Cisco NIR REST API Examples

This chapter contains the following sections:

all_resources()

```
Get all resources  .
REST URL   :
   GET /api/telemetry/utilization/resources.json
Parameters :
   None
Example    :
Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/utilization/resources.json'
Cisco NIR app installed on Cisco Application Services Engine:
```

```
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/utilization/resources.json'
Response   :
   {
       "totalResultsCount": 5,
       "totalItemsCount":5,
       "entries": [
           {
               "categoryName": "",
               "resourceName": "EndPoints",
           }
           <-- SNIP LIST OF ALL OTHER RESOURCES -->
           {
           }
       ]
   }
```

anomalies_details()

```
Get the anomalies in the system
REST URL   :
   GET /api/telemetry/anomalies/details.json
Parameters :
   startTs  (optional) => Start timestamp, default:now-1h
   endTs    (optional) => End timestamp, default:current-time
   count    (optional) => Num.of nodes in response, default:10
   orderBy  (optional) => Sort per the given field
Example :
Cisco NIR app installed on Cisco APIC:
    curl -ksb -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/anomalies/details.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/anomalies/details.json'
Response :
    {
        "totalItemsCount": 90,
        "totalResultsCount": 90,
        "offset": 0,
        "entries": [
            {
                "anomalyId": "QUE000000000018",
                "category": "System Resource",
                "startTs": "2018-09-19T16:45:05.679Z",
                "endTs": "2018-09-19T16:58:05.778Z",
                "entityName": "svc_ifc_policyelem",
                "severity": "critical",
                "anomalyType": "build-up",
                "nodeNames": [
                    "leaf2"
                ],
                "resourceType": "queue",
                "resourceName": "recvQ",
               "anomalyStr": "[svc_ifc_policyelem] : Unexpected build-up of 7487 message[s]
 in recvQ",
                "anomalyScore": 83
            },
            {
                "anomalyId": "QUE000000000007",
                "category": "System Resource",
                "startTs": "2018-09-19T15:16:10.420Z",
                "endTs": "2018-09-19T16:49:01.289Z",
```

```
                "entityName": "svc_ifc_policyelem",
                "severity": "critical",
                "anomalyType": "build-up",
                "nodeNames": [
                "leaf1"
                ],
                "resourceType": "queue",
                "resourceName": "recvQ",
               "anomalyStr": "[svc_ifc_policyelem] : Unexpected build-up of 7502 message[s]
 in recvQ",
                "anomalyScore": 83
            }
        ]
    }
```


anomalies_summary()

```
Get summary of the anomalies in the system
REST URL   :
   GET /api/telemetry/anomalies/summary.json
Parameters :
   startTs  (optional) => Start timestamp, default:now-1h
   endTs    (optional) => End timestamp, default:current-time
Example :

Cisco NIR app installed on Cisco APIC:
    curl -ksb -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/anomalies/summary.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/anomalies/summary.json'
Response :
    {
        "totalAnomalyCount": 2,
        "totalAnomalyScore": 120.0,
        "entries": [
            {
                "severity": "warning",
                "anomalyCount": 1,
                "anomalyScore": 40.0
            },
            {
                "severity": "major",
                "anomalyCount": 1,
                "anomalyScore": 80.0
            }
        ]
    }
```

events_buckets()

```
Get the Events, Audit Logs and Faults count
REST URL   :
    GET /api/telemetry/events/buckets.json
Parameters :
    startTs (mandatory) => Start timestamp
    endTs               => End timestamp, default:current-time
    granularity         => Granularity, default:1 sec
Example    :
```

```
Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/events/buckets.json'
Cisco NIR app installed on Cisco Application Services Engine:
    curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/events/buckets.json'
Response   :
    {
        "totalItemsCount": 3,
        "totalResultsCount": 3,
        "entries": [
            {
                "eventType": "auditLog",
                "entries": [
                    {
                        "startTs": "2018-08-10T17:52:16.000Z",
                        "endTs": "2018-08-10T17:52:16.999Z",
                        "ts": "2018-08-10T17:52:16.499Z",
                        "recordId": null,
                        "recordCount": 3
                    },
                    {
                        "startTs": "2018-08-10T17:52:40.000Z",
                        "endTs": "2018-08-10T17:52:40.999Z",
                        "ts": "2018-08-10T17:52:40.499Z",
                        "recordId": null,
                        "recordCount": 29
                    }
                ],
                "recordCount": 32
            },
            {
                "eventType": "event",
                "entries": [
                    {
                        "startTs": "2018-08-10T17:52:14.000Z",
                        "endTs": "2018-08-10T17:52:14.999Z",
                        "ts": "2018-08-10T17:52:14.499Z",
                        "recordId": "bld1",
                        "recordCount": 1
                    }
                ]
                "recordCount": 1
            }
    }
```

