Preview Features

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Preview Features

In the DCNM 10.4.2 release, the following two features have been introduced as previews for LAN deployments.

The concept of preview features is to get early feedback from customers for subsequent integration into the General Availability (GA) release. Note that preview features have not been qualified for any scaled environments.

- Compute Visibility with VMware vSphere Virtual Center (vCenter)
- Environmental Metrics visibility via streaming telemetry

Note These features are only available in the OVA form factor for DCNM 10.4.2. The installer options in which these features are supported are (1) VXLAN Fabric (2) LAN, SAN, Auto-Config

This section contains the following topics:

Compute Visibility

In virtualized environments, any kind of troubleshooting begins with identifying the network attachment point for the virtual machines in question. This means a quick determination of the server, virtual switch, port-group, VLAN, associated network switch and physical port is critical. This may require multiple touch points and interactions between the server and network administrator as well as reference to multiple tools (compute orchestrator, compute manager, network manager, network controller etc.).
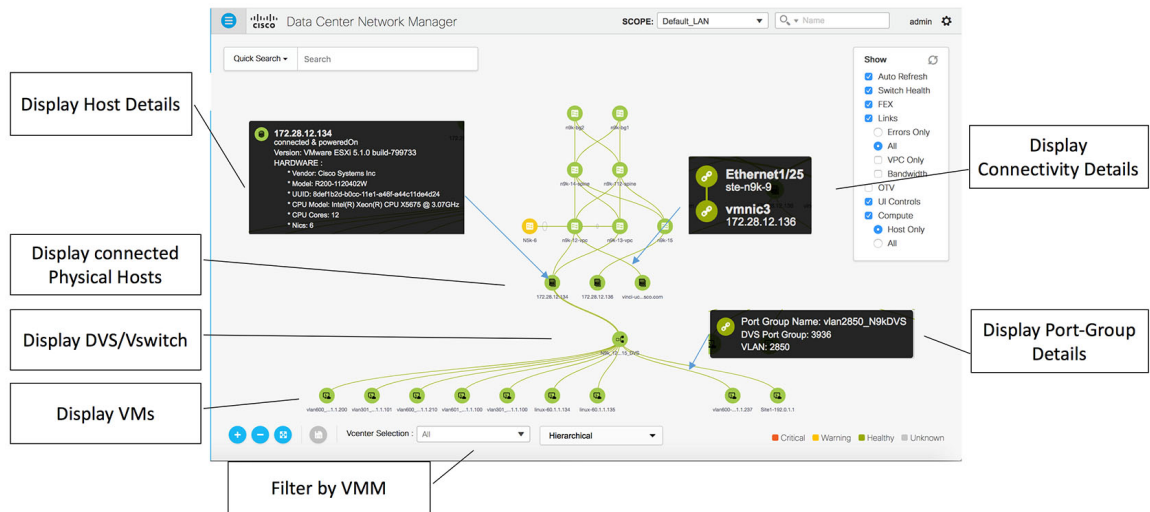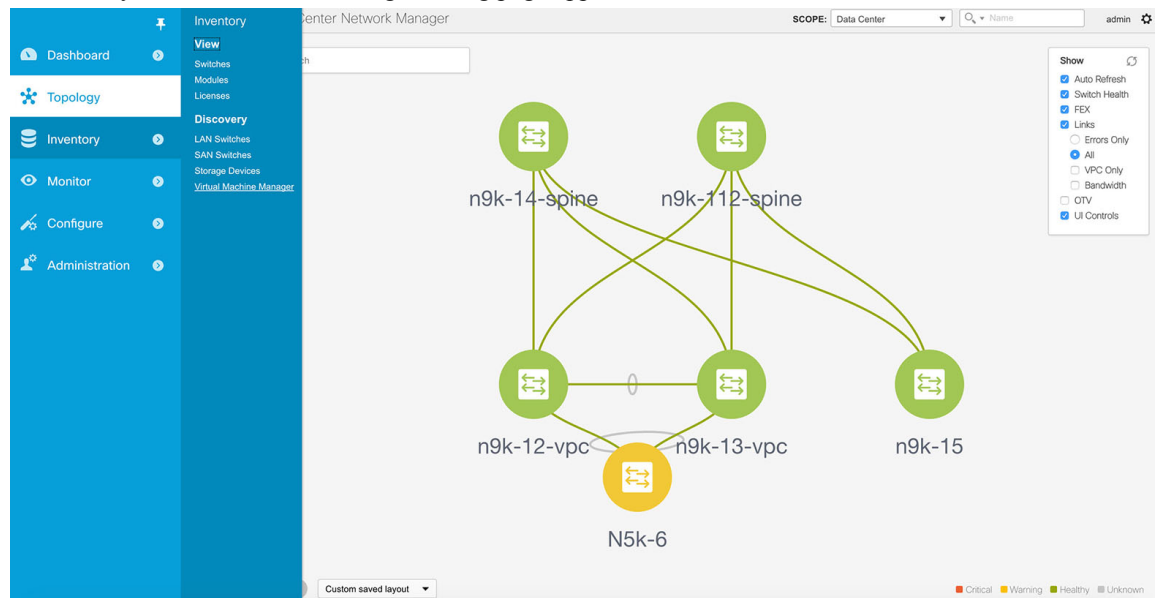
The compute visibility preview feature added in DCNM 10.4.2 strives to provide a single pane of glass that provides the entire attachment path from the end-host all the way up to the network switch. The current DCNM network topology view has been enhanced to optionally display the associated compute nodes including virtualized servers, virtual switches, and virtual machines. Fabric level scope select filters the view to only display compute resources associated with the selected group of switches. This feature is targeted for VMware vSphere vCenter environments.
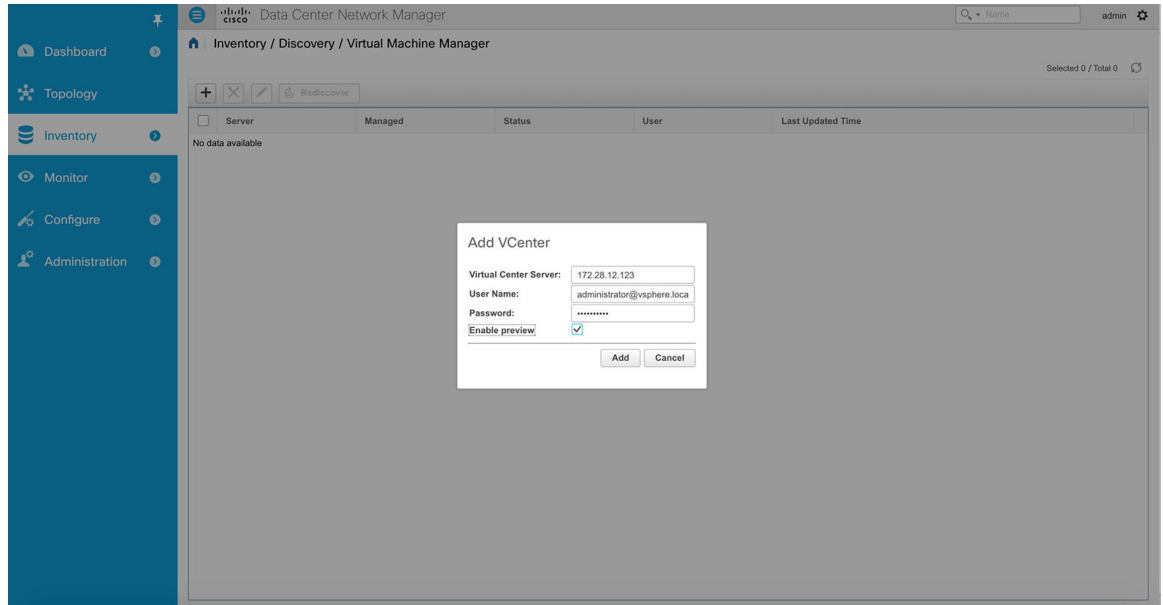
Enabling the Compute Visibility Feature

Procedure

Step 1 From Cisco DCNM Web Client, choose **Configure > Inventory > Virtual Machine Manager**. The Inventory / Discovery / Virtual Machine Manger listing page appears.

Step 2 Click the + button to add a new VMware vSphere vCenter.

Step 3 Add details of the vCenter including its hostname or IP address, and credentials. Please check the button that says "Enable preview". This will enable the compute visibility preview feature (vCenter version required is 5.5 or higher).

