Cisco Nexus Dashboard Insights
Inventory, Release 6.5.1 - For Cisco
NDFC or Standalone NX-OS

# Table of Contents

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# New and Changed Information

The following table provides an overview of the significant changes up to the current release. The table does not provide an exhaustive list of all changes or the new features up to this release.

New Features and Changed Behavior in the Cisco Nexus Dashboard Insights

| Feature | Description | Release | Where Documented |
|---------|-------------|---------|------------------|
| Terminology change | The term Sites has now been renamed as Fabrics | 6.5.1 | Entire document |
| Routes table updates | Allows you to search and visualize routes tables, and also learn about any changes and lost routes that might have happened in a specific period of time. | 6.5.1 | Connectivity |

This document is available from your Cisco Nexus Dashboard Insights GUI as well as online at www.cisco.com. For the latest version of this document, visit Cisco Nexus Dashboard Insights Documentation.

# Inventory

## About Inventory

Inventory provides information on switches in Nexus Dashboard Insights.

Click **Manage** > **Inventory** to access Inventory.

At the top of Inventory, choose whether you want to view the inventory from **Online Fabrics** or **Snapshot Fabrics**.

Click **Switches** to see high-level information on the switches.

> ℹ️ If a switch or hostname is modified, it takes around 2 hours for the updated switch or hostname to be reflect in Inventory.

# Switches

## Switches

Switches provides the following high-level information on the switches. The gear icon allows you to customize the table by hiding some of the columns. By default, all columns are visible. The table can also be filtered based on the columns available. Click on the fabric name to be redirected to all the fabric details. See Fabrics for more information.

To get additional information on any single switch, click switch name.



| Field | Description |
|---|---|
| Name | The name of each switch |
| Anomaly Level | The anomaly levels experienced by each switch |
| Advisory Level | The advisory levels experienced by each switch |
| Fabric | The fabric where each switch resides |
| Model | The model type for each switch |
| Switch Role | Displays the role of switch. |
| Connectivity to Insights | The connectivity of the switches |
| Serial Number | The serial number for the specific switch |
| Software Version | The software version in which the switch is available |

| Field | Description |
|---|---|
| Fabric Type | Displays the type of switch:<br><br>   · ACI<br><br>   · NDFC<br><br>   · NX-OS |

You'll see **Overview**, **Connectivity**, **Anomalies**, and **Advisories** that will provide more information on the switch, with **Overview** shown first by default.

## Switches overview

The following appear below **Overview**.

· **Anomaly level**

Hover over the Anomaly Level to see what category the anomalies belong to. Click the Anomaly Level to get more specific information on the anomalies present for this controller. A slide-in appears, showing all the anomalies that occurred for this controller. See Anomalies to understand how to navigate across the anomalies.

· **Advisory level**

Hover over the Advisory Level to see what category the advisories belong to. Click the Advisory Level to get more specific information on the advisories present for this switch. A slide-in appears, showing all the advisories that occurred for this switch. See Advisories to understand how to navigate across the advisories tab.