events_details()

```
Get the Events, Audit Logs and Faults detailed info
REST URL   :
   GET /api/telemetry/events/details.json
Parameters :
    startTs (mandatory) => Start timestamp
    endTs               => End timestamp, default:current-time
    filter              => Lucene format filter, default:null
    offset              => Time offset, default:0
Example    :
Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/events/details.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/events/details.json'
```

```
Response   :
    {
         "totalItemsCount": 233971,
         "totalResultsCount": 233971,
         "offset": 0,
         "entries": [
            {
                "ack": false,
                "rule": "tca-l2-ingr-bytes5min-drop-rate",
                "lifecycle": "raised",
                "code": "F110176",
                "digest": "l3EncRtdIfF110176",
                "faultType": "operational",
                "highestSeverity": "warning",
                "occurrences": 1,
                "recordId": "bld115",
                "cause": "threshold-crossed",
                "changeSet": [
                    {
                        "oldValue": "",
                        "propertyName": "dropRate",
                        "newValue": "52039"
                    }
                ],
                "subject": "counter",
                "severity": "warning",
                "eventType": "fault",
                "severityId": 2,
                "prevSeverity": "warning",
                "contextClass": "l3EncRtdIf",
                "contextDn": "sys/inst-overlay-1/encrtd-[eth11/7.231]",
                "eventId": 0,
                "origSeverity": "warning",
                "domain": "infra",
                "nodeType": "switch",
                "delegatedFrom": "",
                "modType": "modification",
                "nodeName": "spine1",
                "displayNodeName": "spine1",
               "description": "TCA: ingress drop bytes rate(l2IngrBytes5min:dropRate) value
 52039 raised above threshold 10000",
                "createTime": "2018-08-10T17:55:13Z",
                "isDelegated": false
            }
     ]
}
```

events_summary()

```
Get the Events, Audit Logs and Faults summary
REST URL   :
   GET /api/telemetry/events/summary.json
Parameters :
    startTs (mandatory) => Start timestamp
    endTs               => End timestamp, default:current-time
    filter              => Lucene format filter, default:null
Example    :
Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/events/summary.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/events/summary.json'
```

```
Response   :
    {
        "totalItemsCount": 3,
        "totalResultsCount": 3,
        "entries": [
            {
                "eventType": "fault",
                "totalCount": 145516,
                "entries": [
                    {
                        "severity": "warning",
                        "count": 83190
                    },
                    {
                        "severity": "cleared",
                        "count": 57196
                    },
                    {
                        "severity": "critical",
                        "count": 4710
                    },
                    {
                        "severity": "major",
                        "count": 420
                    }
                ]
            },
            {
                "eventType": "event",
                "totalCount": 4,
                "entries": [
                    {
                        "severity": "info",
                        "count": 4
                    }
                ]
            },
            {
                "eventType": "auditLog",
                "totalCount": 2,
                "entries": [
                    {
                        "action": "creation",
                        "count": 2
                    }
                ]
            }
        ]
    }
```

