "ram": 0,
            "fw_version": "2.42.5000",
            "mirroring_template": false,
            "cpu_speed": 0,
            "is_manual_ip": true,
            "technology": "Computer",
            "psid": "MT_1090120019",
            "guid": "0002c90300455bc0",
            "severity": "Info",
            "script": "N/A",
            "capabilities": [
                "ssh",
                "view_configuration"
            ],
            "state": "active",
            "role": "endpoint",
            "type": "host",
            "sm_mode": "hasSM",
            "vendor": "Mellanox",
            "description": "server",
            "has_ufm_agent": false,
            "server_operation_mode": "HA_StandBy",
            "groups": [
                "Hosts"
            ],
            "total_alarms": 0,
                "uptime": "N/A",
            "temperature": "N/A",
```

```
        "system_name": "r-dmz-ufm131",
        "sw_version": "N/A",
        "system_guid": "0002c90300455bc3",
        "name": "0002c90300455bc0",
        "url": "",
        "modules": [
            "0002c90300455bc0_0_00"
        ],
        "cpu_type": "any",
        "is_managed": true,
        "model": "Computer",
        "ports": [
            "0002c90300455bc2_2",
            "0002c90300455bc1_1"
        ]
    },
    {
        "cpus_number": 0,
        "ip": "fcfc:fcfc:209:36:268a:7ff:fea0:5234",
        "ram": 0,
        "fw_version": "15.2000.2046",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": true,
        "technology": "EDR",
        "psid": "MT_2630110032",
        "guid": "248a070300f88fe0",
        "severity": "Info",
        "script": "N/A",
        "capabilities": [
            "ssh",
            "sysinfo",
            "reboot",
            "mirroring",
            "sw_upgrade",
            "Provisioning"
```

```
],
"state": "active",
"role": "tor",
"type": "switch",
"sm_mode": "noSM",
"vendor": "Mellanox",
"description": "MSB7800",
"has_ufm_agent": false,
"server_operation_mode": "Switch",
"groups": [
    "1U_Switches",
    "Switches"
],
"total_alarms": 0,
            "uptime": "N/A",
  "temperature": "N/A",
"system_name": "switch-ec4034",
"sw_version": "3.8.1991-02-X86_64",
"system_guid": "248a070300f88fe0",
"name": "248a070300f88fe0",
"url": "",
"modules": [
    "248a070300f88fe8"
],
"cpu_type": "any",
"is_managed": true,
"model": "MSB7800",
"ports": [
    "248a070300f88fe0_31",
    "248a070300f88fe0_32",
    "248a070300f88fe0_6",
    "248a070300f88fe0_1",
    "248a070300f88fe0_9",
    "248a070300f88fe0_19",
    "248a070300f88fe0_23",
    "248a070300f88fe0_20"
```

```
            ]
        },
        {
            "cpus_number": 0,
            "ip": "fcfc:fcfc:209:36:225:90ff:fe84:83c4",
            "ram": 0,
            "fw_version": "12.26.1040",
            "mirroring_template": false,
            "cpu_speed": 0,
            "is_manual_ip": true,
            "technology": "Computer",
            "psid": "MT_2190110032",
            "guid": "248a0703002e628e",
            "severity": "Info",
            "script": "N/A",
            "capabilities": [
                "reboot",
                "ssh",
                "fw_inband_upgrade",
                "view_configuration"
            ],
            "state": "active",
            "role": "endpoint",
            "type": "host",
            "sm_mode": "noSM",
            "vendor": "Mellanox",
            "description": "server",
            "has_ufm_agent": false,
            "server_operation_mode": "Not_UFM_Server",
            "groups": [
                "Hosts"
            ],
            "total_alarms": 0,
                "uptime": "N/A",
            "temperature": "N/A",
            "system_name": "r-dmz-ufm135",
```

```
        "sw_version": "N/A",
        "system_guid": "248a0703002e628e",
        "name": "248a0703002e628e",
        "url": "",
        "modules": [
            "248a0703002e628e_0_00"
        ],
        "cpu_type": "any",
        "is_managed": true,
        "model": "Computer",
        "ports": [
            "248a0703002e628e_1",
            "248a0703002e628f_2"
        ]
    },
    {
        "cpus_number": 0,
        "ip": "0.0.0.0",
        "ram": 0,
        "fw_version": "N/A",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": false,
        "technology": "Device",
        "psid": "N/A",
        "guid": "0008f10001085600",
        "severity": "Info",
        "script": "N/A",
        "capabilities": [ ],
        "state": "active",
        "role": "N/A",
        "type": "gateway",
        "sm_mode": "noSM",
        "vendor": "Mellanox",
        "description": "HAWK",
        "has_ufm_agent": false,
```

```
        "server_operation_mode": "Not_UFM_Server",
        "groups": [
            "Gateway_Devices"
        ],
        "total_alarms": 0,
                "uptime": "N/A",
          "temperature": "N/A",
        "system_name": "Mellanox 4036E IO 4036E-20FA",
        "sw_version": "N/A",
        "system_guid": "0008f105002020fa",
        "name": "0008f10001085600",
        "url": "",
        "cpu_type": "any",
        "is_managed": true,
        "model": "HAWK",
        "ports": [
            "0008f10001085601_1"
        ]
    },
    {
        "cpus_number": 0,
        "ip": "fcfc:fcfc:209:36:202:c9ff:fe63:744",
        "ram": 0,
        "fw_version": "9.4.5110",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": true,
        "technology": "FDR",
        "psid": "MT_1010210020",
        "guid": "0002c903007b78b0",
        "severity": "Info",
        "script": "N/A",
        "capabilities": [
            "ssh",
            "sysinfo",
            "reboot",
```

```
        "mirroring",
        "sw_upgrade",
        "Provisioning"
    ],
    "state": "active",
    "role": "tor",
    "type": "switch",
    "sm_mode": "noSM",
    "vendor": "Mellanox",
    "description": "SX6036",
    "has_ufm_agent": false,
    "server_operation_mode": "Switch",
    "groups": [
        "1U_Switches",
        "Switches"
    ],
    "total_alarms": 0,
                "uptime": "N/A",
  "temperature": "N/A",
    "system_name": "r-dmz-ufm-sw49",
    "sw_version": "PPC_M460EX 3.6.8012 2019-02-22 07:53:42 ppc",
    "system_guid": "0002c903007b78b0",
    "name": "0002c903007b78b0",
    "url": "",
    "modules": [ ],
    "cpu_type": "any",
    "is_managed": true,
    "model": "SX6036",
    "ports": [
        "0002c903007b78b0_29",
        "0002c903007b78b0_28",
        "0002c903007b78b0_20",
        "0002c903007b78b0_25",
        "0002c903007b78b0_26",
        "0002c903007b78b0_8",
        "0002c903007b78b0_9",
```

```
                "0002c903007b78b0_5",
                "0002c903007b78b0_33",
                "0002c903007b78b0_17",
                "0002c903007b78b0_34",
                "0002c903007b78b0_19",
                "0002c903007b78b0_30",
                "0002c903007b78b0_31"
            ]
        },
        {
            "cpus_number": 0,
            "ip": "10.209.37.224",
            "ram": 0,
            "fw_version": "12.27.1016",
            "mirroring_template": false,
            "cpu_speed": 0,
            "is_manual_ip": true,
            "technology": "Computer",
            "psid": "MT_2190110032",
            "guid": "248a0703002e61da",
            "severity": "Info",
            "script": "N/A",
            "capabilities": [
                "reboot",
                "ssh",
                "fw_inband_upgrade",
                "view_configuration"
            ],
            "state": "active",
            "role": "endpoint",
            "type": "host",
            "sm_mode": "noSM",
            "vendor": "Mellanox",
            "description": "server",
            "has_ufm_agent": false,
            "server_operation_mode": "Not_UFM_Server",
```

```
            "groups": [
                "Hosts"
            ],
            "total_alarms": 0,
                "uptime": "N/A",
            "temperature": "N/A",
            "system_name": "r-dmz-ufm137",
            "sw_version": "N/A",
            "system_guid": "248a0703002e61da",
            "name": "248a0703002e61da",
            "url": "",
            "modules": [
                "248a0703002e61da_0_00"
            ],
            "cpu_type": "any",
            "is_managed": true,
            "model": "Computer",
            "ports": [
                "248a0703002e61db_2",
                "248a0703002e61da_1"
            ]
        }
]
```


- Response with brief flag:


```
[
    {
        "description": "server",
        "fw_version": "12.16.184",
        "has_ufm_agent": false,
        "guid": "e41d2d03005cf0e0",
        "psid": "MT_2190110032",
        "server_operation_mode": "Not_UFM_Server",
```

```
        "state": "active",
        "system_guid": "e41d2d03005cf0e0",
        "model": "Computer",
        "vendor": "Mellanox",
        "is_manual_ip": false,
        "is_managed": true,
        "severity": "Minor",
        "groups": [
            "Hosts",
            "Alarmed_Devices"
        ],
        "technology": "Computer",
        "mirroring_template": false,
        "system_name": "ufm-host43",
        "ip": "0.0.0.0",
        "role": "endpoint",
        "name": "e41d2d03005cf0e0",
        "sw_version": "NVA",
        "capabilities": [
            "fw_inband_upgrade"
        ],
        "type": "host",
        "ports": [
            "e41d2d03005cf0e0_1"
        ]
    }
]
```


- Request Examples
  - Get all switches

```
ufmRest/resources/systems?type=switch
```

- Get all hosts

```
ufmRest/resources/systems?type=host
```

- Get all switches of type MSB7700

```
ufmRest/resources/systems?type=switch&model=MSB7700
```

- Get all TORs of switches of type MSB7700

```
ufmRest/resources/systems?
type=switch&model=MSB7700&role=tor
```

- Get all devices for peer

```
ufmRest/resources/systems?peer_name=<name>,<name>, …
```

- Status Codes
  - 200 – OK

    400 – BAD_REQUEST

Get System by Name

- Description – lists a specific system using its name
- Request URL – GET /ufmRest/resources/systems/<system-name>
- Request Content Type – Application/json
- Response

```
[
    {
        "cpus_number": 0,
        "ip": "fcfc:fcfc:209:36:268a:7ff:fea0:5234",
        "ram": 0,
        "fw_version": "15.2000.2046",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": true,
        "technology": "EDR",
        "psid": "MT_2630110032",
        "guid": "248a070300f88fe0",
        "severity": "Critical",
        "script": "N/A",
        "capabilities": [
            "ssh",
            "sysinfo",
            "reboot",
            "mirroring",
            "sw_upgrade",
            "Provisioning"
        ],
        "state": "active",
        "role": "tor",
        "type": "switch",
        "sm_mode": "noSM",
        "vendor": "Mellanox",
        "description": "MSB7800",
        "has_ufm_agent": false,
        "server_operation_mode": "Switch",
        "groups": [
            "1U_Switches",
            "Switches",
            "Alarmed_Devices"
        ],
```

```
            "total_alarms": 1,
                    "uptime": "11d 10h 8m 11s",
            "temperature": "45",
            "system_name": "switch-ec4034",
            "sw_version": "3.8.1991-02-X86_64",
            "system_guid": "248a070300f88fe0",
            "name": "248a070300f88fe0",
            "url": "",
            "modules": [
                "248a070300f88fe0_4001_01",
                "248a070300f88fe0_4001_03",
                "248a070300f88fe0_4001_02",
                "248a070300f88fe0_4001_04",
                "248a070300f88fe0_4000_01",
                "248a070300f88fe0_2005_01",
                "248a070300f88fe0_1007_01",
                "248a070300f88fe0_2005_02",
                "248a070300f88fe8"
            ],
"cpu_type": "any",
            "is_managed": true,
            "model": "MSB7800",
            "ports": [
                "248a070300f88fe0_31",
                "248a070300f88fe0_32",
                "248a070300f88fe0_6",
                "248a070300f88fe0_1",
                "248a070300f88fe0_9",
                "248a070300f88fe0_19"
                "248a070300f88fe0_23",
                "248a070300f88fe0_20"
            ]
        }
]
```

- Status Codes
  - 200 – OK
  - 404 – NOT FOUND—system not found (by name)

Get System by IP

- Description – lists a specific system using its IP
- Request URL – GET /ufmRest/resources/systems?ip=<system-ip>
- Request Content Type – Application/json
- Response


```
[
    {
        "cpus_number": 0,
        "ip": "2.2.2.2",
        "ram": 0,
        "fw_version": "2.42.5000",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": true,
        "technology": "Computer",
        "psid": "MT_1090120019",
        "guid": "0002c9030021f970",
        "severity": "Info",
        "script": "N/A",
        "capabilities": [
            "ssh",
            "view_configuration"
        ],
        "state": "active",
        "role": "endpoint",
        "type": "host",
```

```
            "sm_mode": "activeSM",
            "vendor": "Mellanox",
            "description": "server",
            "has_ufm_agent": false,
            "server_operation_mode": "HA_Active",
            "groups": [
                "Hosts"
            ],
            "total_alarms": 0,
            "uptime": "N/A",
            "temperature": "N/A",
            "system_name": "r-dmz-ufm134",
            "sw_version": "N/A",
            "system_guid": "0002c9030021f973",
            "name": "0002c9030021f970",
            "url": "",
            "modules": [
                "0002c9030021f970_0_00"
            ],
            "cpu_type": "any",
            "is_managed": true,
            "model": "Computer",
            "ports": [
                "0002c9030021f972_2",
                "0002c9030021f971_1"
            ]
        }
]
```


- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST—IP parameter is not valid

Get System/s with Modules

- Description – lists a specific system or all systems with their modules
- Request URL

  GET /ufmRest/resources/systems?chassis=<'true'/'True'/'TRUE'/'t'/'T'>

  OR

  GET /ufmRest/resources/systems/<system-name>?chassis=<'true'/'True'/'TRUE'/'t'/'T'>

- Request Content Type – Application/json
- Notes
  - In order to get information about the modules of one system or all systems, the chassis request parameter should be specified using one of the following values:

    'true'/'True'/'TRUE'/'t'/'T'

  - If you do not wish to view the modules of any system, you can either not specify the chassis request parameter, or you can specify the parameter using one of the following values:

    'false'/'False'/'FALSE'/'f'/'F'

- Response


```
[
    {
        "cpus_number": 0,
        "ip": "fcfc:fcfc:209:36:268a:7ff:fea0:5234",
        "ram": 0,
        "fw_version": "15.2000.2046",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": true,
        "technology": "EDR",
        "psid": "MT_2630110032",
```

```
"guid": "248a070300f88fe0",
"severity": "Critical",
"script": "N/A",
"capabilities": [
        "ssh",
        "sysinfo",
        "reboot",
        "mirroring",
        "sw_upgrade",
        "Provisioning"
],
"state": "active",
"role": "tor",
"type": "switch",
"sm_mode": "noSM",
"vendor": "Mellanox",
"description": "MSB7800",
"has_ufm_agent": false,
"server_operation_mode": "Switch",
"groups": [
        "1U_Switches",
        "Switches",
        "Alarmed_Devices"
],
"total_alarms": 10,
"uptime": "11d 10h 8m 11s",
"temperature": "46",
"system_name": "switch-ec4034",
"sw_version": "3.8.1991-02-X86_64",
"system_guid": "248a070300f88fe0",
"name": "248a070300f88fe0",
"url": "",
"modules": [
        }
                "status": "OK",
                "psid": "N/A",
```

```
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_4001_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09072",
        "path": "default(7) / Switch: switch-ec4034 / FAN 1",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "A5",
        "name": "248a070300f88fe0_4001_03",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 3",
        "max_ib_ports": 0,
        "module_index": 3,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09071",
        "path": "default(7) / Switch: switch-ec4034 / FAN 3",
        "device_name": "switch-ec4034",
```

```
            "temperature": "N/A",
            "severity": "Info"
        },
        {
            "status": "OK",
            "psid": "N/A",
            "hw_version": "MTEF-FANF-A",
            "hw_revision": "A5",
            "name": "248a070300f88fe0_4001_02",
            "hca_dev_id": "N/A",
            "sw_version": "N/A",
            "type": "FAN",
            "number_of_chips": 0,
            "description": "FAN - 2",
            "max_ib_ports": 0,
            "module_index": 2,
            "hosting_system_guid": "248a070300f88fe0",
            "device_type": "Switch",
            "serial_number": "MT1704X09078",
            "path": "default(7) / Switch: switch-ec4034 / FAN 2",
            "device_name": "switch-ec4034",
            "temperature": "N/A",
            "severity": "Info"
        },
        {
            "status": "OK",
            "psid": "N/A",
            "hw_version": "MTEF-FANF-A",
            "hw_revision": "A5",
            "name": "248a070300f88fe0_4001_04",
            "hca_dev_id": "N/A",
            "sw_version": "N/A",
            "type": "FAN",
            "number_of_chips": 0,
            "description": "FAN - 4",
            "max_ib_ports": 0,
```

```
            "module_index": 4,
            "hosting_system_guid": "248a070300f88fe0",
            "device_type": "Switch",
            "serial_number": "MT1704X09070",
            "path": "default(7) / Switch: switch-ec4034 / FAN 4",
            "device_name": "switch-ec4034",
            "temperature": "N/A",
            "severity": "Info"
        },
```


- Status Codes
  - 200 – OK
  - 404 – NOT FOUND when a single system is requested

Get System/s with Ports

- Description – lists a specific system or all systems with their active ports
- Request URL

  GET /ufmRest/resources/systems?ports=<'true'/'True'/'TRUE'/'t'/'T'>

  or

  GET /ufmRest/resources/systems/<system-name>?ports=<'true'/'True'/'TRUE'/'t'/'T'>
- Request Content Type – Application/json
- Notes
  - In order to get information about the active ports of one system or all systems, the ports request parameter should be specified using one of the following values:

    'true'/'True'/'TRUE'/'t'/'T'
  - If you do not wish to view the active ports of any system, you can either not specify the ports request parameter, or you can specify the parameter using one of the following values:

'false'/'False'/'FALSE'/'f'/'F'

- Response


```
[
    {
        "cpus_number": 0,
        "ip": "10.215.30.1",
        "ram": 0,
        "fw_version": "16.27.2008",
        "mirroring_template": false,
        "cpu_speed": 0,
        "is_manual_ip": true,
        "technology": "Computer",
        "psid": "MT_0000000008",
        "guid": "b8599f03000a77d0",
        "severity": "Minor",
        "script": "N/A",
        "capabilities": [
            "reboot",
            "ssh",
            "fw_inband_upgrade",
            "view_configuration"
        ],
        "state": "active",
        "role": "endpoint",
        "type": "host",
        "sm_mode": "noSM",
        "vendor": "Mellanox",
        "description": "server",
        "has_ufm_agent": false,
        "server_operation_mode": "Not_UFM_Server",
        "groups": [
            "Hosts",
            "Alarmed_Devices"
```

```
],
"total_alarms": 6,
"temperature": "N/A",
"uptime": "N/A",
"system_name": "r-dcs96",
"sw_version": "N/A",
"system_guid": "b8599f03000a77d0",
"name": "b8599f03000a77d0",
"url": "",
"modules": [
    "ec0d9a03007d7d0a_0_00",
    "b8599f03000a77d0_0_00"
],
"cpu_type": "any",
"is_managed": true,
"model": "Computer",
"ports": [
    {
        "peer_lid": 18,
        "number": 2,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "248a070300f88fe0_20",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "20",
        "guid": "ec0d9a03007d7d0b",
        "peer_node_guid": "248a070300f88fe0",
        "lid": 4,
        "severity": "Minor",
```

```
            "logical_state": "Active",
            "capabilities": [
                "reset",
                "healthy_operations",
                "disable"
            ],
            "active_speed": "25.0 Gbps",
            "enabled_width": [
                "1x",
                "4x"
            ],
            "supported_width": [
                "1x",
                "4x"
            ],
            "description": "Computer IB Port",
            "supported_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "b8599f03000a77d0",
            "tier": 1,
            "path": "default(7)/Computer/r-dcs96/HCA-1/2",
            "name": "ec0d9a03007d7d0b_2",
            "active_width": "4x",
            "dname": "HCA-1/2",
            "peer_node_name": "switch-ec4034",
            "mtu": 4096,
            "external_number": 2
        },
        {
            "peer_lid": 11,
            "number": 2,
```

```
"module": "N/A",
"physical_state": "Link Up",
"peer": "0002c903007b78b0_20",
"enabled_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps",
    "25.0 Gbps"
],
"mirror": "disable",
"peer_port_dname": "20",
"guid": "b8599f03000a77d1",
"peer_node_guid": "0002c903007b78b0",
"lid": 15,
"severity": "Warning",
"logical_state": "Active",
"capabilities": [
    "reset",
    "healthy_operations",
    "disable"
],
"active_speed": "14.0 Gbps",
"enabled_width": [
    "1x",
    "4x"
],
"supported_width": [
    "1x",
    "4x"
],
"description": "Computer IB Port",
"supported_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
```

```
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "b8599f03000a77d0",
            "tier": 1,
            "path": "default(7) / Computer: r-dcs96 / NA / HCA-2/2",
            "name": "b8599f03000a77d1_2",
            "active_width": "4x",
            "dname": "HCA-2/2",
            "peer_node_name": "r-dmz-ufm-sw49",
            "mtu": 4096,
            "external_number": 2
        },
        {
            "peer_lid": 18,
            "number": 1,
            "module": "N/A",
            "physical_state": "Link Up",
            "peer": "248a070300f88fe0_19",
            "enabled_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "mirror": "disable",
            "peer_port_dname": "19",
            "guid": "ec0d9a03007d7d0a",
            "peer_node_guid": "248a070300f88fe0",
            "lid": 3,
            "severity": "Minor",
            "logical_state": "Active",
            "capabilities": [
                "reset",
                "healthy_operations",
```

```
                "disable"
            ],
            "active_speed": "25.0 Gbps",
            "enabled_width": [
                "1x",
                "4x"
            ],
            "supported_width": [
                "1x",
                "4x"
            ],
            "description": "Computer IB Port",
            "supported_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "b8599f03000a77d0",
            "tier": 1,
            "path": "default(7)/Computer/r-dcs96/HCA-1/1",
            "name": "ec0d9a03007d7d0a_1",
            "active_width": "4x",
            "dname": "HCA-1/1",
            "peer_node_name": "switch-ec4034",
            "mtu": 4096,
            "external_number": 1
        },
        {
            "peer_lid": 11,
            "number": 1,
            "module": "N/A",
            "physical_state": "Link Up",
            "peer": "0002c903007b78b0_19",
            "enabled_speed": [
```

```
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "19",
        "guid": "b8599f03000a77d0",
        "peer_node_guid": "0002c903007b78b0",
        "lid": 14,
        "severity": "Warning",
        "logical_state": "Active",
        "capabilities": [
            "reset",
            "healthy_operations",
            "disable"
        ],
        "active_speed": "14.0 Gbps",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
        "description": "Computer IB Port",
        "supported_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "systemID": "b8599f03000a77d0",
```

```
                "tier": 1,
                "path": "default(7) / Computer: r-dcs96 / NA / HCA-2/1",
                "name": "b8599f03000a77d0_1",
                "active_width": "4x",
                "dname": "HCA-2/1",
                "peer_node_name": "r-dmz-ufm-sw49",
                "mtu": 4096,
                "external_number": 1
            }
        ]
    }
]
```


- Status Codes
  - 200 – OK
  - 400 – NOT FOUND

Set Manual IP for System

- Description – sets a manual IP address for a selected system
- Request URL – PUT /ufmRest/resources/systems/<system_id>
- Request Data


```
{
    "ip": "system_ip"
}
```


- Status Codes
  - 200 – OK
  - 400 – bad request

Set System URL & Script Attributes

- Description – sets a value for URL and script attributes of a selected system
- Request URL – PUT /ufmRest/resources/systems/<system_id>/properties
- Request Data

```
{
"script_file_name" : "script_file_name",
"url" : "url"
}
```

- Status Codes
  - 200 – OK
  - 400 – bad request

Set Manual Name for System

- Description – sets a manual name for a selected system
- Request URL – PUT /ufmRest/resources/systems/<system_id>
- Request Data

```
{
        "description" : "ufm-system-1"
}
```

- Status Codes
  - 200 – OK
  - 400 – bad request

Get Managed Switches Power Consumption

- Description - Gets the power consumption for all managed switches in the fabric, in both JSON and CSV format. If the csv_format parameter is set to true, the output is exported in CSV format. If set to false, the export is in JSON format.
- Request URL - GET /ufmRest/resources/systems/power?csv_format=true
- Response

```
{
        "node_guid": "0c42a1030079a66c",
        "sys_image_guid": "0c42a1030079a66c",
        "node_description": "MQM8700",
        "total_power": "112.12 Watts"
        }]
```

- Status Codes
  - 200 – OK
  - 400 – bad request

Ports REST API

- Description – returns information about all ports in the fabric, ports of a specific system, or all active and external ports in the fabric
  - Request URL – GET /ufmRest/resources/ports
  - Main Operations
    - Get all ports
    - Get port/s by name
    - Get all ports of a system
    - Get all active ports
    - Get all external ports

Get All Ports

- Description – lists all ports in the fabric
- Request URL – GET /ufmRest/resources/ports
- Request Content Type – Application/json
- Response – Get all ports by system type (/ufmRest/resources/ports?sys_type=Switch).

```
[
  {
    "description": "Switch IB Port",
    "number": 33,
    "external_number": 33,
    "physical_state": "Link Up",
    "path": "default \/ Switch: r-dmz-ufm-sw49 \/ NA \/ 33",
```

```
    "tier": 4,
    "lid": 8,
    "mirror": "disable",
    "logical_state": "Active",
    "capabilities": [
        "healthy_operations",
        "reset",
        "disable",
        "get_cables_info"
    ],
    "mtu": 4096,
    "peer_port_dname": "HCA-1\/1",
    "severity": "Info",
    "active_speed": "FDR",
    "enabled_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR"
    ],
    "supported_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR"
    ],
    "active_width": "4x",
    "enabled_width": [
        "1x",
        "4x"
    ],
    "supported_width": [
        "1x",
        "4x"
    ],
    "dname": "33",
```

```
    "peer_node_name": "r-dmz-ufm131",
    "peer": "0c42a103008b3bd0_1",
    "peer_node_guid": "0c42a103008b3bd0",
    "systemID": "0002c903007b78b0",
    "node_description": "r-dmz-ufm-sw49:33",
    "name": "0002c903007b78b0_33",
    "module": "NVA",
    "peer_lid": 9,
    "peer_guid": "0c42a103008b3bd0",
    "peer_node_description": "r-dmz-ufm131 HCA-1",
    "guid": "0002c903007b78b0"
  },
  {
    "description": "Switch IB Port",
    "number": 30,
    "external_number": 30,
    "physical_state": "Link Up",
    "path": "default \/ Switch: r-dmz-ufm-sw49 \/ NA \/ 30",
    "tier": 4,
    "lid": 8,
    "mirror": "disable",
    "logical_state": "Active",
    "capabilities": [
      "healthy_operations",
      "reset",
      "disable",
      "get_cables_info"
    ],
    "mtu": 4096,
    "peer_port_dname": "HCA-1\/2",
    "severity": "Info",
    "active_speed": "FDR",
    "enabled_speed": [
      "SDR",
      "DDR",
      "QDR",
```

```
            "FDR"
        ],
        "supported_speed": [
            "SDR",
            "DDR",
            "QDR",
            "FDR"
        ],
        "active_width": "4x",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
        "dname": "30",
        "peer_node_name": "r-dmz-ufm137",
        "peer": "248a0703002e61db_2",
        "peer_node_guid": "248a0703002e61da",
        "systemID": "0002c903007b78b0",
        "node_description": "r-dmz-ufm-sw49:30",
        "name": "0002c903007b78b0_30",
        "module": "NVA",
        "peer_lid": 16,
        "peer_guid": "248a0703002e61db",
        "peer_node_description": "r-dmz-ufm137 mlx5_1",
        "guid": "0002c903007b78b0"
    },
    {
        "description": "Switch IB Port",
        "number": 23,
        "external_number": 23,
        "physical_state": "Link Up",
        "path": "default \/ Switch: r-ufm-sw95 \/ NA \/ 23",
```

```
    "tier": 4,
    "lid": 18,
    "mirror": "disable",
    "logical_state": "Active",
    "capabilities": [
        "healthy_operations",
        "reset",
        "disable",
        "get_cables_info"
    ],
    "mtu": 4096,
    "peer_port_dname": "HCA-1\/1",
    "severity": "Info",
    "active_speed": "EDR",
    "enabled_speed": [
        "SDR",
        "EDR",
        "HDR"
    ],
    "supported_speed": [
        "SDR",
        "EDR",
        "HDR"
    ],
    "active_width": "4x",
    "enabled_width": [
        "1x",
        "2x",
        "4x"
    ],
    "supported_width": [
        "1x",
        "2x",
        "4x"
    ],
    "dname": "23",
```

```
        "peer_node_name": "r-dcs96",
        "peer": "ec0d9a03007d7d0a_1",
        "peer_node_guid": "ec0d9a03007d7d0a",
        "systemID": "b8599f0300fc6de4",
        "node_description": "r-ufm-sw95:23",
        "name": "b8599f0300fc6de4_23",
        "module": "NVA",
        "peer_lid": 6,
        "peer_guid": "ec0d9a03007d7d0a",
        "peer_node_description": "r-dcs96 HCA-1",
        "guid": "b8599f0300fc6de4"
    },
    {
        "description": "Switch IB Port",
        "number": 28,
        "external_number": 28,
        "physical_state": "Link Up",
        "path": "default \/ Switch: r-dmz-ufm-sw49 \/ NA \/ 28",
        "tier": 2,
        "lid": 8,
        "mirror": "disable",
        "logical_state": "Active",
        "capabilities": [
            "healthy_operations",
            "reset",
            "disable",
            "get_cables_info"
        ],
        "mtu": 4096,
        "peer_port_dname": "29",
        "severity": "Info",
        "active_speed": "FDR",
        "enabled_speed": [
            "SDR",
            "DDR",
            "QDR",
```

```
        "FDR"
    ],
    "supported_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR"
    ],
    "active_width": "4x",
    "enabled_width": [
        "1x",
        "4x"
    ],
    "supported_width": [
        "1x",
        "4x"
    ],
    "dname": "28",
    "peer_node_name": "r-dmz-ufm-sw49",
    "peer": "0002c903007b78b0_29",
    "peer_node_guid": "0002c903007b78b0",
    "systemID": "0002c903007b78b0",
    "node_description": "r-dmz-ufm-sw49:28",
    "name": "0002c903007b78b0_28",
    "module": "NVA",
    "peer_lid": 8,
    "peer_guid": "0002c903007b78b0",
    "peer_node_description": "r-dmz-ufm-sw49:29",
    "guid": "0002c903007b78b0"
}...
```


- Response with brief flag (/ufmRest/resources/ports?brief=true&active=true&page_number=1&rpp=10&sorting=system_name[asc],

```
{
    "total_resources": 30,
    "filtered_resources": 28,
    "num_of_pages": 3,
    "first_index": 1,
    "last_index": 10,
    "data": [
        {
            "system_name": "r-dcs96",
            "system_ip": "0.0.0.0",
            "peer_ip": "0.0.0.0",
            "lid": 6,
            "mirror": "disable",
            "logical_state": "Active",
            "capabilities": [
                "healthy_operations",
                "reset",
                "disable"
            ],
            "mtu": 4096,
            "peer_port_dname": "23",
            "severity": "Info",
            "active_speed": "EDR",
            "enabled_speed": [
                "SDR",
                "DDR",
                "QDR",
                "FDR",
                "EDR"
            ],
            "supported_speed": [
                "SDR",
                "DDR",
                "QDR",
                "FDR",
```

```
            "EDR"
        ],
        "active_width": "4x",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
        "dname": "HCA-1/1",
        "peer_node_name": "r-ufm-sw95",
        "peer": "b8599f0300fc6de4_23",
        "peer_node_guid": "b8599f0300fc6de4",
        "systemID": "ec0d9a03007d7d0a",
        "node_description": "r-dcs96 HCA-1",
        "name": "ec0d9a03007d7d0a_1",
        "module": "N/A",
        "peer_lid": 18,
        "peer_guid": "b8599f0300fc6de4",
        "peer_node_description": "r-ufm-sw95:23",
        "guid": "ec0d9a03007d7d0a",
        "system_capabilities": [
            "fw_inband_upgrade"
        ],
        "system_mirroring_template": false
    },
    {
        "system_name": "r-dcs96",
        "system_ip": "0.0.0.0",
        "peer_ip": "0.0.0.0",
        "lid": 3,
        "mirror": "disable",
        "logical_state": "Active",
        "capabilities": [
```

```
        "healthy_operations",
        "reset",
        "disable"
    ],
    "mtu": 4096,
    "peer_port_dname": "24",
    "severity": "Info",
    "active_speed": "EDR",
    "enabled_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR",
        "EDR"
    ],
    "supported_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR",
        "EDR"
    ],
    "active_width": "4x",
    "enabled_width": [
        "1x",
        "4x"
    ],
    "supported_width": [
        "1x",
        "4x"
    ],
    "dname": "HCA-1/2",
    "peer_node_name": "r-ufm-sw95",
    "peer": "b8599f0300fc6de4_24",
    "peer_node_guid": "b8599f0300fc6de4",
    "systemID": "ec0d9a03007d7d0a",
```

```
        "node_description": "r-dcs96 HCA-2",
        "name": "ec0d9a03007d7d0b_2",
        "module": "N/A",
        "peer_lid": 18,
        "peer_guid": "b8599f0300fc6de4",
        "peer_node_description": "r-ufm-sw95:24",
        "guid": "ec0d9a03007d7d0b",
        "system_capabilities": [
            "fw_inband_upgrade"
        ],
        "system_mirroring_template": false
    },
    {
        "system_name": "r-dcs96",
        "system_ip": "0.0.0.0",
        "peer_ip": "0.0.0.0",
        "lid": 11,
        "mirror": "disable",
        "logical_state": "Active",
        "capabilities": [
            "healthy_operations",
            "reset",
            "disable"
        ],
        "mtu": 4096,
        "peer_port_dname": "19",
        "severity": "Info",
        "active_speed": "FDR",
        "enabled_speed": [
            "SDR",
            "DDR",
            "QDR",
            "FDR",
            "EDR"
        ],
        "supported_speed": [
```

```
            "SDR",
            "DDR",
            "QDR",
            "FDR",
            "EDR"
        ],
        "active_width": "4x",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
        "dname": "HCA-2/1",
        "peer_node_name": "r-dmz-ufm-sw49",
        "peer": "0002c903007b78b0_19",
        "peer_node_guid": "0002c903007b78b0",
        "systemID": "ec0d9a03007d7d0a",
        "node_description": "r-dcs96 HCA-3",
        "name": "b8599f03000a77d0_1",
        "module": "N/A",
        "peer_lid": 8,
        "peer_guid": "0002c903007b78b0",
        "peer_node_description": "r-dmz-ufm-sw49:19",
        "guid": "b8599f03000a77d0",
        "system_capabilities": [
            "fw_inband_upgrade"
        ],
        "system_mirroring_template": false
    }...
```


- Status Codes

- 200 – OK

Get Port/s by Name

- Description – get specific port/s using their names
- Request URL – GET /ufmRest/resources/ports/<port-name1>,<port-name2>,...
- Request Content Type – Application/json
- Response


