Monitoring Cisco ACI

Cisco: ACI PowerPack version 109

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Chapter 1

Introduction

Overview

This manual describes how to monitor a Cisco Application Centric Infrastructure system (ACI) in SL1 using the *Cisco: ACI* PowerPack.

The following sections provide an overview of Cisco ACI systems and the *Cisco: ACI* PowerPack:

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Supported Versions

The *Cisco: ACI* PowerPack can be used to monitor versions of Cisco ACI 1.0 (3f) and later.

Cisco ACI PowerPacks

To monitor a Cisco Application Centric Infrastructure (ACI) system using SL1, you must install the following PowerPack:

- *Cisco: ACI*

The following optional PowerPacks provide dashboards and reports for ACI:

- *Cisco: ACI Dashboards*
- *Cisco: ACI Reports*

Content in the Cisco ACI PowerPacks

Cisco: ACI

The *Cisco: ACI* PowerPack allows you to discover, model, and collect data from a Cisco ACI system. The *Cisco: ACI* PowerPack includes:

- An example credential you can use to create credentials to connect to the Cisco ACI system
- Dynamic Applications that discover and monitor the Cisco ACI system
- Run Book Automation Policies and Action Policies that create device records for ACI tenants and that convert a physical device to a virtual device with the same IP address and aligned Dynamic Applications
- Events for alert conditions in the Cisco ACI system
- Device Classes and Device Categories for each type of device in the Cisco ACI system
- Device dashboards for each type of discovered device

NOTE: The Run Book Actions included in the *Cisco: ACI* PowerPack can authenticate API requests using SHA256 hashing when running Federal Information Processing Standard (FIPS)-compliant installations of SL1 version 8.4.2 and later. The actions also support OpenSSL MD5 hashing for non-FIPS-compliant installations. For more information about authenticating API requests, see the ***Using the ScienceLogic API*** manual.

Cisco: ACI Dashboards

The *Cisco: ACI Dashboards* PowerPack includes pre-defined and configured dashboards that allow you to view data collected from Cisco ACI systems.

Cisco: ACI Reports

The *Cisco: ACI Reports* PowerPack includes reports that allow you to view data collected from Cisco ACI systems.

What Does the Cisco: ACI PowerPack Monitor?

SL1 discovers and monitors the following Cisco ACI components:

- ***Clusters of hardware-based servers that host the APIC***. This is the hardware that hosts the APIC (Application Policy Infrastructure Controllers). An APIC manages the physical and virtual infrastructure of ACI. This hwardware cluster has an IP address. Initially, SL1 uses this IP address to discover the ACI system. SL1 displays each cluster as a component device with an IP address.
- ***Application Policy Infrastructure Controllers (APICs)***. These are virtual machines that run on a cluster of hardware-based hosts. Each APIC is the unified point of automation, management, monitoring, and programmability for the ACI system. APICs control the physical and virtual infrastructure of ACI. Among other tasks, each APIC:
    - Controls policies that define ACI deployment of applications
    - Controls policies that define all automation and management
    - Hosts the API for ACI
    - Monitors the health of each component of ACI

  SL1 displays each APIC as a component device.
- ***Spine Switches (Nexus 9K-family switches)***. These are hardware-based, stateless switches. These switches are the spine switches of the ACI infrastructure and provide switching and load-balancing across leaf switches. SL1 displays each spine switch as a component device.
- ***Leaf Switches (Nexus 9K-family switches)***. These are hardware-based, stateless switches. These switches are the leaf switches of the ACI infrastructure and provide switching. All devices in the ACI network communicate via leaf switches. Traffic with the source and destination on the same leaf switch is handled locally; traffic with the source and destination on two different leaf switches travels through a spine switch. SL1 displays each leaf switch as a component device.
- ***Fabric***. A fabric is an instance of an ACI network. A fabric includes an APIC, spine switches, and leaf switches. SL1 displays the fabric name as the prefix to each tenant.
- ***Pods***. A pod is a virtual device that is a container for all the APICs, spine switches, leaf switches, and associated descendents in an ACI infrastructure. SL1 displays each pod as a component device.