flows_details()

```
Get detailed flows
REST URL   :
   GET /api/telemetry/flows/details.json
Parameters :
   startTs  (mandatory) => Start timestamp,
   endTs    (mandatory) => End timestamp, default:current-time
   filter   (optional) => Lucene format filter
{srcIp,srcPort,dstIp,dstPort,ProtocolName,ingressVrf,egressVrf}, default:null
   statName (optional) => Stat name {flow:latency, flow:epmove, flow:pktdrop,
flow:ingressburstmax, flow:egressburstmax, flow:ingressPktCount, flow:egressPktCount}
```

```
   granularity (optional) => Granularity of time period
   fabricName (optional) => limit the records pertaining to this fabricName

Example:
Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/flows/details.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/flows/details.json'
Response:
    {
        "nodeName": null,
        "description": "",
        "statName": null,
        "entries": [
            {
                "flowId": "44.3.3.26:0",
                "srcIp": "44.3.3.26",
                "dstIp": "42.2.2.22",
                "srcPort": "0",
                "dstPort": "0",
                "protocol": "61",
                "protocolName": "ANY-HOST",
                "ingressVrf": "ctx4_1",
                "egressVrf": "ctx4_1",
                "flowType": "IPV4",
                "ingressTenant": "tele4",
                "egressTenant": "tele4",
                "stats": [
                    {
                        "ingressPktCount": 6875,
                        "ingressByteCount": 8250000,
                        "egressPktCount": 0,
                        "egressByteCount": 0,
                        "ingressBurst": 0,
                        "ingressBurstMax": 4800,
                        "egressBurst": 0,
                        "egressBurstMax": 0,
                        "hashCollision": 0,
                        "latency": 0,
                        "srcMoveCount": 0,
                        "dstMoveCount": 0,
                        "moveCount": 0,
                        "dropPktCount": 0,
                        "dropNodes": [
                            "telemetry-hw-spine1"
                        ],
                        "paths": [
                            [
                                {
                                    "node": "telemetry-hw-leaf3",
                                    "nodeType": "Leaf",
                                    "ingressVifs": [
                                        "eth1/1"
                                    ],
                                    "egressVifs": [
                                        "eth1/49"
                                    ]
                                },
                                {
                                    "node": "telemetry-hw-spine1",
                                    "nodeType": "Spine",
                                    "asicDropCode": 128,
                                    "dropReason": "",
```

```
                                    "dropType": "info",
                                    "ingressVifs": [
                                        "eth2/2"
                                    ],
                                    "egressVifs": [
                                        ""
                                    ]
                                }
                            ]
                        ],
                        "nodeNames": [
                            "telemetry-hw-leaf3",
                            "telemetry-hw-spine1"
                        ],
                        "ingressNodes": [
                            "telemetry-hw-leaf3"
                        ],
                        "egressNodes": [],
                        "anomalyScore": 1,
                        "dropReasons": [],
                        "srcEpg": "testl3out",
                        "dstEpg": "",
                        "ts": "2019-02-01T19:18:56.458Z",
                        "originTs": "2019-02-01T19:18:38.445Z",
                        "terminalTs": "2019-02-01T19:20:42.419Z"
                    }
                ],
                "srcEpg": "testl3out",
                "dstEpg": ""
            }
        ]
    }
```