```
[
    {
        "peer_lid": 6,
        "number": 9,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "0002c9030021f972_2",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "HCA-1/2",
        "guid": "0002c903007b78b0",
        "peer_node_guid": "0002c9030021f970",
        "lid": 11,
        "severity": "Info",
        "logical_state": "Active",
        "capabilities": [ ],
        "active_speed": "14.0 Gbps",
        "enabled_width": [
            "1x",
            "4x"
```

```
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
        "description": "Switch IB Port",
        "supported_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps"
        ],
        "systemID": "0002c903007b78b0",
        "tier": 4,
        "path": "default / Switch: r-dmz-ufm-sw49 / NA / 9",
        "name": "0002c903007b78b0_9",
        "active_width": "4x",
        "dname": "9",
        "peer_node_name": "r-dmz-ufm134",
        "mtu": 4096,
        "external_number": 9
    },
    {
        "peer_lid": 18,
        "number": 2,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "248a070300f88fe0_20",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
```

```
"peer_port_dname": "20",
"guid": "ec0d9a03007d7d0b",
"peer_node_guid": "248a070300f88fe0",
"lid": 4,
"severity": "Info",
"logical_state": "Active",
"capabilities": [
    "reset",
    "healthy_operations",
    "disable"
],
"active_speed": "25.0 Gbps",
"enabled_width": [
    "1x",
    "4x"
],
"supported_width": [
    "1x",
    "4x"
],
"description": "Computer IB Port",
"supported_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps",
    "25.0 Gbps"
],
"systemID": "b8599f03000a77d0",
"tier": 1,
"path": "default / Computer: r-dcs96 / NA / HCA-1/2",
"name": "ec0d9a03007d7d0b_2",
"active_width": "4x",
"dname": "HCA-1/2",
"peer_node_name": "switch-ec4034",
"mtu": 4096,
```

```
            "external_number": 2
        }
]
```


- Code Status
  - 200 – OK
  - 404 – NOT FOUND—port not found (by name)

Get All System Ports

- Description – lists all ports of a specific system
- Request URL – GET /ufmRest/resources/ports?system=<system-name>
- Request Content Type – Application/json
- Response


```
[
        {
            "peer_lid": 18,
            "number": 2,
            "module": "N/A",
            "physical_state": "Link Up",
            "peer": "248a070300f88fe0_20",
            "enabled_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "mirror": "disable",
            "peer_port_dname": "20",
```

```
            "guid": "ec0d9a03007d7d0b",
            "peer_node_guid": "248a070300f88fe0",
            "lid": 4,
            "severity": "Info",
            "logical_state": "Active",
            "capabilities": [
"reset",
                "healthy_operations",
                "disable"
            ],
            "active_speed": "25.0 Gbps",
            "enabled_width": [
                "1x",
                "4x"
            ],
            "supported_width": [
                "1x",
                "4x"
            ],
            "description": "Computer IB Port",
            "supported_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "b8599f03000a77d0",
            "tier": 1,
            "path": "default / Computer: r-dcs96 / NA / HCA-1/2",
            "name": "ec0d9a03007d7d0b_2",
            "active_width": "4x",
            "dname": "HCA-1/2",
            "peer_node_name": "switch-ec4034",
            "mtu": 4096,
            "external_number": 2
```

```
    },
    {
        "peer_lid": 11,
        "number": 2,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "0002c903007b78b0_20",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "20",
        "guid": "b8599f03000a77d1",
        "peer_node_guid": "0002c903007b78b0",
        "lid": 15,
        "severity": "Info",
        "logical_state": "Active",
        "capabilities": [
            "reset",
            "healthy_operations",
            "disable"
        ],
        "active_speed": "14.0 Gbps",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
        "description": "Computer IB Port",
```

```
        "supported_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "systemID": "b8599f03000a77d0",
        "tier": 1,
        "path": "default / Computer: r-dcs96 / NA / HCA-2/2",
        "name": "b8599f03000a77d1_2",
        "active_width": "4x",
        "dname": "HCA-2/2",
        "peer_node_name": "r-dmz-ufm-sw49",
        "mtu": 4096,
        "external_number": 2
    },
    {
        "peer_lid": 18,
        "number": 1,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "248a070300f88fe0_19",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "19",
        "guid": "ec0d9a03007d7d0a",
        "peer_node_guid": "248a070300f88fe0",
        "lid": 3,
        "severity": "Info",
```

```
        "logical_state": "Active",
        "capabilities": [
            "reset",
            "healthy_operations",
            "disable"
        ],
        "active_speed": "25.0 Gbps",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
        "description": "Computer IB Port",
        "supported_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "systemID": "b8599f03000a77d0",
        "tier": 1,
        "path": "default / Computer: r-dcs96 / NA / HCA-1/1",
        "name": "ec0d9a03007d7d0a_1",
        "active_width": "4x",
        "dname": "HCA-1/1",
        "peer_node_name": "switch-ec4034",
        "mtu": 4096,
        "external_number": 1
    },
    {
        "peer_lid": 11,
        "number": 1,
```

```
"module": "N/A",
"physical_state": "Link Up",
"peer": "0002c903007b78b0_19",
"enabled_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps",
    "25.0 Gbps"
],
"mirror": "disable",
"peer_port_dname": "19",
"guid": "b8599f03000a77d0",
"peer_node_guid": "0002c903007b78b0",
"lid": 14,
"severity": "Info",
"logical_state": "Active",
"capabilities": [
    "reset",
    "healthy_operations",
    "disable"
],
"active_speed": "14.0 Gbps",
"enabled_width": [
    "1x",
    "4x"
],
"supported_width": [
    "1x",
    "4x"
],
"description": "Computer IB Port",
"supported_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
```

```
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "b8599f03000a77d0",
            "tier": 1,
            "path": "default / Computer: r-dcs96 / NA / HCA-2/1",
            "name": "b8599f03000a77d0_1",
            "active_width": "4x",
            "dname": "HCA-2/1",
            "peer_node_name": "r-dmz-ufm-sw49",
            "mtu": 4096,
            "external_number": 1
        }
]
```


- Code Status
  - 200 – OK

Get All Active Ports

- Description – lists all active ports of a specific system, or for all systems
- Request URL

  GET /ufmRest/resources/ports?active=<'true'/'True'/'TRUE'/'t'/'T'>

  or

  GET /ufmRest/resources/ports?system=<system-name>&active=<'true'/'True'/'TRUE'/'t'/'T'>

- Request Content Type – Application/json
- Response


```
[
    {
```

```
"peer_lid": 11,
"number": 2,
"module": "N/A",
"physical_state": "Link Up",
"peer": "0002c903007b78b0_9",
"enabled_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps"
],
"mirror": "disable",
"peer_port_dname": "9",
"guid": "0002c9030021f972",
"peer_node_guid": "0002c903007b78b0",
"lid": 6,
"severity": "Info",
"logical_state": "Active",
"capabilities": [ ],
"active_speed": "14.0 Gbps",
"enabled_width": [
    "1x",
    "4x"
],
"supported_width": [
    "1x",
    "4x"
],
"description": "Computer IB Port",
"supported_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps"
],
"systemID": "0002c9030021f970",
```

```
            "tier": 1,
            "path": "default / Computer: r-dmz-ufm134 / NA / HCA-1/2",
            "name": "0002c9030021f972_2",
            "active_width": "4x",
            "dname": "HCA-1/2",
            "peer_node_name": "r-dmz-ufm-sw49",
            "mtu": 4096,
            "external_number": 2
},
        {
            "peer_lid": 11,
            "number": 1,
            "module": "N/A",
            "physical_state": "Link Up",
            "peer": "0002c903007b78b0_8",
            "enabled_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps"
            ],
            "mirror": "disable",
            "peer_port_dname": "8",
            "guid": "0002c9030021f971",
            "peer_node_guid": "0002c903007b78b0",
            "lid": 1,
            "severity": "Info",
            "logical_state": "Active",
            "capabilities": [ ],
            "active_speed": "14.0 Gbps",
            "enabled_width": [
                "1x",
                "4x"
            ],
            "supported_width": [
                "1x",
```

```
            "4x"
        ],
        "description": "Computer IB Port",
        "supported_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps"
        ],
        "systemID": "0002c9030021f970",
        "tier": 1,
        "path": "default / Computer: r-dmz-ufm134 / NA / HCA-1/1",
        "name": "0002c9030021f971_1",
        "active_width": "4x",
        "dname": "HCA-1/1",
        "peer_node_name": "r-dmz-ufm-sw49",
        "mtu": 4096,
        "external_number": 1
    },
    {
        "peer_lid": 18,
        "number": 2,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "248a070300f88fe0_32",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "32",
        "guid": "248a0703002e6293",
        "peer_node_guid": "248a070300f88fe0",
```

```
            "lid": 10,
            "severity": "Info",
            "logical_state": "Active",
            "capabilities": [
                "reset",
                "healthy_operations",
                "disable"
            ],
            "active_speed": "25.0 Gbps",
            "enabled_width": [
                "1x",
                "4x"
            ],
            "supported_width": [
                "1x",
                "4x"
            ],
            "description": "Computer IB Port",
            "supported_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "248a0703002e6292",
            "tier": 1,
            "path": "default / Computer: r-dmz-ufm139 / NA / HCA-1/2",
            "name": "248a0703002e6293_2",
            "active_width": "4x",
            "dname": "HCA-1/2",
            "peer_node_name": "switch-ec4034",
            "mtu": 4096,
            "external_number": 2
        },
        {
```

```
            "peer_lid": 18,
            "number": 1,
"module": "N/A",
            "physical_state": "Link Up",
            "peer": "248a070300f88fe0_31",
            "enabled_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "mirror": "disable",
            "peer_port_dname": "31",
            "guid": "248a0703002e6292",
            "peer_node_guid": "248a070300f88fe0",
            "lid": 9,
            "severity": "Info",
            "logical_state": "Active",
            "capabilities": [
                "reset",
                "healthy_operations",
                "disable"
            ],
            "active_speed": "25.0 Gbps",
            "enabled_width": [
                "1x",
                "4x"
            ],
            "supported_width": [
                "1x",
                "4x"
            ],
            "description": "Computer IB Port",
            "supported_speed": [
                "2.5 Gbps",
```

```
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "248a0703002e6292",
            "tier": 1,
            "path": "default / Computer: r-dmz-ufm139 / NA / HCA-1/1",
            "name": "248a0703002e6292_1",
            "active_width": "4x",
            "dname": "HCA-1/1",
            "peer_node_name": "switch-ec4034",
            "mtu": 4096,
            "external_number": 1
        },
        ...
```


- Code Status
  - 200 – OK

Get All External Ports

- Description – lists all external ports of a specific system, or for all systems
- Request URL – GET /ufmRest/resources/ports?external=<'true'/'True'/'TRUE'/'t'/'T'>
- Request Content Type – Application/json
- Response


```
[
    {
        "peer_lid": 11,
        "number": 2,
```

```
"module": "N/A",
"physical_state": "Link Up",
"peer": "0002c903007b78b0_9",
"enabled_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps"
],
"mirror": "disable",
"peer_port_dname": "9",
"guid": "0002c9030021f972",
"peer_node_guid": "0002c903007b78b0",
"lid": 6,
"severity": "Info",
"logical_state": "Active",
"capabilities": [],
"active_speed": "14.0 Gbps",
"enabled_width": [
    "1x",
    "4x"
],
"supported_width": [
    "1x",
    "4x"
],
"description": "Computer IB Port",
"supported_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps"
],
"systemID": "0002c9030021f970",
"tier": 1,
"path": "default / Computer: r-dmz-ufm134 / NA / HCA-1/2",
```

```
        "name": "0002c9030021f972_2",
        "active_width": "4x",
        "dname": "HCA-1/2",
        "peer_node_name": "r-dmz-ufm-sw49",
        "mtu": 4096,
        "external_number": 2
    },
    {
        "peer_lid": 11,
        "number": 1,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "0002c903007b78b0_8",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "8",
        "guid": "0002c9030021f971",
        "peer_node_guid": "0002c903007b78b0",
        "lid": 1,
        "severity": "Info",
        "logical_state": "Active",
        "capabilities": [ ],
        "active_speed": "14.0 Gbps",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
```

```
        "description": "Computer IB Port",
        "supported_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps"
        ],
        "systemID": "0002c9030021f970",
        "tier": 1,
        "path": "default / Computer: r-dmz-ufm134 / NA / HCA-1/1",
        "name": "0002c9030021f971_1",
        "active_width": "4x",
        "dname": "HCA-1/1",
        "peer_node_name": "r-dmz-ufm-sw49",
        "mtu": 4096,
        "external_number": 1
    },
    {
        "peer_lid": 18,
        "number": 2,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "248a070300f88fe0_32",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "32",
        "guid": "248a0703002e6293",
        "peer_node_guid": "248a070300f88fe0",
        "lid": 10,
        "severity": "Info",
```

```
        "logical_state": "Active",
        "capabilities": [
            "reset",
            "healthy_operations",
            "disable"
        ],
        "active_speed": "25.0 Gbps",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
        ],
        "description": "Computer IB Port",
        "supported_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        "systemID": "248a0703002e6292",
        "tier": 1,
        "path": "default / Computer: r-dmz-ufm139 / NA / HCA-1/2",
        "name": "248a0703002e6293_2",
        "active_width": "4x",
        "dname": "HCA-1/2",
        "peer_node_name": "switch-ec4034",
        "mtu": 4096,
        "external_number": 2
    },
    {
        "peer_lid": 18,
        "number": 1,
        "module": "N/A",
```

```
"physical_state": "Link Up",
"peer": "248a070300f88fe0_31",
"enabled_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps",
    "25.0 Gbps"
],
"mirror": "disable",
"peer_port_dname": "31",
"guid": "248a0703002e6292",
"peer_node_guid": "248a070300f88fe0",
"lid": 9,
"severity": "Info",
"logical_state": "Active",
"capabilities": [
    "reset",
    "healthy_operations",
    "disable"
],
"active_speed": "25.0 Gbps",
"enabled_width": [
    "1x",
    "4x"
],
"supported_width": [
    "1x",
    "4x"
],
"description": "Computer IB Port",
"supported_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps",
```

```
                "25.0 Gbps"
            "systemID": "248a0703002e6292",
            "tier": 1,
            "path": "default / Computer: r-dmz-ufm139 / NA / HCA-1/1",
            "name": "248a0703002e6292_1",
            "active_width": "4x",
            "dname": "HCA-1/1",
            "peer_node_name": "switch-ec4034",
            "mtu": 4096,
            "external_number": 1
        },
        . . .
```


- Code Status
  - 200 – OK

Get List of All High BER Ports

- Description – lists all high BER ports
- Request URL – GET /ufmRest/resources/ports?high_ber_only=true
- Request Content Type – Application/json
- Response


```
[
    {
        "description": "Switch IB Port",
        "number": 1,
        "external_number": 1,
        "physical_state": "Link Up",
        "path": "default(1) / Switch: mantaray177 / MCS8500 L10 10 / 1 / 1",
        "tier": 3,
        "high_ber_severity": "Critical",
```

```
    "lid": 42365,
    "mirror": "disable",
    "logical_state": "Active",
    "capabilities": [
        "healthy_operations",
        "reset",
        "disable",
        "get_cables_info"
    ],
    "mtu": 2048,
    "peer_port_dname": "L10/U2/19",
    "severity": "Info",
    "active_speed": "HDR",
    "enabled_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR",
        "EDR",
        "HDR"
    ],
    "supported_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR",
        "EDR",
        "HDR",
        "NDR"
    ],
    "active_width": "4x",
    "enabled_width": [
        "1x",
        "4x"
    ],
    "supported_width": [
```

```
            "1x",
            "2x",
            "4x",
            "8x",
            "12x"
        ],
        "dname": "L10/U1/1",
        "peer_node_name": "mantaray177",
        "peer": "98039b0300a2b814_19",
        "peer_node_guid": "b8599f0300065d16",
        "systemID": "b8599f0300065d16",
        "node_description": "mantaray177:L10/U1/1",
        "name": "98039b0300a2b804_1",
        "module": "N/A",
        "peer_lid": 42368,
        "peer_guid": "98039b0300a2b814",
        "peer_node_description": "mantaray177:L10/U2/19",
        "guid": "98039b0300a2b804",
        "system_name": "mantaray177",
        "system_ip": "0.0.0.0",
        "peer_ip": "0.0.0.0",
        "system_capabilities": [
            "burn_cables_transceivers"
        ],
        "system_mirroring_template": false
    },
    {
        "description": "Switch IB Port",
        "number": 3,
        "external_number": 3,
        "physical_state": "Link Up",
        "path": "default(1) / Switch: mantaray177 / MCS8500 L10 10 / 1 / 3",
        "tier": 3,
        "high_ber_severity": "Critical",
        "lid": 42365,
        "mirror": "disable",
```

```
"logical_state": "Active",
"capabilities": [
    "healthy_operations",
    "reset",
    "disable",
    "get_cables_info"
],
"mtu": 2048,
"peer_port_dname": "L10/U2/17",
"severity": "Info",
"active_speed": "HDR",
"enabled_speed": [
    "SDR",
    "DDR",
    "QDR",
    "FDR",
    "EDR",
    "HDR"
],
"supported_speed": [
    "SDR",
    "DDR",
    "QDR",
    "FDR",
    "EDR",
    "HDR",
    "NDR"
],
"active_width": "4x",
"enabled_width": [
    "1x",
    "4x"
],
"supported_width": [
    "1x",
    "2x",
```

```
            "4x",
            "8x",
            "12x"
        ],
        "dname": "L10/U1/3",
        "peer_node_name": "mantaray177",
        "peer": "98039b0300a2b814_17",
        "peer_node_guid": "b8599f0300065d16",
        "systemID": "b8599f0300065d16",
        "node_description": "mantaray177:L10/U1/3",
        "name": "98039b0300a2b804_3",
        "module": "N/A",
        "peer_lid": 42368,
        "peer_guid": "98039b0300a2b814",
        "peer_node_description": "mantaray177:L10/U2/17",
        "guid": "98039b0300a2b804",
        "system_name": "mantaray177",
        "system_ip": "0.0.0.0",
        "peer_ip": "0.0.0.0",
        "system_capabilities": [
            "burn_cables_transceivers"
        ],
        "system_mirroring_template": false
    },
    {
        "description": "Switch IB Port",
        "number": 4,
        "external_number": 4,
        "physical_state": "Link Up",
        "path": "default(1) / Switch: mantaray177 / MCS8500 L10 10 / 1 / 4",
        "tier": 3,
        "high_ber_severity": "Critical",
        "lid": 42365,
        "mirror": "disable",
        "logical_state": "Active",
        "capabilities": [
```

```
        "healthy_operations",
        "reset",
        "disable",
        "get_cables_info"
    ],
    "mtu": 2048,
    "peer_port_dname": "L10/U2/18",
    "severity": "Info",
    "active_speed": "HDR",
    "enabled_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR",
        "EDR",
        "HDR"
    ],
    "supported_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR",
        "EDR",
        "HDR",
        "NDR"
    ],
    "active_width": "4x",
    "enabled_width": [
        "1x",
        "4x"
    ],
    "supported_width": [
        "1x",
        "2x",
        "4x",
        "8x",
```

```
            "12x"
        ],
        "dname": "L10/U1/4",
        "peer_node_name": "mantaray177",
        "peer": "98039b0300a2b814_18",
        "peer_node_guid": "b8599f0300065d16",
        "systemID": "b8599f0300065d16",
        "node_description": "mantaray177:L10/U1/4",
        "name": "98039b0300a2b804_4",
        "module": "N/A",
        "peer_lid": 42368,
        "peer_guid": "98039b0300a2b814",
        "peer_node_description": "mantaray177:L10/U2/18",
        "guid": "98039b0300a2b804",
        "system_name": "mantaray177",
        "system_ip": "0.0.0.0",
        "peer_ip": "0.0.0.0",
        "system_capabilities": [
            "burn_cables_transceivers"
        ],
        "system_mirroring_template": false
    }
]
```


Get List of High BER Ports with Specific Severity

- Description – lists high BER ports based on severity (warning or error)
- Request URL – GET /ufmRest/resources/ports?high_ber_only=true&high_ber_severity=error
- Request Content Type – Application/json
- Response

```
[
  {
    "description": "Switch IB Port",
    "number": 1,
    "external_number": 1,
    "physical_state": "Link Up",
    "path": "default(1) / Switch: mantaray177 / MCS8500 L10 10 / 1 / 1",
    "tier": 3,
    "high_ber_severity": "Critical",
    "lid": 42365,
    "mirror": "disable",
    "logical_state": "Active",
    "capabilities": [
      "healthy_operations",
      "reset",
      "disable",
      "get_cables_info"
    ],
    "mtu": 2048,
    "peer_port_dname": "L10/U2/19",
    "severity": "Info",
    "active_speed": "HDR",
    "enabled_speed": [
      "SDR",
      "DDR",
      "QDR",
      "FDR",
      "EDR",
      "HDR"
    ],
    "supported_speed": [
      "SDR",
      "DDR",
      "QDR",
      "FDR",
```

```
            "EDR",
            "HDR",
            "NDR"
        ],
        "active_width": "4x",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "2x",
            "4x",
            "8x",
            "12x"
        ],
        "dname": "L10/U1/1",
        "peer_node_name": "mantaray177",
        "peer": "98039b0300a2b814_19",
        "peer_node_guid": "b8599f0300065d16",
        "systemID": "b8599f0300065d16",
        "node_description": "mantaray177:L10/U1/1",
        "name": "98039b0300a2b804_1",
        "module": "N/A",
        "peer_lid": 42368,
        "peer_guid": "98039b0300a2b814",
        "peer_node_description": "mantaray177:L10/U2/19",
        "guid": "98039b0300a2b804",
        "system_name": "mantaray177",
        "system_ip": "0.0.0.0",
        "peer_ip": "0.0.0.0",
        "system_capabilities": [
            "burn_cables_transceivers"
        ],
        "system_mirroring_template": false
    },
```

```
{
    "description": "Switch IB Port",
    "number": 3,
    "external_number": 3,
    "physical_state": "Link Up",
    "path": "default(1) / Switch: mantaray177 / MCS8500 L10 10 / 1 / 3",
    "tier": 3,
    "high_ber_severity": "Critical",
    "lid": 42365,
    "mirror": "disable",
    "logical_state": "Active",
    "capabilities": [
        "healthy_operations",
        "reset",
        "disable",
        "get_cables_info"
    ],
    "mtu": 2048,
    "peer_port_dname": "L10/U2/17",
    "severity": "Info",
    "active_speed": "HDR",
    "enabled_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR",
        "EDR",
        "HDR"
    ],
    "supported_speed": [
        "SDR",
        "DDR",
        "QDR",
        "FDR",
        "EDR",
        "HDR",
```

```
        "NDR"
    ],
    "active_width": "4x",
    "enabled_width": [
        "1x",
        "4x"
    ],
    "supported_width": [
        "1x",
        "2x",
        "4x",
        "8x",
        "12x"
    ],
    "dname": "L10/U1/3",
    "peer_node_name": "mantaray177",
    "peer": "98039b0300a2b814_17",
    "peer_node_guid": "b8599f0300065d16",
    "systemID": "b8599f0300065d16",
    "node_description": "mantaray177:L10/U1/3",
    "name": "98039b0300a2b804_3",
    "module": "N/A",
    "peer_lid": 42368,
    "peer_guid": "98039b0300a2b814",
    "peer_node_description": "mantaray177:L10/U2/17",
    "guid": "98039b0300a2b804",
    "system_name": "mantaray177",
    "system_ip": "0.0.0.0",
    "peer_ip": "0.0.0.0",
    "system_capabilities": [
        "burn_cables_transceivers"
    ],
    "system_mirroring_template": false
},
{
    "description": "Switch IB Port",
```

```
"number": 4,
"external_number": 4,
"physical_state": "Link Up",
"path": "default(1) / Switch: mantaray177 / MCS8500 L10 10 / 1 / 4",
"tier": 3,
"high_ber_severity": "Critical",
"lid": 42365,
"mirror": "disable",
"logical_state": "Active",
"capabilities": [
    "healthy_operations",
    "reset",
    "disable",
    "get_cables_info"
],
"mtu": 2048,
"peer_port_dname": "L10/U2/18",
"severity": "Info",
"active_speed": "HDR",
"enabled_speed": [
    "SDR",
    "DDR",
    "QDR",
    "FDR",
    "EDR",
    "HDR"
],
"supported_speed": [
    "SDR",
    "DDR",
    "QDR",
    "FDR",
    "EDR",
    "HDR",
    "NDR"
],
```

```
        "active_width": "4x",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "2x",
            "4x",
            "8x",
            "12x"
        ],
        "dname": "L10/U1/4",
        "peer_node_name": "mantaray177",
        "peer": "98039b0300a2b814_18",
        "peer_node_guid": "b8599f0300065d16",
        "systemID": "b8599f0300065d16",
        "node_description": "mantaray177:L10/U1/4",
        "name": "98039b0300a2b804_4",
        "module": "N/A",
        "peer_lid": 42368,
        "peer_guid": "98039b0300a2b814",
        "peer_node_description": "mantaray177:L10/U2/18",
        "guid": "98039b0300a2b804",
        "system_name": "mantaray177",
        "system_ip": "0.0.0.0",
        "peer_ip": "0.0.0.0",
        "system_capabilities": [
            "burn_cables_transceivers"
        ],
        "system_mirroring_template": false
    }
]
```


Get Ports with Cable Information

- Description – Gets ports with cable Information.
- Request URL – GET / ufmRest/resources/ports?cable_info=true
- Parameters - cable_info (optional): Set this flag to true to include cable information in the response.
- Response

```
[
    {
        "description": "Computer IB Port",
        "number": 1,
        . . .
        "cable_info": {
            "technology": "Copper cable- unequalized",
            "fw_version": "N/A",
            "serial_number": "MT1506VS04170",
            . . .
            "identifier": "QSFP+"
        }
    }
]
```

- Status Codes:
    - 200-OK

PKey GUIDs Rest API

> **Note**
>
> Note that the previous PKey GUIDs APIs based on /ufmRest/actions/ are deprecated and being replaced by the new set of APIs below (based on /ufmRest/resources/).

- Description – allows users to manage PKey GUIDs by getting, adding, and removing GUIDs from PKeys.
- Request URL – /ufmRest/resources/
- Main Operations
    - Add GUIDs to PKey
    - Remove GUIDs from PKey
    - Get a Specific PKey
    - Get all PKeys
    - Set GUIDs for PKey
    - Delete PKey
    - Update QoS for PKey

Create an Empty PKey

- Description: Allows creating a PKey without GUIDs.
- Request URL: POST /ufmRest/resources/pkeys/add
- Request Content Type: Application/json

- Request Data Example:

```
{
  "pkey" : "0x12",
  "index0" : false,
  "ip_over_ib" : true,
  "mtu_limit" : 2,
  "service_level" : 0,
  "rate_limit" : 2.5
}
```

The required parameters are PKey only, all the others are optional and take the default in case they were not sent.

Add GUIDs to PKey

- Description – adds a list of configured GUIDs to PKey.
- Request URL – POST /ufmRest/resources/pkeys/
- Request Content Type – Application/json
- Request Data Parameters

Name	Value	Default	Description	Mandatory/ Optional
guids	["...",... "..."] Each GUID is a hexadecimal string with a minimum length of 16 characters and maximum length of 20 characters	None	List of port GUIDs	Mandatory

Name	Value	Default	Description	Mandatory/ Optional
ip_over_ib	Boolean: true/false	True	PKey is a member in a multicast group that uses IP over InfiniBand	Optional
index0	Boolean: true/false	False	If true, the API will store the PKey at index 0 of the PKey table of the GUID.	Optional
membership	“full”, “limited”	"full"	◦ “full”- members with full membership can communicate with all hosts (members) within the network/partition ◦ “limited” - members with limited membership cannot communicate with other members with limited membership. However, communication is allowed between every other combination of membership types.	Optional
memberships	[“full”, “limited”, ...] List of “full” or “limited” comma-separated strings. It must be the same length as the GUIDs list. Each value by an index represents a GUID membership.	[]	List of memberships to allow users to create or modify different membership per GUID in same PKey. GUID index 0 in the “guids” list will take index 0 from the memberships list and so on (by order)	This parameter is optional. This parameter conflicts with the “membership” parameter. Users must select either a list of memberships or just one membership for all GUIDs.
pkey	Hexadecimal string between "0x0"-"0x7fff" exclusive	None	Network PKey	Mandatory

- Response – N/A
- Status Codes
  - 200 – OK
  - 400 – bad request
- Request Data Example

```
{
"guids": ["0002c903000e0b72", "0002c903000e0b73"],
"ip_over_ib": false,
"index0": true,
"membership": "full",
"pkey": "0x0a12"
}
```

- Response – N/A
- Status Codes
  - 200 – OK
  - 400 – bad request

Remove GUIDs from PKey

- Description – remove a list of configured GUIDs from PKey
- Request URL – DELETE /ufmRest/resources/pkeys/<pkey>/guids/<guid1>,<guid2>,...
- Request Content Type – Application/json
- Request Data Parameters

Name	Value	Default	Description	Mandatory/Optional
guids	["...",... "..."] Each GUID is a hexadecimal string with a minimum length of 16 characters and maximum length of 20 characters	None	List of port GUIDs	Mandatory
pkey	Hexadecimal string between "0x0"-"0x7fff" exclusive	None	Network PKey	Mandatory

- Status Codes
  - 200 – OK
  - 400 Bad request

Get Specific PKey

- Description – returns information about the specified PKey. The "guids_data" parameter enables retrieving information on the GUIDs of the specified PKey as well.
- Request URL – GET /ufmRest/resources/pkeys/<pkey>?guids_data=<boolean>
  - <pkey> – hexadecimal pkey in the range of 0x0-0x7fff
- Request Content Type – Application/json
- Response Data Example – without GUID data

```
{
    "partition": "api_pkey_0x1",
    "ip_over_ib": true
}
```

- Response Data Example – with GUID data

```
{
    "guids": [
        {
            "membership": "full",
            "guid": "0002c903000e0b78",
            "index0": false
        }
    ],
    "ip_over_ib": true,
    "partition": "api_pkey_0x1"
}
```


- Status Codes
  - 200 – OK

Get All PKeys

- Description – returns a list of all PKeys (with or without their associated GUIDs data).
- Request URL – GET /ufmRest/resources/pkeys?guids_data=<boolean>&qos_conf=<boolean>
  - guids_data flag
    - False – returns a list of all PKeys
    - True – returns a list of all PKeys including their associated GUIDs
  - qos_conf flag
    - False – returns a list of all PKeys without QoS configuration
    - True – returns a list of all PKeys including their associated QoS configuration
  - port_info flag
    - False – returns a list of all PKeys without port information details

        - True – returns a list of all PKeys including their associated port information

    - max_ports flag

        - <positive-int-value> – returns a list of all PKeys with port information details for ports with number less than or equal to the provided value

- Request Content Type

- Application/json

- Response Data Example – without GUID data

```
["0x1", "0x2", "0x3"]
```

- Response Data Example – with GUID data

```
{
"0x3": {
"guids": [
{
"membership": null, "guid": "0002c903000e0b74",
"index0": false
},
{
"membership": null, "guid": "0002c903000e0b75",
"index0": false
}
],
"ip_over_ib": true, "partition": "api_pkey_0x3",
"qos_conf": {"mtu_limit":4,
                "Rate_limit":300,
                "Service_level":3}
}, "0x2": {
"guids": [
```

```
{
"membership": null, "guid": "0002c903000e0b76",
"index0": false
},
{
"membership": null, "guid": "0002c903000e0b77",
"index0": false
}
],
"ip_over_ib": true, "partition": "api_pkey_0x2",
"qos_conf": {"mtu_limit": 4,
                "Rate_limit": 300,
                 "Service_level": 3
}, "0x1": {
"guids": [
{
"membership": "full", "guid": "0002c903000e0b78",
"index0": false
}
],
"ip_over_ib": true, "partition": "api_pkey_0x1",
"qos_conf": {"mtu_limit": 4,
                "Rate_limit": 300,
                 "Service_level": 3
}
}
```


- Status Codes
  - 200 – OK

Set/Update PKey GUIDs

- Description – sets/updates a list of configured GUIDs for PKey (or overwrites the current list, if found), including Quality-of-Service (QoS) parameters.

- Request URL – PUT /ufmRest/resources/pkeys/
- Request Content Type – Application/json
- Request Data Parameters

Name	Value	Default	Description	Mandatory/ Optional
guids	["...",... "..."] Each GUID is a hexadecimal string with a minimum length of 16 characters and maximum length of 20 characters	None	List of port GUIDs	Mandatory
ip_over_ib	Boolean: true/false	True	PKey is a member in a multicast group that uses IP over InfiniBand	Optional
index0	Boolean: true/false	False	If true, the API will store the PKey at index 0 of the PKey table of the GUID.	Optional
membership	“full”, “limited”	"full"	◦ “full”- members with full membership can communicate with all hosts (members) within the network/partition ◦ “limited” - members with limited membership cannot communicate with other members with limited membership. However, communication is allowed between every other combination of membership types.	Optional

Name	Value	Default	Description	Mandatory/ Optional
memberships	[“full”, “limited”, ...] List of “full” or “limited” comma-separated strings. It must be the same length as the GUIDs list. Each value by an index represents a GUID membership.	[]	List of memberships to allow users to create or modify different membership per GUID in same PKey. GUID index 0 in the “guids” list will take index 0 from the memberships list and so on (by order)	This parameter is optional. This parameter conflicts with the “membership” parameter. Users must select either a list of memberships or just one membership for all GUIDs.
mtu_limit	value can be 2k or 4k	2	MTU limit	Optional
service_level	value can be range from 0-15	0	Service level	Optional
rate_limit	value can be one of the following: 2.5, 10, 30, 5, 20, 40, 60, 80, 120, 14, 56, 112, 168, 25, 100, 200, or 300	2.5	Rate Limit	Optional
pkey	Hexadecimal string between "0x0"-"0x7fff" exclusive	None	Network PKey	Mandatory

- Request Data Example

```
{
  "guids": ["0002c903000e0b72", "0002c903000e0b73"],
```

```
    "ip_over_ib" : false, "index0" : true,
    "index0" : true,
    "membership" : "full",
    "mtu_limit" : 2,
    "service_level" : 0,
    "rate_limit" : 2.5,
    "pkey" : "0x0a12"
}
```

- Response – N/A
- Status Codes
  - 200 – OK
  - 400 – bad request

> **Note**
>
> To use this API to trigger Mellanox Scalable Hierarchical Aggregation and Reduction Protocol (SHARP)™ allocations and deallocations, please refer to "NVIDIA SHARP REST API".

Add Hosts to PKey

- Description **-** Allows the user to create new Partition key (Pkey) assignments, including all the ports allocated to sent host names. UFM-SLURM plugin reads the following API attributes (ip_over_ib, index0, membership) from ufm_slurm.conf file, and sends them in request body.
- Request URL - POST /ufmRest/resources/pkeys/hosts
- Status Codes
  - 200 – OK
  - 400 – not found

- Request Data Example:

  The response is a job and its status depends on the action output.