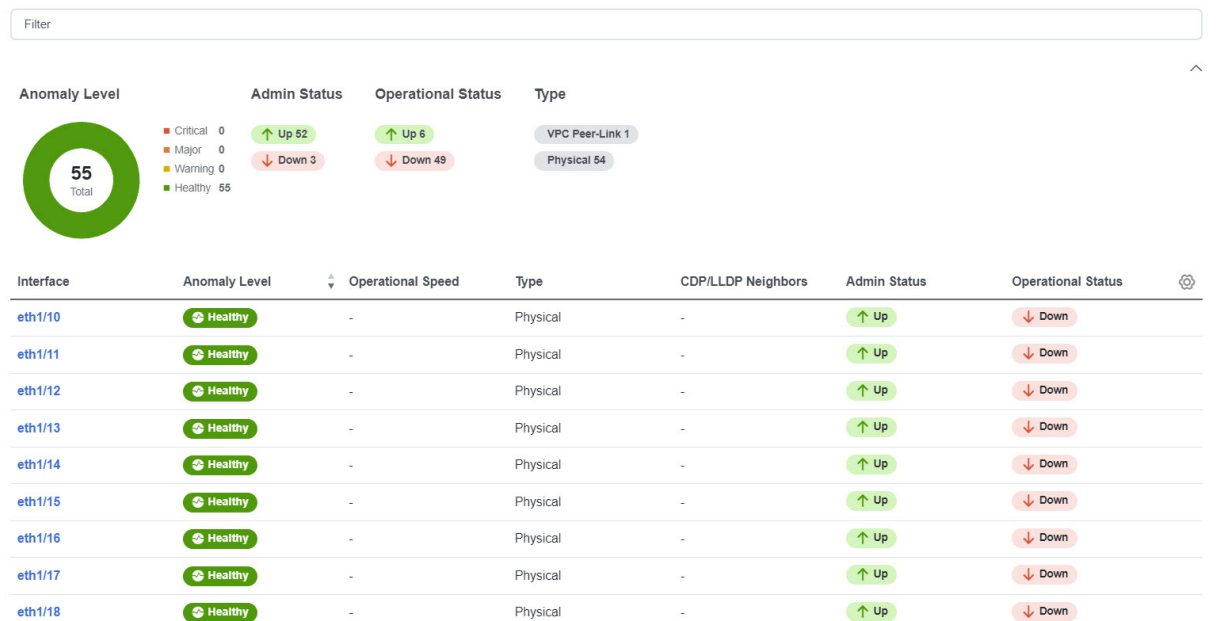· **Interfaces**

Interfaces provides the following information:

    ○ The total number of interfaces in this switch

    ○ The number of physical interfaces

    ○ The overall status of the interfaces in the switch (the number of interfaces that are up, down, or physical not in use)

       Click on the number above the **Total** text to get additional information on the interfaces in this switch.

Interfaces for leaf1

| Interface | Anomaly Level | Operational Speed | Type | CDP/LLDP Neighbors | Admin Status | Operational Status |
|-----------|---------------|-------------------|------|--------------------|--------------|--------------------|
| eth1/10 | ✿ Healthy | - | Physical | - | ↑ Up | ↓ Down |
| eth1/11 | ✿ Healthy | - | Physical | - | ↑ Up | ↓ Down |
| eth1/12 | ✿ Healthy | - | Physical | - | ↑ Up | ↓ Down |
| eth1/13 | ✿ Healthy | - | Physical | - | ↑ Up | ↓ Down |
| eth1/14 | ✿ Healthy | - | Physical | - | ↑ Up | ↓ Down |
| eth1/15 | ✿ Healthy | - | Physical | - | ↑ Up | ↓ Down |
| eth1/16 | ✿ Healthy | - | Physical | - | ↑ Up | ↓ Down |
| eth1/17 | ✿ Healthy | - | Physical | - | ↑ Up | ↓ Down |
| eth1/18 | ✿ Healthy | - | Physical | - | ↑ Up | ↓ Down |

You can filter the list of interfaces based on Anomaly Level, Interface, Type, Operational status and Admin status. Click on a specific interface listed under the Interface column to get additional information on that particular interface. See Interfaces for more information.

· **Switch View**

Within the **Switch View**, you can see the status of the interfaces, where the state could be Up (green), Down (red), or Not in Use (gray).

If the switch has multiple modules installed, you can switch the views between the different modules.

Real Time Visualization (RTEV) feature facilitates real-time event rendering within a user interface (UI) environment. This feature allows for the smooth integration of real-time events directly into the UI, ultimately enhancing the user experience and delivering the most up-to-date information in real-time. RTEV supported features provide the current data in 10 seconds when the change happens which otherwise takes 5 minutes to get updated via the regular pipeline.

Real-time values are shown to the right of the vertical bar. Historical values (past 2 hours) are shown to the left of the bar and may have larger gaps between data points.