Step 4 After initial discovery, which will take a couple of minutes, the information received from vCenter will be appropriately organized and available on the main topology screen. An additional menu item labelled "Compute" will become visible on the right hand selection menu, as shown below.
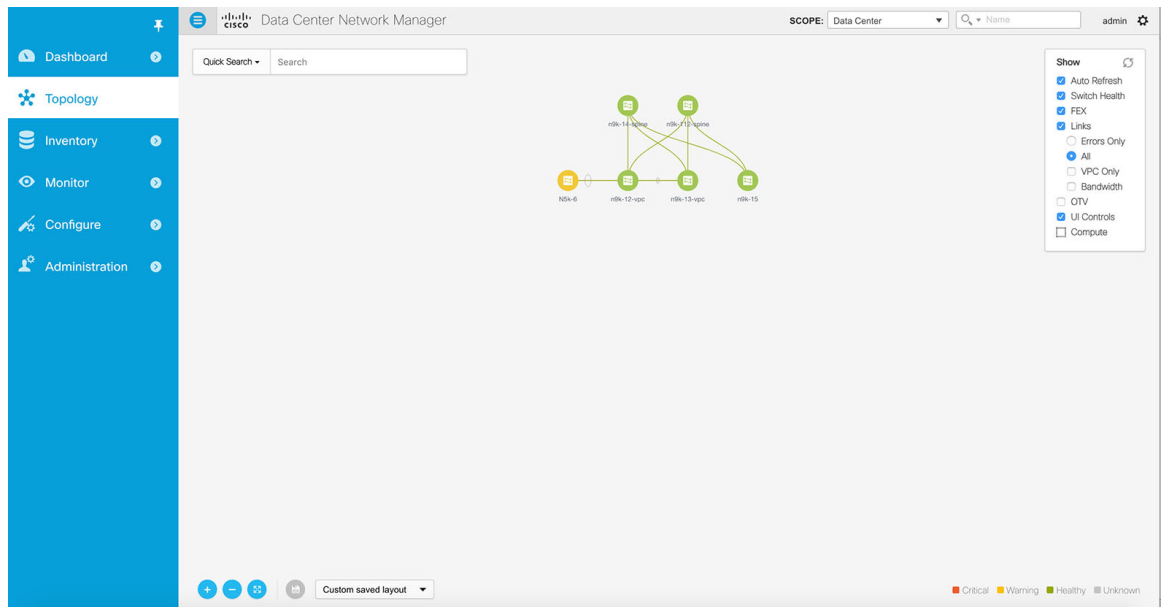
Using the Compute Visibility Feature

Procedure

Step 1   In order to enable the Compute visibility, the topology view must have selected the respective topology SCOPE. Once the Compute option in the topology view menu is checked, you have enabled the compute visibility. By default the "Host Only" sub-option is shown as being selected, which means that the topology will show the VMWare vSphere ESXi hosts (aka servers), which are attached to the network switches.
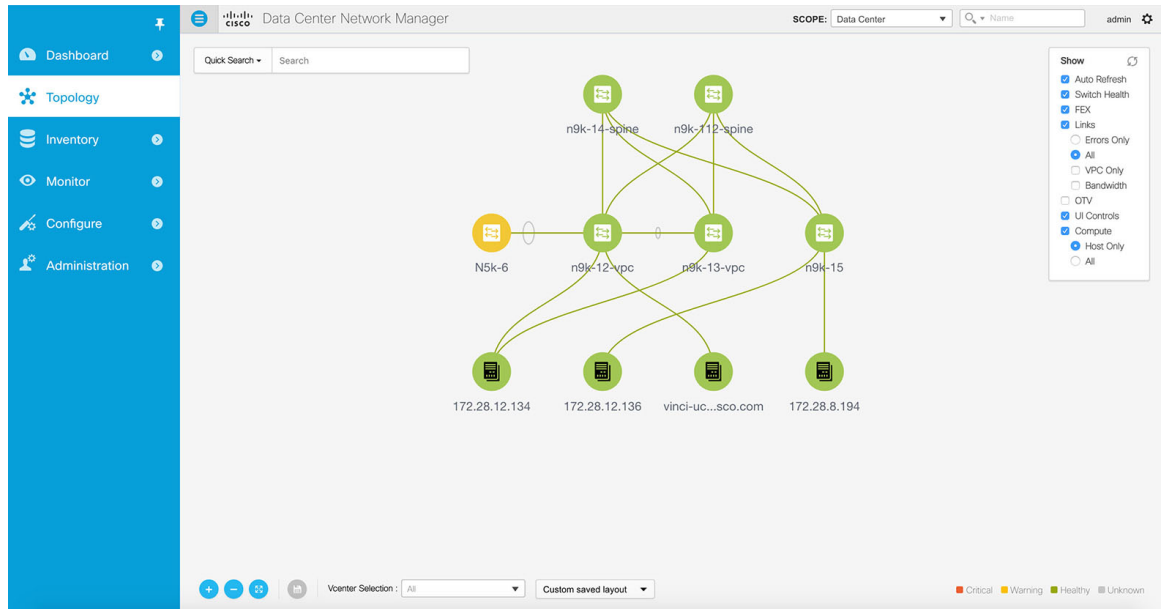

Step 2   Once the topology is shown with the additional compute visibility, through clicking a specific ESXi host, additional information is depicted. The expanded topology will display the virtual switches (both vSwitch and Distributed Virtual Switch) that are configured on the specific ESXi host.
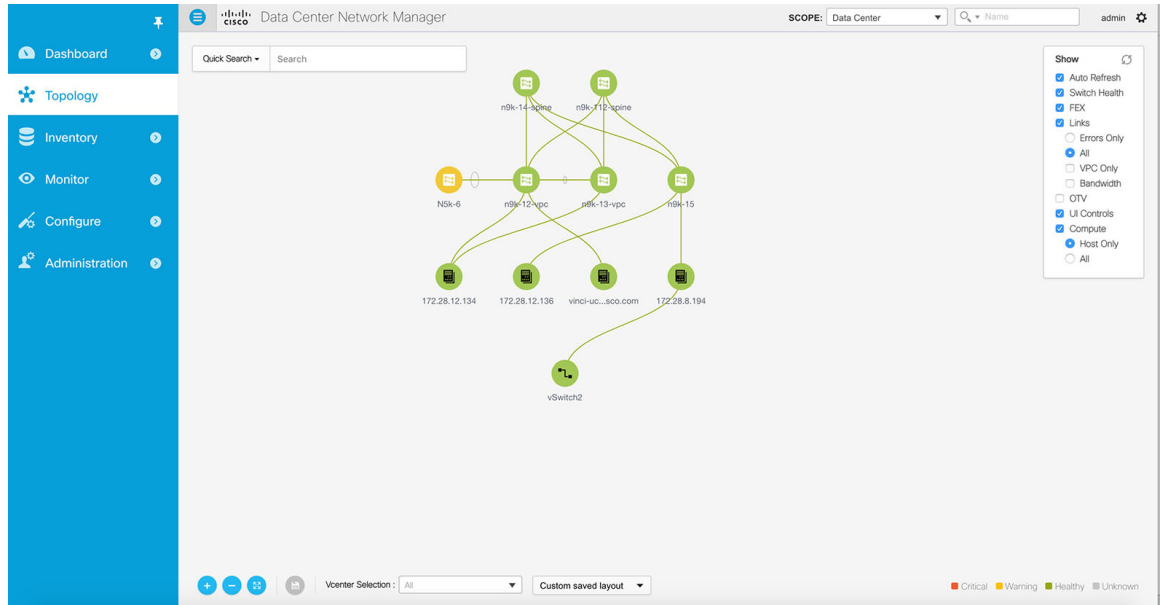
Step 3   Further expansion of the topology is possible by clicking the virtual switch, which will display the virtual machines connected to the selected virtual switch.
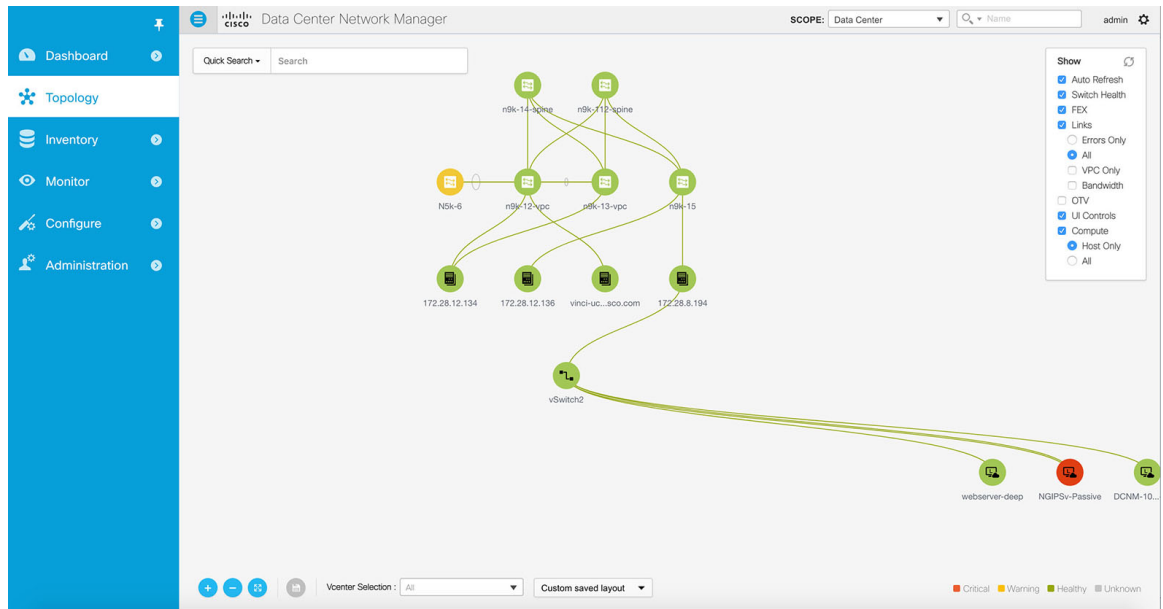