```
{
    "hosts_names" : "r-ufm51,r-ufm77" ,
    "ip_over_ib" :  true ,
    "index0" :  false ,
    "membership" :  "full" ,
    "pkey" :  "0xa12"
}
```

Remove Hosts from PKey

- Description - Using this API allowed the user to remove a list of configured Hosts GUIDs from PKey.
- Request URL - DELETE /ufmRest/resources/pkeys/<pkey>/hosts/<host_name1>, <host_name2>,...
- Status Codes
  - 200 – OK
  - 400 – not found

Delete PKey

- Description – deletes a PKey and all of its configured GUIDs.
- Request URL – DELETE /ufmRest/resources/pkeys/<pkey>
- Status Codes
  - 200 – OK
  - 404 – not found

Update PKey QoS

- Description – updates the QoS configuration for a specific PKey.
- Request URL – PUT /ufmRest/resources/pkeys/qos_conf
- Request Data Example

```
{
    "mtu_limit": 4,
    "service_level": 5,
    "rate_limit": 2,
    "pkey": "0x9"
}
```

- Notes
    - mtu_limit value can be 2k or 4k
    - service_lever value can be range from 0-15
    - rate_limit value can be one of the following: 2.5, 10, 30, 5, 20, 40, 60, 80, 120, 14, 56, 112, 168, 25, 100, 200, or 300
    - Restarting UFM is required for the PKey QoS configuration to take effect
- Status Codes
    - 200 – OK

      400 – bad request

PKey Version (Last Updated)

- Description – returns the time when PKey data was last modified.
- Request URL – GET /ufmRest/resources/pkeys/last_updated
- Request Data Example

```
{
    "last_updated" :  "Thu Sep  3 11:42:39 UTC 2020"
}
```

- Notes
  - Last updated data is not persistent and will be reset when UFM is restarted
  - By default, when no updates are done on PKey data, last_updated value will be null
  - The value of last_updated returned by this REST API will be updated when one of the following REST APIs are called:
    - Add GUIDs to PKey
    - Remove GUIDs from PKey
    - Set GUIDs for PKey
    - Delete PKey
    - Update QoS for PKey

Physical-Virtual GUID Mapping REST API

Create Physical-Virtual GUID Mapping

- **Description:** Creates a physical-virtual GUID mapping by sending the physical and virtual GUID list.
- **Request URL :** POST /ufmRest/app/smconf/physical_virtual_mapping
- **Request Content Type** – Application/json
- **Request Data:**

```
{
    "physical-port-guid" : ["PHYS_PORT_GUID_A", "PHYS_PORT_GUID_B"],
    "virtual-port-guid" : ["VIRT_PORT_GUID_A", "VIRT_PORT_GUID_B"],
    "properties" : {
            "tenant_vport_lids" : true,
      "max_tenant_mc_groups" : 5
      }
}
```

- If either the physical-port-guid or virtual-port-guid were not sent, the default value is an empty list.
- **Response:** Integer associated with this map group.

Status	Description
200	OK
400	BAD_REQUEST (bad or missing parameters)

Get All Physical-Virtual GUID Mapping

- **Description:** Gets all created physical-virtual GUID mapping.
- **Request URL:** GET /ufmRest/app/smconf/physical_virtual_mapping
- **Request Data:** N/A
- **Response Content Type** – Application/json
- **Response:**


```
{
        "1" : {
        "physical-port-guid" : [ "0x0002c90000000005" ] ,
        "virtual-port-guid" : [ "0x0002c90000000066" , "0x0002c90000000067" ] ,
        "properties" :  {
        "tenant_vport_lids" :  true ,
        "max_tenant_mc_groups" :  5
        }
        } ,
        "2" : {
        "physical-port-guid" : [ "0x0002c90000000005" ] ,
        "virtual-port-guid" : [ "0x0002c90000000066" , "0x0002c90000000067" ]
        }
        }
```


- Status Code:

Status	Description
200	OK
400	BAD_REQUEST

Get Specific Physical-Virtual GUID Mapping

- **Description:** Gets a specific physical-virtual GUID mapping.

- **Request URL:** GET /ufmRest/app/smconf/physical_virtual_mapping/
- **Request Data:** N/A
- **Response Content Type** – Application/json
- **Response:**

```
{
"physical-port-guid" : ["PHYS_PORT_GUID_A", "PHYS_PORT_GUID_B"],
"virtual-port-guid" : ["VIRT_PORT_GUID_A", "VIRT_PORT_GUID_B"],
"properties" : {
"tenant_vport_lids" : true,
"max_tenant_mc_groups" : 5
                }
}
```

Status	Description
200	OK
400	BAD_REQUEST
404	NOT_FOUND

Update Physical-Virtual GUID Mapping

- **Description:** Replaces map GUID with a new GUID mapping for a specific group ID.
- **Request URL:** PUT /ufmRest/app/smconf/physical_virtual_mapping/
- **Response Content Type** – Application/json
- **Request Data:**

```
{
"physical-port-guid" : ["PHYS_PORT_GUID_A", "PHYS_PORT_GUID_B"],
"virtual-port-guid" : ["VIRT_PORT_GUID_A", "VIRT_PORT_GUID_B"],
```

```
"properties" : {
                "tenant_vport_lids" : true ,
                "max_tenant_mc_groups" : 5
                }
}
```

- Status Code:

Status	Description
200	OK
400	BAD_REQUEST

Add New Physical-Virtual GUID Mapping to an Existing Group

- **Description:** Adds a new physical-virtual GUID to an existing group ID.
- **Request URL:** PUT /ufmRest/app/smconf/physical_virtual_mapping //add
- **Response Content Type** – Application/json
- **Request Data:**

```
{
"physical-port-guid" : [ "PHYS_PORT_GUID_A" , "PHYS_PORT_GUID_B" ] ,
"virtual-port-guid" : [ "VIRT_PORT_GUID_A" , "VIRT_PORT_GUID_B" ]
}
```

- Status Code:

Status	Description
200	OK
400	BAD_REQUEST

Delete Physical-Virtual GUID Mapping

- **Description**: Deletes a group ID mapping.
- **Request URL:** DELETE /ufmRest/app/smconf/physical_virtual_mapping/
- **Response Content Type** – Application/json
- Status Code:

Status	Description
200	OK
400	BAD_REQUEST
404	NOT_FOUND

Virtualization REST API

Get All Virtual Ports

- Description – get all virtual ports in the fabric
- Request URL – GET /ufmRest/resources/vports
- Request Content Type – Application/json
- Request Data


```
[
  {
    "virtual_port_state": "Active",
    "virtual_port_lid": 3434,
    "system_ip": "11.4.3.175",
    "system_name": "r-ufm77",
    "node_description": "r-ufm77 mlx5_0",
    "system_guid": "248a0703008a850a",
    "port_guid": "248a0703008a850a",
    "port_name": "248a0703008a850a_1",
    "physical_port_number": 1,
    "virtual_port_guid": "0002c90000000017"
  },
  {
    "virtual_port_state": "Active",
    "virtual_port_lid": 3435,
    "system_ip": "11.4.3.175",
    "system_name": "r-ufm77",
    "node_description": "r-ufm77 mlx5_0",
    "system_guid": "248a0703008a850a",
    "port_guid": "248a0703008a850a",
```

```
    "port_name": "248a0703008a850a_1",
    "physical_port_number": 1,
    "virtual_port_guid": "0002c90000000018"
  },
  {
    "virtual_port_state": "Active",
    "virtual_port_lid": 3435,
    "system_ip": "11.4.3.175",
    "system_name": "r-ufm77",
    "node_description": "r-ufm77 mlx5_1",
    "system_guid": "248a0703008a850a",
    "port_guid": "248a0703008a850b",
    "port_name": "248a0703008a850b_2",
    "physical_port_number": 2,
    "virtual_port_guid": "0002c90000000019"
  },
  {
    "virtual_port_state": "Active",
    "virtual_port_lid": 3436,
    "system_ip": "0.0.0.0",
    "system_name": "r-ufm51",
    "node_description": "r-ufm51 HCA-1",
    "system_guid": "f452140300383a00",
    "port_guid": "f452140300383a01",
    "port_name": "f452140300383a01_1",
    "physical_port_number": 1,
    "virtual_port_guid": "0002c9000000001c"
  },
  {
    "virtual_port_state": "Active",
    "virtual_port_lid": 3437,
    "system_ip": "0.0.0.0",
    "system_name": "r-ufm51",
    "node_description": "r-ufm51 HCA-1",
    "system_guid": "f452140300383a00",
    "port_guid": "f452140300383a02",
```

```
        "port_name": "f452140300383a02_2",
        "physical_port_number": 2,
        "virtual_port_guid": "0002c9000000001f"
    }
]
```


- Status codes
  - 200 – OK
  - 400 – BAD_REQUEST

Get All Virtual Ports for Specific System

- Description – get the list of all virtual ports for a specific system
- Request URL – GET /ufmRest/resources/vports?system=<system_guid>
- Request Content Type – Application/json
- Request Data


```
[
    {
        "virtual_port_state": "Active",
        "virtual_port_lid": 3434,
        "system_ip": "11.4.3.175",
        "system_name": "r-ufm77",
        "node_description": "r-ufm77 mlx5_0",
        "system_guid": "248a0703008a850a",
        "port_guid": "248a0703008a850a",
        "port_name": "248a0703008a850a_1",
        "physical_port_number": 1,
        "virtual_port_guid": "0002c90000000017"
    },
    {
```

```
        "virtual_port_state": "Active",
        "virtual_port_lid": 3435,
        "system_ip": "11.4.3.175",
        "system_name": "r-ufm77",
        "node_description": "r-ufm77 mlx5_0",
        "system_guid": "248a0703008a850a",
        "port_guid": "248a0703008a850a",
        "port_name": "248a0703008a850a_1",
        "physical_port_number": 1,
        "virtual_port_guid": "0002c90000000018"
    },
    {
        "virtual_port_state": "Active",
        "virtual_port_lid": 3435,
        "system_ip": "11.4.3.175",
        "system_name": "r-ufm77",
        "node_description": "r-ufm77 mlx5_1",
        "system_guid": "248a0703008a850a",
        "port_guid": "248a0703008a850b",
        "port_name": "248a0703008a850b_2",
        "physical_port_number": 2,
        "virtual_port_guid": "0002c90000000019"
    }
]
```


- Status codes
  - 200 – OK
  - 400 – BAD_REQUEST
  - 404 – NOT_FOUND

Get Virtual Ports for Specific Physical Port

- Description – get the list of virtual ports for specific physical port

- Request URL – GET /ufmRest/resources/vports?port=<port_name>
- Request Content Type – Application/json
- Request Data


```
[
  {
    "virtual_port_state": "Active",
    "virtual_port_lid": 3434,
    "system_ip": "11.4.3.175",
    "system_name": "r-ufm77",
    "node_description": "r-ufm77 mlx5_0",
    "system_guid": "248a0703008a850a",
    "port_guid": "248a0703008a850a",
    "port_name": "248a0703008a850a_1",
    "physical_port_number": 1,
    "virtual_port_guid": "0002c90000000017"
  },
  {
    "virtual_port_state": "Active",
    "virtual_port_lid": 3435,
    "system_ip": "11.4.3.175",
    "system_name": "r-ufm77",
    "node_description": "r-ufm77 mlx5_0",
    "system_guid": "248a0703008a850a",
    "port_guid": "248a0703008a850a",
    "port_name": "248a0703008a850a_1",
    "physical_port_number": 1,
    "virtual_port_guid": "0002c90000000018"
  },
  {
    "virtual_port_state": "Active",
    "virtual_port_lid": 3435,
    "system_ip": "11.4.3.175",
    "system_name": "r-ufm77",
```

```
        "node_description": "r-ufm77 mlx5_1",
        "system_guid": "248a0703008a850a",
        "port_guid": "248a0703008a850b",
        "port_name": "248a0703008a850b_2",
        "physical_port_number": 2,
        "virtual_port_guid": "0002c90000000019"
    }
]
```


- Status codes
  - 200 – OK
  - 400 – BAD_REQUEST
  - 404 – NOT_FOUND

Unhealthy Ports REST API

- Description – Manages unhealthy ports in OpenSM
- Request URL – GET /ufmRest/app/unhealthy_ports
- Main Operations
    - Get Unhealthy Ports
    - Get Unhealthy Port
    - Mark Unhealthy Ports as Healthy
    - Mark Healthy Ports as Unhealthy
    - Mark All Unhealthy Ports as Healthy at Once
    - Connectivity
    - Delete Policies
    - Get Healthy Policy Ports
    - Get Healthy Policy Devices
    - Get Port Health State

Get All Unhealthy Ports

- Description – Gets **all** ports that are marked as unhealthy from OpenSM
- Request URL – GET /ufmRest/app/unhealthy_ports
- Request Content Type – Application/json
- Response

```
[
    {
        "PeerLID": "18",
        "PeerPortNumber": 6,
        "UnhealthyPortNumber": 1,
        "PeerGUID": "248a070300f88fe0",
        "PeerPort": "switch-ec4034/6",
        "UnhealthyNode": "r-dmz-ufm135",
        "UnhealthyPort": "r-dmz-ufm135/HCA-1/1",
        "State": "Info",
        "PeerPortDname": "6",
        "Condition": "MANUAL",
        "PeerNode": "switch-ec4034",
        "StatusTime": "Wed Apr 29 00:05:32 2020",
        "UnhealthyPortDname": "HCA-1/1",
        "UnhealthyGUID": "248a0703002e628e"
    }
]
```


- Status Codes
  - 200 – OK
  - 400 – Bad request

Get Unhealthy Port

- Description – Gets specific port that are marked as unhealthy from OpenSM
- Request URL – GET /ufmRest/app/unhealthy_ports/<port_name>
- Request Content Type – Application/json
- Response

```
{
  "PeerPort": "sw-ufm-ib01 / 35",
  "PeerGUID": "0002c903007e5220",
  "StatusTime": "Sun Apr 21 12:22:13 2024",
  "UnhealthyGUID": "ec0d9a0300d42e54",
  "UnhealthyPort": "1",
  "PeerNode": "sw-ufm-ib01",
  "PeerNodeType": "switch",
  "UnhealthyNodeType": "Unknown",
  "UnhealthyNode": "r-ufm59 mlx5_0",
  "UnhealthyPortNumber": 1,
  "UnhealthyPortNodeDesc": "1",
  "UnhealthyPortPeerNodeDesc": "sw-ufm-ib01:35",
  "UnhealthyPortDname": "Unknown",
  "Condition": [
    "MANUAL"
  ],
  "State": "Warning",
  "PeerLID": "2",
  "PeerPortNumber": 35,
  "PeerPortDname": "35"
}
```


- Status Codes
  - 200 – OK
  - 400 – Bad request

Mark Unhealthy Ports as Healthy

- Description – Marks unhealthy ports or devices as healthy. Once device GUID is passed as a parameter, its unhealthy ports are marked as healthy.
- Request URL – PUT /ufmRest/app/unhealthy_ports

- Request Content Type – Application/json
- Request Data

```
{
    "ports" : [
        "0002c9030060dc20_10"
    ],
    "devices" : [
            “0002c9030060dc20"
    ],
    "ports_policy" : "HEALTHY"
}
```

- Status Codes
    - 200 – OK
    - 400 – Bad request

Mark Healthy Ports as Unhealthy

- Description – Mark healthy ports as unhealthy, and send the action that you want to apply on this port

  Action: ["no_discover", "isolate"]

- Request URL – PUT /ufmRest/app/unhealthy_ports
- URL Parameters:
    - force_set: An optional boolean value. If set to true, will set the port as unhealthy in the policy file without validating if the port exists.

      Request Example: /ufmRest/app/unhealthy_ports?force_set=true

- Request Content Type – Application/json
- Request Data

```
{
   "ports":[
      "0002c9030060dc20_10"
   ],
   "ports_policy":"UNHEALTHY",
   "action":"no_discover"
}
```

- Status Codes
  - 200 – OK
  - 400 – Bad request

Mark All Unhealthy Ports as Healthy at Once

- Description – Marks a list of ports as unhealthy in the UFM server. If the optional boolean value is set to true, the REST API sets the port as unhealthy in the policy file without validating if the port exists. (This parameter allows setting non-discovered or disabled ports as unhealthy)
- Request URL – PUT /ufmRest/app/unhealthy_ports
- URL Parameters:
  - force_set: An optional boolean value. If set to true, will set the port as unhealthy in the policy file without validating if the port exists.

    Request Example: /ufmRest/app/unhealthy_ports?force_set=true
- Request Content Type – Application/json
- Request Data

```
{
   "ports" :  [
      "ALL"
```

```
    ],
    "ports_policy": "HEALTHY"
}
```

- Status Codes
  - 200 – OK
  - 400 – Bad request

Connectivity

- Description – Gets unhealthy port.
- Request URL – GET app/unhealthy_ports.
- Parameter:
  - Connectivity
    - host-to-switch
    - switch-to-switch
- Example:

```
/ufmRestV2/app/unhealthy_ports?connectivity=host-to-switch
```

Delete Policies

- Description: Deletes unhealthy/healthy ports from health policy file.
- Request URL: DELETE app/unhealthy_ports/policy
- Request data (one list)- List of strings:
  - Port names - Deletes all the ports specified in the list.

    - Device GUID - Deletes all the ports in the health policy of that specified device GUID.
    - all_healthy - Deletes all the healthy ports in the health policy.
- Status Codes-
    - 200 – OK
    - 400 – Bad request
- Example:

```
[
    "9c0591030085b3c0_1",
    "9c0591030085b3c1"
]
```

Get Healthy Policy Ports

- Description: Retrieves all unhealthy/healthy ports from the health policy file.
- Request URL: GET app/unhealthy_ports/policy
- Request data
    - device_guid: Enables you to group ports by device.
- Status Codes:
    - 200-OK
    - 400 – Bad request
- Response:

```
[
    {
```

```
            "node_guid": "248a070300f88fe0",
            "port_number": 6,
            "policy": Healthy,
            "action":"",
            "last_updated": "Wed Apr 29 00:05:32 2020",
            "node_description": "r-dmz-ufm135",
            "node_name": "r-dmz-ufm135/HCA-1/1",
            "capabilities": "mark_port_unhealthy",
        }
]
```


Get Healthy Policy Devices

- Description – Retrieves all devices from the health policy.
- Request URL – Get app/unhealthy_ports/policy_devices
- Status Codes:
    - 200-OK
    - 400 – Bad request
- Response:


```
[
    {
        "guid": "248a070300f88fe0",
        "type": host,
        "name":" r-dmz-ufm135/HCA-1/1",
        "number_of_policies": 7
    }
]
```


Get Port Health State

- Description – Returns health state of a given port name.
- Request URL – Get app/unhealthy_ports /port_health_state/<port_name>
- Status Codes:
    - 200-OK
    - 400 – Bad request
- Response:

```
{
    "port_name": "0002c903007e5220_35",
    "healthiness_state": "UNHEALTHY",
    "node_description": "sw-ufm-ib01:35"
}
```

Modules REST API

- Description – returns information on all modules in the fabric, or on a specific module by name, or on all modules of a specific system
- Request URL – GET /ufmRest/resources/modules
- Main Operations
    - Get all modules
    - Get module/s by name
    - Get all modules of a specific system

Get All Modules

- Description – returns information on all modules in the fabric
- Request URL – GET /ufmRest/resources/modules
- Request Content Type – Application/json
- Response


```
[
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "A5",
        "name": "248a070300f88fe0_4001_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
```

```
        "description": "FAN - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09072",
        "path": "default / Switch: switch-ec4034 / FAN 1",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [ ],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "A5",
        "name": "248a070300f88fe0_4001_03",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 3",
        "max_ib_ports": 0,
        "module_index": 3,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09071",
        "path": "default / Switch: switch-ec4034 / FAN 3",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [ ],
        "severity": "Info"
    },
    {
        "status": "OK",
```

```
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "A5",
        "name": "248a070300f88fe0_4001_02",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 2",
        "max_ib_ports": 0,
        "module_index": 2,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09078",
        "path": "default / Switch: switch-ec4034 / FAN 2",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "A5",
        "name": "248a070300f88fe0_4001_04",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 4",
        "max_ib_ports": 0,
        "module_index": 4,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09070",
```

```
        "path": "default / Switch: switch-ec4034 / FAN 4",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MSB7800-ES2F",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_4000_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "MGMT",
        "number_of_chips": 0,
        "description": "MGMT - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1702X09706",
        "path": "default / Switch: switch-ec4034 / MGMT 1",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "fatal",
        "psid": "N/A",
        "hw_version": "MTEF-PSF-AC-A",
        "hw_revision": "A7",
        "name": "248a070300f88fe0_2005_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
```

```
        "type": "PS",
        "number_of_chips": 0,
        "description": "PS - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1702X07738",
        "path": "default / Switch: switch-ec4034 / PS 1",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Warning"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MSB7800-ES2F",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_1007_01",
        "hca_dev_id": "N/A",
        "sw_version": "3.8.1991-02-X86_64",
        "type": "SYSTEM",
        "number_of_chips": 0,
        "description": "SYSTEM",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1702X09706",
        "path": "default / Switch: switch-ec4034 / system 1",
        "device_name": "switch-ec4034",
        "temperature": "45",
        "ports": [],
        "severity": "Info"
    },
```

```
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-PSF-AC-A",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_2005_02",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "PS",
        "number_of_chips": 0,
        "description": "PS - 2",
        "max_ib_ports": 0,
        "module_index": 2,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1702X07735",
        "path": "default / Switch: switch-ec4034 / PS 2",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MSX6036F-1SFR",
        "hw_revision": "N/A",
        "name": "0002c903007b78b0_4000_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "MGMT",
        "number_of_chips": 0,
        "description": "MGMT - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "0002c903007b78b0",
```

```
        "device_type": "Switch",
        "serial_number": "MT1230X02600",
        "path": "default / Switch: r-dmz-ufm-sw49 / MGMT 1",
        "device_name": "r-dmz-ufm-sw49",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MSX60-PF",
        "hw_revision": "N/A",
        "name": "0002c903007b78b0_2005_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "PS",
        "number_of_chips": 0,
        "description": "PS - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "0002c903007b78b0",
        "device_type": "Switch",
        "serial_number": "MT1212X03551",
        "path": "default / Switch: r-dmz-ufm-sw49 / PS 1",
        "device_name": "r-dmz-ufm-sw49",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MSX6036F-1SFR",
        "hw_revision": "N/A",
        "name": "0002c903007b78b0_1007_01",
```

```
        "hca_dev_id": "N/A",
        "sw_version": "PPC_M460EX 3.6.8012 2019-02-22 07:53:42 ppc",
        "type": "SYSTEM",
        "number_of_chips": 0,
        "description": "SYSTEM",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "0002c903007b78b0",
        "device_type": "Switch",
        "serial_number": "MT1230X02600",
        "path": "default / Switch: r-dmz-ufm-sw49 / system 1",
        "device_name": "r-dmz-ufm-sw49",
        "temperature": "43",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MSX60-FF",
        "hw_revision": "N/A",
        "name": "0002c903007b78b0_4001_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "0002c903007b78b0",
        "device_type": "Switch",
        "serial_number": "MT1230X04280",
        "path": "default / Switch: r-dmz-ufm-sw49 / FAN 1",
        "device_name": "r-dmz-ufm-sw49",
        "temperature": "N/A",
        "ports": [],
```

```
            "severity": "Info"
        },
        {
            "status": "active",
            "sw_version": "NA",
            "hw_version": "NA",
            "description": "Aggregation Node (248a070300f88fe8)",
            "severity": "Info",
            "number_of_chips": 0,
            "hosting_system_guid": "248a070300f88fe0",
            "module_index": 0,
            "temperature": "N/A",
            "device_type": "SHArP",
            "serial_number": 53001,
            "path": "default / SubModule: Mellanox Technologies Aggregation Node",
            "device_name": "switch-ec4034",
            "type": "SHARP",
            "ports": [],
            "name": "248a070300f88fe8"
        }
]
```


- Status Codes
  - 200 – OK

Get Module/s by Name

- Description – get module/s using their name
- Request URL – GET/ufmRest/resources/modules/<module-name1>,<module-name2>,...
- Request Content Type – Application/json
- Response

```
[
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "A5",
        "name": "248a070300f88fe0_4001_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09072",
        "path": "default / Switch: switch-ec4034 / FAN 1",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "severity": "Info"
    }
]
```


- Status Codes
  - 200 – OK
  - 404 – NOT FOUND—module was not found (by name)

Get All Modules of Specific System

- Description – returns all modules for a specific system
- Request URL – GET /ufmRest/resources/modules?system=<system-name>

- Request Content Type – Application/json
- Response


```
[
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A"0,
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_4001_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09072",
        "path": "default / Switch: switch-ec4034 / FAN 1",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_4001_03",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
```

```
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 3",
        "max_ib_ports": 0,
        "module_index": 3,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09071",
        "path": "default / Switch: switch-ec4034 / FAN 3",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_4001_02",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 2",
        "max_ib_ports": 0,
        "module_index": 2,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09078",
        "path": "default / Switch: switch-ec4034 / FAN 2",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
```

```
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-FANF-A",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_4001_04",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "FAN",
        "number_of_chips": 0,
        "description": "FAN - 4",
        "max_ib_ports": 0,
        "module_index": 4,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1704X09070",
        "path": "default / Switch: switch-ec4034 / FAN 4",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MSB7800-ES2F",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_4000_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "MGMT",
        "number_of_chips": 0,
        "description": "MGMT - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
```

```
        "device_type": "Switch",
        "serial_number": "MT1702X09706",
        "path": "default / Switch: switch-ec4034 / MGMT 1",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "fatal",
        "psid": "N/A",
        "hw_version": "MTEF-PSF-AC-A",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_2005_01",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "PS",
        "number_of_chips": 0,
        "description": "PS - 1",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1702X07738",
        "path": "default / Switch: switch-ec4034 / PS 1",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
        "severity": "Warning"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MSB7800-ES2F",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_1007_01",
```

```
        "hca_dev_id": "N/A",
        "sw_version": "3.8.1991-02-X86_64",
        "type": "SYSTEM",
        "number_of_chips": 0,
        "description": "SYSTEM",
        "max_ib_ports": 0,
        "module_index": 1,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1702X09706",
        "path": "default / Switch: switch-ec4034 / system 1",
        "device_name": "switch-ec4034",
        "temperature": "45",
        "ports": [],
        "severity": "Info"
    },
    {
        "status": "OK",
        "psid": "N/A",
        "hw_version": "MTEF-PSF-AC-A",
        "hw_revision": "N/A",
        "name": "248a070300f88fe0_2005_02",
        "hca_dev_id": "N/A",
        "sw_version": "N/A",
        "type": "PS",
        "number_of_chips": 0,
        "description": "PS - 2",
        "max_ib_ports": 0,
        "module_index": 2,
        "hosting_system_guid": "248a070300f88fe0",
        "device_type": "Switch",
        "serial_number": "MT1702X07735",
        "path": "default / Switch: switch-ec4034 / PS 2",
        "device_name": "switch-ec4034",
        "temperature": "N/A",
        "ports": [],
```

```
            "severity": "Info"
        },
        {
            "status": "active",
            "sw_version": "NA",
            "hw_version": "NA",
            "description": "Aggregation Node (248a070300f88fe8)",
            "severity": "Info",
            "number_of_chips": 0,
            "hosting_system_guid": "248a070300f88fe0",
            "module_index": 0,
            "temperature": "N/A",
            "device_type": "SHArP",
            "serial_number": 53001,
            "path": "default / SubModule: Mellanox Technologies Aggregation Node",
            "device_name": "switch-ec4034",
            "type": "SHARP",
            "ports": [],
            "name": "248a070300f88fe8"
        }
]
```


- Status Codes
  - 200 – OK

Get All HCAs

- Description – lists all hosts' HCA modules in the fabric.
- Request URL – GET /ufmRest/resources/modules?type=hca
- Request Content Type – Application/json
- Response

```
[
    {
        "status": "N/A",
        "psid": "MT_1090120019",
        "hw_version": "2.42.5000",
        "hw_revision": "N/A",
        "name": "0002c9030021f970_0_00",
        "hca_dev_id": 4099,
        "sw_version": "2.42.5000",
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-3",
        "max_ib_ports": 2,
        "module_index": 1,
        "hosting_system_guid": "0002c9030021f970",
        "device_type": "Computer",
        "serial_number": "N/A",
        "path": "default / Computer: r-dmz-ufm134 / HCA 1",
        "device_name": "r-dmz-ufm134",
        "temperature": "N/A",
        "ports": [
            "0002c9030021f972_2",
            "0002c9030021f971_1"
        ],
        "severity": "Info"
    },
    {
        "status": "N/A",
        "psid": "MT_2190110032",
        "hw_version": "12.25.1020",
        "hw_revision": "N/A",
        "name": "248a0703002e6292_0_00",
        "hca_dev_id": 4115,
        "sw_version": "12.25.1020",
```

```
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-4",
        "max_ib_ports": 2,
        "module_index": 1,
        "hosting_system_guid": "248a0703002e6292",
        "device_type": "Computer",
        "serial_number": "N/A",
        "path": "default / Computer: r-dmz-ufm139 / HCA 1",
        "device_name": "r-dmz-ufm139",
        "temperature": "N/A",
        "ports": [
            "248a0703002e6293_2",
            "248a0703002e6292_1"
        ],
        "severity": "Info"
    },
    {
        "status": "N/A",
        "psid": "MT_0000000008",
        "hw_version": "16.27.2026",
        "hw_revision": "N/A",
        "name": "98039b030000e456_0_00",
        "hca_dev_id": 4119,
        "sw_version": "16.27.2026",
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-5",
        "max_ib_ports": 2,
        "module_index": 1,
        "hosting_system_guid": "98039b030000e456",
        "device_type": "Computer",
        "serial_number": "N/A",
        "path": "default / Computer: r-dmz-ufm128 / HCA 1",
```

```
        "device_name": "r-dmz-ufm128",
        "temperature": "N/A",
        "ports": [
            "98039b030000e456_1"
        ],
        "severity": "Info"
    },
    {
        "status": "N/A",
        "psid": "MT_0000000008",
        "hw_version": "16.27.2008",
        "hw_revision": "N/A",
        "name": "ec0d9a03007d7d0a_0_00",
        "hca_dev_id": 4119,
        "sw_version": "16.27.2008",
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-5",
        "max_ib_ports": 2,
        "module_index": 1,
        "hosting_system_guid": "b8599f03000a77d0",
        "device_type": "Computer",
        "serial_number": "N/A",
        "path": "default / Computer: r-dcs96 / HCA 1",
        "device_name": "r-dcs96",
        "temperature": "N/A",
        "ports": [
            "ec0d9a03007d7d0b_2",
            "ec0d9a03007d7d0a_1"
        ],
        "severity": "Info"
    },
    {
        "status": "N/A",
        "psid": "MT_0000000008",
```

```
        "hw_version": "16.27.2008",
        "hw_revision": "N/A",
        "name": "b8599f03000a77d0_0_00",
        "hca_dev_id": 4119,
        "sw_version": "16.27.2008",
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-5",
        "max_ib_ports": 2,
        "module_index": 2,
        "hosting_system_guid": "b8599f03000a77d0",
        "device_type": "Computer",
        "serial_number": "N/A",
        "path": "default / Computer: r-dcs96 / HCA 1",
        "device_name": "r-dcs96",
        "temperature": "N/A",
        "ports": [
            "b8599f03000a77d1_2",
            "b8599f03000a77d0_1"
        ],
        "severity": "Info"
    },
    {
        "status": "N/A",
        "psid": "MT_1090120019",
        "hw_version": "2.42.5000",
        "hw_revision": "N/A",
        "name": "0002c90300455bc0_0_00",
        "hca_dev_id": 4099,
        "sw_version": "2.42.5000",
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-3",
        "max_ib_ports": 2,
```

```
        "module_index": 1,
        "hosting_system_guid": "0002c90300455bc0",
        "device_type": "Computer",
        "serial_number": "N/A",
        "path": "default / Computer: r-dmz-ufm131 / HCA 1",
        "device_name": "r-dmz-ufm131",
        "temperature": "N/A",
        "ports": [
            "0002c90300455bc2_2",
            "0002c90300455bc1_1"
        ],
        "severity": "Info"
    },
    {
        "status": "N/A",
        "psid": "N/A",
        "hw_version": "N/A",
        "hw_revision": "N/A",
        "name": "248a0703002e628e_0_00",
        "hca_dev_id": 4115,
        "sw_version": "N/A",
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-4",
        "max_ib_ports": 2,
        "module_index": 1,
        "hosting_system_guid": "248a0703002e628e",
        "device_type": "Computer",
        "serial_number": "N/A",
        "path": "default / Computer: r-dmz-ufm135 / HCA 1",
        "device_name": "r-dmz-ufm135",
        "temperature": "N/A",
        "ports": [
            "248a0703002e628e_1",
            "248a0703002e628f_2"
```

```
            ],
            "severity": "Info"
        },
        {
            "status": "N/A",
            "psid": "N/A",
            "hw_version": "N/A",
            "hw_revision": "N/A",
            "name": "0008f10001085600_0_00",
            "hca_dev_id": 23141,
            "sw_version": "N/A",
            "type": "HCA",
            "number_of_chips": 1,
            "description": "HCA - 1",
            "nic_type": "ConnectX-3",
            "max_ib_ports": 2,
            "module_index": 1,
            "hosting_system_guid": "0008f10001085600",
            "device_type": "Gateway",
            "serial_number": "N/A",
            "path": "default / Gateway: Mellanox 4036E IO 4036E-20FA / HCA 1",
            "device_name": "Mellanox 4036E IO 4036E-20FA",
            "temperature": "N/A",
            "ports": [
                "0008f10001085601_1"
            ],
            "severity": "Info"
        }
]
```


- Status Codes
    - 200 – OK

Get All HCAs With Ports

- Description – lists all hosts' HCA modules in the fabric including their respective ports.
- Request URL – GET /ufmRest/resources/modules?type=hca&ports=true
- Request Content Type – Application/json
- Response


```
[
    {
        "status": "N/A",
        "psid": "MT_1090120019",
        "hw_version": "2.42.5000",
        "hw_revision": "N/A",
        "name": "0002c9030021f970_0_00",
        "hca_dev_id": 4099,
        "sw_version": "2.42.5000",
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-3",
        "max_ib_ports": 2,
        "module_index": 1,
        "hosting_system_guid": "0002c9030021f970",
        "device_type": "Computer",
        "serial_number": "N/A",
        "path": "default / Computer: r-dmz-ufm134 / HCA 1",
        "device_name": "r-dmz-ufm134",
        "temperature": "N/A",
        "ports": [
            {
                "peer_lid": 11,
                "number": 2,
                "module": "N/A",
                "physical_state": "Link Up",
```

"peer": "0002c903007b78b0_9",
"enabled_speed": [
"2.5 Gbps",
"5.0 Gbps",
"10.0 Gbps",
"14.0 Gbps"
],
"mirror": "disable",
"peer_port_dname": "9",
"guid": "0002c9030021f972",
"peer_node_guid": "0002c903007b78b0",
"lid": 6,
"severity": "Info",
"logical_state": "Active",
"capabilities": [ ],
"active_speed": "14.0 Gbps",
"enabled_width": [
"1x",
"4x"
],
"supported_width": [
"1x",
"4x"
],
"description": "Computer IB Port",
"supported_speed": [
"2.5 Gbps",
"5.0 Gbps",
"10.0 Gbps",
"14.0 Gbps"
],
"systemID": "0002c9030021f970",
"tier": 1,
"path": "default(7) / Computer: r-dmz-ufm134 / NA / HCA-1/2",
"name": "0002c9030021f972_2",
"active_width": "4x",