flows_summary()

```
Browse flows.
REST URL   :
   GET /api/telemetry/flows/summary.json
Parameters :
   startTs  (optional) => Start timestamp, default:now-1h
   endTs    (optional) => End timestamp, default:current-time
   filter              => Lucene format filter, default:null
   fabricName (optional) => limit the records pertaining to this fabricName
Example:

Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/flows/summary.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/flows/summary.json'
Response:
```


```
    {
        "nodeName": null,
        "description": "",
        "statName": null,
        "entries": [
            {
                "flowId": "44.3.3.26:0",
                "srcIp": "44.3.3.26",
                "dstIp": "42.2.2.22",
                "srcPort": "0",
                "dstPort": "0",
```

```
"protocol": "61",
"protocolName": "ANY-HOST",
"ingressVrf": "ctx4_1",
"egressVrf": "ctx4_1",
"flowType": "IPV4",
"ingressTenant": "tele4",
"egressTenant": "tele4",
"stats": [
    {
        "ingressPktCount": 6875,
        "ingressByteCount": 8250000,
        "egressPktCount": 0,
        "egressByteCount": 0,
        "ingressBurst": 0,
        "ingressBurstMax": 4800,
        "egressBurst": 0,
        "egressBurstMax": 0,
        "hashCollision": 0,
        "latency": 0,
        "srcMoveCount": 0,
        "dstMoveCount": 0,
        "moveCount": 0,
        "dropPktCount": 0,
        "dropNodes": [
            "telemetry-hw-spine1"
        ],
        "paths": [
            [
                {
                    "node": "telemetry-hw-leaf3",
                    "nodeType": "Leaf",
                    "ingressVifs": [
                        "eth1/1"
                    ],
                    "egressVifs": [
                        "eth1/49"
                    ]
                },
                {
                    "node": "telemetry-hw-spine1",
                    "nodeType": "Spine",
                    "asicDropCode": 128,
                    "dropReason": "",
                    "dropType": "info",
                    "ingressVifs": [
                        "eth2/2"
                    ],
                    "egressVifs": [
                        ""
                    ]
                }
            ]
        ],
        "nodeNames": [
            "telemetry-hw-leaf3",
            "telemetry-hw-spine1"
        ],
        "ingressNodes": [
            "telemetry-hw-leaf3"
        ],
        "egressNodes": [],
        "anomalyScore": 1,
        "dropReasons": [],
        "srcEpg": "testl3out",
```

```
                        "dstEpg": "",
                        "ts": "2019-02-01T19:18:56.458Z",
                        "originTs": "2019-02-01T19:18:38.445Z",
                        "terminalTs": "2019-02-01T19:20:42.419Z"
                    }
                ],
                "srcEpg": "testl3out",
                "dstEpg": ""
            }
        ]
    }
```

flows_top_flows()

```
Get flows top flows.
REST URL   :
   GET /api/telemetry/flows/topFlows.json
Parameters :
   startTs  (optional) => Start timestamp, default:now-1h
   endTs    (optional) => End timestamp, default:current-time
   granularity (optional) => Granularity of time period
   statName (optional) => Stat name {flow:latency, flow:epmove, flow:pktdrop}
   fabricName (optional) => limit the records pertaining to this fabricName
Example:

Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/flows/topFlows.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/flows/topFlows.json'
Response:
    {
        "nodeName": null,
        "description": "",
        "statName": null,
        "entries": [
            {
                "flowId": "44.3.3.26:0",
                "srcIp": "44.3.3.26",
                "dstIp": "42.2.2.22",
                "srcPort": "0",
                "dstPort": "0",
                "protocol": "61",
                "protocolName": "ANY-HOST",
                "ingressVrf": "ctx4_1",
                "egressVrf": "ctx4_1",
                "flowType": "IPV4",
                "ingressTenant": "tele4",
                "egressTenant": "tele4",
                "stats": [
                    {
                        "ingressPktCount": 6875,
                        "ingressByteCount": 8250000,
                        "egressPktCount": 0,
                        "egressByteCount": 0,
                        "ingressBurst": 0,
                        "ingressBurstMax": 4800,
                        "egressBurst": 0,
                        "egressBurstMax": 0,
                        "hashCollision": 0,
                        "latency": 0,
                        "srcMoveCount": 0,
```

```
                        "dstMoveCount": 0,
                        "moveCount": 0,
                        "dropPktCount": 0,
                        "dropNodes": [
                            "telemetry-hw-spine1"
                        ],
                        "paths": [
                            [
                                {
                                    "node": "telemetry-hw-leaf3",
                                    "nodeType": "Leaf",
                                    "ingressVifs": [
                                        "eth1/1"
                                    ],
                                    "egressVifs": [
                                        "eth1/49"
                                    ]
                                },
                                {
                                    "node": "telemetry-hw-spine1",
                                    "nodeType": "Spine",
                                    "asicDropCode": 128,
                                    "dropReason": "",
                                    "dropType": "info",
                                    "ingressVifs": [
                                        "eth2/2"
                                    ],
                                    "egressVifs": [
                                        ""
                                    ]
                                }
                            ]
                        ],
                        "nodeNames": [
                            "telemetry-hw-leaf3",
                            "telemetry-hw-spine1"
                        ],
                        "ingressNodes": [
                            "telemetry-hw-leaf3"
                        ],
                        "egressNodes": [],
                        "anomalyScore": 1,
                        "dropReasons": [],
                        "srcEpg": "testl3out",
                        "dstEpg": "",
                        "ts": "2019-02-01T19:18:56.458Z",
                        "originTs": "2019-02-01T19:18:38.445Z",
                        "terminalTs": "2019-02-01T19:20:42.419Z"
                    }
                ],
                "srcEpg": "testl3out",
                "dstEpg": ""
            }
        ]
    }
```