- ***Tenants***. A tenant is a container for policies. These policies control domain-based access within the ACI network. There are three tenants for each fabric in ACI: Common, infrastructure, and management.
    - The common tenant contains policies for resources that are used by all tenants, including firewalls, load balancers, intrusion detection, and Layer 4 to Layer 7 services.
    - The infrastructure tenant contains policies that control the fabric resources (like the fabric VXLAN) and also policies that deploy resources.
    - The management tenant contains policies that control operations of the fabric and communication with the virtual machine controllers. SL1 displays each tenant as a virtual device.

  SL1 displays each tenant as a virtual device. The name of each tenant is *fabric*::*tenant*. For example, ***ACI Fabric 1::common***.

- ***Endpoint Groups (EPGs)***. Endpoints are devices that are connected to the network directly or indirectly (e.g., servers, virtual machines, or network-attached storage). They have an address, a location, attributes (e.g., version or patch level), and can be physical or virtual. An endpoint group is a group of endpoints that have common policy requirements, such as security, virtual machine mobility (VMM), QoS, or Layer 4 to Layer 7 services. For example, an endpoint group could contain all the endpoints in an application's web tier. Rather than configure and manage endpoints individually, they are placed in an endpoint group and are managed as a group. SL1 displays each endpoint group as a component device.
- ***Application Network Profiles***. An Application Network Profile is a container that holds:
    - Multiple endpoint groups that are logically related to one another
    - The connections between the EPGs
    - The policies that define the connections between EPGs

  Application Network Profiles can be organized by:
    - The application they provide, by the function they provide (e.g., "infrastructure")
    - Their location in the data center structure (for example, "DMZ")
    - Any organizing principle that is required by your ACI implementation

  SL1 displays each Application Network Profile as a component device.

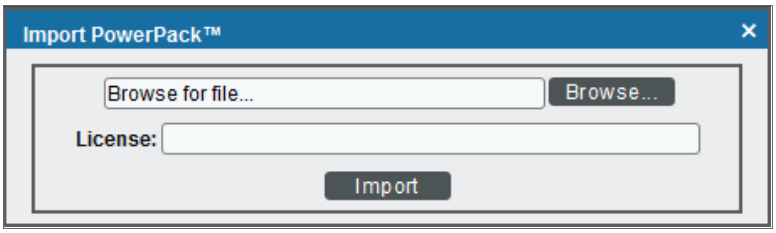
Installing the Cisco ACI PowerPacks

Before completing the steps in this manual, you must import and install the latest version of the *Cisco: ACI* PowerPack. Optionally, you can also install the *Cisco: ACI Dashboards* PowerPack and the *Cisco: ACI Reports* PowerPack.

TIP: By default, installing a new version of a PowerPack overwrites all content from a previous version of that PowerPack that has already been installed on the target system. You can use the ***Enable Selective PowerPack Field Protection*** setting in the **Behavior Settings** page (System > Settings > Behavior) to prevent new PowerPacks from overwriting local changes for some commonly customized fields. (For more information, see the ***System Administration*** manual.)

To download and install a PowerPack:

1. Download the PowerPack from the ScienceLogic Customer Portal.
2. Go to the **PowerPack Manager** page (System > Manage > PowerPacks).
3. In the **PowerPack Manager** page, click the **[Actions]** button, then select *Import PowerPack*.
4. The **Import PowerPack** dialog box appears:



5. Click the **[Browse]** button and navigate to the PowerPack file.
6. When the **PowerPack Installer** modal page appears, click the **[Install]** button to install the PowerPack.

NOTE: If you exit the **PowerPack Installer** modal without installing the imported PowerPack, the imported PowerPack will not appear in the **PowerPack Manager** page. However, the imported PowerPack will appear in the **Imported PowerPacks** modal. This page appears when you click the **[Actions]** menu and select *Install PowerPack*.