Step 4   Additional context information is available through mouse-over . The information is overlaid on top of the current topology view.
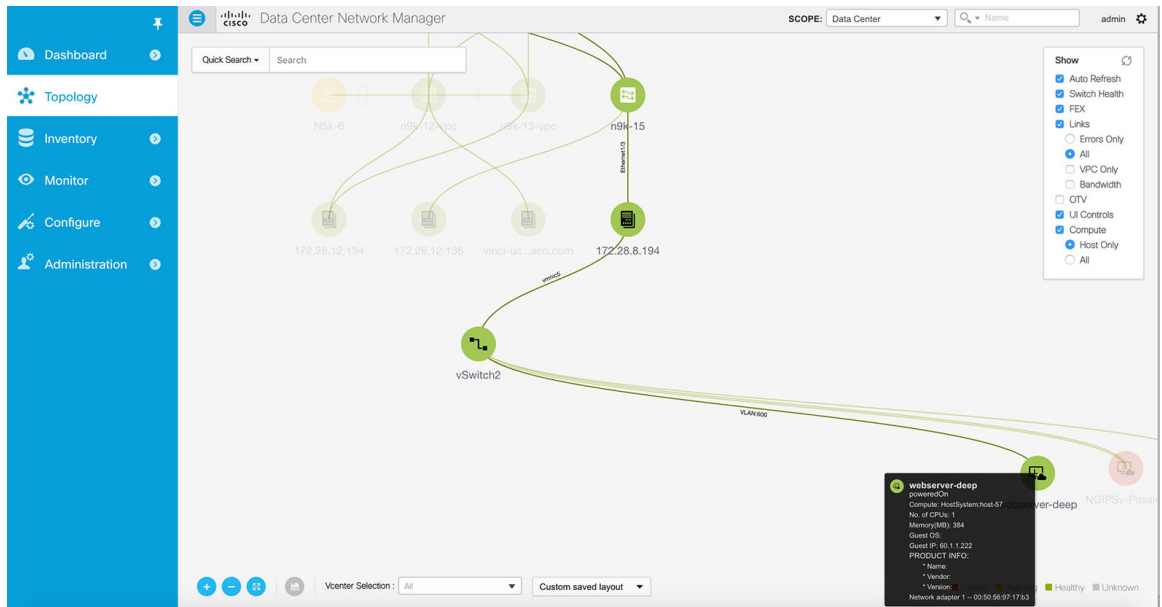
Step 5   When changing from the "Host Only" sub-option to the "All" sub-option, all the compute resources are expanded. This mode provides an expanded view of all the hosts, virtual switches, virtual machines that are part of the topology. If a VM is powered off, it will be shown in red color else it will be green color.
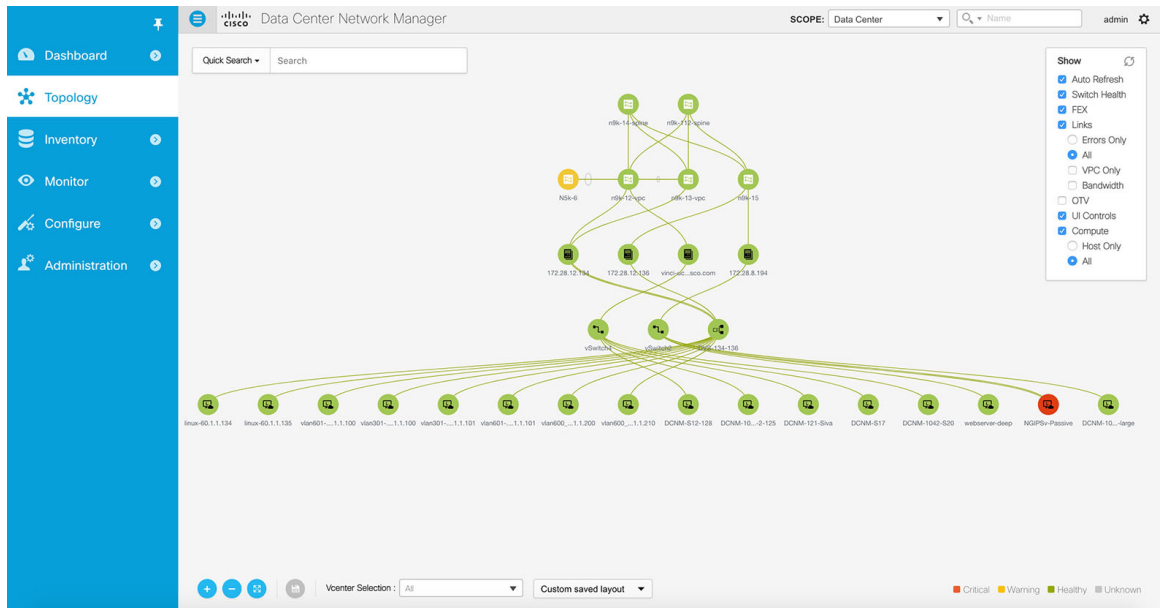
Step 6   Instead of browsing through the large set of available information, to quickly focus on a specific VM, a search option is available. In the top left search bar, select the "Host name (vCenter)" option.
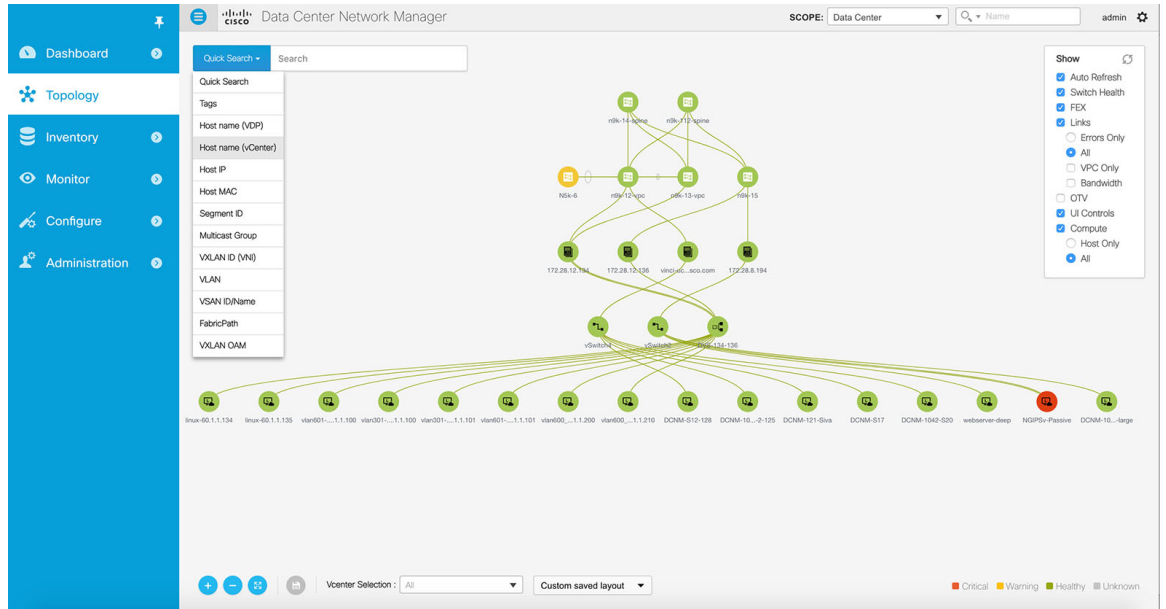
Step 7   As soon as one starts typing characters, the topology is instantaneously updated to highlight the matching objects. Partial searches are supported.
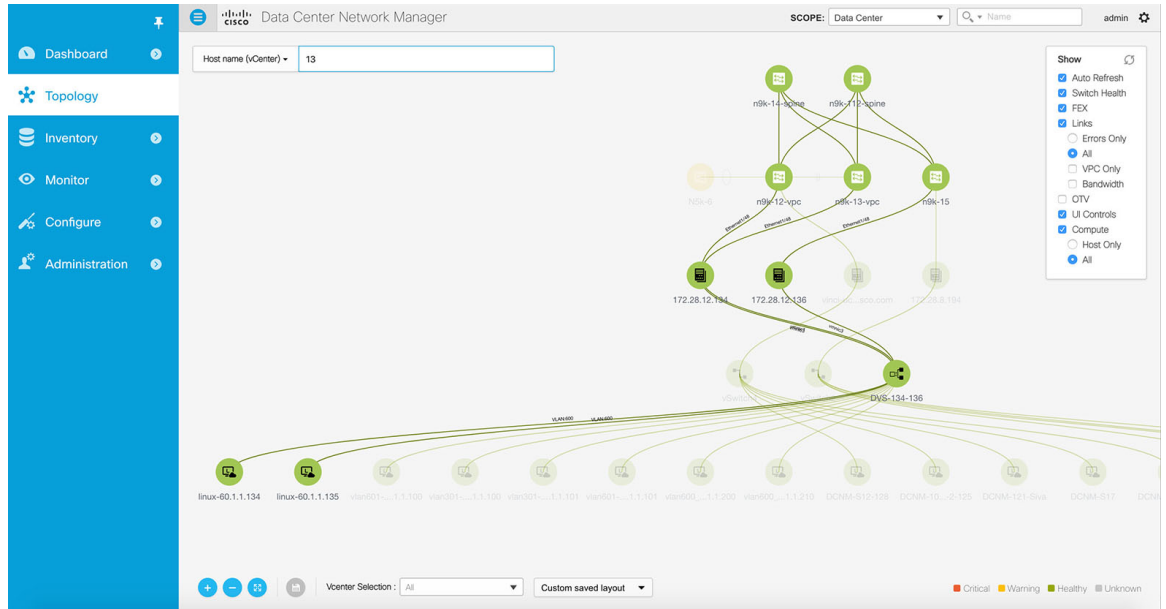
Disabling the Compute Visibility Feature

Procedure

Step 1   From Cisco DCNM Web Client, choose **Configure > Inventory > Virtual Machine Manager**. The Inventory / Discovery / Virtual Machine Manger listing page appears depicting the vCenters that have been added to the DCNM so far.