flows_top_nodes()

```
Get flows top nodes.
REST URL   :
   GET /api/telemetry/flows/topNodes.json
Parameters :
```

```
   startTs  (optional) => Start timestamp, default:now-1h
   endTs    (optional) => End timestamp, default:current-time
   granularity (optional) => Granularity of time period
   statName (optional) => Stat name {flow:latency, flow:epmove, flow:pktdrop},
default:flow-latency
   fabricName (optional) => limit the records pertaining to this fabricName
Example:

Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/flows/topNodes.json'

Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/flows/topNodes.json'
Response:
    {
        "entries": [
            {
                "nodeName": "telemetry-hw-spine1",
                "description": "",
                "stats": [
                    {
                        "ts": "2019-02-01T19:16:32.002Z",
                        "latency": 6
                    }
                ]
            },
            {
                "nodeName": "telemetry-hv-leaf1",
                "description": "",
                "stats": [
                    {
                        "ts": "2019-02-01T19:16:32.002Z",
                        "latency": 5
                    }
                ]
            }
        ]
    }
```

get_fabrics_anomaly_summary()

```
Get fabric anomaly summary.
REST URL   :
    GET /api/telemetry/fabricsSummary.json
Parameters :
    fabricName (mandatory) => Name of the Fabric
    startTs                => Start timestamp, default:current-time - 1 hour
    endTs                  => End timestamp, default:current-time
    include="anomalyScore" => Requires the Latest Maximum anomalyscores of the fabric,
default:'no'
   history             => Requires the timeseries data of sum(anomaly scores, default:'no'

    granularity            => applicable if history = "yes" , granulairy of the timeseries
 data, default=5m
Example    :

Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/fabricsSummary.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/fabricsSummary.json'
```

```
Response   :
    {
        "anomalyScore" : "X"
        "entries": [
                 {
                     totalAnomalyScore ;  X
                     ts : now
                 }
                 .........
                 {
                     totalAnomalyScore ;  X
                     ts : now
                 }
        ],
        "totalResultsCount": N,
        "totalItemsCount": N
    }
```

get_fabrics_list()

```
Get fabrics list.
REST URL   :
    GET /api/telemetry/fabrics.json
Parameters :
    filter              => Lucene format filter, default:null
Example    :
Cisco NIR app installed on Cisco APIC:
    curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/fabrics.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET 'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/fabrics.json'
Response   :
    {
        "entries": [
            {
                "fabricName": "FABRIC1",
                "fabricId": "1",
                "vendor": "CISCO_N9K_STANDALONE",
                "fabricType": "VXLAN",
                "configStatus": "ENABLED",
                "switchCount": 2,
                "controllerCount": 0
            },
            {
                "fabricName": "FABRIC2",
                "fabricId": "2",
                "vendor": "CISCO_ACI",
                "fabricType": "VXLAN",
                "configStatus": "ENABLED",
                "switchCount": 4,
                "controllerCount": 3
            },
            <--snip-->
        ],
        "totalResultsCount": 11,
        "totalItemsCount": 11
    }
```