Click **View All** to see the switch view for all modules installed. Click these links in the Switch View to get additional information:

**View Hardware Resources**

Click **View Hardware Resources** to view a slide-in which appears with information on the hardware resources for this switch in real time. Real Time Visualization helps view up to date information about the resources. Hardware resources shows the variations in the hardware resources over the time range selected. The hardware resources displayed with the percentage utilized per component are CPU, Fan Utilization, Memory, Power Supply, Storage, and Temperature. Click any resource to view further details about it.
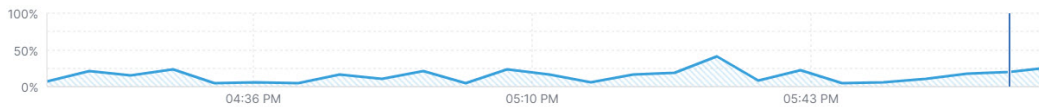
Hardware Resources for leaf1 ⊙ Current ∨

Current

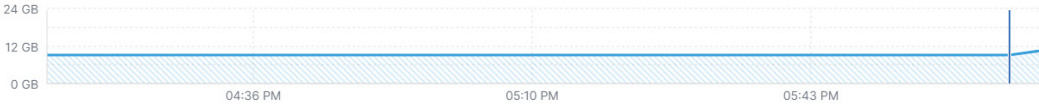REAL-TIME ⊙  **Real-Time Active:** Data is being displayed in real time for graphs where it is available

ⓘ

**All Resources**

Updates every 10s
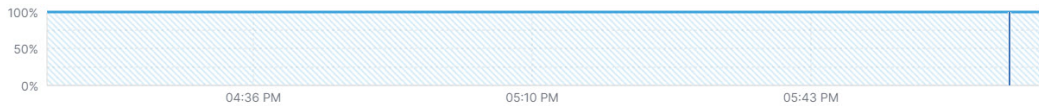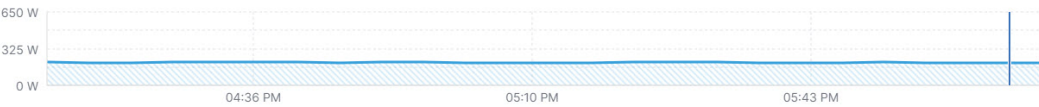
**CPU**
25% ↗
Details

**Memory**
10.498 of 23.477 GB ↗
Details

**Fan Utilization**
100% ↗
Details

**Power Supply**
200 of 650 W ↘
Details

**Storage**
5.682 of 7.28 GB ↘
Details

## View Capacity

Click **View Capacity** to view a slide-in appears with capacity information for the switch. Capacity details shows the variations in operational, configuration and interface resources over the time range selected.

| Type of Resource | List of resources |
|---|---|
| *Operational Resources* | • Egress Routed ACL<br>• IPV4 Host Routes<br>• IPV4 Prefix Routes<br>• IPV6 Host Routes<br>• IPV6 Prefix Routes<br>• Ingress Routed ACL<br>• L2 QoS TCAM<br>• L3 QoS TCAM<br>• MAC<br>• Multicast Routes |
| *Configuration Resources* | • L2 VNI<br>• L3 VNI<br>• VLAN<br>• VRF |
| *Interface Resources* | • Egress Port Bandwidth<br>• Ingress Port Bandwidth<br>• Port Usage |

The port diagram key helps understand the switch view. Click any interface in the switch view to get more details about the interface. See Interfaces for more information.

- **General** :

**General** provides the following information:

| Field | Description |
|---|---|
| Fabric | The fabric where each switch resides |
| Role | The role defines what the device is |
| Type | Displays what type of switch this is:<br><br>- Access<br>- Aggregation<br>- Border<br>- Leaf<br>- Spine<br>- ToR<br><br>ⓘ Nexus Dashboard Insights will now onboard ToR switches to provide complete visibility into the fabric. This requires creating an Layer 3 interface (SVI) in the ToR switch prior to onboarding.<br><br>ⓘ Layer 2 ToR is a supported topology for headless and monitored mode fabrics. You need to push PTP configuration to the TOR. For NDFC managed mode fabrics this isn't supported. |
| Connectivity to Insights | Connectivity status for switch |