Step 2   Select the vCenter for which the preview functionality has been enabled. Then click the "**X**" button. Confirm the deletion by clicking "Yes" on the pop-up.
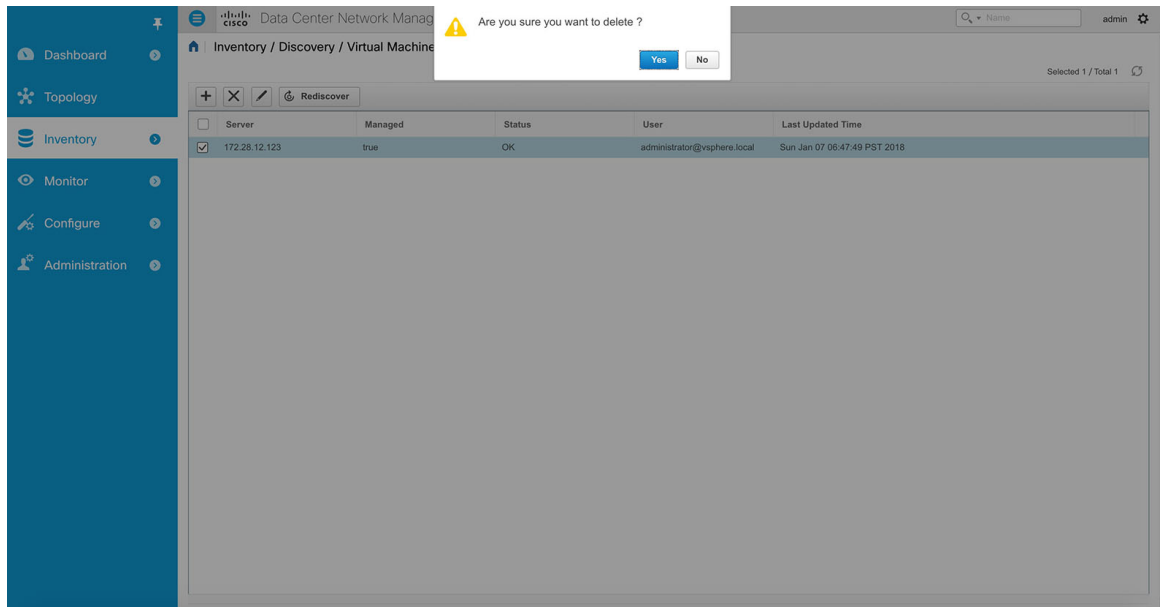
Streaming Telemetry for LAN Deployments

In today's data center environments, granular visibility and tracking of network events has become extremely critical. The traditional polling based methods that pull network state in predefined intervals need a fork-lift upgrade. More advanced streaming approaches are required that provide network event visibility in closer to real time through a push method. Streaming telemetry not only allows data to be pushed out at a much finer granularity with a lower cadence (shorter interval) but it also enables event based notifications. While getting relevant data in a timely fashion is highly desirable, the data needs to be analyzed and converted into actionable insights.

As a first step toward LAN analytics, DCNM 10.4.2 enables subscriptions for environmental metrics through streaming telemetry for consumption and analysis. The environmental metrics that are streamed include CPU, Memory, Power, and Fan Speed; all of these are enabled with a single click. DCNM configures the streaming updates for CPU, Memory to be streamed out every 30 seconds, and those for Power, Fan Speed to be streamed out every 300 seconds (5 minutes). The per-metric real-time streaming dashboards allow filtering on a per

fabric and per switch level including a per-switch drill-down where applicable. Streaming telemetry is currently supported on the Nexus 9000 platforms.

Pre-requisites for Enabling the Streaming Telemetry Feature

The pre-requisites for enabling this feature are:

- The Cisco Nexus 9000 switches and Cisco DCNM need to be time synchronized (NTP is recommended).

- Minimum software version on the Nexus 9000 switches must be 7.0(3)I6(1) or higher.

Enabling the Streaming Telemetry Feature

Procedure

Step 1 Go to **Configure > LAN Telemetry > Configure**. Select the fabric for which LAN Telemetry has to be enabled. Then press the **Enable** button.