```
            "dname": "HCA-1/2",
            "peer_node_name": "r-dmz-ufm-sw49",
            "mtu": 4096,
            "external_number": 2
        },
        {
            "peer_lid": 11,
            "number": 1,
            "module": "N/A",
            "physical_state": "Link Up",
            "peer": "0002c903007b78b0_8",
            "enabled_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps"
            ],
            "mirror": "disable",
            "peer_port_dname": "8",
            "guid": "0002c9030021f971",
            "peer_node_guid": "0002c903007b78b0",
            "lid": 1,
            "severity": "Info",
            "logical_state": "Active",
            "capabilities": [],
            "active_speed": "14.0 Gbps",
            "enabled_width": [
                "1x",
                "4x"
            ],
            "supported_width": [
                "1x",
                "4x"
            ],
            "description": "Computer IB Port",
            "supported_speed": [
```

```
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps"
            ],
            "systemID": "0002c9030021f970",
            "tier": 1,
            "path": "default(7) / Computer: r-dmz-ufm134 / NA / HCA-1/1",
            "name": "0002c9030021f971_1",
            "active_width": "4x",
            "dname": "HCA-1/1",
            "peer_node_name": "r-dmz-ufm-sw49",
            "mtu": 4096,
            "external_number": 1
        }
    ],
    "severity": "Info"
},
{
    "status": "N/A",
    "psid": "MT_2190110032",
    "hw_version": "12.25.1020",
    "hw_revision": "N/A",
    "name": "248a0703002e6292_0_00",
    "hca_dev_id": 4115,
    "sw_version": "12.25.1020",
    "type": "HCA",
    "number_of_chips": 1,
    "description": "HCA - 1",
    "nic_type": "ConnectX-4",
    "max_ib_ports": 2,
    "module_index": 1,
    "hosting_system_guid": "248a0703002e6292",
    "device_type": "Computer",
    "serial_number": "N/A",
    "path": "default / Computer: r-dmz-ufm139 / HCA 1",
```

```
"device_name": "r-dmz-ufm139",
"temperature": "N/A",
"ports": [
    {
        "peer_lid": 18,
        "number": 2,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "248a070300f88fe0_32",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "32",
        "guid": "248a0703002e6293",
        "peer_node_guid": "248a070300f88fe0",
        "lid": 10,
        "severity": "Info",
        "logical_state": "Active",
        "capabilities": [
            "reset",
            "healthy_operations",
            "disable"
        ],
        "active_speed": "25.0 Gbps",
        "enabled_width": [
            "1x",
            "4x"
        ],
        "supported_width": [
            "1x",
            "4x"
```

```
            ],
            "description": "Computer IB Port",
            "supported_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "248a0703002e6292",
            "tier": 1,
            "path": "default(7) / Computer: r-dmz-ufm139 / NA / HCA-1/2",
            "name": "248a0703002e6293_2",
            "active_width": "4x",
            "dname": "HCA-1/2",
            "peer_node_name": "switch-ec4034",
            "mtu": 4096,
            "external_number": 2
        },
        {
            "peer_lid": 18,
            "number": 1,
            "module": "N/A",
            "physical_state": "Link Up",
            "peer": "248a070300f88fe0_31",
            "enabled_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "mirror": "disable",
            "peer_port_dname": "31",
            "guid": "248a0703002e6292",
            "peer_node_guid": "248a070300f88fe0",
```

```
                "lid": 9,
                "severity": "Info",
                "logical_state": "Active",
                "capabilities": [
                    "reset",
                    "healthy_operations",
                    "disable"
                ],
                "active_speed": "25.0 Gbps",
                "enabled_width": [
                    "1x",
                    "4x"
                ],
                "supported_width": [
                    "1x",
                    "4x"
                ],
                "description": "Computer IB Port",
                "supported_speed": [
                    "2.5 Gbps",
                    "5.0 Gbps",
                    "10.0 Gbps",
                    "14.0 Gbps",
                    "25.0 Gbps"
                ],
                "systemID": "248a0703002e6292",
                "tier": 1,
                "path": "default(7) / Computer: r-dmz-ufm139 / NA / HCA-1/1",
                "name": "248a0703002e6292_1",
                "active_width": "4x",
                "dname": "HCA-1/1",
                "peer_node_name": "switch-ec4034",
                "mtu": 4096,
                "external_number": 1
            }
        ],
```

```
            "severity": "Info"
        },
        {
            "status": "N/A",
            "psid": "MT_0000000008",
            "hw_version": "12.25.1020",
            "hw_revision": "N/A",
            "name": "98039b030000e456_0_00",
            "hca_dev_id": 4119,
            "sw_version": "16.27.2026",
            "type": "HCA",
            "number_of_chips": 1,
            "description": "HCA - 1",
            "nic_type": "ConnectX-5",
            "max_ib_ports": 2,
            . . .
```


- Status Codes
    - 200 – OK

Get All HCAs of Specific System

- Description – lists all hosts' HCA modules for a specific host system
- Request URL – GET /ufmRest/resources/modules?type=hca&system=<system_id>
- Request Content Type – Application/json
- Response


```
[
    {
        "status": "N/A",
        "psid": "MT_0000000008",
        "hw_version": "16.27.2008",
```

```
        "hw_revision": "N/A",
        "name": "ec0d9a03007d7d0a_0_00",
        "hca_dev_id": 4119,
        "sw_version": "16.27.2008",
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-5",
        "max_ib_ports": 2,
        "module_index": 1,
        "hosting_system_guid": "b8599f03000a77d0",
        "device_type": "Computer",
        "serial_number": "N/A",
        "path": "default / Computer: r-dcs96 / HCA 1",
        "device_name": "r-dcs96",
        "temperature": "N/A",
        "ports": [
            "ec0d9a03007d7d0b_2",
            "ec0d9a03007d7d0a_1"
        ],
        "severity": "Info"
    },
    {
        "status": "N/A",
        "psid": "MT_0000000008",
        "hw_version": "16.27.2008",
        "hw_revision": "N/A",
        "name": "b8599f03000a77d0_0_00",
        "hca_dev_id": 4119,
        "sw_version": "16.27.2008",
        "type": "HCA",
        "number_of_chips": 1,
        "description": "HCA - 1",
        "nic_type": "ConnectX-5",
        "max_ib_ports": 2,
        "module_index": 2,
```

```
            "hosting_system_guid": "b8599f03000a77d0",
            "device_type": "Computer",
            "serial_number": "N/A",
            "path": "default / Computer: r-dcs96 / HCA 1",
            "device_name": "r-dcs96",
            "temperature": "N/A",
            "ports": [
                "b8599f03000a77d1_2",
                "b8599f03000a77d0_1"
            ],
            "severity": "Info"
        }
]
```


- Status Codes
    - 200 – OK

Get All HCAs of Specific System With Ports

- Description – lists all HCA modules for a specific host system including their respective ports
- Request URL – GET /ufmRest/resources/modules?type=hca&system=<system_id>&ports=true
- Request Content Type – Application/json
- Response


```
[
    {
            "status": "N/A",
            "psid": "MT_0000000008",
            "hw_version": "16.27.2008",
            "hw_revision": "N/A",
```

```
"name": "ec0d9a03007d7d0a_0_00",
"hca_dev_id": 4119,
"sw_version": "16.27.2008",
"type": "HCA",
"number_of_chips": 1,
"description": "HCA - 1",
"nic_type": "ConnectX-5",
"max_ib_ports": 2,
"module_index": 1,
"hosting_system_guid": "b8599f03000a77d0",
"device_type": "Computer",
"serial_number": "N/A",
"path": "default / Computer: r-dcs96 / HCA 1",
"device_name": "r-dcs96",
"temperature": "N/A",
"ports": [
    {
        "peer_lid": 18,
        "number": 2,
        "module": "N/A",
        "physical_state": "Link Up",
        "peer": "248a070300f88fe0_20",
        "enabled_speed": [
            "2.5 Gbps",
            "5.0 Gbps",
            "10.0 Gbps",
            "14.0 Gbps",
            "25.0 Gbps"
        ],
        "mirror": "disable",
        "peer_port_dname": "20",
        "guid": "ec0d9a03007d7d0b",
        "peer_node_guid": "248a070300f88fe0",
        "lid": 4,
        "severity": "Info",
        "logical_state": "Active",
```

```
            "capabilities": [
                "reset",
                "healthy_operations",
                "disable"
            ],
            "active_speed": "25.0 Gbps",
            "enabled_width": [
                "1x",
                "4x"
            ],
            "supported_width": [
                "1x",
                "4x"
            ],
            "description": "Computer IB Port",
            "supported_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "b8599f03000a77d0",
            "tier": 1,
            "path": "default(7) / Computer: r-dcs96 / NA / HCA-1/2",
            "name": "ec0d9a03007d7d0b_2",
            "active_width": "4x",
            "dname": "HCA-1/2",
            "peer_node_name": "switch-ec4034",
            "mtu": 4096,
            "external_number": 2
        },
        {
            "peer_lid": 18,
            "number": 1,
            "module": "N/A",
```

```
"physical_state": "Link Up",
"peer": "248a070300f88fe0_19",
"enabled_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps",
    "25.0 Gbps"
],
"mirror": "disable",
"peer_port_dname": "19",
"guid": "ec0d9a03007d7d0a",
"peer_node_guid": "248a070300f88fe0",
"lid": 3,
"severity": "Info",
"logical_state": "Active",
"capabilities": [
    "reset",
    "healthy_operations",
    "disable"
],
"active_speed": "25.0 Gbps",
"enabled_width": [
    "1x",
    "4x"
],
"supported_width": [
    "1x",
    "4x"
],
"description": "Computer IB Port",
"supported_speed": [
    "2.5 Gbps",
    "5.0 Gbps",
    "10.0 Gbps",
    "14.0 Gbps",
```

```
                "25.0 Gbps"
            ],
            "systemID": "b8599f03000a77d0",
            "tier": 1,
            "path": "default(7) / Computer: r-dcs96 / NA / HCA-1/1",
            "name": "ec0d9a03007d7d0a_1",
            "active_width": "4x",
            "dname": "HCA-1/1",
            "peer_node_name": "switch-ec4034",
            "mtu": 4096,
            "external_number": 1
        }
    ],
    "severity": "Info"
},
{
    "status": "N/A",
    "psid": "MT_0000000008",
    "hw_version": "16.27.2008",
    "hw_revision": "N/A",
    "name": "b8599f03000a77d0_0_00",
    "hca_dev_id": 4119,
    "sw_version": "16.27.2008",
    "type": "HCA",
    "number_of_chips": 1,
    "description": "HCA - 1",
    "nic_type": "ConnectX-5",
    "max_ib_ports": 2,
    "module_index": 2,
    "hosting_system_guid": "b8599f03000a77d0",
    "device_type": "Computer",
    "serial_number": "N/A",
    "path": "default / Computer: r-dcs96 / HCA 1",
    "device_name": "r-dcs96",
    "temperature": "N/A",
    "ports": [
```

```
            {
                "peer_lid": 11,
                "number": 2,
                "module": "N/A",
                "physical_state": "Link Up",
                "peer": "0002c903007b78b0_20",
                "enabled_speed": [
                    "2.5 Gbps",
                    "5.0 Gbps",
                    "10.0 Gbps",
                    "14.0 Gbps",
                    "25.0 Gbps"
                ],
                "mirror": "disable",
                "peer_port_dname": "20",
                "guid": "b8599f03000a77d1",
                "peer_node_guid": "0002c903007b78b0",
                "lid": 15,
                "severity": "Info",
                "logical_state": "Active",
                "capabilities": [
                    "reset",
                    "healthy_operations",
                    "disable"
                ],
                "active_speed": "14.0 Gbps",
                "enabled_width": [
                    "1x",
                    "4x"
                ],
                "supported_width": [
                    "1x",
                    "4x"
                ],
                "description": "Computer IB Port",
                "supported_speed": [
```

```
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "systemID": "b8599f03000a77d0",
            "tier": 1,
                "path": "default(7) / Computer: r-dcs96 / NA /
HCA-2/2",
            "name": "b8599f03000a77d1_2",
            "active_width": "4x",
            "dname": "HCA-2/2",
            "peer_node_name": "r-dmz-ufm-sw49",
            "mtu": 4096,
            "external_number": 2
        },
        {
            "peer_lid": 11,
            "number": 1,
            "module": "N/A",
            "physical_state": "Link Up",
            "peer": "0002c903007b78b0_19",
            "enabled_speed": [
                "2.5 Gbps",
                "5.0 Gbps",
                "10.0 Gbps",
                "14.0 Gbps",
                "25.0 Gbps"
            ],
            "mirror": "disable",
            "peer_port_dname": "19",
            "guid": "b8599f03000a77d0",
            "peer_node_guid": "0002c903007b78b0",
            "lid": 14,
            "severity": "Info",
```

```
                "logical_state": "Active",
                "capabilities": [
                    "reset",
                    "healthy_operations",
                    "disable"
                ],
                "active_speed": "14.0 Gbps",
                "enabled_width": [
                    "1x",
                    "4x"
                ],
                "supported_width": [
                    "1x",
                    "4x"
                ],
                "description": "Computer IB Port",
                "supported_speed": [
                    "2.5 Gbps",
                    "5.0 Gbps",
                    "10.0 Gbps",
                    "14.0 Gbps",
                    "25.0 Gbps"
                ],
                "systemID": "b8599f03000a77d0",
                "tier": 1,
                "path": "default(7) / Computer: r-dcs96 / NA / HCA-2/1",
                "name": "b8599f03000a77d0_1",
                "active_width": "4x",
                "dname": "HCA-2/1",
                "peer_node_name": "r-dmz-ufm-sw49",
                "mtu": 4096,
                "external_number": 1
            }
        ],
        "severity": "Info"
    }
```

```
]
```

- Status Codes
  - 200 – OK

Links REST API

- Description – returns information on all links in the fabric, on all links connected to a specific system, or on one link or all links with their cable information
- Request URL – GET /ufmRest/resources/links
- Main Operations
    - Get all links
    - Get all links connected to a specific system
    - Get all link/s with their cable information

Get All Links

- Description – returns information on all links in the fabric
- Request URL – GET /ufmRest/resources/links
- Request Content Type – Application/json
- Response


```
[
  {
    "source_guid": "0002c903007b78b0",
    "source_port": "29",
    "destination_guid": "0002c903007b78b0",
    "destination_port": "28",
    "source_port_dname": "29",
    "destination_port_dname": "28",
    "width": "IB_4x",
    "severity": "Info",
    "name": "0002c903007b78b0_28:0002c903007b78b0_29",
```

```
        "capabilities" :  [
        ]
    },
]
. . .
```


- Status Codes
    - 200 – OK

Get All Links Connected to Specific System

- Description – returns information on all links connected to a system identified by the system name
- Request URL – GET /ufmRest/resources/links?system=<system-name>
- Request Content Type – Application/json
- Response


```
[
        {
                "destination_port_dname" :  "HCA-1/2",
                "severity" :  "Info",
                "source_guid" :  "248a070300f88fe0",
                "width" :  "IB_4x",
                "source_port_dname" :  "20",
                "source_port" :  "20",
                "destination_port" :  "2",
                "destination_guid" :  "b8599f03000a77d0",
                "name" :  "248a070300f88fe0_20:ec0d9a03007d7d0b_2"
        },
        {
                "destination_port_dname" :  "HCA-1/1",
                "severity" :  "Info",
```

```
            "source_guid": "248a070300f88fe0",
            "width": "IB_4x",
            "source_port_dname": "19",
            "source_port": "19",
            "destination_port": "1",
            "destination_guid": "b8599f03000a77d0",
            "name": "248a070300f88fe0_19:ec0d9a03007d7d0a_1"
        },
        {
            "destination_port_dname": "HCA-2/1",
            "severity": "Info",
            "source_guid": "0002c903007b78b0",
            "width": "IB_4x",
            "source_port_dname": "19",
            "source_port": "19",
            "destination_port": "1",
            "destination_guid": "b8599f03000a77d0",
            "name": "0002c903007b78b0_19:b8599f03000a77d0_1"
        },
        {
            "destination_port_dname": "HCA-2/2",
            "severity": "Info",
            "source_guid": "0002c903007b78b0",
            "width": "IB_4x",
            "source_port_dname": "20",
            "source_port": "20",
            "destination_port": "2",
            "destination_guid": "b8599f03000a77d0",
            "name": "0002c903007b78b0_20:b8599f03000a77d1_2"
        }
]
```


- Status Codes
    - 200 – OK

Get Link/s With Cable Information

- Description – returns information on one link or all links with their cable information
- Request URL

  GET /ufmRest/resources/links?cable_info=<'true'/'True'/'TRUE'/'t'/'T'>

  or

  GET /ufmRest/resources/links?system=<system-name>&cable_info=<'true'/'True'/'TRUE'/'t'/'T'>

- Request Content Type – Application/json
- Possible Filters – optional request parameter that can be used as filter:

Parameter	Value	Description
monitoring_counters_info	true	Return all the monitoring counters info for source and destination ports

- Response


```
[
    {
        "destination_port_dname": "HCA-1/2",
        "severity": "Info",
        "source_guid": "248a070300f88fe0",
        "width": "IB_4x",
        "source_port_dname": "20",
        "source_port": "20",
        "cable_info": {
            "part_number": "MCP1600-E002E30",
            "length": "2 m",
            "serial_number": "MT1917VS00386",
            "identifier": "QSFP+",
            "technology": "Copper cable- unequalized",
```

```
                "revision": "A2"
            },
            "destination_port": "2",
            "destination_guid": "b8599f03000a77d0",
            "name": "248a070300f88fe0_20:ec0d9a03007d7d0b_2"
        },
        {
            "destination_port_dname": "HCA-1/1",
            "severity": "Info",
            "source_guid": "248a070300f88fe0",
            "width": "IB_4x",
            "source_port_dname": "19",
            "source_port": "19",
            "cable_info": {
                "part_number": "MCP1600-E002E30",
                "length": "2 m",
                "serial_number": "MT1917VS00440",
                "identifier": "QSFP+",
                "technology": "Copper cable- unequalized",
                "revision": "A2"
            },
            "destination_port": "1",
            "destination_guid": "b8599f03000a77d0",
            "name": "248a070300f88fe0_19:ec0d9a03007d7d0a_1"
        },
        {
            "destination_port_dname": "HCA-2/1",
            "severity": "Info",
            "source_guid": "0002c903007b78b0",
            "width": "IB_4x",
            "source_port_dname": "19",
            "source_port": "19",
            "cable_info": {
                "part_number": "MCP1600-E002E30",
                "length": "2 m",
                "serial_number": "MT1917VS00395",
```

```
                "identifier": "QSFP+",
                "technology": "Copper cable- unequalized",
                "revision": "A2"
            },
            "destination_port": "1",
            "destination_guid": "b8599f03000a77d0",
            "name": "0002c903007b78b0_19:b8599f03000a77d0_1"
        },
        {
            "destination_port_dname": "HCA-2/2",
            "severity": "Info",
            "source_guid": "0002c903007b78b0",
            "width": "IB_4x",
            "source_port_dname": "20",
            "source_port": "20",
            "cable_info": {
                "part_number": "MCP1600-E002E30",
                "length": "2 m",
                "serial_number": "MT1917VS00384",
                "identifier": "QSFP+",
                "technology": "Copper cable- unequalized",
                "revision": "A2"
            },
  "destination_port": "2",
            "destination_guid": "b8599f03000a77d0",
            "name": "0002c903007b78b0_20:b8599f03000a77d1_2"
        }
]
```


- Status Codes
    - 200 – OK

Get Cable Information

- Description – returns information on one cable or multiple cables

- Request URL –

  GET /ufmRest/resources/links?cable_serial=<S/N of the cable>

  Or

  GET /ufmRest/resources/links?cable_serial=<S/N of cable#1, S/N of cable#2, S/N of cable#3>

- Request Content Type – Application/json

- Response

```
[
    {
        "source_guid": "248a0703002e6222",
        "source_port": "1",
        "destination_guid": "e41d2d0300062380",
        "destination_port": "3",
        "source_port_dname": "HCA-1\/1",
        "destination_port_dname": "3",
        "width": "IB_4x",
        "severity": "Info",
        "name": "248a0703002e6222_1:e41d2d0300062380_3"
    }
]
```

- Status Codes

  - 200 – OK

Get Switch Port Cable Information

- Description – retrieve cable information for switch ports

- Request URL – POST /ufmRest/actions

- Request Content Type – application/json

- Request Data


```
{
    "params": {
        "port_id": "0002c9030060dc20_11"
    },
    "action": "get_cables_info",
    "object_ids": [
        "0002c9030060dc20"
    ],
    "object_type": "System",
    "description": "",
    "identifier": "id"
}
```


- Response


```
{
    "troubleshooting_info": {
        "Recommendation": "No issue was observed.",
        "Status Opcode": "0",
        "Group Opcode": "N/A"
    },
    "module_info": {
        "Attenuation (5g,7g,12g) [dB]": "4,5,9",
        "Rev": "A2",
        "CDR RX": "",
        "Voltage [mV]": "N/A",
        "Vendor Part Number": "MCP1600-E001",
        "Rx Power Current [dBm]": "N/A",
        "OUI": "Mellanox",
        "Digital Diagnostic Monitoring": "No",
        "Transfer Distance [m]": "1",
```

```
        "LOS Alarm": "N/A",
        "Temperature [C]": "N/A",
        "Cable Technology": "Copper cable unequalized",
        "Tx Power Current [dBm]": "N/A",
        "Bias Current [mA]": "N/A",
        "Power Class": "1.5 W max",
        "Compliance": "N/A",
        "Vendor Serial Number": "MT1623VS01862",
        "Wavelength [nm]": "N/A",
        "Identifier": "QSFP+",
        "FW Version": "N/A",
        "CDR TX": "",
        "Cable Type": "Passive copper cable",
        "Vendor Name": "Mellanox"
    },
    "operational_info": {
        "FEC": "No FEC",
        "Auto Negotiation": "ON",
        "Loopback Mode": "No Loopback",
        "Physical state": "LinkUp",
        "Width": "0x",
        "State": "Active",
        "Speed": "IB-EDR"
    },
    "supported_info": {
        "Enabled Link Speed": "0x0000003f (EDR,FDR,FDR10,QDR,DDR,SDR)",
        "Supported Cable Speed": "0x0000003f (EDR,FDR,FDR10,QDR,DDR,SDR)"
    }
}
```


- Status Codes
    - 202 – ACCEPTED
    - 400 – BAD_REQUEST

- 404 – NOT_FOUND
- 403 – FORBIDDEN

Non-Optimal Links REST API

Get Non-Optimal Links Action

- Description – get the default action of non-optimal links between the ports
- Request URL – GET /ufmRest/app/non_optimal_ports
- Request Content Type – application/json
- Response

```
{
    "bad_port_action" : "ignore"
}
```

- Status Codes
  - 200 – OK
  - 400 – bad request

Update Non-Optimal Links Action

- Description – updates the action on the non-optimal links between the ports. Possible actions: "ignore", "reset", and "disable".
- Request URL – PUT /ufmRest/app/non_optimal_ports
- Request Content Type – application/json
- Request Data

```
{
```

```
        "bad_port_action" :  "ignore"
}
```

- Status Codes
  - 200 – OK
  - 400 – bad request

Run Action on Non-Optimal Links

- Description – run an immediate action on all the non-optimal links between the ports. Possible actions: "ignore", "reset", and "disable".
- Request URL – POST /ufmRest/app/non_optimal_ports/action_on_port
- Request Content Type – application/json
- Request Data

```
{
        "bad_port_action" :  "ignore"
}
```

- Status Codes
  - 201 – created
  - 400 – bad request

Logical Model REST API

Environments REST API

- Description – manages logical environments and allow users to group servers, networks, and more within an environment
- Request URL – GET /ufmRest/resources/environments
- Main operations
    - Get all environments
    - Get an environment by name
    - Create an environment
    - Update an environment
    - Delete an environment

Get All Environments

- Description – lists all environments in the logical model
- Request URL – GET /ufmRest/resources/environments
- Request Content Type – Application/json
- Response

```
[
    {
        "logical_servers": [],
        "severity": "Info",
        "total_servers": 0,
        "description": null,
```

```
            "state" : "created",
            "error" : "none",
            "total_alarms" : 0,
            "networks" : [ ],
            "name" : "environment-cluster-1"
        }
]
```


- Status Codes
    - 200 – OK

Get Environment by Name

- Description – get a specific environment using its name
- Request URL – GET /ufmRest/resources/environments/<name>

  <name> – name of environment. If not used, all environments will be listed.
- Request Content Type – Application/json
- Response


```
{
            "logical_servers" : [ ],
            "severity" : "Info",
            "total_servers" : 0,
            "description" : null,
            "state" : "created",
            "error" : "none",
            "total_alarms" : 0,
            "networks" : [ ],
            "name" : "environment-cluster-1"
```

```
}
```

- Status Codes
  - 200 – OK
  - 404 – NOT FOUND

Create Environment

- Description – create a new environment
- Request URL – POST /ufmRest/resources/environments
- Request Content Type – Application/json
- Request Data

```
{
    "name": "ufm-environment",
    "description": "cluster 1 environment"
}
```

- Request Data

```
{
    "name": "ufm-environment"
}
```

- Status Codes
  - 200 – OK
  - 404 – BAD_REQUEST

Update Environment

- Description
- Update an environment's details
- Request URL
- PUT /ufmRest/resources/environments/<name>
- Request Content Type
- Application/json
- Request Data

```
{
    "description" : "cluster 2 environment"
}
```

- Response

```
{
    "name" : "ufm-environment"
}
```

- Status Codes
  - 200 – OK
  - 404 – BAD_REQUEST

Delete Environment

- Description – delete an existing environment
- Request URL – DELETE /ufmRest/resources/environments/<name>
- Request Content Type – Application/json
- Response – N/A
- Status Codes
    - 204 – no content
    - 404 – BAD_REQUEST

Logical Servers REST API

- Description – manages logical servers within an environment. These interfaces allow users to retrieve information on, create, update, delete, allocate to and free resources from logical servers.
- Request URL – GET /ufmRest/resources/environments/<name>/logical_servers
- Main operations
    - Get all logical servers
    - Get a logical server by name
    - Create a logical server
    - Allocate computes manually to a logical server
    - Allocate computes automatically to a logical server
    - Free computes manually from a logical server
    - Free computes automatically from a logical server
    - Delete a logical server

Get All Logical Servers

- Description – lists all logical servers in the model
- Request URL – GET /ufmRest/resources/environments/<name>/logical_servers
- Request Content Type – Application/json
- Response


```
[
    {
        "description": null,
        "computes": [
            "0002c903000e0b72"
        ],
        "total_computes": 1,
        "severity": "Info",
        "network_interfaces": [
            "env1_server1_management"
        ],
        "total_interfaces": 1,
        "environment": "env1",
        "state": "allocated",
        "error": "none",
        "total_active_computes": 1,
        "os": "Linux",
        "name": "server1"
    }
]
```


- Status Codes
    - 200 – OK

Get Logical Server by Name

- Description – get a specific logical server by its name
- Request URL – GET /ufmRest/resources/environments/<name>/logical_servers/<name>

  <name> – name of a logical server. If not used, all logical servers will be listed.
- Request Content Type – Application/json
- Response


```
{
        "description": null,
        "computes": [
            "0002c903000e0b72"
        ],
        "total_computes": 1,
        "severity": "Info",
        "network_interfaces": [
            "env1_server1_management"
        ],
        "total_interfaces": 1,
        "environment": "env1",
        "state": "allocated",
        "error": "none",
        "total_active_computes": 1,
        "os": "Linux",
        "name": "server1"
}
```


- Status Codes
  - 200 – OK
  - 404 – NOT FOUND

Create Logical Server

- Description – create a logical server within a given environment
- Request URL – POST /ufmRest/resources/environments/<name>/logical_servers
- Request Content Type – Application/json
- Request Data

```
{
    "name": "logical-server-1",
    "description": "logical server for cluster 1"
}
```

- Response

```
{
    "name": "logical-server-1"
    "environment": "ufm-environment"
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD_REQUEST

Allocate Computes Manually to Logical Server

- Description – allocates specific computes to a logical server
- Request URL – PUT /ufmRest/resources/environments/<name>/logical_servers/<name>/allocate-

computes

- Request Content Type – Application/json
- Request Data – specifies the list of the computes using their names. Example:

```
{
    "computes": ["0002c903000e0b72", "...", ...]
}
```

- Response – lists all the computes that are allocated to the logical server. Example:

```
{
    "computes": [
        "0002c903000e0b72"
    ],
    "name": "server1"
}
```

- Status Codes
    - 200 – OK
    - 400 – BAD_REQUEST

Allocate Computes Automatically to Logical Server

- Description – allocates computes to a logical server according to the specified number of computes
- Request URL – PUT /ufmRest/resources/environments/<name>/logical_servers/<name>/allocate-computes
- Request Content Type – Application/json

- Request Data – specifies the number of the computes required for allocation. Example:

```
{
    "total_computes": 2
}
```

- Response – lists all the computes that are allocated to the logical server. Example:

```
{
    "computes": [
        "0002c903000e0b72",
        "0002c903000e0b73"
    ],
    "name": "server1"
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD_REQUEST

Assign Computes Manually to Logical Server

- Description – assign computes for logical server. As opposed to the allocate computes APIs, this API assigns only the computes sent in the request to the logical server. If an empty list is sent, all assigned computes to this logical server are removed.
- Request URL – PUT /ufmRest/resources/environments/<env_name>/logical_servers/<server_name>assig computes
- Request Content Type – Application/json

- Request Data

```
{
    "computes" :  [
        "f452140300383a00"
    ]
}
```

- Status Codes
    - 200 – OK
    - 400 – BAD_REQUEST

Assign Computes Automatically to Logical Server

- Description – assign computes automatically for logical server depending on total_computes number
- Request URL – PUT /ufmRest/resources/environments/<env_name>/logical_servers/<server_name>auto_computes
- Request Content Type – Application/json
- Request Data

```
{
    "total_computes" :  1
}
```

- Status Codes
    - 200 – OK

- 400 – BAD_REQUEST

Free Computes Manually From Logical Server

- Description – free specified computes from a logical server
- Request URL – PUT /ufmRest/resources/environments/<name>/logical_servers/<name>/free-computes
- Request Content Type – Application/json
- Request Data – specifies list of computes to free using the compute names. Example:

```
{
    "computes": ["0002c903000e0b72", "...", ...]
}
```

- Response – lists all the computes that were deallocated from the logical server. Example:

```
{
    "computes": [
    ],
    "name": "server1"
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD_REQUEST

Free Computes Automatically From Logical Server

- Description – free the requested amount of computes that are allocated to a logical server
- Request URL – PUT /ufmRest/resources/environments/<name>/logical_servers/<name>/free-computes
- Request Content Type – Application/json
- Request Data – lists the computes that are allocated to the logical server. Example:

```
{
    "computes": [
        "0002c903000e0b72",
        "0002c903000e0b73"
    ],
    "name": "server1"
}
```

- Response – lists all the computes that are allocated to the logical server. Example:

```
{
    "total_computes": <number>
}
```

- Status Codes
    - 200 – OK
    - 400 – BAD_REQUEST

Update Network Interfaces Assigned to Logical Server

- Description – update the network interfaces assigned to logical server
- Request URL – PUT /ufmRest/resources/environments/<env_name>/logical_servers/<logical_server_name
- Request Data

```
[
  {
    "network": "10",
    "description": "new_discreption"
  },
  {
    "network": "13",
    "description": "N/A"
  }
]
```

- Status Codes
  - 200 – OK
  - 400 – BAD_REQUEST

Update Logical Server Description

- Description – update logical server description
- Request URL – PUT /ufmRest/resources/environments/<env_name>/logical_servers/<ls_name>
- Request Data

```
{
  "description": "new_disc"
```

```
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD_REQUEST
  - 404 – NOT_FOUND

Delete Logical Server

- Description – free computes from a logical server
- Request URL – DELETE /ufmRest/resources/environments/<name>/logical_servers/<name>
- Request Content Type – Application/json
- Response – N/A
- Status Codes
  - 204 – NO CONTENT
  - 404 – NOT FOUND

Computes REST API

- Description – these interfaces allow users to retrieve all or a specific compute allocated to a logical server
- Request URL – /ufmRest/resources/environments/<name>/logical_servers/<name>/computes
- Main operations
  - Get all computes

- Get a compute by name

Get All Computes

- Description – lists all computes of a logical server
- Request URL – GET /ufmRest/resources/environments/<name>/logical_servers/<name>/computes
- Request Content Type – Application/json
- Response

```
[
    {
        "severity": "Info",
        "name": "0002c903000e0b72",
        "environment": "env1",
        "state": "allocated",
        "total_vifs": 0,
        "logical_server": "server1",
        "description": "Compute Element"
    },
    {
        "severity": "Info",
        "name": "0002c90300a06a70",
        "environment": "env1",
        "state": "allocated",
        "total_vifs": 0,
        "logical_server": "server1",
        "description": "Compute Element"
    }
]
```

- Status Codes

- 200 – OK

Get Compute by Name

- Description – get a specific compute using its name
- Request URL – GET /ufmRest/resources/environments/<name>/logical_servers/<name>/computes/<nam

  <name> – name of a compute. If not used, all computes will be listed.
- Request Content Type – Application/json
- Response

```
{
        "severity": "Info",
        "name": "0002c903000e0b72",
        "environment": "env1",
        "state": "allocated",
        "total_vifs": 0,
        "logical_server": "server1",
        "description": "Compute Element"
}
```

- Status Codes
  - 200 – OK

Global Networks REST API

- Description – manages global networks that can be used by all environments
- Request URL – /ufmRest/resources/networks

- Main operations
    - Get all global networks
    - Get a global network
    - Create a global network
    - Update a global network
    - Delete a global network

Get All Global Networks

- Description – lists all global networks
- Request URL – GET /ufmRest/resources/networks
- Request Content Type – Application/json
- Response


```
[
    {
        "load_average": 0,
        "description": null,
        "pkey": "0x4",
        "ip_services_configuration": {
            "primary_dns": "0.0.0.0",
            "secondary_dns": "0.0.0.0",
            "method": "external",
            "domain_name": ""
        },
        "severity": "Info",
        "interfaces": [],
        "state": "created",
        "qos_parameters": {
            "service_level": 0,
            "rate_limit": 0
```

```
        },
        "error": "none",
        "ip_configuration": {
            "ip": "0.0.0.0",
            "mask": "255.255.255.0",
            "gateway": "0.0.0.0"
        },
        "mtu_limit": 0,
        "total_alarms": 0,
        "default_membership": "full",
        "name": "global_net2"
    },
    {
        "load_average": 0,
        "description": "Primary IB management network",
        "pkey": "0x7fff",
        "ip_services_configuration": {
            "primary_dns": "0.0.0.0",
            "secondary_dns": "0.0.0.0",
            "method": "external",
            "domain_name": ""
        },
        "severity": "Info",
        "interfaces": [],
        "state": "created",
        "qos_parameters": {
            "service_level": null,
            "rate_limit": null
        },
        "error": "none",
        "ip_configuration": {
            "ip": "192.168.60.0",
            "mask": "255.255.255.0",
            "gateway": "0.0.0.0"
        },
        "mtu_limit": 2048,
```