| Field | Description |
|---|---|
| Telemetry Collection Status | Telemetry collection status provides insights into the health and performance of the switches and devices in your network. The different telemetry collection statuses at the fabric level include:<br><br>• OK – This status indicates that the telemetry data streaming from a switch to Nexus Dashboard Insights is functioning correctly. This is the desired state, as it ensures comprehensive monitoring and visibility into the network's performance.<br><br>• Not OK – This status indicates the telemetry data streaming from a switch to Nexus Dashboard Insights is not functioning correctly. This could be as a result of various problems, such as network outages, misconfigurations, or hardware failures. |
| Software Version | The version of the software on the switch |
| Last Software Update | The date when the software was last updated on this switch |
| Uptime | The amount of time that this switch has been up. You will also see when the switch was last rebooted |
| Model | The model type for this switch |
| Serial Number | The serial number for this switch |
| Out-of-Band IPv4 Address | The IPv4 address for the out-of-band management of this switch |
| Out-of-Band IPv6 Address | The IPv6 address for the out-of-band management of this switch |
| In-Band IPv4 Address | The IPv4 address for the in-band management of this switch |
| Switch ID | The ID of the switch |
| Created At | The date and time the switch was created |

• **Connectivity**

Connectivity provides the following information:

| Field | Description |
|---|---|
| Endpoints | The number of endpoints associated with this switch |

| Field | Description |
|---|---|
| L3 Neighbors | The number of Layer 3 neighbors associated with this switch |

Click on the number shown in either of these areas to get additional information on the endpoints or the Layer 3 neighbors.

- **Analytics Summary**

Analytics summary displays the congestion level of the switch.

## Connectivity

Click **Connectivity** to view connectivity information for this switch. The following appear below **Connectivity**, with **Interfaces** shown first by default.

Click any of these to view additional connectivity information for this switch:

- **Interfaces**

  Click Interfaces to view the Interfaces for this switch. The following information is available in Interfaces:

  - Anomaly level (Only Interface down anomaly is in Realtime)
  - Admin Status (Real time visualization)
  - Operational status (Real time visualization)
  - Type

  The Interfaces are listed in a tabular form. The following data is available for the interfaces in the table:

  - Anomaly level
  - Operational speed
  - Type
  - CDP/LLDP
  - Admin Status
  - Operational Status

There are various other columns that are optional and can be added to the table by clicking on the gear icon using the toggle to show or hide. See Interfaces for more information.

- **L3 Neighbors**

  Click the L3 Neighbors to view L3 Neighbors for this switch. You can filter the results based on Neighbor, Local Switch, VRF and Operational Status. Click the IP address in the Neighbor column to view details on this neighbor.

- **Endpoints**

  Click **Endpoints** to view the Endpoints for this switch. You can filter the results based on Anomaly

Level, MAC Address, IP Addresses, host names, Connected To, Interface, Time, Status, Tenant, VRF, BD, EPG/L3out, Search Deleted IPs, VM Name, Hypervisor.

Click a MAC address, IP address or a hostname to get the following additional information on that endpoint. You can view **Overview**, **Endpoint History** and **Anomalies** for the selected endpoint.

- **Routes**
    - Click **Routes** to view the route details for this switch.
    - You can choose from the drop-down list to view the details for either IPv4 or IPv6 routes.
    - Click **Download** to download any route table from the last 7 days.
    - You can filter the table based on route, protocol or VRF.
    - The **Routes per VRF** graph shows the number of routes per VRF for the top 10 VRFs.
    - The **Change Summary** helps view the number of the added, modified, and deleted routes. Click **Change Summary** to list all the routes which have had modified or deleted change made in a tabular form.
    - The Routes table displays information such as route, node name, protocol, VRF, and Next Hop. The Routes table only displays 10,000 route table entries and 10,000 history events. The Routes table always shows the current route table irrespective of the time range selected.
    - Click on any route listed to view General and Route History view along with the timeline for the change. The General page list of all the next hops available for that route. The Route History page shows detail of last 50 route events. The route history events shows deleted or modified events. Route add events are shown under modified routes category.
    - Each Next Hop IP address is subscripted with the node name and interface where it is configured.
    - Click **View Details** in the routing page banner to list any unsupported nodes, inactive nodes, switch connection, failure and if data is inconsistent for the selected time range.
- **vPC Domains**

    Click **vPC Domains** to view the vPC Domain for this switch. You can filter the results based on Domain ID. Click a domain in the **Domain ID** column to view vPC domain details on that domain. Click an interface in the Interface column to view additional information on that interface.