There will be a warning message that will indicate that DCNM and the switches need to be time synchronized before this feature is enabled. Recall, that this is a pre-requisite for this feature. If the pre-requisite is met, please acknowledge by clicking **Yes**.
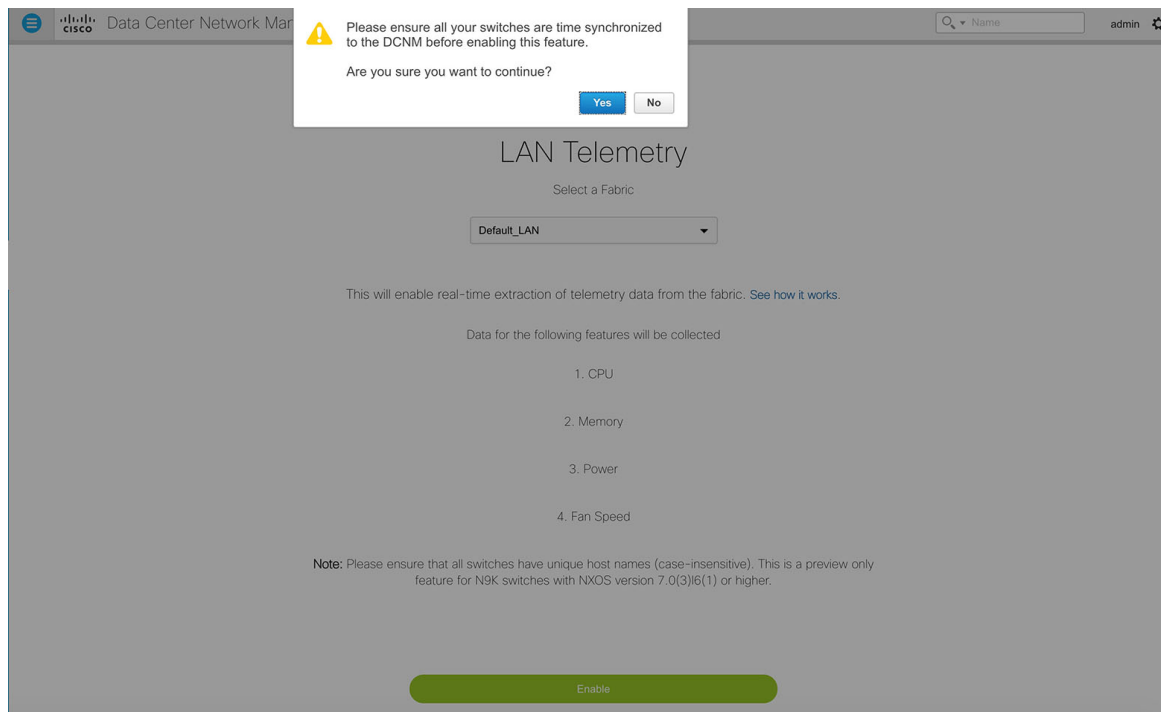
Step 2 Once the feature is enabled, a message will appear indicating the initialization process has begun, which will take a couple of minutes. This time is needed for the streaming configuration to be pushed to the switches, the initial data to be streamed out from the switches, consumed by DCNM and depicted on the LAN telemetry dashboard.
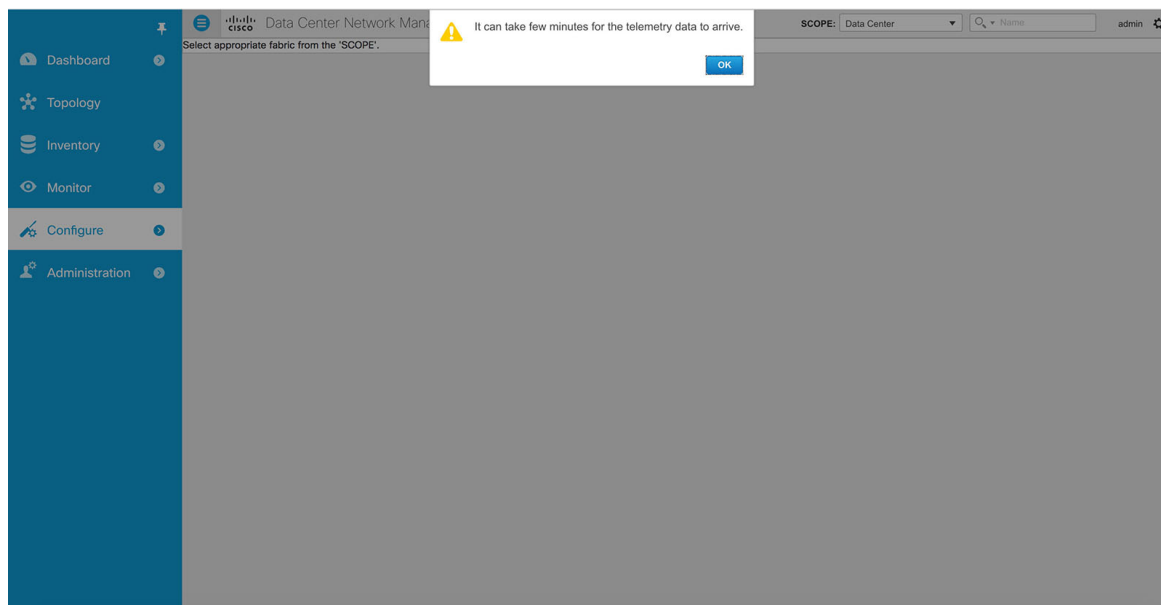
Once the LAN telemetry preview feature is enabled, DCNM will update the switch telemetry configuration for the environmental metrics. Every switch that does not conform to the telemetry requirements (must be Cisco Nexus 9000) will be excluded from the configuration update. The job status can be monitored by going to **Configure > Template >Jobs**.
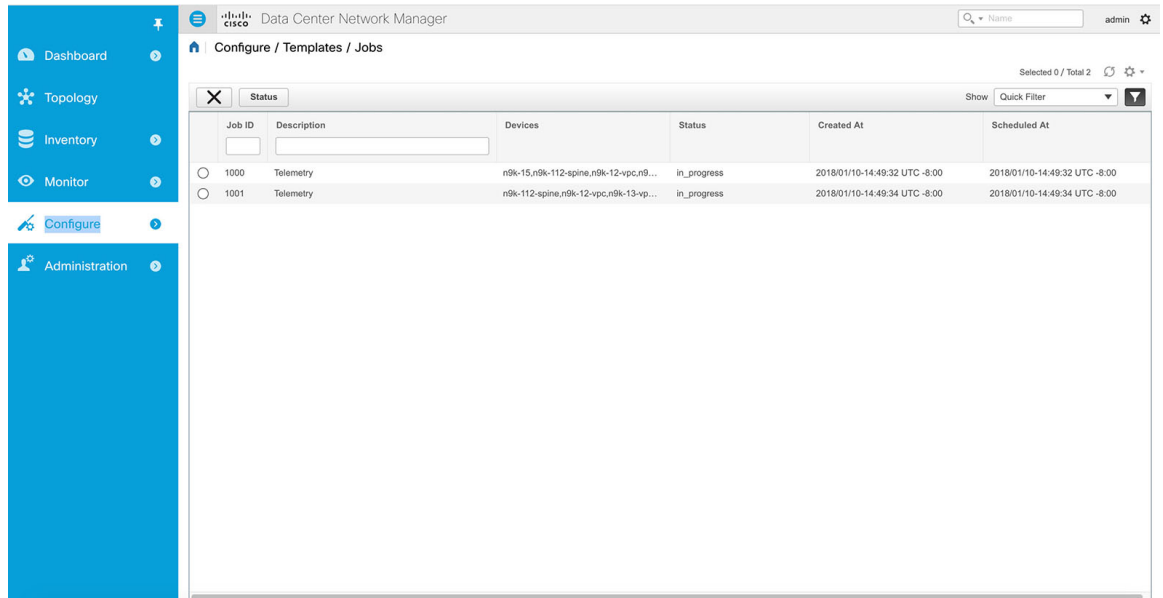
Once the jobs are successfully executed, the required telemetry configuration has been applied to the switches and the streaming data will appear once received and processed.

Using the Streaming Telemetry Feature

Procedure

Step 1 Once LAN telemetry has been successfully enabled, a new Telemetry Explore screen is available. You can navigate to the Telemetry Explore screen by following **Monitor > LAN Telemetry > Explore**. Select the fabric for which LAN telemetry has been enabled through the SCOPE at the top.
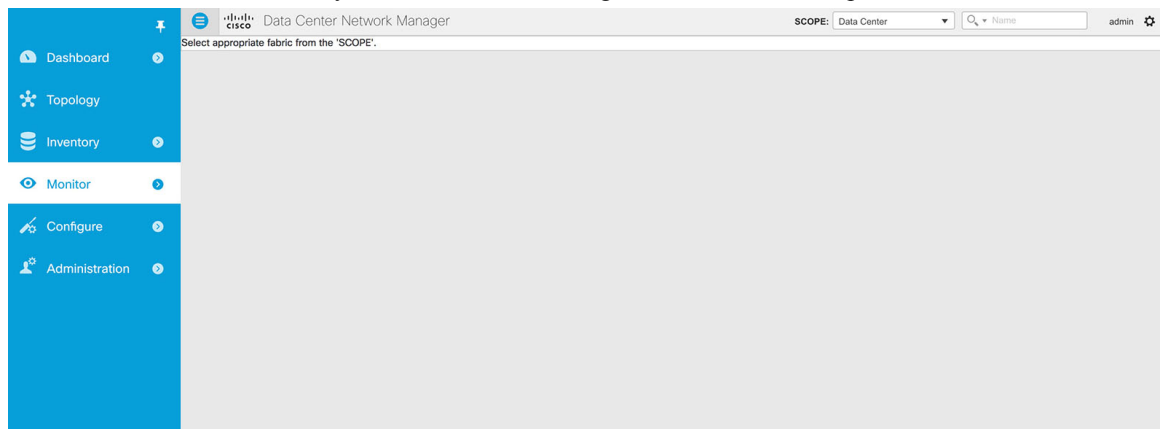

Step 2 Once the appropriate fabric is selected as part of the scope, the LAN telemetry dashboard shows up, depicting CPU data, by default.
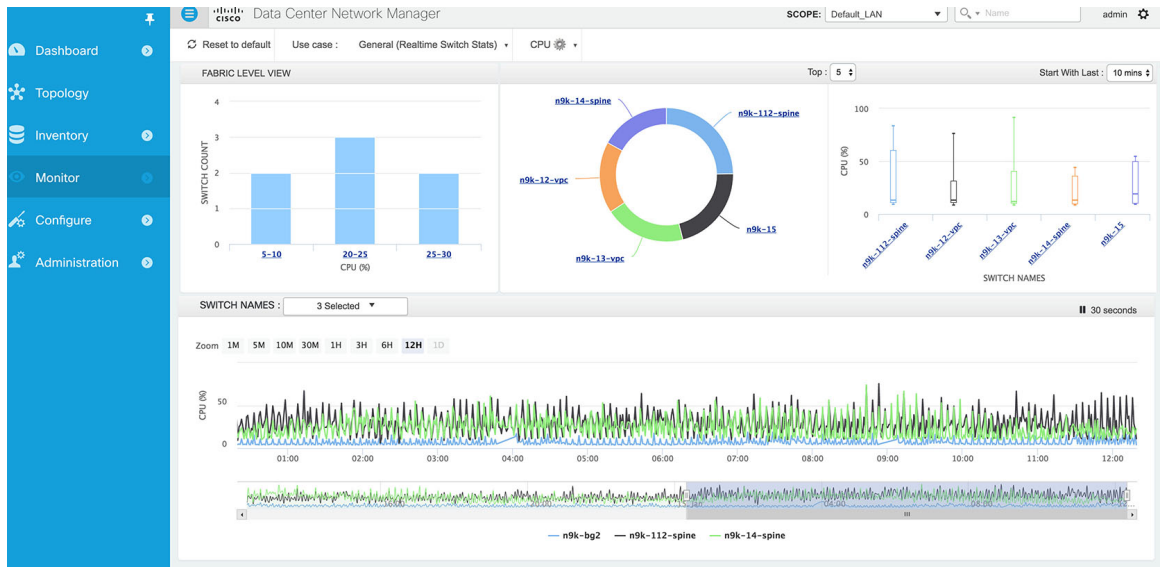
The top three tiles in the screen depict the data collected over the last 10 minutes. This interval can be changed by selecting a different time scale in the pull down. Next, we will describe the details depicted in the various tiles and graphs. The first tile on the left shows a fabric level view; it's a histogram showing the count of switches that fall within a certain CPU range.
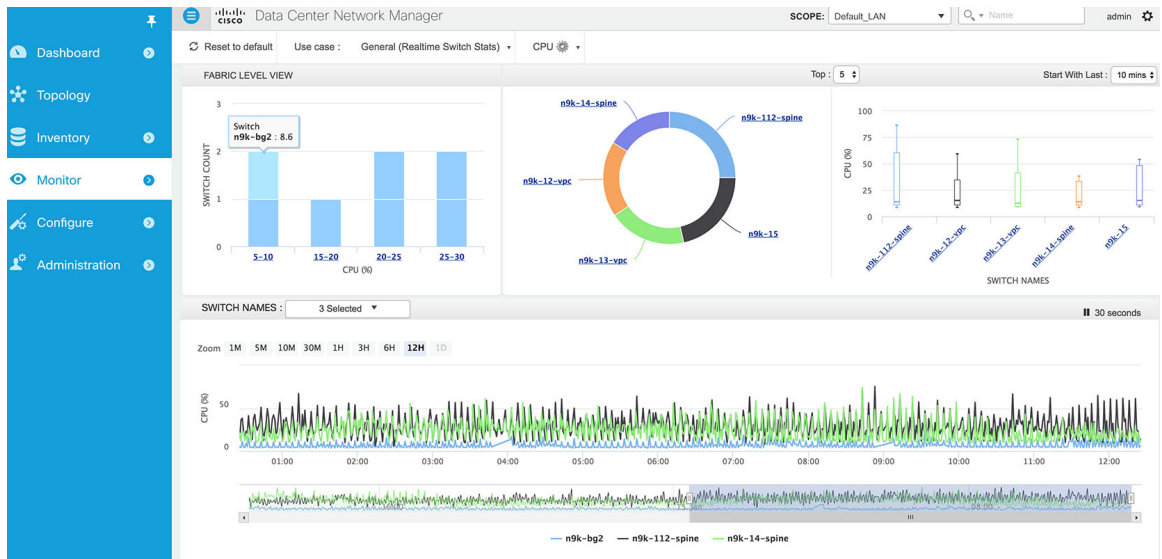