get_nodes_list()

```
Get nodes list.
REST URL   :
    GET /api/telemetry/nodes.json
Parameters :
    startTs (mandatory) => Start timestamp
    endTs               => End timestamp, default:current-time
    count               => Num.of nodes in response, default:1000
    filter              => Lucene format filter, default:null
Example    :

Cisco NIR app installed on Cisco APIC:
    curl -k -i -XGET 'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/nodes.json
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET 'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/nodes.json'
Response   :
    {
        "entries": [
            {
                "nodeRole": "leaf",
                "nodeId": "302",
                "nodeName": "rleaf-scrimshaw2",
                "nodeMgmtpIp": "1.2.3.4"
            },
            {
                "nodeRole": "spine",
                "nodeId": "205",
                "nodeName": "swmp14-dopplebock",
                "nodeMgmtpIp": "1.2.3.4"
            },
            <--snip-->
        ],
        "totalResultsCount": 11,
        "offset": 0,
        "totalItemsCount": 11
    }
```

get_protocols_details()

```
Get Telemetry Protocol Stats details.
REST URL   :
   GET /api/telemetry/protocols/details.json
Parameters :
   startTs  (mandatory) => Start timestamp
   endTs                => End timestamp, default:current-time
   fabricName           => limit the records pertaining to this fabricName
   nodeName             => Name of node
   statName           => <protocol[:counter[:qualifier]], protocol[:counter[:qualifier]]...>

   history              => '1' or '0', default is '0', indicates time-series request
   granularity          => Granularity of time period, default:5m
   orderBy              => One statName of the format <protocol[:counter[:qualifier]]>
   filter             => Lucene format filter to query for specific nodeName or sourceName,
 default:null
Example    :

Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET
```

```
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/protocols/details.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/protocols/details.json'
Response   :
   {
       "totalResultsCount": 6,
       "totalItemsCount": 6,
       "offset": 0,
       "description": "Protocol statistical counters",
       "entries": [
           {
               "nodeName": "leaf-103",
               "entries": [
                   {
                       "sourceName": "phys-[eth1/14]",
                       "entries": [
                           {
                               "counterName": "InterfaceUtilisationIngress",
                               "value": 60.625,
                               "trending": "up",
                               "stats": [
                                   {
                                       "ts": "2018-10-24T05:05:00.000Z",
                                       "value": 60.625
                                   },
                                   {
                                       "ts": "2018-10-24T05:00:00.000Z",
                                       "value": 59.827586206896555
                                   },
                                   {
                                       "ts": "2018-10-24T04:55:00.000Z",
                                       "value": 59.57142857142857
                                   }
                               ]
                           }
                       ]
                   },
   <--snip-->
                   {
                       "sourceName": "phys-[eth1/11]",
                       "entries": [
                           {
                               "counterName": "LldpPktsEgress",
                               "value": 111.0,
                               "trending": "up",
                               "stats": [
                                   {
                                       "ts": "2018-10-24T05:05:00.000Z",
                                       "value": 111.0
                                   },
                                   {
                                       "ts": "2018-10-24T05:00:00.000Z",
                                       "value": 110.10344827586206
                                   },
                                   {
                                       "ts": "2018-10-24T04:55:00.000Z",
                                       "value": 109.61904761904762
                                   }
                               ]
                           }
                       ]
                   }
               ]
```

```
            }
        ]
    }
```

get_protocols_resources()

```
Get Telemetry Protocol Stats resources.
REST URL   :
   GET /api/telemetry/protocols/resources.json
Parameters :
   filter              => Lucene format filter, default:null
   fabricName          => limit the records pertaining to this fabricName
Example    :
Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/protocols/resources.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/protocols/resources.json'
Response   :
   [
       {
           "protocol": "interface",
           "counter": "utilisation",
           "qualifiers": [
               "ingress",
               "egress"
           ]
       },
       {
           "protocol": "interface",
           "counter": "bytes",
           "qualifiers": [
               "ingress",
               "egress"
           ]
       },
   <--snip-->
       {
           "protocol": "lldp",
           "counter": "pkts",
           "qualifiers": [
               "ingress",
               "egress"
           ]
       },
       {
           "protocol": "lldp",
           "counter": "errors"
       }
   ]
```