```
            "total_alarms": 0,
            "default_membership": "full",
            "name": "management"
        }
]
```


- Status Codes
    - 200 – OK

Get Global Network by Name

- Description – get a specific global network using its name
- Request URL – GET /ufmRest/resources/networks/<name>
- Request Content Type – Application/json
- Response


```
{
            "load_average": 0,
            "description": null,
            "pkey": "0x4",
            "ip_services_configuration": {
                "primary_dns": "0.0.0.0",
                "secondary_dns": "0.0.0.0",
                "method": "external",
                "domain_name": ""
            },
            "severity": "Info",
            "interfaces": [],
            "state": "created",
            "qos_parameters": {
                "service_level": 0,
```

```
                "rate_limit" : 0
            } ,
            "error" : "none" ,
            "ip_configuration" : {
                "ip" : "0.0.0.0" ,
                "mask" : "255.255.255.0" ,
                "gateway" : "0.0.0.0"
            } ,
            "mtu_limit" : 0 ,
            "total_alarms" : 0 ,
            "default_membership" : "full" ,
            "name" : "global_net2"
        }
```


- Status Codes
    - 200 – OK
    - 204 – NOT FOUND

Create Global Network

- Description – create a new global network
- Request URL – POST /ufmRest/resources/networks
- Request Data Parameters

Name	Values	Default	Description	Optional/ Mandatory
name	String		Name of network	Mandatory
description	String	None	Description of the network	Optional

Name	Values	Default	Description	Optional/ Mandatory
default_membership	"full", "partial"	"full"	◦ full – members with full membership can communicate with all hosts (members) within the network/partition ◦ partial – members with limited membership cannot communicate with other members with limited membership but communication is allowed between every other combination of membership types	Optional
pkey	0x0-0x7fff	0x0	PKey of the network. If the PKey is not specified during the network definition process (in the Network Configuration window or by using the Logical Server wizard), UFM will select the best available PKey for the network.	Optional (hexadecimal)
load_average	0, 500, ..4000		The average traffic load to the typical destination per Logical Interface in MB per second	Optional
mtu_limit	0-4100	2048	Limit of maximum transmission unit	Optional
rate_limit	0, 100, .., 5700	0	Rate Limit in Mbits per second. This value is converted to a standard InfiniBand enumerator, and provisioned to the SM via the partitions.conf and qos-policy.conf files.	Optional
service_level	0,1, ..,7	0	Priority queue in which the traffic will always be served. ◦ 0 – Strict High ◦ 1 – High ◦ 2 – Meduim, ◦ ... ◦ 7 – Strict low	Optional
method	external; static	static	Method of assigning IP	Optional

Name	Values	Default	Description	Optional/ Mandatory
primary_dns	IPv4	0.0.0.0	Primary DNS	Optional
secondary_dns	IPv4	0.0.0.0	Secondary DNS	Optional
domain_name	String	Empty	Domain name	Optional

- Request Data Example

```
{
        "name": " UFM-network",
        "description": "...",
        "default_membership": "partial",
        "pkey": "0x0",
        "load_average": 500
        "mtu_limit": 2048
        "ip_services_configuration": {
            "method": "static",
            "primary_dns": "255.255.0.0",
            "secondary_dns": "255.255.0.0",
            "domain_name": "12345678901234567"
        }
        "qos_parameters": {
            "service_level": 6,
            "rate_limit": 5700
        }
}
```

- Request Content Type – Application/json
- Response
- Status Codes
    - 200 – OK
    - 400 – BAD_REQUEST

Update Global Network

- Description – update an existing global network
- Request URL – PUT /ufmRest/resources/networks
- Request Data Parameters

Name	Values	Default	Description	Optional/ Mandatory
description	String	None	Description of the network	Optional
load_average	0, 500, ..4000		The average traffic load to the typical destination per Logical Interface in MB per second	Optional
mtu_limit	0-4100	2048	Limit of maximum transmission unit	Optional
rate_limit	0, 100, .., 5700	0	Rate Limit in Mbits per second. This value is converted to a standard InfiniBand enumerator, and provisioned to the SM via the partitions.conf and qos-policy.conf files.	Optional
service_level	0,1, ..,7	0	Priority queue in which the traffic will always be served. ◦ 0 – Strict High ◦ 1 – High ◦ 2 – Meduim,	Optional

Name	Values	Default	Description	Optional/ Mandatory
			○ ... ○ 7 – Strict low	

- Request Data Example

```
{
        "description": "...",
        "load_average": 500
        "mtu_limit": 2048
        "qos_parameters": {
            "service_level": 6,
            "rate_limit": 5700
        }
}
```

- Request Content Type – Application/json
- Response

```
{
    "name": "UFM-network"
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD_REQUEST

Delete Global Network

- Description – delete an existing global network
- Request URL – DELETE /ufmRest/resources/networks/<name>
- Request Content Type – Application/json
- Response – N/A
- Status Codes
    - 204 – NO CONTENT
    - 400 – BAD_REQUEST

Local Networks REST API

- Description – manages networks of local logical environments
- Request URL – /ufmRest/resources/environments/<name>/networks
- Main operations
    - Get all local networks
    - Get a local network
    - Create a local network
    - Update a local network
    - Delete a local network

Get All Local Networks

- Description – lists all local networks
- Request URL – GET /ufmRest/resources/environments/<name>/networks
- Request Content Type – Application/json

- Response


```
[
    {
        "load_average": 0,
        "description": null,
        "pkey": "0x4",
        "ip_services_configuration": {
            "primary_dns": "0.0.0.0",
            "secondary_dns": "0.0.0.0",
            "method": "external",
            "domain_name": ""
        },
        "severity": "Info",
        "interfaces": [],
        "state": "created",
        "qos_parameters": {
            "service_level": 0,
            "rate_limit": 0
        },
        "error": "none",
        "ip_configuration": {
            "ip": "0.0.0.0",
            "mask": "255.255.255.0",
            "gateway": "0.0.0.0"
        },
        "mtu_limit": 0,
        "total_alarms": 0,
        "default_membership": "full",
        "name": "global_net2"
    }
]
```


- Status Codes

- 200 – OK

Get Local Network by Name

- Description – get a specific local network using its name
- Request URL – GET /ufmRest/resources/environments/<name>/networks/<name>
- Request Content Type – Application/json
- Response


```
{
        "load_average": 0,
        "description": null,
        "pkey": "0x4",
        "severity": "Info",
        "interfaces": [],
        "state": "created",
        "qos_parameters": {
            "service_level": 0,
            "rate_limit": 0
        },
        "error": "none",
        "ip_configuration": {
            "ip": "0.0.0.0",
            "mask": "255.255.255.0",
            "gateway": "0.0.0.0"
        },
        "mtu_limit": 0,
        "total_alarms": 0,
        "default_membership": "full",
        "name": "global_net2"
    }
```

- Status Codes
    - 200 – OK
    - 204 – NOT FOUND

Create Local Network

- Description – create a new local network
- Request URL – POST /ufmRest/resources/environments/<name>/networks
- Request Data Parameters

Name	Values	Default	Description	Optional/ Mandatory
name	String		Name of network	Mandatory
description	String	None	Description of the network	Optional
default_membership	"full", "partial"	"full"	• full – members with full membership can communicate with all hosts (members) within the network/partition • partial – members with limited membership cannot communicate with other members with limited membership but communication is allowed between every other combination of membership types	Optional
pkey	0x0-0x7fff	0x0	PKey of the network. If the PKey is not specified during the network definition process (in the Network Configuration window or by using the Logical Server wizard), UFM will select the best available PKey for the network.	Optional (hexadecimal)
load_average	0, 500, ..4000		The average traffic load to the typical destination per Logical Interface in MB per second	Optional

Name	Values	Default	Description	Optional/ Mandatory
mtu_limit	0-4100	2048	Limit of maximum transmission unit	Optional
rate_limit	0, 100, .., 5700	0	Rate Limit in Mbits per second. This value is converted to a standard InfiniBand enumerator, and provisioned to the SM via the partitions.conf and qos-policy.conf files.	Optional
service_level	0,1, ..,7	0	Priority queue in which the traffic will always be served. ◦ 0 – Strict High ◦ 1 – High ◦ 2 – Meduim, ◦ ... ◦ 7 – Strict low	Optional
method	external; static	static	Method of assigning IP	Optional
primary_dns	IPv4	0.0.0.0	Primary DNS	Optional
secondary_dns	IPv4	0.0.0.0	Secondary DNS	Optional
domain_name	String	Empty	Domain name	Optional

- Request Data Example

```
{
        "name": "UFM-network",
        "description": "...",
```

```
        "default_membership": "partial",
        "pkey": "0x0",
        "load_average": 500
        "mtu_limit": 2048
        "ip_services_configuration": {
            "method": "static",
            "primary_dns": "255.255.0.0",
            "secondary_dns": "255.255.0.0",
            "domain_name": "12345678901234567"
        }
        "qos_parameters": {
            "service_level": 6,
            "rate_limit": 5700
        }
}
```

- Request Content Type – Application/json
- Response

```
{
    "name": "UFM-network"
}
```

- Status Codes
    - 200 – OK
    - 400 – BAD_REQUEST

Update Local Network

- Description – update an existing local network

- Request URL – PUT /ufmRest/resources/environments/<name>/networks
- Request Data Parameters

Name	Values	Default	Description	Optional/ Mandatory
description	String	None	Description of the network	Optional
load_average	0, 500, ..4000		The average traffic load to the typical destination per Logical Interface in MB per second	Optional
mtu_limit	0-4100	2048	Limit of maximum transmission unit	Optional
rate_limit	0, 100, .., 5700	0	Rate Limit in Mbits per second. This value is converted to a standard InfiniBand enumerator, and provisioned to the SM via the partitions.conf and qos-policy.conf files.	Optional
service_level	0,1, ..,7	0	Priority queue in which the traffic will always be served. ◦ 0 – Strict High ◦ 1 – High ◦ 2 – Meduim, ◦ ... ◦ 7 – Strict low	Optional

- Request Data Example

```
{
        "description" : "...",
        "load_average" : 500
        "mtu_limit" : 2048
        "qos_parameters" : {
            "service_level" : 6,
            "rate_limit" : 5700
        }
```

```
}
```

- Request Content Type – Application/json
- Response

```
{
    "name" :  "UFM-network"
}
```

- Status Codes
    - 200 – OK
    - 400 – BAD_REQUEST

Delete Local Network

- Description – delete an existing local network
- Request URL – DELETE /ufmRest/resources/environments/<name>/networks/<name>
- Request Content Type – Application/json
- Response – N/A
- Status Codes
    - 200 – OK
    - 400 – BAD_REQUEST

Network Interfaces REST API

- Description – manages the interfaces (association) between the networks and the logical servers
- Request URL – /ufmRest/resources/environments/<name>/logical_servers/<name>/network_interfac
- Main operations
    - Get all network interfaces
    - Get a network interface
    - Create a network interface
    - Update a network interface
    - Delete a network interface

Get All Network Interfaces

- Description – lists all network interfaces for a specified logical server
- Request URL – GET /ufmRest/resources/environments/<name>/logical_servers/<name>/network_interfac
- Request Content Type – Application/json
- Response


```
[
    {
        "load_average": null,
        "severity": "Info",
        "ip": "192.168.60.1",
        "description": "Management NetIfc",
        "membership": "parent",
        "name": "environment-1_server-1_management",
        "state": "created",
        "qos_parameters": {
            "service_level": 0,
```

```
                "rate_limit": 0
            },
            "id": 1,
            "logical_server": "server1",
            "port": 0,
            "network": "management"
        }
]
```


- Status Codes
    - 200 – OK

Get Network Interface by Name

- Description – get a specific network interface using its name
- Request URL – GET /ufmRest/resources/environments/<name>/logical_servers/<name>/network_interfac
- Request Content Type – Application/json
- Response


```
{
            "load_average": null,
            "severity": "Info",
            "ip": "192.168.60.1",
            "description": "Management NetIfc",
            "membership": "parent",
            "name": "env1_server1_management",
            "state": "created",
            "qos_parameters": {
                "service_level": 0,
                "rate_limit": 0
```

```
            },
            "id": 1,
            "logical_server": "server1",
            "port": 0,
            "network": "management"
}
```

- Status Codes
  - 200 – OK
  - 204 – NOT FOUND

Create Network Interface

- Description – create an interface between a logical server and a local/global network
- Request URL – POST /ufmRest/resources/environments/<name>/logical_servers/<name>/network_interfac
- Request Data Parameters

Name	Values	Default	Description	Optional/ Mandatory
network	String		Name of network	Mandatory
description	String	None	Description of the network interface	Optional

- Request Data Example

```
{
        "network": "UFM-network",
        "description": "Interface to UFM main network"
```

```
}
```

- Request Content Type – Application/json
- Response

```
{
    "name" :  "environment-1-server-1-UFM-network"
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD_REQUEST

Update Network Interface

- Description – update an existing network interface
- Request URL – PUT /ufmRest/resources/environments/<name>/logical_servers/<name>/network_interfac
- Request Data Parameters

Name	Values	Default	Description	Optional/ Mandatory
description	String	None	Description of the network	Optional
default_membership	"full", "partial"	"full"	◦ full – members with full membership can communicate with all hosts (members) within the network/partition ◦ partial – members with limited membership cannot communicate with other members with limited	Optional

Name	Values	Default	Description	Optional/ Mandatory
			membership but communication is allowed between every other combination of membership types	
load_average	0, 500, .. 4000		The average traffic load to the typical destination per Logical Interface in MB per second	Optional
mtu_limit	0-4100	2048	Limit of maximum transmission unit	Optional
rate_limit	0, 100, .. 5700	0	Rate Limit in Mbits per second. This value is converted to a standard InfiniBand enumerator, and provisioned to the SM via the partitions.conf and qos-policy.conf files.	Optional
service_level	0,1, .. 7	0	Priority queue in which the traffic will always be served. ◦ 0 – Strict High ◦ 1 – High ◦ 2 – Meduim, ◦ ... ◦ 7 – Strict low	Optional

- Request Data Example

```
{
        "description": "Interface to UFM network",
        "load_average": 500
        "qos_parameters": {
            "service_level": 6,
            "rate_limit": 5700
        }
}
```

- Request Content Type – Application/json
- Response

```
{
    "name" :  "environment-1-server-1-UFM-network"
}
```

- Status Codes
    - 200 – OK
    - 400 – BAD_REQUEST

Delete Network Interface

- Description – delete an existing network interface
- Request URL – /ufmRest/resources/environments/<name>/logical_servers/<name>/network_interfac
- Request Content Type – Application/json
- Response – N/A
- Status Codes
    - 204 – NO CONTENT
    - 400 – BAD_REQUEST

Alarms REST API

- Description – returns information on all alarms in the fabric, or on one alarm using its ID
- Request URL – GET /ufmRest/app/alarms
- Main operations
  - Get all alarms
  - Get an alarm using its ID
  - Get alarms of a specific device
  - Remove alarms of a specific device

Get All Alarms

- Description – Returns information on all alarms in the fabric
- Request URL – GET /ufmRest/app/alarms
- Request Content Type – Application/json
- Response


```
[
    {
        "id" : 2 ,
        "type" : "Switch" ,
        "name" : "System Module Error" ,
        "description" : "Module status FAULT" ,
        "event_type" : 394 ,
        "duration" : "0 s" ,
        "reason" : "Module PS 1 on sw-ufm-qm01(10.209.224.32) status is fatal" ,
```

```
            "severity" : "Critical" ,
            "timestamp" : "2024-05-28 08:23:10" ,
            "counter" : "N/A" ,
            "event_count" : 459 ,
            "object_name" : "0c42a1030079a66c" ,
            "object_path" : "Switch: sw-ufm-qm01"
        } ,
        {
            "id" : 3 ,
            "type" : "IBPort" ,
            "name" : "Link HW Error" ,
            "description" : "Link Downed" ,
            "event_type" : 112 ,
            "duration" : "0 s" ,
            "reason" : "Link-Downed counter delta threshold exceeded. Threshold is 0, calculated delta
is 2. Peer info: default / Switch: sw-ufm-qm01 / 35." ,
            "severity" : "Warning" ,
            "timestamp" : "2024-05-27 08:18:51" ,
            "counter" : "Infiniband_LinkDowned" ,
            "event_count" : 1 ,
            "object_name" : "b8599f03000a7768_1" ,
            "object_path" : "Computer: r-ufm77 / mlx5_0"
        }
]
ABOUT
```


- Status Codes
    - 200 – OK

Get Alarm Using ID

- Description – Returns information on a specific alarm by its ID
- Request URL – GET /ufmRest/app/alarms/<id>
- Request Content Type – Application/json

- Response

```
{
   "id":9,
   "type":"Grid",
   "name":"System Information is missing",
   "description":"Switch System Information is missing",
   "event_type":406,
   "duration":"0 s",
   "reason":"Failed to get sysinfo for switch
0c42a1030079a66c due to bad credentials",
   "severity":"Warning",
   "timestamp":"2024-05-27 08:21:45",
   "counter":"N/A",
   "event_count":1,
   "object_name":"Grid",
   "object_path":"Grid"
}
```

- Note – if the <id> parameter is not provided, all alarms will be listed
- Status Codes
  - 200 – OK
  - 404 – NOT FOUND—alarm was not found (by ID)

Get All Alarms of a Specific Device

- Description – Returns information on all alarms of a specified device
- Request URL – GET ufmRest/app/alarms?device_id=<device_ID>
- Request Content Type – Application/json
- Response

```
[
   {
      "id":4,
      "type":"IBPort",
      "name":"Link HW Error",
      "description":"Link Downed",
      "event_type":112,
      "duration":"0 s",
      "reason":"Link-Downed counter delta threshold exceeded.
Threshold is 0, calculated delta is 3. Peer info: default \/
Switch: ufm-ndr-04 \/ 62.",
      "severity":"Warning",
      "timestamp":"2024-05-27 08:18:51",
      "counter":"Infiniband_LinkDowned",
      "event_count":1,
      "object_name":"0c42a1030079a66c_33",
      "object_path":"Switch: sw-ufm-qm01 \/ 33"
   },
   {
      "id":5,
      "type":"IBPort",
      "name":"Link HW Error",
      "description":"Link Downed",
      "event_type":112,
      "duration":"0 s",
      "reason":"Link-Downed counter delta threshold exceeded.
Threshold is 0, calculated delta is 3. Peer info: default \/
Switch: ufm-ndr-04 \/ 61.",
      "severity":"Warning",
      "timestamp":"2024-05-27 08:18:51",
      "counter":"Infiniband_LinkDowned",
      "event_count":1,
      "object_name":"0c42a1030079a66c_34",
      "object_path":"Switch: sw-ufm-qm01 \/ 34"
   }
```

```
]
```

- Status Codes
  - 200 – OK
  - 404 – NOT FOUND—alarm was not found (by ID)

Remove All Alarms of a Specific Device

- Description – Removes all alarms of a specified device
- Request URL – DELETE ufmRest/app/alarms?device_id=<device_ID>
- Request Content Type – Application/json
- Status Codes
  - 200 – OK
  - 404 – NOT FOUND—alarm was not found (by ID)

Events REST API

> **Note**
>
> For the full list of UFM supported events, refer to “Supported Traps and Events” section in UFM User Manual document.

- Description – returns information on all events running in the fabric, or on a specific event using its ID
- Request URL – GET /ufmRest/app/events
- Main operations
  - Get all events
  - Get an event using its ID
  - Trigger external event
  - Trigger external events

Get All Events

- Description – Returns information on all events running in the fabric
- Request URL – GET /ufmRest/app/events
- Request Content Type – Application/json
- Response

```
[
    {
```

```
        "id":97213,
        "name":"MCast Group Deleted",
        "type":"Site",
        "event_type":"67",
        "severity":"Info",
        "timestamp":"2024-05-28 08:03:05",
        "counter":"N/A",
        "category":"Fabric Notification",
        "object_name":"default",
        "object_path":"default(2)",
        "write_to_syslog":false,
        "description":"Mcast group is deleted:
ff12601bffff0000, 1fffc6ec2"
    },
    {
        "id":97214,
        "name":"New MCast Group Created",
        "type":"Site",
        "event_type":"66",
        "severity":"Info",
        "timestamp":"2024-05-28 08:03:07",
        "counter":"N/A",
        "category":"Fabric Notification",
        "object_name":"default",
        "object_path":"default(2)",
        "write_to_syslog":false,
        "description":"New MCast group is created:
ff12601bffff0000, 1fffc6ec2"
    }
]
```


- Possible Filters
    - object_name – filters by object name
    - type – filters by type

    - category – filters by category
    - severity – filters by severity
    - group – filters events by the group that has caused the event
- Status Codes
    - 200 – OK

Get Event Using ID

- Description – returns information on a specific event by its ID
- Request URL – GET /ufmRest/app/events/<id>
- Request Content Type – Application/json
- Response


```
{
    "id" : 97227 ,
    "name" : "New MCast Group Created" ,
    "type" : "Site" ,
    "event_type" : "66" ,
    "severity" : "Info" ,
    "timestamp" : "2024-05-28 08:09:05" ,
    "counter" : "N/A" ,
    "category" : "Fabric Notification" ,
    "object_name" : "default" ,
    "object_path" : "default(2)" ,
    "write_to_syslog" : false ,
    "description" : "New MCast group is created: ff12601bffff0000, 1ffd9acbf"
}
```


- Note – if the <id> parameter is not provided, all events will be listed
- Status Codes

- 200 – OK
- 404 – NOT FOUND—event was not found (by ID)

Trigger External Event

- Description – Trigger external event in UFM
- Request URL – POST /ufmRest/app/events/external_event
- Request Content Type – Application/json
- Response - Success
- Request Body

```
{
   "event_id":554,
   "external_event_name":"External event new name",
   "external_event_type":"External event type",
   "external_event_source":"External event source",
   "description":"Awsome external event!"
}
```

- Status Codes
  - 200 – OK
  - 404 – NOT FOUND—event was not found (by ID)

Trigger External Events

- Description – Trigger external events in UFM
- Request URL – POST /ufmRest/app/events/external_events
- Request Content Type – Application/json
- Response - Success

- Request Body

```
[
   {
      "event_id":554,
      "external_event_name":"External event new name",
      "external_event_type":"External event type",
      "external_event_source":"External event source",
      "description":"Awsome external event!"
   }
]
```

- Status Codes
  - 200 – OK
  - 404 – NOT FOUND—event was not found (by ID)

System Log REST API

This API allows users to access and update the system log configurations in UFM.

Get Syslog Configurations

- URL – GET /ufmRest/app/syslog
- Request Data – N/A
- Response Example

```
{
   "active":true,
   "destination":"/var/log/",
   "level":"WARNING",
   "ufm_log":true,
   "events_log":false,
   "rest_api_log": false,
   "authentication_service_log": false
 }
```

- Response codes –
  - 200 – OK

Update Syslog Configurations

- URL – PUT /ufmRest/app/syslog
- Request Data

```
{
```

```
    "active": false,
    "destination": "local",
    "level":"ERROR",
    "ufm_log":true,
    "events_log":true,
    "rest_api_log": false,
    "authentication_service_log": false
}
```

- **Note:** authentication_service_log is relevant only when the authentication service is enabled.
- Response Example – N/A
- Response codes –
    - 200 – OK
    - 400 – BAD REQUEST

Fabric Validation Tests REST API

- Description – this interface allows users to run fabric validation tests and receive the summary as a job output. Summary of the job contains all errors and warnings that were found during the test execution.
- Request URL – /ufmRest/fabricValidation/tests
- Main Operations
  - Get all tests
  - Run test

Get All Tests

- Description – retrieves all the existing fabric validation tests in UFM
- Request URL – GET /ufmRest/fabricValidation/tests
- Request Data – N/A
- Response

```
[
   "CheckLids",
   "CheckLinks",
   "CheckSubnetManager",
   "CheckPortCounters",
   "CheckDuplicateNodes",
   "CheckDuplicateGuids",
   "CheckRouting",
   "CheckLinkSpeed",
```

```
    "CheckLinkWidth",
    "CheckPartitionKey",
    "CheckTemperature",
    "CheckCables",
    "CheckEffectiveBER",
    "CheckSymbolBER",
    "RailOptimizedTopologyValidation",
    "DragonflyTopologyValidation",
    "SHARP FabricValidation",
    "TreeTopologyValidation",
    "SocketDirectModeReporting"
]
```

- Status Codes
  - 200 – OK

Run Test

- Description – allows user to run a specific fabric validation test
- Request URL – POST /ufmRest/fabricValidation/tests/test_name

  test_name is one of the tests from the list that is returned using the Get all Tests request
- Request Data – N/A
- Response – HTTP Response Location Header will contain URI with Job ID created for running the specified test
- Status Codes
  - 202 – accepted
  - 409 – CONFLICT—Fabric validation test is currently running, please try running the test later
- Job Output

```
{
  "Status": "Completed With Errors",
  "Foreground": true,
  "Description": "Fabric validation CheckSubnetManager test",
  "RelatedObjects": [
    "Site"
  ],
  "Created": "2017-06-21 09:43:14",
  "LastUpdated": "2017-06-21 09:43:14",
  "Summary": {
    "TestStatus": "Completed with Errors",
    "DetailedStatus": {
      "Warning": [
      ],
      "Error": [
        {
          "PortGUID": "0x0002c903001c56c1",
          "Summary": "Running duplicated master subnet
manager",
          "NodeGUID": "0x0002c903001c56c0",
          "PortNumber": "1",
          "Scope": "Site",
          "SystemGUID": "0x0002c903001c56c0"
        },
        {
          "PortGUID": "0x0002c90300a7cbf1",
          "Summary": "Running duplicated master subnet
manager",
          "NodeGUID": "0x0002c90300a7cbf1",
          "PortNumber": "0",
          "Scope": "Site",
          "SystemGUID": "0x0002c90300a7cbf0"
        }
      ]
    }
```

```
    },
    "CreatedBy": "admin",
    "Progress": 100,
    "Operation": "Fabric validation test",
    "ID": "20.1"
  }
```

- DetailedStatus – summary of the test results. Consists of two lists:
  - Errors – list of all errors that were found during test execution
  - Warnings – list of all warnings that were found during test execution
- TestStatus – status of the test completion. Depends on the severity of the results:
  - Completed with Errors – errors are more severe than warnings. Therefore, even when both warnings and errors are found during test execution, the TestStatus will read “Completed with Errors”.
  - Completed with Warnings – warnings are less severe than warnings. Therefore, TestStatus will read “Completed with Warnings” when only warnings are found during test execution.

Update Credentials REST API

Get Device Credentials

- Description – allows users to get devices credentials in UFM
- Request – GET /ufmRest/resources/systems/<dev_name>/credentials?credential_types=<type>

  The type parameter may be any of the following:

  - SSH_Server
  - SSH_Switch
  - MLNX-OS
  - IPMI
- Response Data

```
[
  {
    "type": "IPMI",
    "user": "admin",
    "port": 623,
    "timeout": "N\/A",
    "name": "IPMI",
    "credentials": "*******"
  }
]
```

- Request Content Type – application/json
- Note:
  - Credentials will always return asterisks (***) instead of actual text
- Status Codes

  - 200 – credentials were updated successfully

    - 400 – bad request (bad or missing parameters)
    - 404 – system not found

Get Site Credentials

- Description – allows users to get siet credentials in UFM
- Request – GET /ufmRest/resources/sites/<site_name>/credentials?credential_types=<type>

  The type parameter may be any of the following:

    - SSH_Server
    - SSH_Switch
    - MLNX-OS
    - IPMI
- Response Data

```
[
  {
    "type": "IPMI",
    "user": "admin",
    "port": 623,
    "timeout": "N\/A",
    "name": "IPMI",
    "credentials": "*******"
  }
]
```

- Request Content Type – application/json
- Note:
    - Credentials will always return asterisks (***) instead of actual text
- Status Codes

    - 200 – credentials were updated successfully
    - 400 – bad request (bad or missing parameters)

Update Devices Credentials

- Description – allows users to update devices credentials in UFM
- Request – PUT /ufmRest/resources/systems/<name1>,<name2>,.../credentials

> **Note**
>
> <name1> and <name2> are the system's <name> attribute that should be updated.

- Request Data

```
}
        "type":
"SSH_Server"/"SSH_Switch"/"IPMI"/"SNMP"/"TELNET"/"MLNX_OS",
        "user": "<username>",
        "password": "<password>",
        "port": <port>*,
        "timeout": <timeout>*
    "use_manual_ip": true/false,
        "ip": <ip>
}
```

> **Note**
>
> The value of this attribute can only be an integer and not a string.

- Request Content Type – application/json
- Notes

- The “type” attribute is mandatory. The rest of the attributes are optional
- If the “user” and “password” attributes were not updated before, the first update should contain both attributes

  Response

- Status Codes
  - 200 – credentials were updated successfully
  - 400 – bad request (bad or missing parameters)
  - 404 – system not found

Update Site Credentials

- Description – allows users to update site credentials in UFM
- Request – PUT /ufmRest/resources/sites/<site_name>/credentials
- Request Data

```
{
    "type": "SSH_Server"/"SSH_Switch"/"IPMI"/"MLNX_OS",
    "user": "<username>",
    "password": "<password>",
    "port": <port>,
    "keep_old_pwd": true,
    "timeout": <timeout>
}
```

- Request Content Type – application/json
- Notes
  - The default site name is “default”
  - The “type” attribute is mandatory. The rest of the attributes are optional.

    - If the “user” and “password” attributes were not updated before, the first update should contain both attributes.
    - The attribute "keep_old_pwd" can be configured as "true" if there's a requirement to maintain the previous password operational during the transition period when the switch password is changed for large-scale fabrics. This setting is only relevant for MLNX_OS credentials type. By default, the value is set to "false".
- Response – N/A
- Status Codes
    - 200 – credentials were updated successfully
    - 400 – bad request (bad or missing parameters)
    - 404 – system not found

Groups REST API

- Description – these interfaces allow users to retrieve information on groups, create, delete, and update groups
- Request URL – GET /ufmRest/app/groups
- Main operations
    - Get all groups
    - Get a group using its name
    - Update a group using its name
    - Delete a group using its name
    - Create a group
    - Add members to a group
    - Remove members from a group

Get All Groups

- Description – retrieve information on groups
- Request URL – GET /ufmRest/resources/groups
- Request Content Type – Application/json
- Response

```
[
    {
    "description": "grp222",
    "type": "Rack",
```

```
    "severity": "Info",
    "name": "grp2"
    },

    {
    "description": "grp111",
    "type": "Rack",
    "severity": "Info",
    "name": "grp1"
    }
]
```

- Possible Filters
  - Type – filters by type. Example:

    ```
    /ufmRest/resources/groups?type=Rack
    ```

    Possible values: “Rack”, “General”, “Port”

  - Members – adds members to the response. Example:

    ```
    ufmRest/resources/groups?type=Rack&members=true
    ```

  - extend_members

    ```
    /resources/groups?members=true&extend_members=true
    ```

  - device_id

```
/resources/groups?device_id=0008f10001085600
```

- Response:

```
[
     {
     "description": "grp222",
     "type": "Rack",
     "severity":"Info",
     "members": [ "0002c90300a7ccf0", "0002c9030060dc20"],
     "name": "grp2"
     },

     {
     "description": "grp111",
     "type": "Rack",
     "severity": "Info",
     "members": [ "0002c903007e50a0" ],
     "name": "grp1"
     }
]
```

- Status Codes
    - 200 – OK

Get Group Using Its Name

- Description – Retrieve information on a group using its name
- Request URL – GET ufmRest/resources/groups/<group_name>
- Request Content Type – Application/json

- Response

```
[
     {
     "description": "grp111",
     "type": "Rack",
     "severity": "Info",
     "name": "grp1"
         }
]
```

- Possible Filters
- Members – adds members to the response. Example:

```
/ufmRest/resources/groups/grp1?members=true
```

- Status Codes
    - 200 – OK

Update Group Using Name

- Description – update a group using its name
- Request URL – PUT ufmRest/resources/groups/<group_name>
- Request Content Type – Application/json
- Request Data

```
{
  "description*": "new_desc"
```

```
}
```

> **Note**
>
> *This is the only attribute that can be updated.

- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST

Delete Group Using Name

- Description – delete a group using its name
- Request URL – DELETE ufmRest/resources/groups/<group_name>
- Request Content Type – Application/json
- Request Data – N/A
- Status Codes
  - 202 – accepted

Create Group

- Description – create a new group
- Request URL – POST ufmRest/resources/groups/
- Request Content Type – Application/json
- Request Data

```
{
  "description*": "new_desc",
  "type**": "group_type",
  "name***": "group_name"
}
```

> **Note**
>
> * Optional attribute.
>
> ** Mandatory attribute. Can only be “Rack” or “General”, “Port”.
>
> *** Mandatory attribute.

- Status Codes
  - 201 – created with the link to the group object
  - 400 – BAD REQUEST

Add Members to Group

- Description – add members to an existing group
- Request URL – POST /ufmRest/resources/groups/<group_name>/members
- Request Content Type – Application/json
- Request Data

```
{
  "object_ids": ["0002c90300a7ccf0", "0002c9030060dc20"]
}
```

- Status Codes
  - 202 – accepted
  - 400 – BAD REQUEST

Remove Members From Group

- Description – remove members from an existing group
- Request URL – DELETE /ufmRest/resources/groups/<group_name>/members
- Request Content Type – Application/json
- Request Data

```
{
  "object_ids": ["0002c90300a7ccf0", "0002c9030060dc20"]
}
```

- Note – to remove all members of a group, the object_ids argument in the request data can be left empty
- Status Codes
  - 202 – accepted

Apply Software Upgrade or Firmware Upgrade Action

- Description – allows user to apply software upgrade action on group of switches or firmware upgrade action on group of hosts.
- Request URL – POST /ufmRestV2/actions
- Request Content Type – Application/json
- Request Data

```
{
```

```
  "params": {
    "username": "admin",
    "password": "admin",
    "path": "/tmp",
    "image": "software_upgrade.img",
    "protocol": "ftp",
    "server": "10.20.30.40"
  },
  "description": "",
  "action": "sw_upgrade",
  "object_ids": [
    "host"
  ],
  "object_type": "Group",
  "identifier": "id"
}
```

- Status Codes
  - 202 – accepted
  - 400 – bad request
  - 404 – not found

Users REST API

- Description – these interfaces are used for managing UFM users by getting, creating, updating, and deleting them
- Request URL – /ufmRest/app/users
- Main Operations
    - Get all users
    - Get a user by name
    - Create a user
    - Update a user
    - Delete a user

> **Note**
>
> Note that in UFM Appliance, only TENANT users can be managed.

Get All Users

- Description – lists all users in UFM
- Request URL – GET /ufmRest/app/users
- Request Content Type – Application/json
- Response

```
[
    {
        "name": "admin-3",
        "group": "System_Admin",
        "id": 3
    },
    {
        "name": "tenant-1",
        "group": "Tenant",
        "id": 4
    }
]
```

- Status Codes
    - 200 – OK

Get User by Name

- Description – fet a specific user using its name
- Request URL – GET /ufmRest/app/users/<name>
- Request Content Type – Application/json
- Response