The middle tile depicts the Top 5 switches in the fabric with respect to average CPU usage. The user can select the Top 10 or Top 15 switches by choosing the drop-down menu above the middle tile.
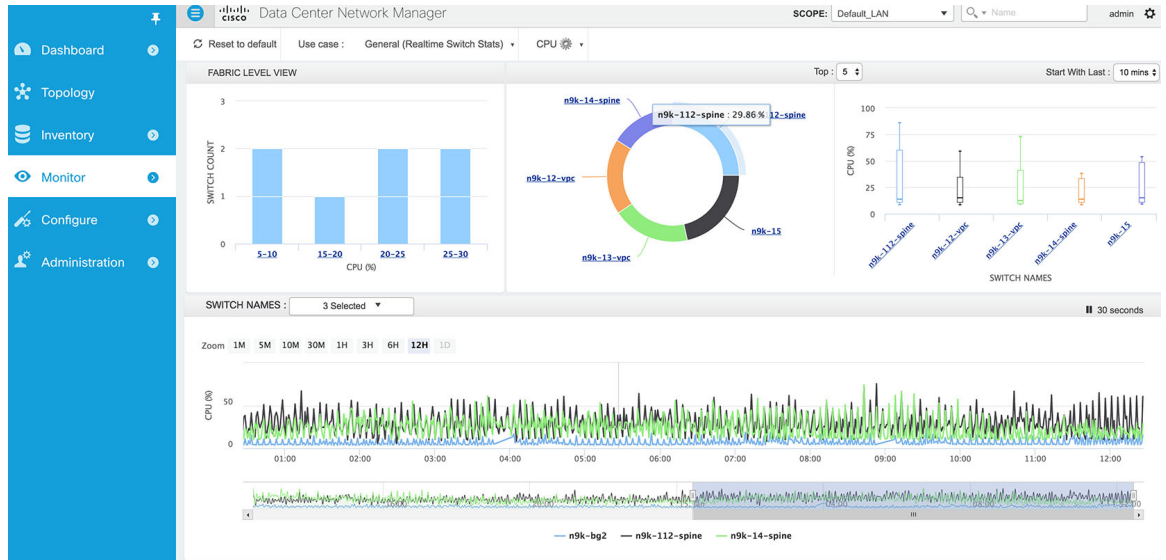
Since averages may not always satisfy your needs, the third tile depicts the spread of the CPU values over the selected time-interval. Specifically, the box plot provides the maximum and minimum CPU values reported from the switch over the selected time-interval as well as the 80% confidence interval for the reported values. In simpler terms, this is the range in which majority of the reported CPU values were reported.
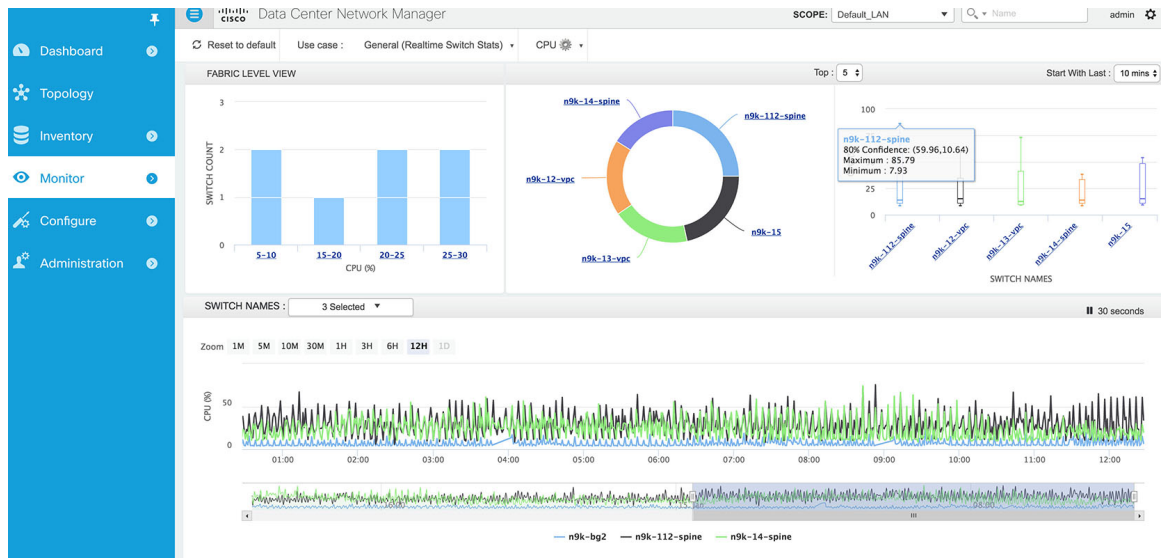

The representation at the bottom shows the real time CPU data feed for every switch. The graph refreshes automatically every 30 seconds. By default, 3 switches are selected to be displayed. The user can select up to a maximum of 5 switches by selecting them in the drop-down menu next to "SWITCH NAMES".
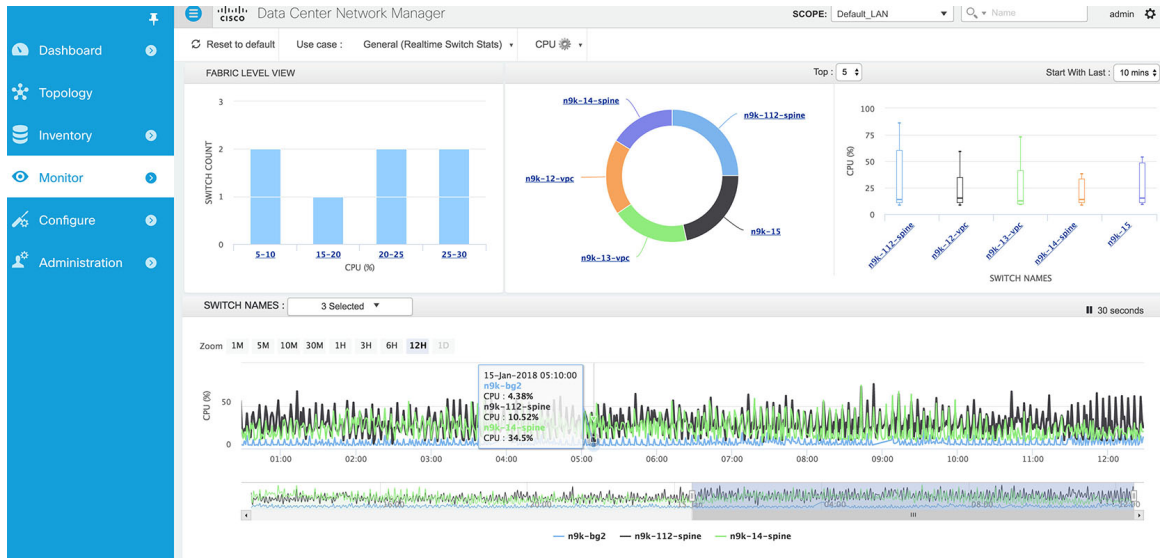
Step 3 Every graph has a drill-down capability which enables the user to see the live CPU usage on a per switch per process basis. The per-process view can be triggered by simply clicking on the switch of interest in any of the graphs. Below is the drill-down view for the CPU metric with a sample selected switch (n9k-112-spine).
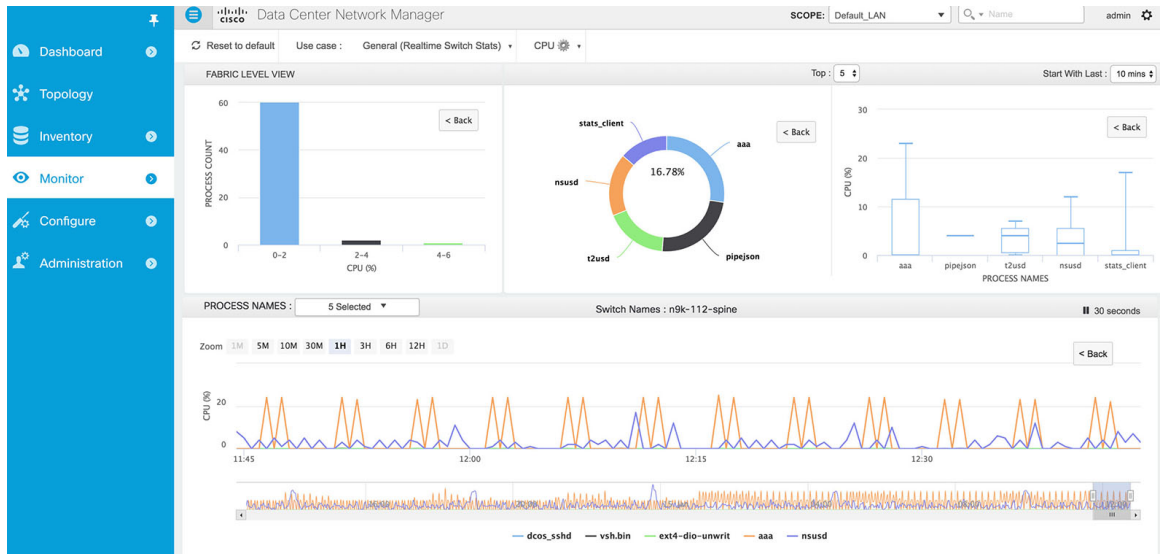