- **Multicast**

    The Multicast card lists the IGMP, IGMP snooping and the PIM details for the switch. The Instances table shows the following information:

| Protocol Type | Fields for Instances Table |
|---|---|
| IGMP DETAILS | • Interface<br>• Admin State<br>• Operational Status<br>• Tenant<br>• VRF<br>• IP Address<br>• Querier Address<br>• Membership Count<br>• Querier Version<br>• Errors<br>• View Stats |
| IGMP SNOOPING DETAILS | • VLAN<br>• Admin State<br>• Querier Address<br>• Querier Version<br>• Multicast Routing State<br>• Switch Querier State<br>• Errors<br>• View Stats |
| PIM DOMAINS DETAILS | • VRF<br>• Rendezvous Point Addresses |

# Guidelines and Limitations

## Guidelines and Limitations for Real Time Visualization (RTEV)

• Controller events are not in real-time and RTEV is limited to switches only.

• For RTEV, 20 UI sessions are supported.

• For the real-time connection to be established, you must enable the NX-API feature in NDFC and in Cisco NX-OS sites that do not have a controller.

## Guidelines and Limitations when Viewing Hardware Resources

All parameters are updated in real-time based on the cadence from the switch when it sends the data.

## Guidelines and Limitations for Routes Table

• Routes table is only supported on NX-OS release 10.4(3) and later.

- You must enable gRPC Network Management Interface (gNMI) transport feature in the switches. To enable gNMI transport you must configure the following:

  - Configure FabricPassword/LanPassword/LeafPassword

  - Enable Feature NX-API

- The routing collector has built in metering to only process the supported scale of route change events and it drops the rest of the route events. For example, on a physical standard deployment, 1 million route updates can be ingested in 3 minutes. Data drop is indicated in the UI using the route banner. When route events are dropped due to metering, it will take some time to re-snapshot and reconcile the route data.

- For a newly onboarded fabric or switch, it may take some time for the Routes table to be available.

- The download Route table API is only allowed on switch level page. The API returns complete Route table if the prefixes in history events processed are less than 50,0000 per switch.

- When the route database experiences a storm of updates, the metering logic might drop some of these updates resulting in incorrect counts of **New**, **Modified**, or **Deleted** prefixes or routes displayed within a 2 hour window. In this scenario a re-snapshot request to the switch is initiated, which will sync route database with the switch and accurately reflect the total number of routes for a given fabric.

# Interfaces

The following interface types (Real time visualization) are supported:

- **Physical Interface**: To view the interface details of the node such as, node name, physical interface name, operational status, and admin state. The page also displays protocols, QoS, and DOM properties of the physical interface.

- **Port Channel Interface**: The port channel is an aggregate of physical interfaces and they can be statistically channeled or can be dynamic using LACP protocols. The statistical data that collects the counters for packets, bytes and various errors are similar to that of physical interface. The 150 *sourcename* differentiates the physical interface from port-channel (aggregated interfaces). The operational data is obtained by looking at an additional set of objects that gives the admin-status, oper-status and list of member interfaces for both PC and vPC.

- **vPC Interface**: The vPC is a logical interface that spans across two physical switches for fault tolerance. For a vPC interface type, the Logical Neighbors information is also displayed. The categories that are supported are L3Out, IPN, ISN, L4-L7.

- **SVI Interface**: An SVI is a virtual routed interface that connects a VLAN on the device to the Layer 3 router engine on the same device. Specific information such as Member Interfaces over which the SVI is deployed, VLAN ID, VLAN Type, Encap VLAN are displayed for the SVI interface.

Click an interface to view more details about it.

# Overview

The Anomaly level is available at the top. The fields for overview change depending on the type of interface supported.