```
{
     "name": "admin",
     "group" "System_Admin",
     "id": "1"
}
```

- Status Codes

- 200 – OK
- 404 – NOT FOUND

Create User

- Description – creates a new user
- Request URL – POST /ufmRest/app/users
- Request Content Type – Application/json
- Request Data Parameters

Name	Values	Default	Description	Mandatory/ Optional
name	String. Minimum length is 4. Maximum length is 30, composed of alphanumeric characters and "_", "-".	None	Name of user	Mandatory
group	String. One of the following: ◦ "System_Admin", ◦ "Fabric_Admin", ◦ "Fabric_Operator", ◦ "Monitoring_Only", ◦ "Tenant"	None	Name of group	Mandatory
password	String. Minimum length is 4. Maximum length is 30, composed of alphanumeric and "_" characters	None	User's password	Mandatory

- Request Data Example

```
{
    "name": "ufm-tenant",
    "group": "Tenant",
    "password": "655478"
```

```
}
```

- Response

```
{
    "name": "ufm-tenant"
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST

Update User

- Description – updates user's password
- Request URL – PUT /ufmRest/app/users/<name>
- Request Content Type – Application/json
- Request Data Parameters

Name	Values	Default	Description	Mandatory/ Optional
password	String. Minimum length is 4. Maximum length is 30, composed of alphanumeric and "_" characters	None	User's password	Mandatory

- Request Data Example

```
{
```

```
    "password": "45364nnfgd"
}
```

- Response – returns the username in the response body. Example:

```
{
    "name": "admin"
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST

Delete User

- Description – deletes an existing user. Note that “admin” user cannot be deleted.
- Request URL – DELETE /ufmRest/app/users/<name>
- Request Content Type – Application/json
- Response – N/A
- Status Codes
  - 204 – NO CONTENT
  - 400 – BAD REQUEST
  - 404 – NOT FOUND

Telemetry REST API

- Description – returns information whether the feature is enabled or not
- Request URL – GET / ufmRest/app/ufm_config
- Request Content Type – Application/json
- Response

```
{
  "ls_auditing": "Disabled",
  "monitoring_mode": "Disabled",
  "syslog": "Disabled",
  "license_state": "valid",
  "license_state_info": "N\/A",
  "telemetry": "<telemetry_status>"(Enabled/Disabled)
}
```

Top X Telemetry Sessions REST API

- Description – returns information on the Top X telemetry session
- Request URL – GET /ufmRest/telemetry?type=topX&membersType=Ports&PickBy=PortTXPackets&limit=15&attributes=[additonal_attributes]
- Request Content Type – Application/json
- Response

```
[
  {
```

```
    "name": "r-dmz-ufm131 mlx5_0",
    "guid": "0c42a103008b3bd0_1",
    "PortRcvPktsExtended_Rate": 1993291398.4024506,
    "phy_received_bits_Rate": 1993291398.4024506,
    "PortRcvDataExtended_Rate": 7973165593.609802
  },
  {
    "name": "r-dmz-ufm131 mlx5_1",
    "guid": "0c42a103008b3bd1_2",
    "PortRcvPktsExtended_Rate": 1993289961.4256535,
    "phy_received_bits_Rate": 1993289961.4256535,
    "PortRcvDataExtended_Rate": 7973159845.702614
  }
]
```


History Telemetry Sessions

- Description – returns information on the history telemetry session
- Request URL – GET /ufmRest/telemetry?type=history&membersType=Ports&attributes=[attributes_list]&members=[members_list_guids]&start_time=-1h&end_time=-0min

> **Note**
>
> http://localhost:4300/ufmRestV2/telemetry?type=history&membersType=Device&attributes=[Infiniband_PckInRate]&result_format=Port&members=[ec0d9a03007d7f0a]&start_time=-5min&end_time=-0min

- Request Content Type – Application/json
- Response

```
        {
  'data': {
    '2021-12-01 19:12:36': {
      'Port': {
        'ec0d9a03007d7f0a_1': {
          'statistics': {'Infiniband_PckInRate': 1.0},
          'guid': 'ec0d9a03007d7f0a_1',
          'name': 'ufm-host87 mlx5_0'
        }
      }
    }
  }, 'members': [{
    'description': 'Computer IB Port',
    'number': 1,
    'external_number': 1,
    'physical_state': 'Link Up',
    'path': 'default \/ Computer: ufm-host87 \/ HCA-1\/1',
    'tier': 1,
    'high_ber_severity': 'N\/A',
    'lid': 1,
    'mirror': 'disable',
    'logical_state': 'Active',
    'capabilities': ['healthy_operations', 'reset',
'disable'],
    'mtu': 4096,
    'peer_port_dname': '11',
    'severity': 'Info',
    'active_speed': 'EDR',
    'enabled_speed': ['SDR', 'DDR', 'QDR', 'FDR', 'EDR'],
    'supported_speed': ['SDR', 'DDR', 'QDR', 'FDR', 'EDR'],
    'active_width': '4x',
    'enabled_width': ['1x', '4x'],
    'supported_width': ['1x', '4x'],
    'dname': 'HCA-1\/1',
    'peer_node_name': 'switchib',
```

```
    'peer': 'ec0d9a030029dba0_11',
    'peer_node_guid': 'ec0d9a030029dba0',
    'systemID': 'ec0d9a03007d7f0a',
    'node_description': 'ufm-host87 mlx5_0',
    'name': 'ec0d9a03007d7f0a_1',
    'module': 'N\/A',
    'peer_lid': 5,
    'peer_guid': 'ec0d9a030029dba0',
    'peer_node_description': 'switchib:11',
    'guid': 'ec0d9a03007d7f0a',
    'system_name': 'ufm-host87',
    'system_ip': '0.0.0.0',
    'peer_ip': '0.0.0.0',
    'system_capabilities': ['fw_inband_upgrade',
'mark_device_unhealthy'],
    'system_mirroring_template': false
  }]
}
```


Possible Attribute Values

The below are all the available values of the Monitoring attributes.

- **Monitor Class** – the selected object type for monitoring
- **Monitor Attributes** – the selected attributes (counters) for monitoring the monitored objects

Attribute	Value	Description
Monitoring class	"Device"	General device in the fabric (can be switch/ host/bridge, etc.)
	"Port"	Represents a physical port in the fabric
Monitor attributes	"Infiniband_MBOut" "Infiniband_MBOut	Total number of data octets, divided by 4, transmitted on all VLs from the port, including all octets between (and not including) the start of packet delimiter and the VCRC, and may include packets containing errors.

Attribute	Value	Description
	Rate"*	All link packets are excluded. Results are reported as a multiple of four octets
	"Infiniband_MBIn" "Infiniband_MBInRate"*	Total number of data octets, divided by 4, received on all VLs at the port. All octets between (and not including) the start of packet delimiter and the VCRC are excluded, and may include packets containing errors. All link packets are excluded. When the received packet length exceeds the maximum allowed packet length specified in C7-45, the counter may include all data octets exceeding this limit. Results are reported as a multiple of four octets
	"Infiniband_PckOut" "Infiniband_PckOutRate"*	Total number of packets transmitted on all VLs from the port, including packets with errors, and excluding link packets
	"Infiniband_PckIn" "Infiniband_PckInRate"*	Total number of packets, including packets containing errors and excluding link packets, received from all VLs on the port
	"Infiniband_RcvErrors"	Total number of packets containing errors that were received on the port including: ◦ Local physical errors (ICRC, VCRC, LPCRC, and all physical errors that cause entry into the BAD PACKET or BAD PACKET DISCARD states of the packet receiver state machine). ◦ Malformed data packet errors (LVer, length, VL). ◦ Malformed link packet errors (operand, length, VL). ◦ Packets discarded due to buffer overrun (overflow).
	"Infiniband_XmtDiscards"	Total number of outbound packets discarded by the port when the port is down or congested for the following reasons: ◦ Output port is not in the active state ◦ Packet length has exceeded NeighborMTU ◦ Switch Lifetime Limit exceeded ◦ Switch HOQ Lifetime Limit exceeded, including packets discarded while in VLStalled State

Attribute	Value	Description
	"Infiniband_SymbolErrors"	Total number of minor link errors detected on one or more physical lanes
	"Infiniband_LinkRecovers"	Total number of times the Port Training state machine has successfully completed the link error recovery process
	"Infiniband_LinkDowned"	Total number of times the Port Training state machine has failed the link error recovery process and downed the link
	"Infiniband_LinkIntegrityErrors"	The number of times that the count of local physical errors exceeded the threshold specified by LocalPhyErrors
	"Infiniband_RcvRemotePhysErrors"	Total number of packets marked with the EBP delimiter received on the port
	"Infiniband_XmtConstraintErrors"	Total number of packets not transmitted from the switch physical port for the following reasons: ◦ FilterRawOutbound is true and packet is raw. ◦ PartitionEnforcementOutbound is true and packet fails partition key check or IP version check
	"Infiniband_RcvConstraintErrors"	Total number of packets received on the switch physical port that are discarded for the following reasons: ◦ FilterRawInbound is true and packet is raw ◦ PartitionEnforcementInbound is true and packet fails partition key check or IP version check
	"Infiniband_ExcBufOverrunErrors"	The number of times that OverrunErrors consecutive flow control update periods occurred, each having at least one overrun error
	"Infiniband_RcvSwRelayErrors"	Total number of packets received on the port that were discarded when they could not be forwarded by the switch relay for the following reasons: ◦ DLID mapping ◦ VL mapping ◦ Looping (output port = input port)

Attribute	Value	Description
	"Infiniband_VL15Dropped"	Number of incoming VL15 packets dropped because of resource limitations (e.g., lack of buffers) in the port
	"Infiniband_XmitWait"	The number of ticks during which the port selected by PortSelect had data to transmit but no data was sent during the entire tick because of insufficient credits or of lack of arbitration
	"Infiniband_CBW"	Congestion bandwidth rate, measure the rate of congestion measured by XmitWait counter
	"Infiniband_Normalized_MBOut"	Effective port bandwidth utilization in % XmitData incremental/Link Capacity
	"Infiniband_Normalized_CBW"	Amount of bandwidth that was suppressed due to congestion (XmitWait incremental/Time) * Link Capacity Separate counters are used for Tier 4 ports and for the rest of the ports
	"Infiniband_NormalizedXW"	Congestion in relation to packets transmitted over the link XmitWait incremental / XmitPackets incremental. This event is calculated only for the port directly connected to receiving hosts. Separate counters are used for Tier 4 ports and for the rest of the ports

Note

*Rate Counter – Counter value that is calculated based on the delta from the previous sampled value divided by elapsed time from previous sample (the ratio between two sequential samples).

Events Policy REST API

- Description – these interfaces are used for retrieving information on and updating existing event policies in UFM
- Request URL – /ufmRest/app/events_policy
- Main operations
    - Get all events policies
    - Get an events policy using its ID
    - Get all simulated events policy messages
    - Update a specific events policy
    - Simulate events policy

Get All Events Policies

- Description – retrieve information on all events policies in UFM
- Request URL – GET /ufmRest/app/events_policy/
- Request Content Type – Application/json
- Request Data – N/A
- Response

```
{
    "133": {
        "severity": "Minor",
        "to_snmp": false,
        "use_alarm": true,
        "threshold": 10.0,
```

```
        "to_syslog": false,
        "policy_object": "Port",
        "duration": 300,
        "to_ui": true,
        "to_mail": false,
        "call_script": false,
        "to_log": true,
        "description": "Port Normalized Transmit Wait",
        "action":"Isolated"
    },
    "130": {
        "severity": "Minor",
        "to_snmp": false,
        "use_alarm": true,
        "threshold": 1.0,
        "to_syslog": false,
        "policy_object": "Port",
        "duration": 0,
        "to_ui": true,
        "to_mail": false,
        "call_script": false,
        "to_log": true,
        "description": "Non-optimal link width"
    }
}
```

- Possible Filters – may be used to filter the request:
    - ids – retrieves information on events policies per ID

      Example:

```
GET /ufmRest/app/events_policy?ids=133,135
```

- Status Codes
  - 200 – OK

Get Events Policy

- Description – retrieve information on an events policy using its ID
- Request URL – GET /ufmRest/app/events_policy/<policy_id>
- Request Content Type – Application/json
- Request Data – N/A
- Response

```
{
    "severity": "Minor",
    "to_snmp": false,
    "use_alarm": true,
    "threshold": 10.0,
    "to_syslog": false,
    "policy_object": "Port",
    "duration": 300,
    "to_ui": true,
    "to_mail": false,
    "call_script": false,
    "to_log": true,
    "description": "Port Normalized Transmit Wait",
    "action":"Isolated"
}
```

- Status Codes
  - 200 – OK

Get All Simulated Events Policy Messages

- Description – Retrieves all simulated events messages.
- Request URL – GET /ufmRest/app/events_policy/simulated_messages
- Request Content Type – Application/json
- Request Data – N/A
- Response


```
{
"64": "GID Address In Service: prefix ff12601bffff0000,guid
0xb8599f03000a7768",
"65": "GID Address Out of Service: prefix ff12601bffff0000,guid
0xb8599f03000a7768",
"66": "New MCast group is created: ff12601bffff0000,
0xb8599f03000a7768",
"67": "Mcast group is deleted: ff12601bffff0000, 0x123",
"110": "Symbol-Error counter rate threshold exceeded. Threshold
is 0, received value is 5. Peer info: default(2) / Switch: sw-
ufm-qm01 / 35.",
"111": "Link-Error-Recovery counter rate threshold exceeded.
Threshold is 0, received value is 5. Peer info: default(2) /
Switch: sw-ufm-qm01 / 35.",
"112": "Link-Downed counter delta threshold exceeded. Threshold
is 0, calculated delta is 5. Peer info: default(2) / Switch: sw-
ufm-qm01 / 35.",
"113": "PortRcvErrors counter rate threshold exceeded. Threshold
is 0, received value is 5. Peer info: default(2) / Switch: sw-
ufm-qm01 / 35.",
"114": "PortRcvRemotePhysicalErrors counter rate threshold
exceeded. Threshold is 0, received value is 5. Peer info:
default(2) / Switch: sw-ufm-qm01 / 35.",
"115": "PortRcvSwitchRelayErrors counter rate threshold exceeded.
Threshold is 5, received value is 5. Peer info: default(2) /
Switch: sw-ufm-qm01 / 35.",
```

"116": "PortXmitDiscards counter rate threshold exceeded. Threshold is 0 received value is 5. Peer info: default(2) / Switch: sw-ufm-qm01 / 35.",
"117": "PortXmitConstraintErrors counter rate threshold exceeded. Threshold is 0, received value is 5. Peer info: default(2) / Switch: sw-ufm-qm01 / 35.",
"118": "PortRcvConstraintErrors counter rate threshold exceeded. Threshold is 0, received value is 5. Peer info: default(2) / Switch: sw-ufm-qm01 / 35.",
"119": "LocalLinkIntegrityErrors counter rate threshold exceeded. Threshold is 0, received value is 5. Peer info: default(2) / Switch: sw-ufm-qm01 / 35.",
"120": "ExcessiveBufferOverrunErrors counter rate threshold exceeded. Threshold is 0, received value is 5. Peer info: default(2) / Switch: sw-ufm-qm01 / 35.",
"121": "VL15Dropped counter rate threshold exceeded. Threshold is 0, received value is 5. Peer info: default(2) / Switch: sw-ufm-qm01 / 35.",
"122": "Congested Bandwidth (in percents) threshold exceeded. Threshold is 0, received value is 5. Peer info: default(2) / Switch: sw-ufm-qm01 / 35.",
"123": "Port Normalized Transmit BW counter threshold exceeded. Threshold is 0, received value is 5. Peer info: default(2) / Switch: sw-ufm-qm01 / 35.",
"130": "Found a 4x link that operates in 1x width mode.",
"134": "T4 Congested Bandwidth (in percents) threshold exceeded. Threshold is 0 received value is 5. Peer info: default(2) / Switch: sw-ufm-qm01 / 35.",
"141": "Flow Control Update watchdog timer has expired: lid 15, port #20",
"144": "Capability Mask Modified: lid 4431, mask 0xa751e848",
"145": "System Image GUID is changed: 100, 0x0c42a1030079a66c",
"156": "Ethernet Gateway(s) identified - Link speed enforcement is disabled in the fabric. Restart the Ethernet Gateway(s) for change to take effect.",

```
"250": "UFM License has expired 20 days ago! UFM is now running
in Limited Mode!",
"251": "UFM License has expired 10 days ago! UFM will switch to
limited mode in 3 days!",
"252": "UFM License has expired. Please restart UFM server",
"253": "Duplicate Serial Number 12342 detected on installed
licenses. Please refer to your system vendor representative to
update your license",
...........
}
```

- Status Codes
  - 200 – OK

Update Events Policy

- Description – update an existing events policy using its ID
- Request URL – PUT /ufmRest/app/events_policy/<policy_id>
- Request Content Type – Application/json
- Request Data

```
{
  "duration": 10,
  "to_log": true,
  "to_syslog": true,
  "to_snmp": true,
  "to_ui": true,
  "to_mail": true,
  "use_alarm": true,
  "threshold": 10,
  "call_script":true,
  "severity": "Warning",
```

```
  "action": "Isolated"
}
```

- Response – N/A
- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST

Update Events Policies

- Description – update multiple existing event policies
- Request URL – PATCH /ufmRest/app/events_policy
- Request Content Type – Application/json
- Request Data

```
[
{
"name": "64",
"to_log": true,
"to_mail": false,
"to_snmp": false,
"to_syslog": false,
"to_ui": true,
"use_alarm": false
},
{
"name": "65",
"to_log": true,
"to_mail": false,
"to_snmp": false,
"to_syslog": false,
```

```
"to_ui": true,
"use_alarm": true
},
{
"name": "66",
"to_log": true,
"to_mail": false,
"to_snmp": false,
"to_syslog": false,
"to_ui": true,
"use_alarm": false
}
]
```

- Response – N/A
- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST

Simulate Events Policy

- Description – Simulates a list of events policies.
- Request URL – POST /ufmRest/app/events_policy/simulation
- Request Content Type – Application/json
- Request Data

```
{"events_ids": ["250", "156", "344", "388", "502", "339",
"911", "1525", "352"]}
```

- Response – N/A

- Status Codes
    - 200 – OK
    - 400 – BAD REQUEST

Get Application Object Collection Versioning

- Request URL – GET /ufmRest/app/versioning
- Request Content Type – Application/json
- Response

```
{
  "event_policies_version": 216,
  "sites_version": 1457,
  "alarms_version": 25296,
  "traps_version": 41392,
  "templates_version": 4,
  "users_version": 3,
  "servers_version": 3762,
  "switches_version": 225,
  "ports_version": 1782,
  "links_version": 198,
  "modules_version": 198,
  "submodules_version": 0,
  "mirror_template_version": 0,
  "saps_version": 6,
  "groups_version": 24,
  "objects_groups_version": 6,
  "smconfs_version": 1
}
```

Reports REST API

- Description – manages UFM reports by starting, stopping, and retrieving them
- Request URL – /ufmRest/reports
- Main operations
    - Start a report
    - Stop a report
    - Get a report
    - Get the last report

Start Report

- Description – start a new report
- Request URL – POST /ufmRest/reports/<report_type>
- Request Content Type – Application/json
- Note
    - report_type should be one of the following: Fabric_Health, UFM_Health, or Topology_Compare
- Request Data
    - Topology_Compare reports – request data should be the topology file to which UFM will compare the current topology
    - UFM_Health reports – N/A
    - Fabric_Health reports:

```
{
    "duplicate_nodes": true,
    "map_guids_desc": true,
    "firmware": true
}
```

> **Note**
>
> At least 1 parameter should be passed to the API.

Name	Values	Default	Dependent On*	Description
duplicate_nodes	Boolean	False		Lists all nodes with same node description. Does not include switches with the same description.
map_guids_desc	Boolean	False	duplicate_nodes	Enables the usage of a mapping file (between node GUID and node description) when running duplicate node description analysis of the fabric
ufm_alarms	Boolean	False		Lists all open alarms in UFM
sm_state	Boolean	False		Verifies that: ▪ There is only one active (master) Subnet Manager in the fabric; ▪ The master is selected according to highest priority and lowest port GUID; ▪ The report lists all SMs in the fabric with their attributes
firmware	Boolean	False		Checks for firmware inconsistencies. For each device model in the fabric, the test finds the latest installed version of the firmware and reports devices with older versions.

Name	Values	Default	Dependent On*	Description
cables	Boolean	False		Reports cable information as stored in EEPROM on each port: cable vendor, type, length and serial number
cables_errors_only	Boolean	False	Cables	errors_only flag for cables
non_opt_links	Boolean	False		Performs a full-fabric discovery and reports 'non-responsive' ports with their path
non_opt_speed_width	Boolean	False		Enables link speed and link width checks
link_speed	["ALL", "SDR", "DDR", "QDR", "FDR_10", "FDR", "EDR"]	"ALL"	non_opt_speed_width	Checks if link speed is optimally used
Link_width	["ALL", "SDR", "DDR", "QDR", "FDR_10", "FDR", "EDR"]	"ALL"	non_opt_speed_width	Checks if link width is optimally used
eye_open	Boolean	False		Lists Eye-Opener information for each link
min_bound	Integer	22	eye_open	Minimum bound for eye_open check
max_bound	Integer	65	eye_open	Maximum bound for eye_open check

Name	Values	Default	Dependent On*	Description
eye_open_errors_only	Boolean	False	eye_open	errors_only flag for eye_open
duplicate_zero_and_lids	Boolean	False		Lists all ports with same LID or zero LID value
effective_ber_check	Boolean	True		Lists errors and warnings for Effective Ber
phy_port_grade	Boolean	False		Physical port grade information

> **Note**
>
> For example: “map_guids_desc” is dependent on “duplicate_nodes” in the sense that to set “map_guids_desc”, “duplicate_nodes” has to be set to True.

- Response

```
{
    "report_id": 4
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST

Stop Report

- Description – stops a report using its ID
- Request URL – DELETE /ufmRest/reports/<report_id>
- Request Content Type – Application/json
- Response – N/A
- Status Codes
    - 200 – OK
    - 400 – BAD REQUEST

Get Report

- Description – retrieve report's result using its ID
- Request URL – GET /ufmRest/reports/<report_id>
- Request Content Type – Application/json
- Response

```
{
    "date": "2018-04-07 05:38:13",
    "sections": [
        {
            "status": {
                "severity": "Info",
                "value": ""
            },
            "elements": [
                {
                    "Warnings": "0",
                    "Errors": "0",
```

```
                    "Fabric Test": "Non-unique Node
Descriptions",
                    "Total": "0"
                },
                {
                    "Warnings": "0",
                    "Errors": "0",
                    "Fabric Test": "Firmware Versions",
                    "Total": "0"
                },
                {
                    "Warnings": "0",
                    "Errors": "0",
                    "Fabric Test": "Total:",
                    "Total": "0"
                }
            ],
            "description": "",
            "title": "Report Summary"
        },
        {
            "status": {
                "severity": "Info",
                "value": ""
            },
            "elements": [
                {
                    "Count": "1",
                    "Device Type": "EDR",
                    "Non Active Ports": "32",
                    "Active Ports": "4",
                    "Total Ports": "36"
                },
                {
                    "Count": "1",
                    "Device Type": "SX6036",
```

```
                    "Non Active Ports": "25",
                    "Active Ports": "11",
                    "Total Ports": "36"
                },
                {
                    "Count": "16",
                    "Device Type": "Computer",
                    "Non Active Ports": "0",
                    "Active Ports": "21",
                    "Total Ports": "21"
                },
                {
                    "Count": "5",
                    "Device Type": "MSB7700",
                    "Non Active Ports": "156",
                    "Active Ports": "24",
                    "Total Ports": "180"
                },
                {
                    "Count": "23",
                    "Device Type": "Total:",
                    "Non Active Ports": "213",
                    "Active Ports": "60",
                    "Total Ports": "273"
                }
            ],
            "description": "",
            "title": "Fabric Summary"
        },
        {
            "status": {
                "severity": "Info",
                "value": "Completed Successfully."
            },
            "description": "Lists all nodes with same node
description. Does not include switches with the same
```

```
description. ",
            "title": "Non-unique Node Descriptions"
        },
        {
            "status": {
                "severity": "Info",
                "value": "Completed Successfully."
            },
            "description": "Checks for firmware
inconsistencies. For each device model in the fabric, the
test finds the latest installed version of the firmware and
reports devices with older versions. ",
            "title": "Firmware Versions"
        }
    ],
    "Created by": "admin",
    "title": "Fabric Health Report"
}
```


- Status Codes
  - 200 – OK
  - 202 – ACCEPTED (processing report)
  - 400 – BAD REQUEST

Get Last Report

- Description – get the results of the last generated report using its type
- Request URL – GET /ufmRest/reports/last_report/<report_type>
- Note
  - report_type should be one of the following: Fabric_Health, UFM_Health, or Topology_Compare

- Request Content Type – Application/json
- Response – See response in the previous chapter
- Status Codes
    - 200 – OK
    - 400 – BAD REQUEST

Periodic Fabric Health REST API

Get All Periodic Health Tasks

- URL: GET ufmRestV2/periodic_health
- Response:


```
[
{
"report_id": "1451",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:23:10"
},
{
"report_id": "1452",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:24:16"
},
{
"report_id": "1453",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:25:02"
},
{
"report_id": "1454",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:26:08"
},
{
```

```
"report_id": "1455",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:27:13"
},
  {
"report_id": "1456",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:28:19"
},
  {
"report_id": "1457",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:29:05"
},
  {
"report_id": "1458",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:30:11"
},
  {
"report_id": "1460",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:31:16"
},
  {
"report_id": "1461",
"report_scope": "Periodic",
"timestamp": "2022-07-12 14:32:02"
}
]
```


Get Periodic Health Task

- URL: GET ufmRestV2/periodic_health/<report_id>

- Response: The last complete fabric report.

Enable Feature

- URL: POST ufmRestV2/periodic_health/start
- Response: 202

Disable Feature

- URL: POST ufmRestV2/periodic_health/stop
- Response: 202

Set Run Parameters

- URL: POST ufmRestV2/periodic_health/configure
- Response:


```
{ "duplicate_nodes": true, "map_guids_desc": false, "ufm_alarms": true, "sm_state": true, "firmware": false, "cables": false, "non_opt_links": true, "non_opt_speed_width": true, "link_speed": "ALL", "link_width": "ALL", "eye_open": false, "duplicate_zero_and_lids": false, "effective_ber_check": false, "symbol_ber_check": false, "phy_port_grade": false }
```


Get Run Parameters

- URL: GET ufmRestV2/periodic_health/configure
- Response:

{ "duplicate_nodes": true, "map_guids_desc": false, "ufm_alarms": true, "sm_state": true, "firmware": false, "cables": false, "non_opt_links": true, "non_opt_speed_width": true, "link_speed": "ALL", "link_width": "ALL", "eye_open": false, "duplicate_zero_and_lids": false, "effective_ber_check": false, "symbol_ber_check": false, "phy_port_grade": false }

Get Last Report

- URL: GET ufmRestV2/periodic_health/last_report
- Response: The last complete fabric report.

SMTP Configuration REST API

- Description – manages SMTP configurations in UFM
- Request URL – /ufmRest/app/smtp
- Main operations
  - Get SMTP configuration
  - Update SMTP configuration

Get SMTP Configuration

- Description – get information on SMTP configuration settings in UFM
- Request URL – GET /ufmRest/app/smtp
- Request Content Type – application/json
- Response

```
{
   "sender":"AnasBadaha <ufmvpi@gmail.com>",
   "server":"smtp.gmail.com",
   "pwd":"123456ufmvpi",
   "user":"ufmvpi",
   "use_ssl":true,
   "use_authentication":true,
   "port":465
}
```

- Status Codes
  - 200 – OK

Update SMTP Configuration

- Description – update the settings of the current SMTP configuration in UFM
- Request URL – PUT /ufmRest/app/smtp
- Request Content Type – application/json
- Request Data

```
{
   "sender_name":"AnasBadaha",
   "sender_addr":"ufmvpi@gmail.com",
   "server":"smtp.gmail.com",
   "pwd":"123456ufmvpi",
   "user":"ufmvpi",
   "use_ssl":true,
   "port":465,
   "use_authentication":true
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST

Events and Periodic Reports Recipients Configuration REST API

- Description – manages recipients of events and periodic reports, including getting, adding, removing, and deleting existing recipients
- Request URL – GET /ufmRest/app/smtp/recipients
- Main operations
  - Get recipients list
  - Add new recipients
  - Delete existing recipients
  - Update existing recipients

Get Recipients

- Description – get recipients list of events or periodic reports
- Request URL – GET /ufmRest/app/smtp/recipients ?recipients_type=("events", "periodic_report")

> **Note**
>
> Note: recipients_type should either be “events” or “periodic_report”

- Request Content Type – application/json
- Response

```
{
   "recipients":[
      "anasb@mellanox.com"
   ],
   "recipients_type":"events"
}
```

- Status Codes
  - 200 – OK
  - 404 – bad request

Add Recipients

- Description – adds new recipients of the events or periodic reports
- Request URL – POST /ufmRest/app/smtp/recipients
- Request Content Type – application/json
- Request Data

```
{
   "recipients":[
      "anasb@mellanox.com"
   ],
   "recipients_type":"events"
}
```

- Status Codes

- 201 – created
- 404 – bad request

Delete Recipients

- Description – deletes existing recipients from the events or periodic reports
- Request URL – POST /ufmRest/app/smtp/recipients
- Request Content Type – application/json
- Request Data

```
{
   "recipients":[
      "anasb@mellanox.com"
   ],
   "recipients_type":"events"
}
```

- Status Codes
  - 204 – NO CONTENT
  - 404 – bad request

Update Recipients

- Description – updates the recipients of the events or periodic reports
- Request URL – PUT /ufmRest/app/smtp/recipients
- Request Content Type – application/json
- Request Data

```
{
```

```
    "old_recipients":[
       "anasb@mellanox.com"
    ],
    "new_recipients":[
       "new@mellanox.com"
    ],
    "recipients_type":"events"
}
```

- Status Codes
  - 200 – OK
  - 404 – bad request

SM Configuration REST API

- Description – these interfaces are used for configuring SM properties
- Request URL – /ufmRest/app/smconf
- Main operations:
  - GET configuration
  - Update configuration

Get SM Configuration

- Description – get any value for OpenSM configurations by sending the key_name
- Request URL – GET /ufmRest/app/smconf?param_name= <sm_configuration_key_name>
- Request Content Type – application/json
- Response – Sent key value
- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST
- Request URL example – /ufmRest/app/smconf?param_name
- Response –

```
{
  "m_key": "0x0",
  "sm_key": "0x1",
  "sa_key": "0x1",
```

```
  "m_key_lease_period": 60,
  "no_partition_enforcement": false,
  "vl_stall_count": "0x7",
  "leaf_vl_stall_count": "0x7",
  "sm_priority": 15,
  "ignore_other_sm": false,
  "sminfo_polling_timeout": 5000,
  "polling_retry_number": 4,
  "honor_guid2lid_file": false,
  "max_wire_smps": 8,
  "transaction_timeout": 200,
  "max_msg_fifo_timeout": 10000,
  "single_thread": false,
  "log_file": "\/opt\/ufm\/files\/log\/opensm.log",
  "dump_files_dir": "\/opt\/ufm\/files\/log\/",
  "sa_db_file": "(null)",
  "no_clients_rereg": false,
  "disable_multicast": false,
  "exit_on_fatal": true,
  "routing_engine_active": "minhop",
  "lid_matrix_dump_file":
"\/opt\/ufm\/files\/conf\/opensm\/lid_matrix.conf",
  "lfts_file": "\/opt\/ufm\/files\/conf\/opensm\/lfts.conf",
  "root_guid_file":
"\/opt\/ufm\/files\/conf\/opensm\/root_guid.conf",
  "cn_guid_file": "(null)",
  "ids_guid_file": "(null)",
  "guid_routing_order_file": "(null)",
  "node_name_map_file": "(null)",
  "qos": 0,
  "qos_options": {
    "default": {
      "sl2vl": {
        "0": 0,
        "1": 1,
        "2": 2,
```

```
        "3": 3,
        "4": 0,
        "5": 1,
        "6": 2,
        "7": 3
      }
    },
    "hca": {
      "sl2vl": {
        "0": 0,
        "1": 1,
        "2": 2,
        "3": 3,
        "4": 0,
        "5": 1,
        "6": 2,
        "7": 3
      }
    },
    "switchPort0": {
      "sl2vl": {
        "0": 0,
        "1": 1,
        "2": 2,
        "3": 3,
        "4": 0,
        "5": 1,
        "6": 2,
        "7": 3
      }
    },
    "switchExternalPorts": {
      "sl2vl": {
        "0": 0,
        "1": 1,
        "2": 2,
```

```
        "3": 3,
        "4": 0,
        "5": 1,
        "6": 2,
        "7": 3
      }
    },
    "router": {
      "sl2vl": {
        "0": 0,
        "1": 1,
        "2": 2,
        "3": 3,
        "4": 0,
        "5": 1,
        "6": 2,
        "7": 3
      }
    }
  },
  "subnet_prefix": "0xfe80000000000000",
  "lmc": 0,
  "packet_lifetime": "0x12",
  "force_link_speed": "Max_Supported",
  "head_of_queue_lifetime": "0x12",
  "leaf_head_of_queue_lifetime": "0x10",
  "sl_confs": {

  },
  "max_op_vls": 3,
  "subnet_timeout": 18,
  "local_phy_errors_threshold": "0x8",
  "overrun_errors_threshold": "0x8",
  "sweep_interval": 10,
  "reassign_lids": false,
  "force_heavy_sweep": false,
```

```
  "sweep_on_trap": true,
  "force_log_flush": false,
  "log_flags": [
    "Error",
    "Info"
  ],
  "log_max_size": 4096,
  "accum_log_file": true,
  "routing_engine_names": [
    "minhop"
  ],
  "connect_roots": false,
  "use_ucast_cache": true,
  "m_key_per_port": false,
  "m_key_lookup": false,
  "sa_enhanced_trust_model": false,
  "sa_etm_allow_untrusted_guidinfo_rec": false,
  "sa_etm_allow_guidinfo_rec_by_vf": false,
  "sa_etm_allow_untrusted_proxy_requests": false,
  "sa_check_sgid_spoofing": true,
  "sa_etm_max_num_mcgs": 128,
  "sa_etm_max_num_srvcs": 32,
  "sa_etm_max_num_event_subs": 32,
  "mlnx_congestion_control": 0,
  "congestion_control_policy_file":
"\/opt\/ufm\/files\/conf\/opensm\/cc-policy.conf",
  "ar_sl_mask": "0xffff",
  "dfp_max_cas_on_spine": 2,
  "dfp_down_up_turns_mode": 0,
  "name": "default"
}
```


Set SM Configuration

- Description – update the OpenSM configurations by REST API

- Request URL – PUT /ufmRest/app/smconf
- Request Content Type – application/json
- Request Data –

```
{
  “sm_configuration_key_name”: “sm_configuration_key_value”,
  “sm_configuration_key_name2”:
“sm_configuration_key_value2”,
}
```

- Response – sent key value
- Status codes
    - 200 – OK
    - 400 – BAD REQUEST

Enhanced QoS REST API

- Description – configures QoS settings for physical and virtual ports. Through this feature, users can set specific values for guaranteed bandwidth, and assign a specific rate limit per SL.
- Request URL – /ufmRest/resources/sl_qos/
- Main operations
    - Bandwidth Names
    - Get bandwidth names
    - Get a specific bandwidth name
    - Delete a specific bandwidth name
    - Update a specific bandwidth name
    - Add a new bandwidth name
    - Ports Rules
    - Get all ports rules
    - Get specific ports rules
    - Delete specific ports rules
    - Update specific ports rules
    - Add new ports rules

Bandwidth Names REST API

Get Bandwidth Names

- Description – get all saved bandwidth names (bandwidths values are in Mb/s)

- Request URL – GET /ufmRest/resources/sl_qos/names
- Request Content Type – application/json
- Response

```
{
  "bw1": 50,
  "bw2": 100,
  "bw4": 90,
  "bw5": 80
}
```

- Status Codes
  - 200 – OK

Get Specific Bandwidth Name

- Description – get a specific bandwidth name
- Request URL – GET ufmRest/resources/sl_qos/names? name=bw1
- Request Content Type – application/json
- Response

  50

- Status Codes
  - 200 – OK
  - 404 – NOT FOUND

Delete Specific Bandwidth Name

- Description – deletes a specific bandwidth name

- Request URL – DELETE ufmRest/resources/sl_qos/names? name=bw1
- Request Content Type – application/json
- Status Codes
    - 202 – NO CONTENT
    - 400 – BAD REQUEST
    - 404 – NOT FOUND

Update Specific Bandwidth Name

- Description – updates a specific bandwidth name (bandwidth values are in Mb/s)
- Request URL – PUT ufmRest/resources/sl_qos/names /<bw_name>
- Request Content Type – application/json
- Request Data – rate limit integer value:70
- Status Codes
    - 200 – OK
    - 400 – BAD REQUEST
    - 404 – NOT FOUND

Add New Bandwidth Name

- Description – adds a new bandwidth name
- Request URL – POST ufmRest/resources/sl_qos/names
- Request Content Type – application/json
- Request Data

```
{
  "bw1": 50,
```

```
  "bw2": 60,
  "bw3": 200,
  "bw4": 50
}
```

- Status Codes
  - 201 – created
  - 400 – BAD REQUEST

Ports Rules REST API

Get All Ports Rules

- Description – get all configured physical and virtual ports rules
- Request URL –
  - GET ufmRest/resources/sl_qos/rules – to get all physical ports rules
  - GET ufmRest/resources/sl_qos/vport_rules – to get all virtual ports rules
- Request Content Type – application/json
- Response

```
{
  "rules": {
    "default": {
      "sl_list": {
        "1": "bw1",
        "3": "bw2",
        "all": "bw1"
      }
    },
    "2c90000000000025": {
```

```
      "sl_list": {
        "1": "bw2"
      }
    }
  }
}
```

- Status Codes
  - 200 – OK

Get Specific Ports Rules

- Description – get Rules for specific physical or virtual ports
- Request URL –
  - GET ufmRest/resources/sl_qos/rules?guid_list= default, 2c90000000025 – to get specific physical ports rules
  - GET ufmRest/resources/sl_qos/vport_rules?guid_list= default, 2c90000000025 – to get specific virtual ports rules
- Request Content Type – application/json
- Response

```
{
  "rules": {
    "default": {
      "sl_list": {
        "1": "bw1",
        "3": "bw2",
        "all": "bw1"
      }
    },
```

```
    "2c90000000000025": {
      "sl_list": {
        "1": "bw2"
      }
    }
  }
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST
  - 404 – NOT FOUND

Delete Specific Ports Rules

- Description – delete rules for specific physical or virtual ports
- Request URL –
  - DELETE ufmRest/resources/sl_qos/rules?guid_list= default, 2c90000000025 – to delete physical ports rules
  - DELETE ufmRest/resources/sl_qos/vport_rules?guid_list= default, 2c90000000025 – to delete virtual ports rules
- Request Content Type – application/json
- Status Codes
  - 204 – NO CONTENT
  - 400 – BAD REQUEST
  - 404 – NOT FOUND

Update Specific Ports Rules

- Description – update rules for specific physical or virtual ports

- Request URL –
  - PUT ufmRest/resources/sl_qos/rules/<guid> – to update specific physical port rules
  - PUT ufmRest/resources/sl_qos/vport_rules/<guid> – to update specific virtual port rules
- Request Content Type – application/json
- Request Data

```
{
  "sl_list": {
    "3": "bw1",
    "3": "bw2",
    "all": "bw1"
  }
}
```

- Status Codes
  - 200 – OK
  - 400 – BAD REQUEST
  - 404 – NOT FOUND

Add New Ports Rules

- Description – add new rules for specific physical or virtual ports
- Request URL –
  - POST ufmRest/resources/sl_qos/rules – to add new physical ports rules
  - POST ufmRest/resources/sl_qos/vport_rules – to add new virtual ports rules
- Request Content Type – application/json

- Request Data

```
{
  "rules": {
    "default": {
      "sl_list": {
        "1": "bw1",
        "3": "bw2",
        "all": "bw1"
      }
    },
    "2c90000000000025": {
      "sl_list": {
        "1": "bw2"
      }
    }
  }
}
```

- Status Codes
  - 201 – created
  - 400 – BAD REQUEST

NVIDIA SHARP REST API

SHARP Reservations APIs

> **Note**
>
> SHARPv2 must be running (enable_SHARP = true) and the NVIDIA Scalable Hierarchical Aggregation and Reduction Protocol (SHARP)™ allocation parameter must be enabled (enable_SHARP_alloction = true) for this API to trigger resource (GUID) allocations and deallocations within SHARP.