Chapter 2

Configuration and Discovery

Overview

The following sections describe how to configure and discover Cisco Application Centric Infrastructure (ACI) component devices for monitoring by SL1 using the *Cisco: ACI* PowerPack:

Prerequisites for Monitoring Cisco ACI

To configure the SL1 system to monitor a Cisco ACI system using the *Cisco: ACI* PowerPack, you must first:

- Know the credentials (username and password) for a user account that has access to the API for the Cisco ACI system. The user account must have read-all access.
- Ensure that the APIC in your ACI system supports TLS 1.1 or TLS 1.2. SL1 does not support TLS 1.0.

Configuring a Credential for the Cisco ACI System

To use the Dynamic Applications in the *Cisco: ACI* PowerPack, you must first define an ACI credential in SL1. This credential allows SL1 to collect data from your ACI system.

The *Cisco: ACI* PowerPack includes the following example credentials that you can use as templates when creating your own credentials for discovering your ACI system:

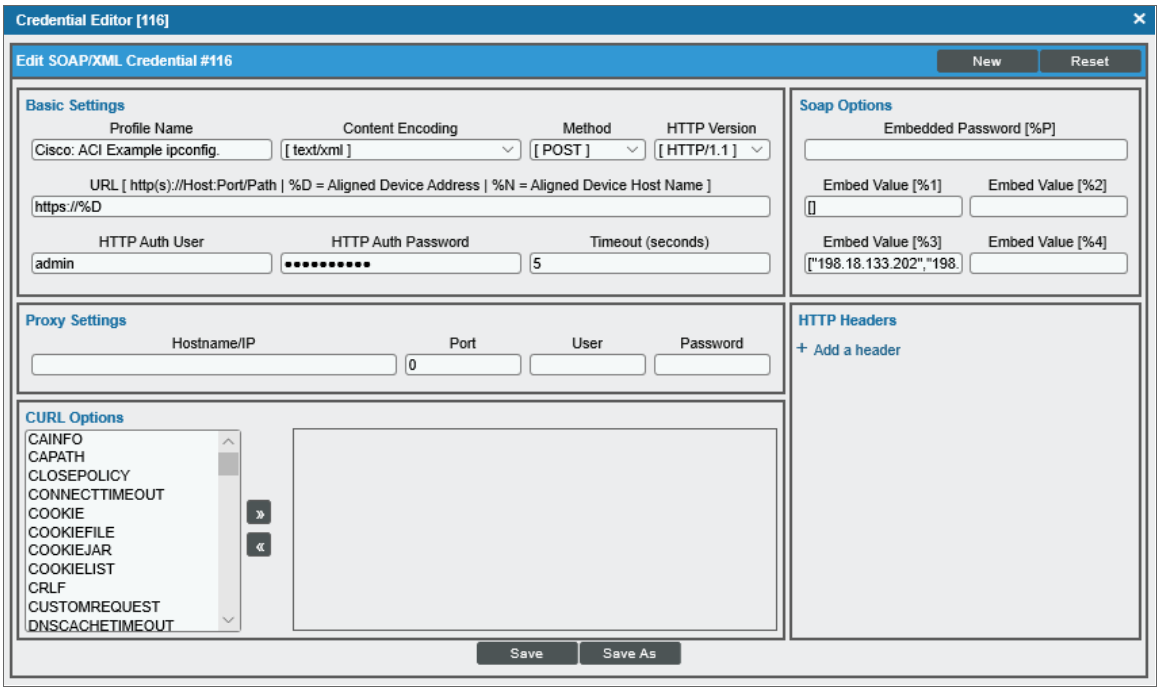
- ***Cisco: ACI Example Priority***. Use this SOAP/XML credential if you want to specify particular APICs from which SL1 should ***not*** collect data and to establish the precedence order of the APICs in the event that the first one fails.
- ***Cisco: ACI Sample Credential***. Use this Basic/Snippet credential if you want to discover an ACI system without specifying APICs that should not be monitored or the APIC precedence order.

The following sections describe how to configure these credentials.