Step 4 Similar data visualization is available for other metrics such as Memory, Power, and Fan. The metrics can be selected from the dropdown in the top menu.
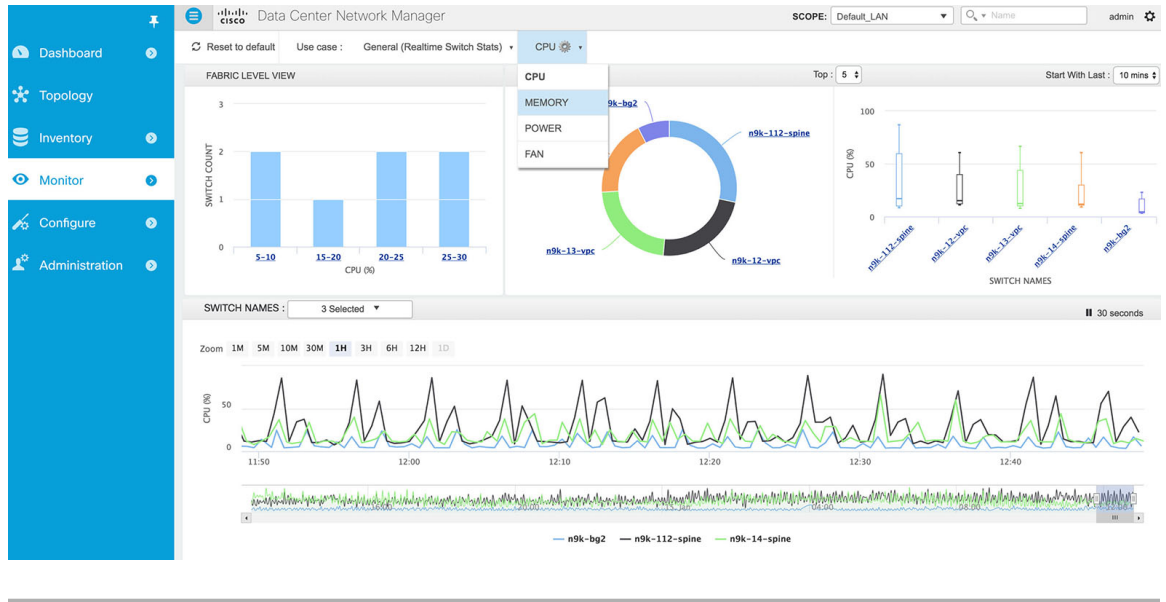
Data Visualization For Streaming Telemetry Metrics

Memory Data View

The memory dashboard depicts the actual memory consumption (RAM) on every switch in Gigabytes (GB). The per-process memory consumption will be available at a later stage.
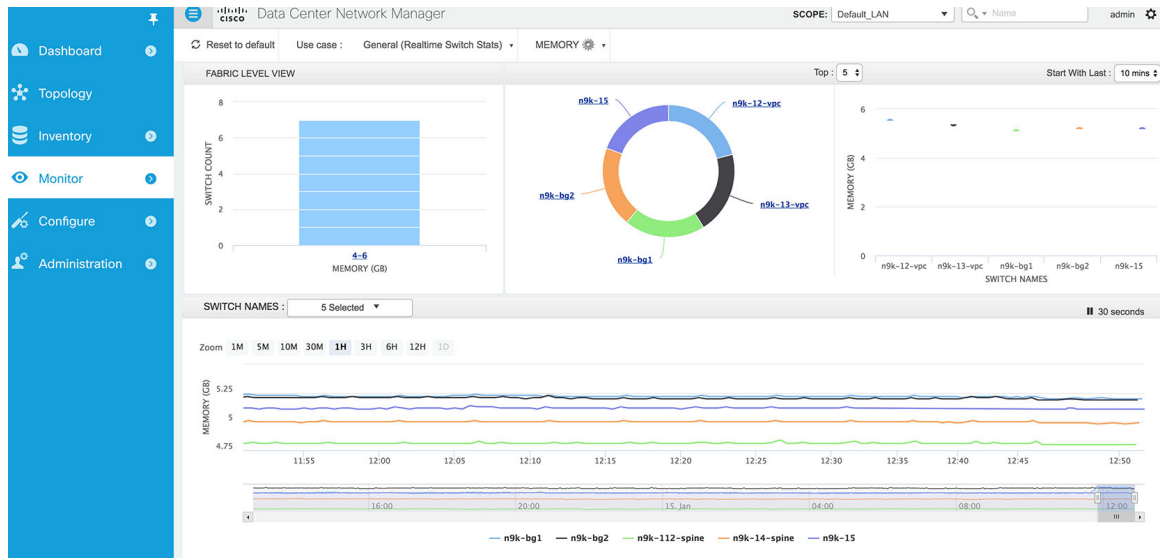
Power Data View

The top-level view for the power dashboard depicts the efficiency of the power supplies. By definition, efficiency is Output-Power/Input-Power, which consequently results in a maximum efficiency of 1.0.
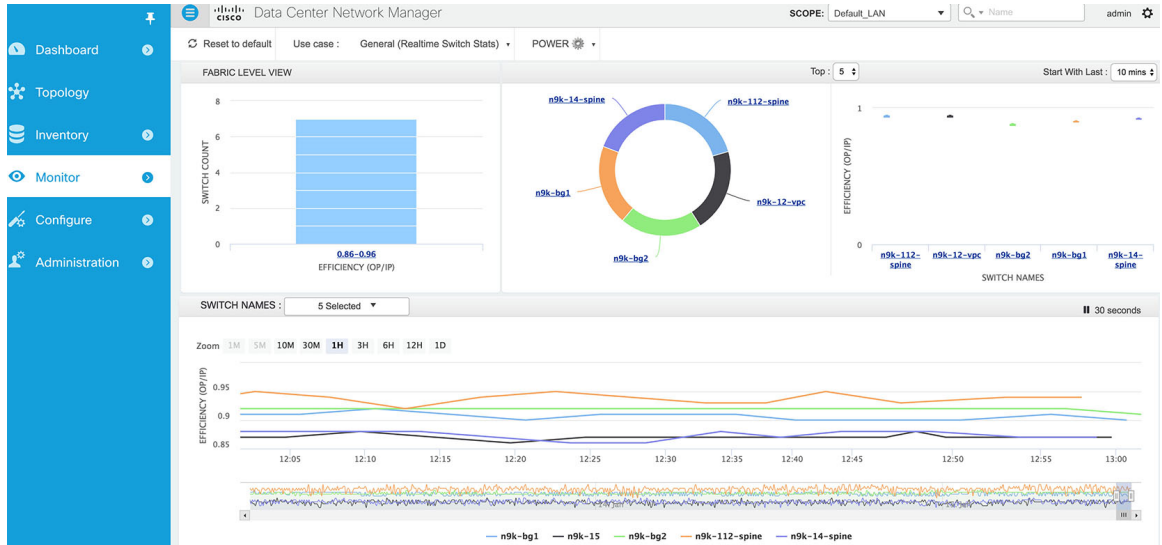