- **INTERFACE TYPE : PHYSICAL**

| Section | |
|---|---|
| General | - Interface<br><br>- Type (Access Port, Trunk Port, L3 Port)<br><br>- IP Address<br><br>- Admin Status<br><br>- Operational Status<br><br>- CDP/LLDP neighbors<br><br>- Total Endpoints<br><br>- SFP Diagnostics (You can click on 'View SFP Diagnostics' to view further details)<br><br>ℹ️ If LLDP is disabled, the tag will show 'LLDP disabled', otherwise it will show the count. This is applicable for CDP neighbors as well. |

| Section | |
|---|---|
| VLANs Allowed on Interface (This is available for Access Single Port and Trunk Multiple Ports) | • VLAN ID<br>• VNI |
| Sub interfaces (This is available for Access Single Port and Trunk Multiple Ports) | • Sub interface<br>• IP Address |
| Associated Routing Protocols (For L3 Port) | • Protocol<br>• Type |

- **INTERFACE TYPE : PORT CHANNEL**

| Section | |
|---|---|
| General | • Interface<br>• Description<br>• Type (Access Port, Trunk Port, L3 Port, vPC Peer link for vPC Domain)<br>• Aggregation Type<br>• Bandwidth<br>• IP Address<br>• Admin Status<br>• Operational Status<br>• CDP/LLDP neighbors<br>• Total Endpoints<br>• SFP Diagnostics (You can click on 'View SFP Diagnostics' to view further details)<br><br>ⓘ If LLDP is disabled, the tag will show 'LLDP disabled', otherwise it will show the count. This is applicable for CDP neighbors as well. |
| LACP Details | • Interface<br>• Admin Status<br>• Operational Status<br>• LACP Packets received<br>• LACP Packets transmitted<br>• Errors |

| Section | |
|---|---|
| VLANs Allowed on Interface (This is available for Access Single Port and Trunk Multiple Ports) | · VLAN ID<br><br>· VNI |
| SFP Diagnostics (DOM) | · Lane<br><br>· Voltage<br><br>· Temperature<br><br>· Current<br><br>· Transmit Power Value<br><br>· Receive Power Value |

· **INTERFACE TYPE : vPC**

> ℹ vMCT is not supported.

| Section | |
|---|---|
| General | · Interface<br><br>· Description<br><br>· Type<br><br>· vPC Domain<br><br>· Bandwidth<br><br>· IP Address<br><br>· Admin Status<br><br>· Operational Status<br><br>· CDP/LLDP neighbors<br><br>· Total Endpoints<br><br>· SFP Diagnostics (You can click on 'View SFP Diagnostics' to view further details)<br><br>> ℹ If LLDP is disabled, the tag will show 'LLDP disabled', otherwise it will show the count. This is applicable for CDP neighbors as well. |
| Members | · Switch<br><br>· Port Channel<br><br>· Aggregation Type<br><br>· Interface<br><br>· Operational Status |

| Section | |
|---|---|
| VLANs Allowed on Interface (This is available for Access Single Port and Trunk Multiple Ports) | • VLAN ID<br>• VNI |
| SFP Diagnostics (DOM) | • Lane<br>• Voltage<br>• Temperature<br>• Current<br>• Transmit Power Value<br>• Receive Power Value |

**・ INTERFACE TYPE : SUB-INTERFACE**

| Section | |
|---|---|
| General | • Interface<br>• Description<br>• Type (L3 Port)<br>• Parent Interface<br>• VRF<br>• Encap<br>• IP Address<br>• Admin Status<br>• Operational Status<br>• CDP/LLDP neighbors<br>• Total Endpoints<br>• SFP Transceiver (You can click on 'View SFP Diagnostics' to view further details)<br><br>ℹ If LLDP is disabled, the tag will show 'LLDP disabled', otherwise it will show the count. This is applicable for CDP neighbors as well. |
| Associated Routing Protocols (For L3 Port) | • Protocol<br>• Type |

**・ INTERFACE TYPE : NVE**

| Section | |
|---|---|
| General | · Interface<br><br>· Description<br><br>· Type (L2/L3 Port)<br><br>· Encapsulation<br><br>· Mode<br><br>· Admin Status<br><br>· Operational Status<br><br>· Peers |
| VNIs | · VNID<br><br>· Multicast Group<br><br>· Type<br><br>· VLAN/VRF |

· **INTERFACE TYPE : SVI**

| Section | |
|---|---|
| General | · Interface<br><br>· Description<br><br>· Type<br><br>· IP address<br><br>· Encap<br><br>· Admin Status<br><br>· Operational Status<br><br>· SFP Transceiver (You can click on 'View SFP Diagnostics' to view further details) |
| Associated Routing Protocols (This is available only if the routing protocol is configured) (Real Time Visualization) | · Protocol<br><br>· Type |