get_protocols_topentities()

```
Get Telemetry Protocol Stats topEntities.
REST URL   :
   GET /api/telemetry/protocols/topEntities.json
Parameters :
   startTs  (mandatory) => Start timestamp
```

```
   endTs                => End timestamp, default:current-time
   fabricName           => limit the records pertaining to this fabricName
   statName             => parameter to find topEntities protocol[:counter[:qualifier]]
   granularity          => Granularity of time period, default:5m
   filter             => Lucene format filter to query for specific nodeName or sourceName,
 default:null
Example    :
Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/protocols/topEntities.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/protocols/topEntities.json'
Response   :
   {
       "totalResultsCount": 6,
       "totalItemsCount": 6,
       "offset": 0,
       "description": "Protocol statistical counters",
       "entries": [
           {
               "nodeName": "leaf-103",
               "entries": [
                   {
                       "sourceName": "phys-[eth1/4]",
                       "entries": [
                           {
                               "counterName": "InterfaceUtilisationIngress",
                               "value": 65.53333333333333,
                               "trending": "down",
                               "stats": [
                                   {
                                       "ts": "2018-10-24T05:20:00.000Z",
                                       "value": 65.53333333333333
                                   },
                                   {
                                       "ts": "2018-10-24T05:15:00.000Z",
                                       "value": 65.78571428571429
                                   }
                               ]
                           }
                       ]
                   },
                   {
                       "sourceName": "phys-[eth1/14]",
                       "entries": [
                           {
                               "counterName": "InterfaceUtilisationIngress",
                               "value": 59.666666666666664,
                               "trending": "up",
                               "stats": [
                                   {
                                       "ts": "2018-10-24T05:20:00.000Z",
                                       "value": 59.666666666666664
                                   },
                                   {
                                       "ts": "2018-10-24T05:15:00.000Z",
                                       "value": 59.5
                                   }
                               ]
                           }
                       ]
                   },
   <--snip-->
```

```
                ]
            }
        ]
    }
```

get_protocols_topnodes()

```
Get Telemetry Protocol Stats topNodes.
REST URL   :
   GET /api/telemetry/protocols/topNodes.json
Parameters :
   startTs  (mandatory) => Start timestamp
   endTs                => End timestamp, default:current-time
   fabricName           => limit the records pertaining to this fabricName
   nodeName             => Name of node
   statName             => interface:utilization
   summarize            => '1' or '0', default is '0', summarizes across protocols
Example    :

Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/protocols/topNodes.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/protocols/topNodes.json'
Response   :
    {
        "totalResultsCount": 6,
        "totalItemsCount": 6,
        "offset": 0,
        "description": "Protocol top nodes by score",
        "entries": [
            {
                "nodeName": "leaf-103",
                "entries": [
                    {
                        "counterName": "protocol|utilization",
                        "stats": [
                            {
                                "ts": "2019-02-08T13:50:00.000Z",
                                "value": 62.333333333333336
                            },
                            {
                                "ts": "2019-02-08T13:45:00.000Z",
                                "value": 62.833333333333336
                            }
                        ],
                        "value": 62.333333333333336,
                        "trending": "down"
                    }
                ]
            },
    ....
    }
```

health_diagnostics()

```
Get health dianostics.
REST URL   :
```

```
   GET /api/telemetry/health/collectionStats.json
Parameters :
   None
Example    :

Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/health/collectionStats.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/health/collectionStats.json'
Response   :
   {
       "totalItemsCount": 11,
       "entries": [
           {
               "nodeName": "pod20-leaf3",
               "stats": [
                   {
                       "resource": "sysStats",
                       "totalItemsCount": 9600,
                       "lastUpdatedTs": "2018-06-13T10:25:52.468Z",
                       "state": "HEALTHY"
                   }
               ]
           },
           <--snip-->
       ]
   }
```