The drill down view indicates the input power in Watts, consumed by the individual power supply of the selected switch. A sample drill-down view for a selected device is shown below (n9k-112-spine):
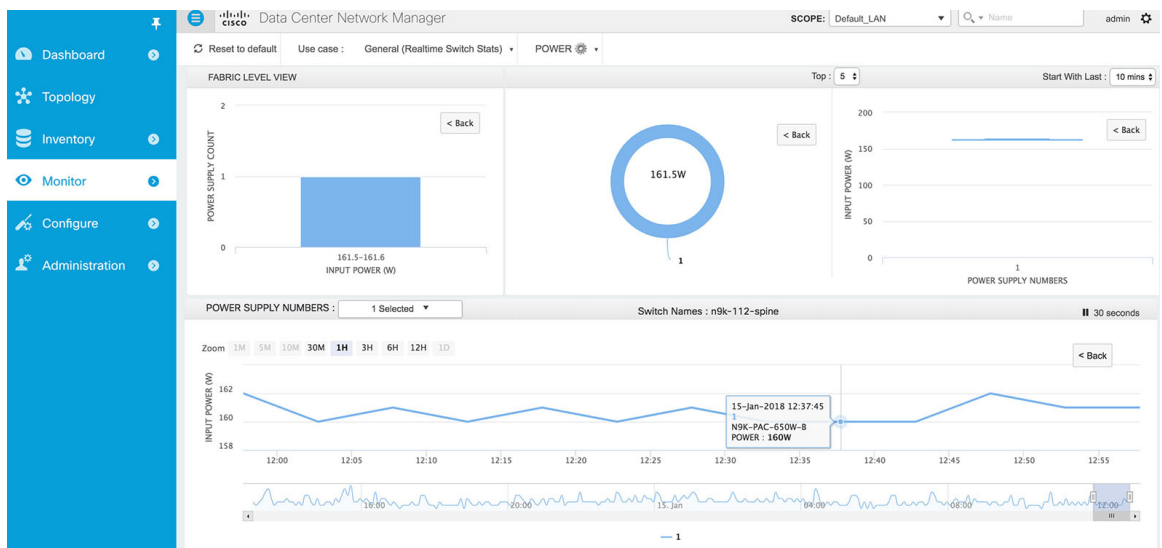

Fan Data View

The top-level view for the fan dashboard depicts the speed difference between the various fans in the system. In the typical case, the expectation is that all the fans in the same tray, operate at more or less the same speed.
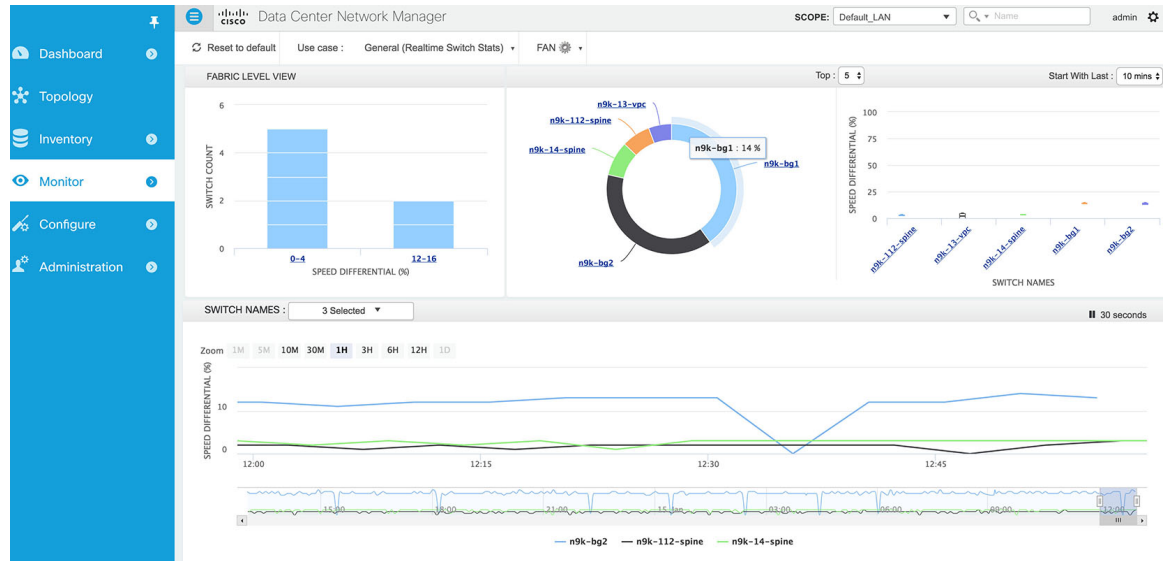
The drill down view provides the fan speed as a percentage metric of each individual fan within a selected device. A sample drill-down view for a selected device is shown below (n9k-bg1):
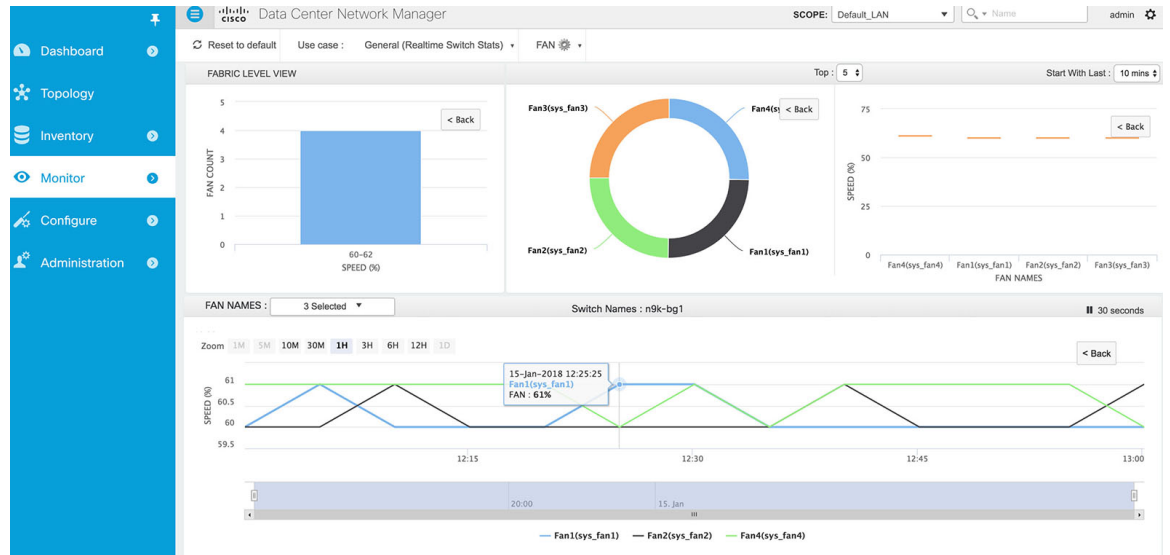
Telemetry Health View

The LAN Telemetry Health screen, provides a detailed break-down of how much data is being streamed out by each switch per feature for the last 24 hours. This data can be accessed by traversing the menu: **Monitor > LAN Telemetry > Health**.
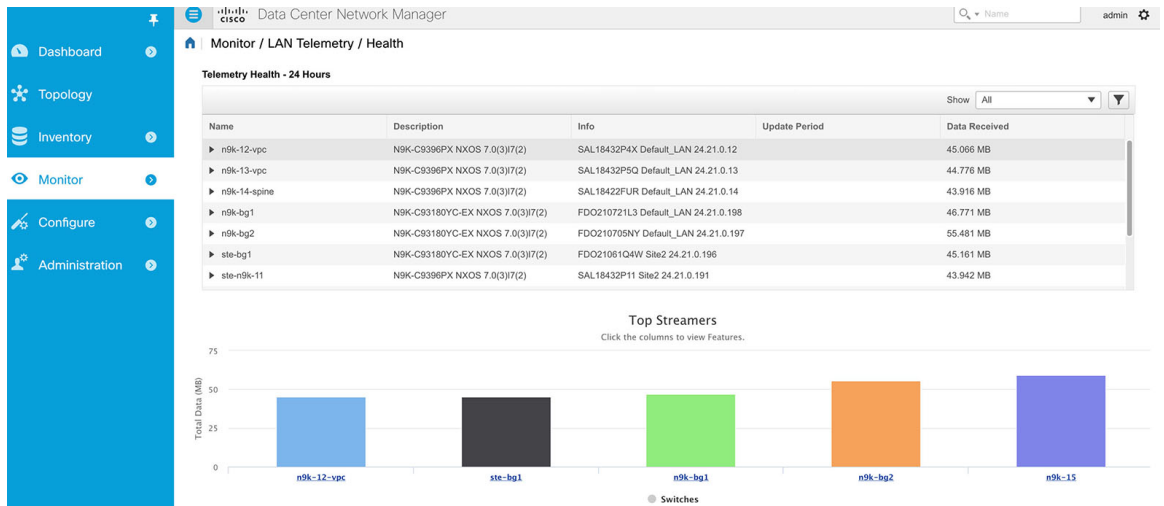
The bar graph depicts the top 5 streaming switches and a has drill-down capability for feature-wise break-down.