NVIDIA SHARP reservation REST APIs support the following operations:

- Get Specific SHARP Reservation
- Create a New SHARP Reservation
- Delete SHARP Reservation
- Update SHARP Reservation

Get All Reservations

- Description – Retrieves all SHARP reservations
- Request URL – GET /ufmRest/app/sharp/allocate_resources
- Request Content-Type – Application/json
- Response

```
{
```

```
    "anas1":{
       "pkey":"0x12",
       "guids":["0x248a0703008a850a", "0x248a0703008a850b"]
    },
    "anas2":{
       "pkey":"0x12",
       "guids": ["0xf452140300383a01", "0xf452140300383a02"]
    }
 }
```

- Status Codes
  - 200 – OK
  - 400 – BAD_REQUEST

Get Specific SHARP Reservation

- Description – Gets specific SHARP reservation by app_id
- Request URL – GET /ufmRest/app/sharp/allocate_resources/<app_id>
- Request Content Type – Application/json
- Status Codes
  - 200 – OK
  - 400 – BAD_REQUEST
  - 404 – NOT_FOUND

```
{
   "anas1":{
      "pkey": "0x12",
      "guids": ["0x248a0703008a850a", "0x248a0703008a850b"]
```

```
    }
}
```

Create a New SHARP Reservation

> **Note**
>
> The following API is replacing the deprecated SHARP API presented in earlier versions of this UFM Enterprise REST API Guide.

- Description – Creates a new SHARP reservation. By default, the SHARP blocking API is called, which entails sending the reservation request to SHARP and awaiting the response (success or fail). To revert to the previous behavior of using the non-blocking API, set the "blocking" parameter in the API to false. If the partial allocation parameter is set to false, the SHARP allocation request will not succeed in the event that even a single node is absent in the fabric. By default, this parameter is set to true.
- Example of a false partial allocation: Request URL – POST /ufmRest/app/sharp/resources?partially_alloc=false
- Example of calling a non-blocking API: Request URL – POST /ufmRest/app/sharp/resources?blocking=false
- Request Content-Type – Application/json
- Status Codes
    - 202 – ACCEPTED (All nodes were added successfully to created allocation)
    - 206 – PARTIAL (Not all nodes were added to created allocation because they are not found in the fabric)
    - 200 - OK (All nodes were added successfully to the created allocation and the SHARP blocking API is called)
    - 400 – BAD_REQUEST

- Request Data

Name	Value	Default	Description	Mandatory/Optional
App_id	String	None	"0x7fff" (This is the default management pkey) Application id. It is also the identifier of this nodes allocation	Mandatory
App_resources_limit	Integer	-1	Application resources limitation	Optional
Hosts_names	String	None	A string of hosts names separated by a comma, to be added to sharp allocation. Example: "r-ufm77,r-ufm51"	Optional
Port_guids	list	None	List of ports guids Example: ["f452140300383a01", "f452140300383a02"]	Optional
pkey	Hexadecimal string between "0x0001"-"0x7ffe" exclusive	"0x7fff" (This is the default management pkey)	Created network PKey to be used by Sharp	Optional

Examples:

- Create SHARP allocation by sending hosts_names:

```
{
"app_id" : "99" ,
"hosts_names" : "r-ufm51,r-ufm55" ,
"pkey" : "0x12" ,
"app_resources_limit" :  -1
```

```
}
```

- Create SHARP allocation by sending port_guids:

```
{
"app_id":"99",
"port_guids": ["f452140300383a01", "f452140300383a02"],
"pkey":"0x12",
"app_resources_limit": -1
}
```

Delete SHARP Reservation

> **Note**
>
> The following API is replacing the deprecated SHARP API presented in earlier versions of the UFM Enterprise REST API Guide.

- Description - Deletes SHARP Allocation. By default, the SHARP blocking API is called to delete SHARP reservation.
- Example of calling delete allocation using SHARP blocking API: Request URL - DELETE /ufmRest/app/sharp/resources/<app_id>
- Example of calling delete allocation using SHARP non-blocking API: Request URL - DELETE /ufmRest/app/sharp/resources/<app_id>?blocking=false
- Request Content-Type – Application/json
- Status Codes
    - 204 – NO CONTENT

- 400 – BAD_REQUEST

Update SHARP Reservation

> **Note**
>
> The following API is replacing the deprecated SHARP API presented in earlier versions of this UFM Enterprise REST API Guide.

- Description – Updates SHARP Allocation. By default, the update SHARP blocking API is called, which entails sending the update reservation request to SHARP and awaiting the response (success or fail). To revert to the previous behavior of using the non-blocking API, set the "blocking" parameter in the API to false. If the partial allocation parameter is set to false, the SHARP allocation request will not succeed in the event that even a single node is absent in the fabric. By default, this parameter is set to true.
- Example of a false partial allocation: Request URL – PUT /ufmRest/app/sharp/resources/<app_id>?partially_alloc=false
- Example of calling a non-blocking API: Request URL – PUT /ufmRest/app/sharp/resources<app_id>?blocking=false
- Request Content-Type – Application/json
- Status Codes
    - 202 – ACCEPTED (All nodes were updated successfully to SHARP allocation)
    - 206 – PARTIAL (Not all nodes were updated to SHARP allocation because they are not found in the fabric)
    - 200 - OK (All nodes were updated successfully to the SHARP allocation and the SHARP blocking API is called)
    - 400 – BAD_REQUEST
- Body Examples:

- Update SHARP allocation by sending hosts_names:

```
{
    "hosts_names" : "r-ufm51,r-ufm77"
}
```

- Update SHARP allocation by sending port_guids:

```
{
  "port_guids" : [ "f452140300383a01" ,  "f452140300383a02" ]
}
```

SHARP Jobs APIs

The SHARP jobs REST API provides methods on obtaining information on SHARP jobs and support the following operations:

- Get All SHARP Jobs
- Get a Specific SHARP Job
- Get All SHARP Non-Blocking Jobs
- Get Specific SHARP Non-Blocking Job

Get All SHARP Jobs

- Description – Retrieves all active SHARP jobs.
- Request URL – GET /ufmRest/app/sharp/resources/jobs
- Request Content Type – Application/json
- Status Codes

- 200 – OK

- Response


```
{
    "99:58" : {
        "job_id" : 58 ,
        "num_guids" : 1 ,
        "num_rails" : 1 ,
        "trees" : {
            "0" : {
                "tree_id" : 0 ,
                "type" : "LLT" ,
                "ANs" : {
                    "0x33333" : {
                        "description" : "sw3" ,
                        "lid" : 23 ,
                        "rank" : 1 ,
                        "guid" : "0x33333" ,
                        "parent_guid" : null ,
                        "child_guids" : null ,
                        "hca_guids" : [
                            "0x78395179" ,
                            "0x78395178"
                        ]
                    }
                }
            }
        } ,
        "reservation_key" : "99"
    } ,
    "99:74" : {
        "job_id" : 74 ,
        "num_guids" : 1 ,
        "num_rails" : 1 ,
```

```
            "trees" : {
                "0" : {
                    "tree_id" : 0 ,
                    "type" : "LLT" ,
                    "ANs" : {
                        "0x33333" : {
                            "description" : "sw3" ,
                            "lid" : 23 ,
                            "rank" : 1 ,
                            "guid" : "0x33333" ,
                            "parent_guid" : null ,
                            "child_guids" : null ,
                            "hca_guids" : [
                                "0x78395179" ,
                                "0x78395178"
                            ]
                        }
                    } ,
                    "reservation_key" : "99"
                }
            }
        }
    }
```


Get a Specific SHARP Job

- Description – Retrieves specific active SHARP jobs with specific a reservation_id
- Request URL – GET /ufmRest/app/sharp/resources/jobs/<job_id>?reservation_id=<reservation_id>
- Request Content Type – Application/json
- Status Codes

- 200 – OK
- 404 – NOT_FOUND

- Response


```
{
    "99:58" : {
        "job_id" : 58 ,
        "num_guids" : 1 ,
        "num_rails" : 1 ,
        "trees" : {
            "0" : {
                "tree_id" : 0 ,
                "type" : "LLT" ,
                "ANs" : {
                    "0x33333" : {
                        "description" : "sw3" ,
                        "lid" : 23 ,
                        "rank" : 1 ,
                        "guid" : "0x33333" ,
                        "parent_guid" : null ,
                        "child_guids" : null ,
                        "hca_guids" : [
                            "0x78395179" ,
                            "0x78395178"
                        ]
                    }
                }
            }
        } ,
        "reservation_key" : "99"
    }
}
```

Get All SHARP Non-Blocking Jobs

- Description – Retrieves all active SHARP jobs using non blocking SHARP API
- Request URL – GET /ufmRest/app/sharp/resources/jobs_nb
- Request Content Type – Application/json
- Status Codes
  - 200 – OK
- Response – the HTTP response location header contains a URL with job ID created for running the action.

  Example:


```
{
    "ID" : "1" ,
    "Status" : "Completed" ,
    "Progress" : 100 ,
    "Description" : "Get sharp jobs" ,
    "Created" : "2023-05-03 09:48:35" ,
    "LastUpdated" : "2023-05-03 09:48:35" ,
        "Summary" :  {
                "99:58" : {
        "job_id" : 58 ,
        "num_guids" : 1 ,
        "num_rails" : 1 ,
        "trees" : {
                "0" : {
                    "tree_id" : 0 ,
                "type" : "LLT" ,
                "ANs" : {
                "0x33333" : {
                        "description" : "sw3" ,
```

```
                    "lid" : 23 ,
                    "rank" : 1 ,
                    "guid" : "0x33333" ,
                    "parent_guid" : null ,
                    "child_guids" : null ,
                    "hca_guids" : [ "0x78395179" ,  "0x78395178" ]
                    }
            }
            }
    } ,
    "reservation_key" : "99"
    } ,
    "99:74" : {
    "job_id" : 74 ,
    "num_guids" : 1 ,
    "num_rails" : 1 ,
    "trees" : {
            "0" : {
            "tree_id" : 0 ,
            "type" : "LLT" ,
            "ANs" : {
                    "0x33333" : {
                    "description" : "sw3" ,
                    "lid" : 23 ,
                    "rank" : 1 ,
                    "guid" : "0x33333" ,
                    "parent_guid" : null ,
                    "child_guids" : null ,
                    "hca_guids" : [ "0x78395179" ,  "0x78395178" ]
                    }
            } ,
            "reservation_key" : "99"
            }
    }
            }
    } ,
```

```
    "RelatedObjects" : [ ] ,
    "CreatedBy" : "admin" ,
    "Operation" : "Get sharp jobs" ,
    "Foreground" : true ,
    "SiteName" : ""
}
```


Get Specific SHARP Non-Blocking Job

- Description – Retrieves specific active SHARP jobs with specific reservation_id using non blocking SHARP API
- Request URL – GET /ufmRest/app/sharp/resources/jobs_nb/<job_id>?reservation_id=<reservation_id>
- Request Content Type – Application/json
- Status Codes
    - 200 – OK
    - 404 – NOT_FOUND
- Response – the HTTP Response location header contains a URL with job ID created for running the action. Example:


```
{
    "ID" : "1" ,
    "Status" : "Completed" ,
    "Progress" : 100 ,
    "Description" : "Get sharp jobs" ,
    "Created" : "2023-05-03 09:48:35" ,
    "LastUpdated" : "2023-05-03 09:48:35" ,
            "Summary" :   {
                    "99:58" : {
            "job_id" : 58 ,
```

```
            "num_guids" : 1 ,
            "num_rails" : 1 ,
            "trees" : {
                "0" : {
                "tree_id" : 0 ,
                "type" : "LLT" ,
                "ANs" : {
                    "0x33333" : {
                    "description" : "sw3" ,
                    "lid" : 23 ,
                    "rank" : 1 ,
                    "guid" : "0x33333" ,
                    "parent_guid" : null ,
                    "child_guids" : null ,
                    "hca_guids" : [ "0x78395179" ,  "0x78395178" ]
                }
                }
                }
            } ,
            "reservation_key" : "99"
    } ,
    "RelatedObjects" : [ ] ,
      "CreatedBy" : "admin" ,
      "Operation" : "Get sharp jobs" ,
      "Foreground" : true ,
      "SiteName" : ""
}
```


Extract the Performance counters of specific hostnames

- Description – This API is used to get the Performance counters for a specific list of hostnames.

  You can do filtering based on counter names. you can show the job summary in both JSON and CSV format.

- Request URL – POST /ufmRest/app/sharp/resources/pm_counters?csv_format=true
- Request Content Type – Application/json
- {"hosts_names":"r-ufm51,r-ufm77", "pm_counters_names": ["PortRcvConstraintErrors", "PortXmitConstraintErrors"]}
- Status Codes
  - 202 – ACCEPTED
  - 400 – BAD_REQUEST
- Response – the HTTP Response location header contains a URL with job ID created for running the action. Example:


```
[
    {
        "ID": "1",
        "Status": "Completed",
        "Progress": 100,
        "Description": "Get performance counters for hosts of sharp jobs",
        "Created": "2024-07-28 07:37:34",
        "LastUpdated": "2024-07-28 07:37:37",
        "Summary":
"NodeGUID,PortGUID,PortNumber,PortRcvConstraintErrors,PortXmitConstraintErrors,SystemNa
ufm77\n0x0c42a1030079a66c,0x0c42a1030079a66c,35,0,0,sw-ufm-
qm01\n0x0c42a1030079a66c,0x0c42a1030079a66c,36,0,0,sw-ufm-
qm01\n0x0c42a1030079a66c,0x0c42a1030079a66c,37,0,0,sw-ufm-
qm01\n0x0c42a1030079a66c,0x0c42a1030079a66c,38,6,0,sw-ufm-
qm01\n0xb8599f03000a7769,0xb8599f03000a7769,1,0,0,r-
ufm77\n0xf452140300383a00,0xf452140300383a01,1,0,0,r-
ufm51\n0xf452140300383a00,0xf452140300383a02,2,0,0,r-ufm51\n",
        "RelatedObjects": "",
        "CreatedBy": "admin",
        "Operation": "",
        "Foreground": true,
        "SiteName": ""
```

```
    },
    {
        "ID": "2",
        "Status": "Completed",
        "Progress": 100,
        "Description": "Get performance counters for hosts of sharp jobs",
        "Created": "2024-07-28 07:38:39",
        "LastUpdated": "2024-07-28 07:38:41",
        "Summary": "[{'NodeGUID': '0xb8599f03000a7768', 'PortGUID':
'0xb8599f03000a7768', 'PortNumber': '1', 'PortRcvConstraintErrors': '0',
'PortXmitConstraintErrors': '0', 'SystemName': 'r-ufm77'}, {'NodeGUID': '0x0c42a1030079a66c',
'PortGUID': '0x0c42a1030079a66c', 'PortNumber': '35', 'PortRcvConstraintErrors': '0',
'PortXmitConstraintErrors': '0', 'SystemName': 'sw-ufm-qm01'}, {'NodeGUID':
'0x0c42a1030079a66c', 'PortGUID': '0x0c42a1030079a66c', 'PortNumber': '36',
'PortRcvConstraintErrors': '0', 'PortXmitConstraintErrors': '0', 'SystemName': 'sw-ufm-qm01'},
{'NodeGUID': '0x0c42a1030079a66c', 'PortGUID': '0x0c42a1030079a66c', 'PortNumber': '37',
'PortRcvConstraintErrors': '0', 'PortXmitConstraintErrors': '0', 'SystemName': 'sw-ufm-qm01'},
{'NodeGUID': '0x0c42a1030079a66c', 'PortGUID': '0x0c42a1030079a66c', 'PortNumber': '38',
'PortRcvConstraintErrors': '6', 'PortXmitConstraintErrors': '0', 'SystemName': 'sw-ufm-qm01'},
{'NodeGUID': '0xb8599f03000a7769', 'PortGUID': '0xb8599f03000a7769', 'PortNumber': '1',
'PortRcvConstraintErrors': '0', 'PortXmitConstraintErrors': '0', 'SystemName': 'r-ufm77'},
{'NodeGUID': '0xf452140300383a00', 'PortGUID': '0xf452140300383a01', 'PortNumber': '1',
'PortRcvConstraintErrors': '0', 'PortXmitConstraintErrors': '0', 'SystemName': 'r-ufm51'},
{'NodeGUID': '0xf452140300383a00', 'PortGUID': '0xf452140300383a02', 'PortNumber': '2',
'PortRcvConstraintErrors': '0', 'PortXmitConstraintErrors': '0', 'SystemName': 'r-ufm51'}]",
        "RelatedObjects": "",
        "CreatedBy": "admin",
        "Operation": "",
        "Foreground": true,
        "SiteName": ""
    }
]
```

Topology Compare REST API

Compare Current Topology with External .topo File

This API is asynchronous, therefore will create a hidden job and return its ID in the response.

- URL: POST ufmRestV2/reports/Topology_Compare
- Payload: .topo file (the payload is optional and if you do not send it, then the topology is compared against the master typology).
- Response: redirect to job ID

Get Compare Result

- URL: GET ufmRestV2/reports/last_report/Topology_Compare
- Response:


```
"{
{
  "added": {
    "nodes": [
      {
        "guid": "0002c9000002026c",
        "system_name": "L0_R03_B15_I04",
        "ip": "0.0.0.0",
        "type": "switch"
      },
      {
        "guid": "0002c90000012721",
        "system_name": "H_5",
        "ip": "0.0.0.0",
```

```
        "type": "host"
      }
    ],
    "links": [
      {
        "source_guid": "0002c9000002026c",
        "destination_guid": "0002c90000021b7c",
        "name": "0002c9000002026c_28:0002c90000021b7c_4"
      },
      {
        "source_guid": "0002c9000002026c",
        "destination_guid": "0002c90000021b88",
        "name": "0002c9000002026c_31:0002c90000021b88_4"
      },
      {
        "source_guid": "0002c9000002026c",
        "destination_guid": "0002c90000021b8c",
        "name": "0002c9000002026c_32:0002c90000021b8c_4"
      }
    ]
  },
  "removed": {
    "nodes": [
      {
        "guid": "0002c9000002026c",
        "system_name": "L0_R03_B15_I04",
        "ip": "0.0.0.0",
        "type": "switch"
      },
      {
        "guid": "0002c90000012721",
        "system_name": "H_5",
        "ip": "0.0.0.0",
        "type": "host"
      }
    ],
```

```
    "links": [
      {
        "source_guid": "0002c9000002026c",
        "destination_guid": "0002c90000021b7c",
        "name": "0002c9000002026c_28:0002c90000021b7c_4"
      },
      {
        "source_guid": "0002c9000002026c",
        "destination_guid": "0002c90000021b88",
        "name": "0002c9000002026c_31:0002c90000021b88_4"
      },
      {
        "source_guid": "0002c9000002026c",
        "destination_guid": "0002c90000021b8c",
        "name": "0002c9000002026c_32:0002c90000021b8c_4"
      }
    ]
  }
}
```


Get List of Created Topodiff Results

- URL: GET /ufmRestV2/Topology_Compare
- Response:


```
[
  {
    "report_id": "4",
    "report_scope": "Periodic",
    "timestamp": "2021-06-22 11:00:00"
  },
  {
    "report_id": "5",
```

```
    "report_scope": "Periodic",
    "timestamp": "2021-06-22 11:05:00"
  },
  {
    "report_id": "6",
    "report_scope": "Periodic",
    "timestamp": "2021-06-22 11:10:00"
  },
]
```


Get Topodiff Report Information

- URL: GET /ufmRest/reports/Topology_Compare/<report_id>
- Response:


```
{
  "title": "Topology Compare Report",
  "date": "2021-01-21 12:02:00",
  "sections": [
    {
      "title": "Topology Compare",
      "description": "Compares planned topology to an actual one
",
      "status": {
        "severity": "Critical",
        "value": "Completed Successfully. 3 Errors Found, 1
Warnings Found"
      },
      "elements": [
        {
          "status": {
            "severity": "Critical",
```

```
            "value": "Completed Successfully. 3 Errors Found, 1
Warnings Found"
          },
          "elements": [
            {
              "Detected Differences": " Found mismatches between
the topology defined in /opt/ufm/data/fabric.topo and the
discovered fabric.",
              "Severity": "Warning"
            },
            {
              "Detected Differences": " Total: 3 Additional nodes
detected",
              "Severity": "Critical"
            },
            {
              "Detected Differences": " Unplanned node detected:
r-hyp-sw01/U1",
              "Severity": "Critical"
            },
            {
              "Detected Differences": " Unplanned node detected:
r-ufm254-hyp-03/mlx5_0",
              "Severity": "Critical"
            },
            {
              "Detected Differences": " Unplanned node detected:
r-ufm254-hyp-04/U1",
              "Severity": "Critical"
            } ] } ] } ],
  "Created by": "admin"
}
```

Update Master Topology File with Current Topology or External File

- URL: POST ufmRestV2/Topology_Compare/master_topology
- External file optional (if not sent, the API aligns the master topology with the current topology).

Export Topology File

- Description: generates the .topo file for the current topology. Could be synchronous or asynchronous call.
- URL: POST ufmRestV2/Topology_Compare/topology_file
- Request Data: N/A
- Response:

```
{
  "file_name": "mytop.topo"
}
```

Retrieve Topology File

- Description: requests the file from the server side in order to download it on the local machine.
- URL: GET /ufmRest/topology_file/<file_name>
- Response: .topo file

Get Notification

- URL: GET /ufmRest/notifications
- Response:

```
[
  {
    "instanceID": 4,
    "subject": "Topology Diff",
    "severity": "Info",
    "timestamp": "2021-01-29 15:16:18",
    "read": true,
    "body": {"is_stable":true} }]
```


Acknowledge Notification

- Description: Acknowledge the notification once the user gets the message.
- URL: PUT/ufmRest/notifications/>instanceID>
- Response: 202 successful operation

Periodic IBDiagnet REST API

Start New IBDiagnet Task

- Description – start new task
- Request URL – POST /ufmRest/reports/ibdiagnetPeriodic
- Request Content Type – Application/json
- Request Data
  - general – general parameters of the task including the name , running mode (scheduled/once), and the location of the IBDiagnet results which are:
    - Remote: save reports and data to remote location configured in UFM remote location settings
    - Local: save reports and data to default local path on UFM server
  - command_flags – dictionary of "key":"value" with desired ibdiagnet flags
  - conf_file_parms – advanced parameters to run as configuration file
  - run – parameters regarding scheduling
- Example

```
{
  "general": {
    "name": "example1",
    "running_mode": "scheduled",
    "location": "remote"
  },
  "command_flags": {
    "--mads_timeout": 500
```

```
  },
  "run": {
    "startTime": "2020-10-01 16:40:59",
    "endTime": "2020-10-01 18:45:59",
    "interval": 3600
  },
  "conf_file_params": "max_hops=64"
}
```

Deactivate IBDiagnet Task

- Description – stop running task
- Request URL – POST /ufmRest/reports/ibdiagnetPeriodic/stop/<task_name>
- Request Content Type – Application/json

Start Deactivated Task

- Description – start deactivated task
- Request URL – POST /ufmRest/reports/ibdiagnetPeriodic/start/<task_name>
- Request Content Type – Application/json

Delete IBDiagnet Task

- Description – delete task
- Request URL – DELETE /ufmRest/reports/ibdiagnetPeriodic/<task_name>
- Request Content Type – Application/json

Edit Running Task

- Description – edit running task
- Request URL – PUT /ufmRest/reports/ibdiagnetPeriodic/<task_name>

- Request Content Type – Application/json
- Request Data
  - general – general parameters of the task including the name and running mode (scheduled/once)
  - run – parameters regarding scheduling
- Example

```
{
  "general": {
    "name": "example1",
    "running_mode": "scheduled"
  },
  "run": {
    "startTime": "2020-10-01 16:40:59",
    "endTime": "2020-10-01 18:45:59",
    "interval": 3600
  }
}
```

Get All IBDiagnet Tasks

- Description – get all system tasks
- Request URL - GET /ufmRest/reports/ibdiagnetPeriodic
- Request Content Type – Application/json
- Response example:

```
[
  {
    "id": "351915390845",
```

```
    "name": "example",
    "last_run_result": "Successful",
    "next_scheduled_run": "01\/10\/2020 16:53:00",
    "last_result_location":
"\/opt\/ufm\/files\/periodicIbdiagnet\/example-01-10-2020-
16.03.21",
    "running_mode": "scheduled",
    "last_run_time": "01\/10\/2020 16:03:21",
    "task_state": "Enabled",
    "ibdiagnet_params": null,
    "command_flags": {
    },
    "scheduling_object": {
      "endTime": "2020-10-01 18:58:00",
      "interval": 3600,
      "startTime": "2020-10-01 16:53:00"
    }
  },
  {
    "id": "256750526107",
    "name": "example1",
    "last_run_result": "Successful",
    "next_scheduled_run": "01\/10\/2020 17:41:01",
    "last_result_location":
"\/opt\/ufm\/files\/periodicIbdiagnet\/example1-01-10-2020-
16.41.01",
    "running_mode": "scheduled",
    "last_run_time": "01\/10\/2020 16:41:01",
    "task_state": "Disabled",
    "ibdiagnet_params": "max_hops=64",
    "command_flags": {
      "--mads_timeout": 500
    },
    "scheduling_object": {
      "endTime": "2020-10-01 18:45:59",
      "interval": 3600,
```

```
        "startTime": "2020-10-01 16:40:59"
      }
    }
  ]
```

Get IBDiagnet Task

- Description – task parameter
- Request URL – GET /ufmRest/reports/ibdiagnetPeriodic/<task_name>
- Request Content Type – Application/json

Logging REST API

Logging REST API

- Description – Retrieves different types of logs.
- Request URL – /ufmRest/app/logs/<type>
- Types:
    - Event
    - SM
    - UFM

Get Log

- Description – Retrieves a log file of a specific type.
- Request URL – GET /ufmRest/app/logs/<type>[&length=<number>]
    - Length is an optional limit on the number of returned lines and defaults to 500. It cannot be set to more than 10000
- Request Content Type – Application/json
- Response – content attribute will contain the logs text
- Status Codes
    - 200 – OK
    - 400 – bad request (bad or missing parameters)

Get Events Logs in JSON Format

- Description – Retrieves event logs with support for server pagination.