service_health()

```
Get the health of the services
REST URL   :
   GET /api/telemetry/health/serviceHealth.json
Parameters :
   None
Example    :

Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/health/serviceHealth.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/health/serviceHealth.json'
Response   :
   {
       "entries": [
           {
               "serviceType": "THIRD_PARTY_SERVICE",
               "serviceName": "elastic",
               "state": "HEALTHY",
               "displayName": "Data Store"
           },
           {
               "serviceType": "CISCO_SERVICE",
               "serviceName": "correlator",
               "state": "HEALTHY",
               "displayName": "Correlator"
           },
           <--snip-->
```

```
        ]
    }
```

utilization_node_details()

```
Get node details .
REST URL   :
   GET /api/telemetry/utilization/nodeDetails.json
Parameters :
   None
Example    :

Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/utilizationnodeDetails.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/utilizationnodeDetails.json'
Response   :
    {
       "totalResultsCount": 157,
       "totalItemsCount":157,
       "entries": [
           {
               "nodeName": "node-1",
               "entries": [
                   {
                       "resourceName":"cpu",
                       "latestValue":"85",
                       "maxValue":"100",
                       "resourceCategory":"",
                       "trending":"down",
                       "values":[
                           { "value":"85", "ts":"2018-02-21T20:21:03.109Z" },
                           {},
                           <--snip-->
                           {}
                       ]
                   },
                   {
                       "resourceName":"memory",
                       "latestValue":"84",
                       "maxValue":"100",
                       "resourceCategory":"",
                       "trending":"up",
                       "values":[
                           { "value":"84", "ts":"2018-02-21T20:21:03.109Z" },
                           {},
                           <--snip-->
                           {}
                       ]
                   },
                   <-- snip , LIST OF ALL OTHER RESOURCES -->
                   {
                       "resourceName":"ports",
                       "latestValue":"83",
                       "maxValue":"100",
                       "resourceCategory":"",
                       "trending":"up",
                       "values":[
                           { "value":"83", "ts":"2018-02-21T20:21:03.109Z" },
                           {},
```

```
                        <--snip-->
                        {}
                    ]
                }
            ]
        },
        {
            "nodeName": "node-2"
            <-- same as in node-1 -->
        }
        <----snip LIST OF ALL OTHER NODES --->
        {
            "nodeName": "node-10"
            <-- same as in node-1 -->
        }
    ]
}
```

utilization_top_nodes()

```
Get top nodes by utilization .
REST URL   :
   GET /api/telemetry/utilization/topNodes.json
Parameters :
   None
Example    :
Cisco NIR app installed on Cisco APIC:
   curl -k -i -XGET
'https://<ip:port>/appcenter/Cisco/NIR/api/telemetry/utilization/topNodes.json'
Cisco NIR app installed on Cisco Application Services Engine:
   curl -k -i -XGET
'https://<ip:port>/sedgeapi/v1/cisco-nir/api/api/telemetry/utilization/topNodes.json'
Response   :
   {
       "totalResultsCount": 10,
       "totalItemsCount":10,
       "entries": [
           {
               "nodeName": "node-1",
               "entries": [
                   {
                       "resourceName":"cpu",
                       "latestValue":"85",
                       "maxValue":"100",
                       "resourceCategory":"",
                       "trending":"down",
                       "values":[
                           { "value":"85", "ts":"2018-02-21T20:21:03.109Z" },
                           {},
                           <--snip-->
                           {}
                       ]
                   },
                   {
                       "resourceName":"memory",
                       "latestValue":"84",
                       "maxValue":"100",
                       "resourceCategory":"",
                       "trending":"up",
                       "values":[
                           { "value":"84", "ts":"2018-02-21T20:21:03.109Z" },
                           {},
```

```
                        <--snip-->
                        {}
                    ]
                },
                {
                    "resourceName":"ports",
                    "latestValue":"83",
                    "maxValue":"100",
                    "resourceCategory":"",
                    "trending":"up",
                    "values":[
                        { "value":"83", "ts":"2018-02-21T20:21:03.109Z" },
                        {},
                        <--snip-->
                        {}
                    ]
                }
            ]
        },
        {
            "nodeName": "node-2"
            <-- same as in node-1 -->
        }
        <----snip--->
        {
            "nodeName": "node-10"
            <-- same as in node-1 -->
        }
    ]
}
```