# Multicast

Click Multicast to bring up details for multicast routes on this interface.

| Section | |
|---|---|
| General | • IP Address |
| | • IGMP Version |
| | • IGMP Querier |
| | • IGMP Last Reporter |
| | • Admin State |
| | • Oper State |
| | • VRF |
| | • Tenant |
| | • Designated Router Address |
| | • Designated Router Priority |
| | • Neighbor Address |
| Multicast Groups | • Source |
| | • Multicast Group |
| | • VRF |
| | • Last Reporter |

For any interface, you can choose to view either the **IGMP** details or the **PIM** details.

IGMP DETAILS :

- General Information
    - Fast-leave
    - Allow V3 ASM
    - Report Link-local Groups
- Statistics
    - V2 Leave Received
    - V2 Leave Sent
    - V2 Query Received
    - V2 Query Sent
    - V2 Report Received
    - V2 Report Sent
    - V3 Query Received
    - V3 Query Sent
    - V3 Report Received
    - V3 Report Sent

PIM DETAILS :

- Neighbor Details
  - Neighbor
  - BFD Config
  - Bi-Dir Config
- Statistics
  - Authentication failed
  - Bad Version Packet
  - Checksum Errors
  - Invalid Packet Received
  - Invalid Packet Sent
  - Join No RP
  - Join Wrong RP
  - Packet from Self
  - Packet Length Error
  - Packet on Passive Interface

# Trends and Statistics

Click Trends and Statistics to view trends and statistics information on this specific interface in this switch. You see information about the traffic that is flowing over the interface, the usage and various statistics for Microbursts and errors. All of the information is now available in real time. Real Time Visualization helps view up-to-date information.

NX-OS switches support the new subscription service and will send notifications to all interested clients for every sample (every 10 seconds). In the event of any issues with the dial-in connection, it will automatically fall back to the regular update cadence, which is at 1-minute intervals.

- Admin Status (Real time visualization)
- Operational Status (Real time visualization)
- Errors (Real time visualization)
- Traffic (by bytes or by packets) (Real time visualization)
  - Flood
  - Multicast
  - Unicast
  - Total
- Bandwidth (Real time visualization)
  - Utilization
  - Rate
- Congestion
  - Congestion score

- PFC

- ECN

- Drops

- RED/WRED/AFD

- Errors

> The congestion statistics show the ECN and PFC counters for the traffic received and transmitted. This is used to display where the congestion occurs. Click on any of the counter graphs displayed to view the per queue counters. This displays the list of the counters in the queue along with the number of packets in the respective queue.

# Anomalies

Click to view anomaly information on this specific interface in this switch. See Anomalies for more information.

The Anomaly level shows the total number of anomalies that have occurred and the number of anomalies that have occurred in the last week.

Hover over the Anomaly Level to view the category of the anomalies occurred. Click the Anomaly Level to get specific information on the anomalies present for the specific controller or switch.

The **View all anomalies** takes you to the Anomalies tab. See Anomalies to understand how to navigate across the anomalies.

# Filtering Information

In some cases, you might be able to filter results to find information more easily.

For example, you might have a situation where there a large number of endpoints under a single leaf switch, but you are only interested in endpoints that have a certain VLAN value.

You could filter the information to show only those specific endpoints in this situation.

Use the following operators for the filter refinement:

| Operator | Description |
| --- | --- |
| == | With the initial filter type, this operator, and a subsequent value, returns an exact match. |
| != | With the initial filter type, this operator, and a subsequent value, returns all that do not have the same value. |
| contains | With the initial filter type, this operator, and a subsequent value, returns all that contain the value. |
| !contains | With the initial filter type, this operator, and a subsequent value, returns all that do not contain the value. |
| < | With the initial filter type, this operator, and a subsequent value, returns a match less than the value. |
| < = | With the initial filter type, this operator, and a subsequent value, returns a match less than or equal to the value. |
| > | With the initial filter type, this operator, and a subsequent value, returns a match greater than the value. |
| > = | With the initial filter type, this operator, and a subsequent value, returns a match greater than or equal to the value. |

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