- Request URL – GET ufmRest/app/logs/history_events?page_number=<page_namer>&rpp=<page size>
- Request Content Type – Application/json
- Response – Content attribute contains JSON list
- Status Codes
- 200 – OK
- 400 – bad request (bad or missing parameters)

Create History

- Description – Create a file with log entries from a specific time range (including archived logs)
- Request URL – POST /ufmRest/app/logs/<type>/history?start=<timestamp>&end=<timestamp>[&length=<number>][&tz=<timezone>][& event_src=<events src>]
    - Start and end are the time range in milliseconds
    - Length is an optional limit on the number of returned lines and defaults to configuration option max_history_lines (100000)
    - Tz is an optional timezone and defaults to utc. Must be one of these values.
- Event Source is an optional parameter that is only valid if the log type is 'Event'. It must be specified as either 'device' or 'link'.Request Content Type – Application/json
- Response – the HTTP Response Location Header will contain URI with job ID created for generating the file. Once the job is successfully finished, its summary field will have the following format:

```
{"result_exceeds_limit" : false , "file_name" : "event_history_admin" , "limit" : 10000 }
```

Where limit is the given/default length, result_exceeds_limit indicates whether increasing the limit will return more data, and file_name points to the result file. The file can be obtained by using:

```
GET /ufm_web/<file_name>
```

- Status Codes
  - 202 – accepted. Job ID created successfully
  - 400 – bad request (bad or missing parameters)

Usage Statistics REST API

- Description – This REST API stores statistics into the usage statistics file which is stored in the file system.
- Request URL – POST /ufmRest/app/usage_statistics
- Request Content Type – Application/json
- Request data example:

```
{ "events": [
    "2023-11-01 10:38:36\tadmin\tufm\tUFM application has been started",
    "2023-11-01 10:38:36\tadmin\tufm\tTimepicker has been set: Last 5 Minutes",
    "2023-11-01 10:39:13\tadmin\tufm\tUFM window has been hidden"
]] }
```

- Response:

```
{
    "file_path": "/opt/ufm/files/log/usage_statistics/usage_statistics"
  }
```

- Status Code:
  - 202 – Accepted

Access Tokens API

Get All Tokens

- Description – returns information on all created tokens by the user
- Request URL – GET /ufmRest/app/tokens
- Response:

```
[
  {
    "access_token": "czQYeCfKIeXqlwSqtorunOPysaSp2r",
    "revoked": false,
    "issued_at": 1637067961,
    "expires_in": 315360000,
    "username": "admin"
  }
]
```

- Status Codes:
  - 200 – Ok

Create New Token

- Description – Create a new token
- Request URL – POST /ufmRest/app/tokens
- Response:

```
  {
```

```
    "access_token": "czQYeCfKIeXqlwSqtorunOPysaSp2r",
    "revoked": false,
    "issued_at": 1637067961,
    "expires_in": 315360000,
    "username": "admin"
  }
```

- Status Codes:
  - 200 – Ok

Revoke a Token

- Description – Revoke a specific token
- Request URL – POST /ufmRest/app/tokens/revoke
- Request Content Type – Multipart/form-data

> **Note**
>
> token: oiR3v37KxscBKfemvMnXzgazqZD15Z

- Status Codes:
  - 200 – Ok
  - 404 – Not Found

How to Use the Access Token

The access token should be attached in the header of the API request as the following example:

To get all fabric events using the token based authentication:

- URL /**ufmRestV3**/app/events
- Headers: {... **Authorization: Basic <access_token>** ...}

Roles Access Control

Get Rest APIs

- Description – Returns all Rest APIs in UFM.
- Request URL – GET /ufmRest/app/roles_access_control/rest_apis
- Response:

```
[
    {
        "route": "/monitoring/start",
        "method": "POST"
    }
]
```

- Status Codes:
    - 200 – Ok

Get All Roles

- Description – Returns all roles.
- Request URL – GET /ufmRest/app/roles_access_control/roles
- Response:

```
] [
    {
        "name": "Read_only",
        "allowed_urls": {
```

```
                "/monitoring/start" : [
                    "POST"
                ],
                "/monitoring/session/<session_id>" : [
                    "PUT",
                    "DELETE",
                    "GET"
                ]}
}   }
```

- Status Codes:
    - 200 – Ok

Get Role by Name

- Description – Returns a specific role.
- Request URL – GET /ufmRest/app/roles_access_control/roles/<role_name>
- Response:

```
]  {
            "name" :  "Read_only",
            "allowed_urls" :  {
                "/monitoring/start" : [
                    "POST"
                ],
                "/monitoring/session/<session_id>" : [
                    "PUT",
                    "DELETE",
                    "GET"
                ]}
}   }
```

- Status Codes:
    - 200 – Ok

Create New Role

- Description – Creates a new role.
- Request URL – POST /ufmRest/app/roles_access_control/roles
- Request Data:

```
{
"name" : "Role_Name" ,
"allowed_urls" : {"/monitoring/attribute_values" : [ "GET" ] }
}
```

- Status Codes:
- 200 – Ok

Update Role

- Description – Updates a role.
- Request URL – PUT /ufmRest/app/roles_access_control/roles/<role-name>
- Request Data:

```
{
"allowed_urls" : {"/monitoring/attribute_values" : [ "GET" ] }
}
```

- Status Codes:
    - 200 – Ok

Delete Role

- Description – Deletes a role.
- Request URL –DELETE /ufmRest/app/roles_access_control/roles/<role-name>
- Status Codes:
- 200 – Ok

CloudX APIs

Create Network

- Description – Create a new network
- Request URL – POST /ufmRest/cloudx/Network
- Request Payload:

```
{
  "id": "43a0f1c4-8bf5-4d69-8775-fe7c35549b91",
  "name": "privateCX4",
  "tenant_id": "6a51b867d9c149b5af70a66240a35353",
  "admin_state_up": true,
  "mtu": 1500,
  "status": "ACTIVE",
  "subnets": [],
  "standard_attr_id": 36,
  "shared": false,
  "project_id": "6a51b867d9c149b5af70a66240a35353",
  "port_security_enabled": true,
  "router:external": false,
  "provider:network_type": "vlan",
  "provider:physical_network": "ConnectX5",
  "provider:segmentation_id": 10,
  "availability_zone_hints": [],
  "is_default": false,
  "availability_zones": [],
  "ipv4_address_scope": null,
  "ipv6_address_scope": null,
  "vlan_transparent": null,
  "description": "",
```

```
  "tags": [],
  "created_at": "2021-09-21T08:33:27Z",
  "updated_at": "2021-09-21T08:33:28Z",
  "revision_number": 1,
  "network_qos_policy": null
}
```

- Response – the HTTP Response Location Header will contain URI with Job ID created for this action.
- Status Codes
  - 202 – successful operation
  - 400 – bad request

Delete Network

- Description – Delete existing network
- Request URL – DELETE /ufmRest/cloudx/Network
- Request Payload:

```
{
"id":"<network_id>"
}
```

- Response – the HTTP Response Location Header will contain URI with Job ID created for this action.
- Status Codes
  - 202 – successful operation
  - 400 – bad request
  - 404 – not found

Add Port to Network

- Description – Add port to existing network
- Request URL – POST /ufmRest/cloudx/Port
- Request Payload:


```
{
  "id": "85379c18-1b09-4f19-b471-b3496b145993",
  "name": "",
  "network_id": "43a0f1c4-8bf5-4d69-8775-fe7c35549b91",
  "tenant_id": "29b7850797be4f0b9a2f888d07fce349",
  "mac_address": "fa:16:3e:b9:be:c4",
  "admin_state_up": true,
  "status": "DOWN",
  "device_id": "dhcp9c934189-944b-53e6-9103-75806a1e8e87-
a029821a-ca6a-4ddf-9d85-801ea318a25e",
  "device_owner": "network:dhcp",
  "standard_attr_id": 247,
  "fixed_ips": [
    {
      "subnet_id": "acff29ee-3ddc-47b7-a4bd-3f61cc2bc953",
      "ip_address": "11.11.11.2"
    }
  ],
  "project_id": "29b7850797be4f0b9a2f888d07fce349",
  "qos_policy_id": null,
  "port_security_enabled": false,
  "security_groups": [],
  "binding:vnic_type": "normal",
  "binding:profile": {},
  "binding:host_id": "r-ufm254-hyp-04",
  "binding:vif_type": "unbound",
  "binding:vif_details": {},
  "allowed_address_pairs": [],
```

```
    "network_qos_policy": null,
    "extra_dhcp_opts": [],
    "description": "",
    "qos_network_policy_id": null,
    "resource_request": null,
    "ip_allocation": "immediate",
    "tags": [],
    "created_at": "2021-10-18T08:52:02Z",
    "updated_at": "2021-10-18T08:52:02Z",
    "revision_number": 1,
    "network": {
      "id": "a029821a-ca6a-4ddf-9d85-801ea318a25e",
      "name": "ib_tenant_net",
      "tenant_id": "29b7850797be4f0b9a2f888d07fce349",
      "admin_state_up": true,
      "mtu": 1500,
      "status": "ACTIVE",
      "subnets": [
        "acff29ee-3ddc-47b7-a4bd-3f61cc2bc953"
      ],
      "standard_attr_id": 244,
      "shared": true,
      "availability_zone_hints": [],
      "availability_zones": [
        "nova",
        "nova"
      ],
      "ipv4_address_scope": null,
      "ipv6_address_scope": null,
      "router:external": false,
      "vlan_transparent": null,
      "description": "",
      "qos_policy_id": null,
      "port_security_enabled": true,
      "l2_adjacency": true,
      "tags": [],
```

```
    "created_at": "2021-10-18T08:51:57Z",
    "updated_at": "2021-10-18T08:52:01Z",
    "revision_number": 2,
    "project_id": "29b7850797be4f0b9a2f888d07fce349",
    "provider:network_type": "vlan",
    "provider:physical_network": "ibnet",
    "provider:segmentation_id": 97
  }
}
```

- Response – the HTTP Response Location Header will contain URI with Job ID created for this action.
- Status Codes
  - 202 – successful operation
  - 400 – bad request

Delete Port From Network

- Description – Delete existing port from a network
- Request URL – DELETE /ufmRest/cloudx/Port
- Request Payload:

```
{
  "id": "85379c18-1b09-4f19-b471-b3496b145993",
  "name": "",
  "network_id": "43a0f1c4-8bf5-4d69-8775-fe7c35549b91",
  "tenant_id": "29b7850797be4f0b9a2f888d07fce349",
  "mac_address": "fa:16:3e:b9:be:c4",
  "admin_state_up": true,
  "status": "ACTIVE",
  "device_id": "dhcp9c934189-944b-53e6-9103-75806a1e8e87-
a029821a-ca6a-4ddf-9d85-801ea318a25e",
```

```
  "device_owner": "network:dhcp",
  "standard_attr_id": 247,
  "fixed_ips": [
    {
      "subnet_id": "acff29ee-3ddc-47b7-a4bd-3f61cc2bc953",
      "ip_address": "11.11.11.2"
    }
  ],
  "allowed_address_pairs": [],
  "extra_dhcp_opts": [],
  "security_groups": [],
  "description": "",
  "binding:vnic_type": "normal",
  "binding:profile": {},
  "binding:host_id": "r-ufm254-hyp-04",
  "binding:vif_type": "other",
  "binding:vif_details": {},
  "qos_policy_id": null,
  "qos_network_policy_id": null,
  "port_security_enabled": false,
  "resource_request": null,
  "ip_allocation": "immediate",
  "tags": [],
  "created_at": "2021-10-18T08:52:02Z",
  "updated_at": "2021-10-18T08:52:02Z",
  "revision_number": 2,
  "project_id": "29b7850797be4f0b9a2f888d07fce349",
  "network_qos_policy": null
}
```


- Response – the HTTP Response Location Header will contain URI with Job ID created for this action.
- Status Codes
    - 202 – successful operation

- 400 – bad request
- 404 – not found

Client Authentication REST API

Get Client Authentication Settings

- Description: Get client authentication settings
- URL: GET /ufmRest/app/client_authentication/settings
- Request Content Type – Application/json
- Request Data: N/A
- Response:

```
{
    "enable": true,
    "client_cert_sans": [
        {
            "san": "ufm-test.net",
            "user": "ufmsysadmin"
        }
    ],
    "ssl_cert_hostnames": [
        "ufm-test.net"
    ],
    "ssl_cert_file": "Present",
    "ca_intermediate_cert_file": "Present",
    "cert_auto_refresh": {
        "enabled": true,
        "root_intermediate_certs_url": https://test.net,
        "ssl_cert_url": https://rest.net,
```

```
        "ssl_cert_thumbprint":
"41EBA872F116E720E494A0AE1ED357EF8A0C60C9",
        "last_checked": "2022-03-15 11:35:40",
        "last_updated": "2022-03-15 11:35:40",
        "bootstrap_cert_file": "Present"
    }
}
```

- Status Codes:
  - 200 – Ok

Configure Certificate "Auto-Refresh"

- Description: Configure settings
- URL: PUT /ufmRest/app/client_authentication/settings
- Request Content Type – Application/json
- Request Data format:

```
{
       "enable": true,
       "client_cert_sans": [
             {
                    "san": "ufm-test.net",
                    "user": "ufmsysadmin"
             }
       ],
       "ssl_cert_hostnames": [
             "ufm-test.net"
       ],
       "cert_auto_refresh": {
             "enable": true,
```

```
            "root_intermediate_certs_url":
https://test.net2,
            "ssl_cert_url": passwordhttps://test.net,
            "ssl_cert_thumbprint":
"2268BDD79DF7FD9C818EB97F315AE0F35D223A16",
            "bootstrap_pfx_password": "password",
            "bootstrap_cert_file": base64 test format
             "bootstrap_pfx_password_file":
}
```

- Response: N/A

> **Note**
>
> - Only switches to "auto-refresh after refresh.
> - The bootstrap_cert_file file should be made up of base64 strings

- Status Codes:
  - 200 – Ok
  - 400 - Bad Request (bad or missing parameters)
  - 404 – Resource does not exist

> **Note**
>
> Bootstrap certificate bootstrap_pfx_password_file and bootstrap_pfx_password options are mutually exclusive, only one should be provided.

Update Certificates

- Description: Update certificates
- URL: POST /ufmRest/app/client_authentication/auto_refresh_certificates
- Request Content Type – Application/json
- Request Data: N/A
- Response: N/A

> **Note**
>
> After the certificates are updated, the system switches to client certificates.

- Status Codes:
  - 200 – Ok
  - 400 – Bad Request (bad or missing parameters)

Delete All Client Certificates

- Description: Delete client certificates return to user/password
- URL: DELETE /ufmRest/app/client_authentication/settings
- Request Content Type – Application/json
- Request Data: N/A
- Response: "Success"
- Status Codes:
  - 200 – Ok

- 400 – Bad Request (bad or missing parameters)
- 404 - Resource does not exist

Uploading New UFM Appliance Version REST API

Infrastructure Usage

- Using upgrade_ufm_appliance.py package which is part of the UFM software.
- Using UFM REST API infrastructure to control the upgrade.

Upgrade Flow

- Prerequisite:
    1. The upgrade is performed only on UFM APL.
    2. The system's initial version is HA master/slave.
    3. UFM runs on the master system.
- Via REST API, download the UFM appliance image.
- Via REST API, start upgrade using upgrade_ufm_appliance.py tool. The tool performs the following steps:
    1. Validates cluster.
    2. Retrieves HA status.
    3. Verifies installed version.
    4. Uploads the image to both systems.
    5. Installs the image on both systems.
    6. Changes boot location on slave.
    7. Reloads slave.

8. Changes boot location on master.

- Via REST API reload master.

REST API

Upload New UFM APL Image

- Description – Allows users to upload a new UFM APL image before applying the upgrade.
- Request URL – POST /ufmRest/app//images/appliance
- Request Content Type – Application/json
- Request Data:

```
{
    "file" :  " image-ufm_appliance-x86_64-UFMAPL_4.8.0.6_UFM_6.9.0.7-20220502-060753.img"
}
```

- Status Codes
    - 202 – ACCEPTED
    - 400 – bad request (bad or missing parameters, allowed only 10 images).

Delete UFM APL Image

- Description – Allows users to delete an uploaded UFM APL.
- Request URL – DELETE /ufmRest/app/images/appliance/<image_name>
- Request Content Type – Application/json
- Status Codes
    - 202 – ACCEPTED

- 404 – NOT_FOUND

Activate UFM APL Upgrade Image

- Description – Allows users to activate UFM APL upgrade.
- Request URL – POST /ufmRest/actions/appliance/upgrade
- Request Content Type – Application/json
- Request Data:

```
{
    "name" :  " image-ufm_appliance-x86_64-UFMAPL_4.8.0.6_UFM_6.9.0.7-20220502-060753.img"
}
```

- Status Codes
  - 202 – ACCEPTED
  - 400 – BAD REQUEST— Bad or missing parameter
  - 404 – NOT_FOUND

Activate UFM APL Master reload

- Description – Allows users to reload master system.
- Request URL – POST /ufmRest/actions/appliance/master_reboot
- Request Content Type – Application/json
- Request Data:
- Status Codes

- 202 – ACCEPTED

Get the List of Available Images

- Description – Allows users to get all the available images applied on a device.
- Request URL – GET /ufmRest/app/images/appliance
- Request Content Type – Application/json
- Response Data:

```
{
image-ufm_appliance-x86_64-UFMAPL_4.8.0.6_UFM_6.9.0.7-20220502-060753.img,
image-ufm_appliance-x86_64-UFMAPL_4.8.0.6_UFM_6.9.0.9-20220502-060753.img
}
```

- Status Codes
  - 200 – OK

Get Upgrade Status

- Description – Allows users to get upgrade status.
- Request URL – GET /ufmRest/actions/appliance/upgrade_status
- Request Content Type – Application/json
- Response Data:

```
{
```

```
2022-05-17 07:44:49.374 INFO    Going to install image-
ufm_appliance-x86_64-UFMAPL_4.8.0.6_UFM_6.9.0.7-20220502-
060753.img: image version UFMAPL_4.8.0.6_UFM_6.9.0.7
2022-05-17 07:44:49.381 INFO    Validating cluster: 10.209.36.38,
10.209.36.35
2022-05-17 07:44:49.382 INFO    Validating cluster: 10.209.36.38,
10.209.36.35
2022-05-17 07:44:49.382 INFO    Retrieving ha status info from:
10.209.36.38
2022-05-17 07:44:49.382 INFO    Retrieving version info from:
10.209.36.38
2022-05-17 07:45:25.069 INFO    Image version for 10.209.36.38 is:
UFMAPL_4.8.0.4_UFM_6.9.0.4
2022-05-17 07:45:25.069 INFO    Retrieving ufm status info from:
10.209.36.38
2022-05-17 07:45:41.007 INFO    Show installed images on:
10.209.36.38
2022-05-17 07:45:47.015 INFO    Retrieving ha status info from:
10.209.36.35
2022-05-17 07:45:47.016 INFO    Retrieving version info from:
10.209.36.35
2022-05-17 07:45:52.491 INFO    Image version for 10.209.36.35 is:
UFMAPL_4.8.0.4_UFM_6.9.0.4
2022-05-17 07:45:52.491 INFO    Retrieving ufm status info from:
10.209.36.35
2022-05-17 07:46:07.550 INFO    Show installed images on:
10.209.36.35
2022-05-17 07:46:13.212 INFO    Upgrading cluster: 10.209.36.38,
10.209.36.35
2022-05-17 07:46:13.212 INFO    Uploading image /tmp/image-
ufm_appliance-x86_64-UFMAPL_4.8.0.6_UFM_6.9.0.7-20220502-
060753.img on: 10.209.36.38
2022-05-17 07:46:13.213 INFO    Uploading image /tmp/image-
ufm_appliance-x86_64-UFMAPL_4.8.0.6_UFM_6.9.0.7-20220502-
060753.img on: 10.209.36.35
2022-05-17 07:47:59.972 INFO    Installing image on: 10.209.36.38
```

```
2022-05-17 07:48:00.964 INFO    Installing image on: 10.209.36.35
2022-05-17 07:49:28.473 INFO    Changing boot location on:
10.209.36.38
2022-05-17 07:49:33.882 INFO    Rebooting device: 10.209.36.38
2022-05-17 07:49:38.744 INFO    Reload command 'reload noconfirm'
initiated on '10.209.36.38'
2022-05-17 07:53:47.738 INFO    Reload command on '10.209.36.38' ended,
status: True
2022-05-17 07:53:47.739 INFO    Retrieving version info from:
10.209.36.38
2022-05-17 07:53:52.999 INFO    Changing boot location on:
10.209.36.35
}
```

- Status Codes
  - 200 – OK
  - 404 – NOT_FOUND (log file not found)

UFM System Dump API

Create New System Dump

- Description – Allows users to execute UFM system dump according to the mode of operation (if mode is not specified, the D**efault** mode is set, see below). The system triggers the job, and once created, it signals the start of the backup process. Upon process completion, the job returns the location of the backup (system dump) on the machine.
- Request URL – POST /ufmRest/app/backup?mode=Default
- Mode
  - **Default** – For basic collection
  - Snapshot – For more extended collection (including UFM logs)

- Request Content Type – Application/json
- Response type - hyperlink
- Response Data

```
!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 Final//EN">
<title>Redirecting...</title>
<h1>Redirecting...</h1>
<p>You should be redirected automatically to target URL: <a
href="/ufmRestV2/jobs/10">/ufmRestV2/jobs/10</a>.  If not click the
link.
Status Codes
202 – ACCEPTED
400 – bad request.
```

UFM Dynamic Telemetry Instances REST API

The management of dynamic telemetry instances involves the facilitation of user requests for the creation of multiple telemetry instances. As part of this process, the UFM enables users to establish new UFM Telemetry instances according to their preferred counters and configurations. These instances are not initiated by the UFM but rather are monitored for their operational status through the use of the UFM Telemetry bring-up tool.

Instantiate a New Instance

- Description: Instantiates a new telemetry instance per the requested configuration in the request parameters
- URL: POST https://10.209.36.126/ufmRestV2/app/telemetry/instances/cset_name
- Request Data:

Parameter	Description
requested_guids	An array of objects, where each object specifies the node GUID and ports of the requested GUID
guid	A string specifying the unique identifier (node GUID) of the requested metrics
ports	An array of integers specifying the ports of the requested GUID.
counters	An array of strings specifying the names of the metrics counters to be retrieved – only supported counters can be sent (can be retrieved via the supported counters API).
configuration	An optional object specifying additional configuration parameters.
sample_rate	An integer specifying the rate at which the metrics are sampled.

Parameter	Description
base_config	An optional string specifying the base configuration to be used.
ttl	An optional string specifying the time-to-live (TTL) for the metrics data.
is_registered_discovery	An optional boolean value indicating whether the metrics are registered with the discovery service.
is_async	An optional boolean value. If this parameter is sent, the creation will become asynchronous, and a job_id will be returned. To get the status of this job, please refer to the Jobs API. We recommend using this parameter.

- Response: Port number to communicate with the instantiated new instance.
- Request Example:

```
Content-Type: application/json
{
  "requested_guids": [
    {
      "guid": "xyz123",
      "ports": [8080, 8081, 8082]
    },
    {
      "guid": "abc456",
      "ports": [9090]
    }
  ],
  "counters": ["cpu", "memory"],
  "configuration": {
    "setting1": "value1",
    "setting2": "value2"
  },
  "sample_rate": 5,
  "base_config": "config1",
```

```
    "ttl": "24h",
    "is_registered_discovery": true
}
The API will return a port that will be exposed by the UFM
Telemetry.
Get All Instances
GET https://10.209.36.126/ufmRestV2/app/telemetry/instances
Return list of all instances + configuration + ports
{
    "<cset_name>": {
        "name": "<cset_name>",
        "requested_guids": [
            {
                "guid": "248a0703008dae46",
                "ports": [
                    1
                ]
            }
        ],
        "counters": [
            "PortXmitDataExtended",
            "PortRcvDataExtended"
        ],
        "sample_rate": 20,
        "ttl": "1h",
        "base_config": "",
        "endpoint_port": 9007,
        "status": "",
        "is_registered_discovery": true,
        "root_dir": "/opt/ufm/files/dynamic_telemetry/<cset_name>",
        "configuration": {
            "num_iterations": "20000",
            "plugin_env_CLX_EXPORT_API_SHOW_STATISTICS": 1,
            "plugin_env_UFM_TELEMETRY_MANAGED_MODE": 1
        },
        "conf_file": "",
```

```
            "hca": "mlx5_0",
            "pid": 7837
        }
}
```


Get Specific Instance Configuration

- Description: Gets a specific instance configuration.
- URL: GET https://10.209.36.126/ufmRestV2/app/telemetry/instances/cset_name
- Request Data: N/A
- Response Example:


```
{
    "pdr_dynamic": {
        "name": "pdr_dynamic",
        "requested_guids": [
            {
                "guid": "248a0703008fa280",
                "ports": [
                    1,
                    1,
                    1,
                    1
                ]
            },
            {
                "guid": "ec0d9a0300bf551c",
                "ports": [
                    1
                ]
            },
            {
                "guid": "e8ebd3030064b7c6",
```

```
                "ports": [
                    1,
                    1
                ]
            },
            {
                "guid": "043f720300b818a0",
                "ports": [
                    39
                ]
            },
            {
                "guid": "7cfe900300d5ba54",
                "ports": [
                    1,
                    1,
                    1
                ]
            },
            {
                "guid": "98039b03009fce76",
                "ports": [
                    1
                ]
            }
        ],
        "counters": [
            "phy_raw_errors_lane0",
            "phy_raw_errors_lane1",
            "phy_raw_errors_lane2",
            "phy_raw_errors_lane3",
            "phy_effective_errors",
            "phy_symbol_errors",
        ],
        "sample_rate": 300,
        "ttl": "10000d",
```

```
            "base_config": "",
            "endpoint_port": 9007,
            "status": {
                "managed_mode": true,
                "start_time": 1683039674.951503,
                "num_ports": 29,
                "status": "running",
                "iteration_time_sec": 0.274126,
                "export_time_sec": 0.000279,
                "port_counters_time_sec": 0.010115,
                "ports_per_sec": 2867.029164607019,
                "timestamp": 1683093341.727322
            },
            "is_registered_discovery": true,
            "root_dir": "/opt/ufm/files/dynamic_telemetry/pdr_dynamic",
            "configuration": {
                "plugin_env_UFM_TELEMETRY_MANAGED_MODE": 1,
                "plugin_env_CLX_EXPORT_API_SHOW_STATISTICS": 1
            },
            "conf_file": "",
            "hca": "mlx5_0",
            "pid": 3662593
        }
}
```


Change Running Instance

- Description: Modifies the run configuration of an active telemetry instance. Specifically, the user is permitted to alter a specific set of GUIDs and the sample rate in their request.
- URL: PUT https://10.209.36.126/ufmRestV2/app/telemetry/instances/cset_name
- Request Data:

```
Content-Type: application/json
{
  "requested_guids": [
    {
      "guid": "1234",
      "ports": [5, 1]
    },
    {
      "guid": "5678",
      "ports": [8]
    }
  ],
  "sample_rate": 5
}
```

Get All Instances Status

- Description: Returns the running status and statistics of the started instances
- URL: GET https://10.209.36.126/ufmRestV2/app/telemetry/instances/status
- Request Data: N/A
- Response Example:

```
{
    "dror": {
        "managed_mode": true,
        "start_time": 1681422289.418903,
        "num_ports": 1,
        "status": "running",
        "iteration_time_sec": 0.026844,
        "export_time_sec": 9.4e-5,
        "port_counters_time_sec": 0.00068,
```

```
            "ports_per_sec": 1470.5882352941176,
            "timestamp": 1681422417.825401
        }
    }
```


Pause Running Instance

- Description: Pauses a running instance (with an option to rerun it with the same configuration).
- URL: PUT https://10.209.36.126/ufmRestV2/app/telemetry/instances/pause/cset_name
- Request Data: N/A
- Response Example: N/A

Continue Running a Stopped Instance

- Description: Continues running a stopped instance
- URL: PUT https://10.209.36.126/ufmRestV2/app/telemetry/instances/continue/cset_name


```
{
    "requested_guids": [
        {
            "guid": "1234",
            "ports": [5, 1]
        },
        {
            "guid": "5678",
            "ports": [8]
        }
    ],
    "sample_rate": 5,
"ttl": "300d",
```

```
}
```

- Request Data:

```
{
   "requested_guids": [
      {
         "guid": "1234",
         "ports": [5, 1]
      },
      {
         "guid": "5678",
         "ports": [8]
      }
   ],
   "sample_rate": 5,
"ttl": “300d”,
}
```

- Response Example: N/A

Get Supported Counters

- Description: Returns a list of all the supported counters.
- URL: GET https://10.209.36.126/ufmRestV2/app/telemetry/instances/counters
- Request Data: N/A
- Response Example:

```
[
"ob_amp_lane3",
"link_width_active",
```

```
...,
"alev_plus_bfm2_lane0",
"pre_tap_lane0"  ]
```

Delete a Running Instance

- Description: Deletes a running telemetry instance and returns a job_id to track the deletion process.
- URL: DELETE https://10.209.36.126/ufmRestV2/app/telemetry/instances/cset_name
- Request Data: N/A
- Response Example:

```
job_id to track the deletion process
```

Plugin Management API

Get All Plugins

- Description – Returns information about all loaded plugins
- Request URL – GET /ufmRest/plugin
- Response:

```
[
  {
"name" : "tfs" ,
"is_added" : false ,
"enabled" : "No" ,
"tag" : "NA" ,
"shared_volumes" : "NA" ,
"port" : "NA" ,
"status" : "stopped" ,
"ui_config" : { } ,
"httpd_conf_file" : "Not present" ,
"capabilities" : [ "add" ] ,
"tags" : [ "latest" ]
    }
  ]
```

- Status Codes:
-
    - 200 – Ok

Add Plugin

- Description – Adds a plugin
- Request URL – POST /ufmRest/plugin/<plugin-name>/run/add
- Request Data:

```
{
" plugin-tag " : "<tag-version>"
}
```

- Response: Redirect to job id
- Status Codes:
-
  - 200 – Ok

Remove Plugin

- Description – Removes a plugin
- Request URL – POST /ufmRest/plugin/<plugin-name>/run/remove
- Response: Redirect to job id
- Status Codes:
  - 200 – Ok

Disable Plugin

- Description – Disables a plugin
- Request URL – POST /ufmRest/plugin/<plugin-name>/run/disable
- Response: Redirect to job id
- Status Codes:

- 200 – Ok

Enable Plugin

- Description – Enables a plugin
- Request URL – POST /ufmRest/plugin/<plugin-name>/run/enable
- Response: Redirect to job id
- Status Codes:
  - 200 – Ok

Pull Plugin Image

- Description – Pulls plugin image. The request data may include an optional parameter called "ha_standby," which is necessary only when the setup operates in high availability (HA) mode. Furthermore, the fields "username" and "password" are also optional, particularly when there is no trusted communication required between the master and standby nodes.
- Request URL – POST /ufmRest/plugin/pull
- Request Data:

```
{
{
"repository_name": <Image path in docker hup>,
 "ha_standby":
   {
    "load_to_ha_standby": Boolean,
    "username": string,
    "password": string
   }
}
```

- Response: Redirects to job ID

- Status Code:
    - 200 – OK

Load Plugin Image

- Description – Loads plugin image. The request data may include an optional parameter called "ha_standby," which is necessary only when the setup operates in high availability (HA) mode. Furthermore, the fields "username" and "password" are also optional, particularly when there is no trusted communication required between the master and standby nodes.
- Request URL – POST /ufmRest/plugin/load
- Request Data:

```
{
 "file": <file>,
 “ha_standby":
   {
    "load_to_ha_standby": Boolean,
    "username": string,
    "password": string
   }
}
```

- Response: Redirects to job ID
- Status Code:
    - 200 – Ok

System Monitoring REST API

Get System Monitoring Prometheus Metrics

- Description – Retrieves Prometheus-formatted metrics for system monitoring, including CPU Utilization Percentage, Memory Usage Percentage, IO Operations Statistics, and additional metrics associated with UFM REST API calls and UFM Events.
- Request URL – GET ufmRest/system_monitoring/metrics
- Response - Text in Prometheus format
- Status Code:
    - 200 – Ok

Get Topology Changes Events History Counters

- Description – This API grants access to event history counters associated with topology changes, including events such as node status changes (up/down), switch status changes (up/down), director switch status changes (up/down), and link status changes (up/down). These events are collected through the Prometheus endpoint.
- Request URL – GET ufmRest/system_monitoring/events_counters
- Request Content Type – Application/json
- Response

```
{
    "12h": {
        "Director Switch is Down": 0,
        "Director Switch is Up": 0,
        "Link is Down": 0,
        "Link is Up": 0,
```

```
            "Node is Down": 0,
            "Node is Up": 6,
            "Switch is Down": 0,
            "Switch is Up": 0
        },
        "1h": {
            "Director Switch is Down": 0,
            "Director Switch is Up": 0,
            "Link is Down": 0,
            "Link is Up": 0,
            "Node is Down": 0,
            "Node is Up": 0,
            "Switch is Down": 0,
            "Switch is Up": 0
        },
……
……
}
```


- Status Code:
    - 200 – Ok

UFM Configuration REST API

Get UFM Configuration

- Description – Returns UFM configuration details, such as whether the feature is activated or not, and more.
- Request URL – GET / ufmRest/app/ufm_config
- Request Content Type – Application/json
- Response

```
default_session_interval: 30
disabled_features: ["UsageStatistics"]
ha_mode: "Disabled"
ha_standby_node: []
is_local_user: true
..
```

- Status Code:
    - 200 – Ok

Update UFM Configuration

- Description – Updates sections within the gv.cfg file. Please note that not all sections and properties can to be modified.
- Request URL – PUT / ufmRest/app/ufm_config
- Request Content Type – Application/json
- Response: Text

- Request Data

```
<section name>:{
      <property>:<value>
   }
```

- Status Code:
    - 200 – Ok

Plugin REST APIs

- NDT Plugin REST API
- Telemetry to FluentD Streaming (TFS) Plugin REST API
- Events to FluentD Streaming (EFS) Plugin REST API
- UFM Bright Cluster Integration Plugin REST APIs
- Autonomous Link Maintenance (ALM) Plugin REST API
- gRPC-Streamer Plugin REST API
- Sysinfo Plugin REST API
- SNMP REST API

Document Revision History

Revision	Nate	Description
6.18.0	Aug 14, 2024	Updated: • UFM Version REST API - Updated response • System Log REST API • Physical-Virtual GUID Mapping REST API • NVIDIA SHARP REST API
6.17.2	Jun 24, 2024	No changes
6.17.1	May 28, 2024	No changes
6.17.0	May 7, 2024	Updated: • Events REST API - Added "Trigger External Event" and "Trigger External Events" • NVIDIA SHARP REST API - Updated Update SHARP Reservation • Systems REST API - Updated Get Managed Switches Power Consumption with two examples • Update Credentials REST API - Updated "Update Site Credentials" Added: • Autonomous Link Maintenance (ALM) Plugin REST API - Added "Get Cluster Status", "Get Events Summary", "Get Port Level Status", "Get Configuration", Update Configuration" and "Get Model Performance" • Events Policy REST API - Added "Update a Specific Events Policy" and "Simulate Events Policy" • Unhealthy Ports REST API - Added "Get Unhealthy Port" and "Get Port Health State"
	May 13,	Updated Unhealthy Ports REST API

Revision	Nate	Description
	2024	
	May 23, 2024	• Updated Set System URL & Script Attributes in Systems REST API • Updated Add GUIDs to PKey and Set/Update PKey GUIDs in PKey GUIDs Rest API
	May 28, 2024	• Updated responses in Events REST API and Alarms REST API • Updated Reports REST API
6.15.4	Mar 1, 2024	No changes
6.16.0	Feb 8, 2024	Updated: • Get System/s with Modules and Modules REST API - Updated command responses • Autonomous Link Maintenance (ALM) Plugin REST API - Added Get Cluster Status, GET Event Summary and Get Port Level Status
6.15.2	Jan 5, 2024	No changes
6.15.1	Dec 12, 2023	Added the following sections under NDT Plugin REST API: • Configure Cable Validation Plugin Connection • Get Cable Validation Plugin Connectivity Status • Get Cable Validation Report
6.15.0	Nov 5, 2023	Updated: • Get Managed Switches Power Consumption • Create History • Continue Running a Stopped Instance - Updated URL • REST API Complementary Information - Introduced new authentication methods • Mark Healthy Ports as Unhealthy • Instantiate a New Instance • Delete a Running Instance

Revision	Nate	Description
		Added: • Create an Empty PKey • Physical-Virtual GUID Mapping REST API • Get Events Logs in JSON Format • Usage Statistics REST API • UFM Configuration REST API • System Monitoring REST API • REST API Complementary Information
6.14.1	Aug 29, 2023	Updated: • Modules REST API - Added "hw_revision" field in module REST API • Systems REST API - Added "hw_revision" field in module REST API Added: Subnet Merger REST APIs
6.14.0	Aug 10, 2023	Updated: • Mark Unhealthy Ports as Healthy • Create a New SHARP Reservation • Delete SHARP Reservation Added: • Delete Policies • Get Healthy Policy Ports • Get Healthy Policy Devices • Load Plugin Image • Pull Plugin Image • Roles Access Control
6.13.1	May 18, 2023	No change
6.13.0	May 5, 2023	Updated: • Create a New SHARP Reservation - Added partial aloc parameter to the API • Update SHARP Reservation - Added partial aloc parameter to the API • Get Virtual Ports for Specific Physical Port

Revision	Nate	Description

		• Telemetry to FluentD Streaming (TFS) Plugin REST API
		• PKey GUIDs Rest API
		
		Added:
		
		• UFM Dynamic Telemetry Instances REST API
		• SNMP REST API
		• Sysinfo Plugin REST API
		• Added the following REST APIs under NVIDIA SHARP REST API
		  ◦ Get All SHARP Jobs
		  ◦ Get a Specific SHARP Job
		  ◦ Get All SHARP Non-Blocking Jobs
		  ◦ Get Specific SHARP Non-Blocking Job
		• Added the following REST APIs under Telemetry to FluentD Streaming (TFS) Plugin REST API
		  ◦ Multiple UFM Telemetry Endpoints
		  ◦ Get Streaming Attributes Configurations
		  ◦ Update Streaming Configurations
		• Autonomous Link Maintenance (ALM) Plugin REST API

6.12.1	Feb 19, 2023	No changes
6.12.0	Feb 6, 2023	Updated: • Create a New SHARP Reservation • Delete SHARP Reservation • Update SHARP Reservation Added: • Remove Hosts from PKey • Delete PKey • UFM System Dump API • Plugin Management API
6.11.1	Dec, 2022	Removed Logical Server (LS) Auditing REST API
6.11.0	Nov, 2022	Added: • Get Default Monitoring Session Data by PKey Filtering

Revision	Nate	Description
		• Monitoring Sessions REST API - Added filtering by group name • Mark All Unhealthy Ports as Healthy at Once • Systems REST API • Events to FluentD Streaming (EFS) Plugin REST API Updated: • Disable/Enable/Reset Ports • Mark Device as Unhealthy • Telemetry to FluentD Streaming (TFS) Plugin REST API
6.10.0	Jul, 2022	Added: • Periodic Fabric Health REST API • Uploading New UFM Appliance Version REST API
	Aug, 2022	Updated: • NVIDIA SHARP REST API

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