Creating a SOAP/XML Credential for Cisco ACI

To configure a SOAP/XML credential for Cisco ACI, perform the following steps:

1. Go to the **Credential Management** page (System > Manage > Credentials).
2. Locate the **Cisco: ACI Example Priority** credential and then click its wrench icon ( ). The **Edit SOAP/XML Credential** modal page appears:



3. Enter values in the following fields:

Basic Settings

- ***Profile Name***. Type a new name for the credential.
- ***URL***. Type "%D". You can type the IP address of the cluster where the APIC resides, but this is not recommended.
- ***HTTP Auth User***. Type the username for a user account that has read-all access to the APIC API.
- ***HTTP Auth Password***. Type the password for the username you entered in the ***HTTP Auth User*** field.

SOAP Options

- ***Embed Value [%1]***. If you want to specify one or more APICs from which SL1 should ***not*** collect data, type the IP addresses of those APICs.
- ***Embed Value [%3].*** If you want to specify the APIC precedence order, type the IP addresses of the APICs in your desired precedence order. When you do so, if the primary APIC being monitored becomes unavailable, SL1 will use this order to determine the next APIC it should monitor instead.

NOTE: When entering IP addresses in the ***Embed Value [%1]*** or ***Embed Value [%3]*** fields, each IP address should be surrounded by quotation marks and include a comma and space between IP addresses. Additionally, the list of IP addresses should be surrounded by brackets. For example: ["198.18.133.200", "198.18.133.201", "198.18.133.202"]

NOTE: When creating the *discovery session*, the **first** entry in the ***Embed Value [%3]*** field must be entered in the ***IP Address Discovery List*** field in the **Discovery Session Editor**.

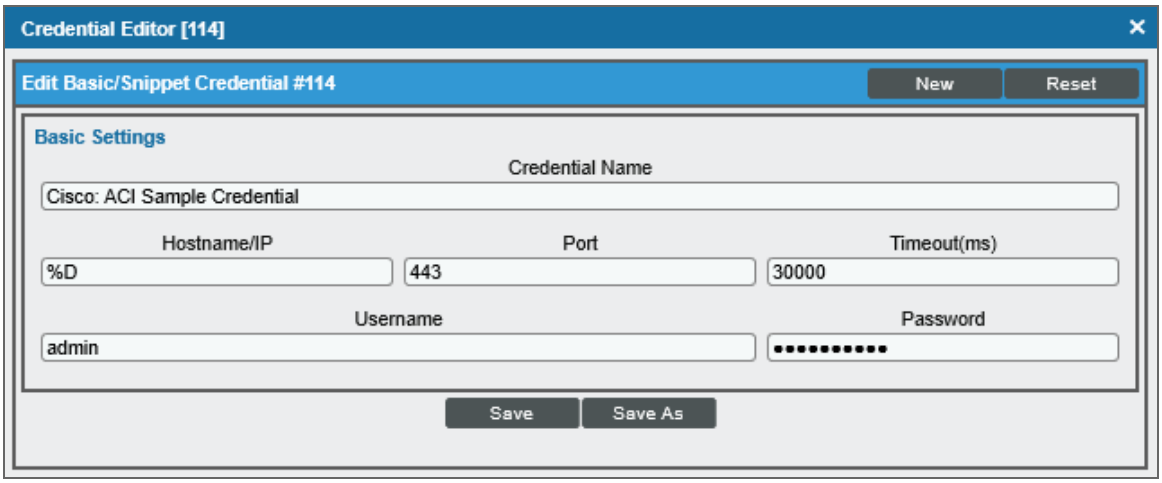
4. Click **[Save As]**.
5. In the confirmation message, click **[OK]**.

Creating a Basic/Snippet Credential for Cisco ACI

To configure a Basic/Snippet credential for Cisco ACI, perform the following steps:

1. Go to the **Credential Management** page (System > Manage > Credentials).

2. Click the wrench icon ( ) for *Cisco: ACI Sample Credential*. The **Credential Editor** page appears:



3. Supply values in the following fields:

   - ***Credential Name***. Type a new name for the credential.
   - ***Hostname/IP***. Type "%D". You can enter the IP address of the cluster where the APIC resides, but this is not recommended.
   - ***Username***. Type the username for a user account that has read-all access to the APIC API.
   - ***Password***. Type the password for the username you entered in the ***Username*** field.

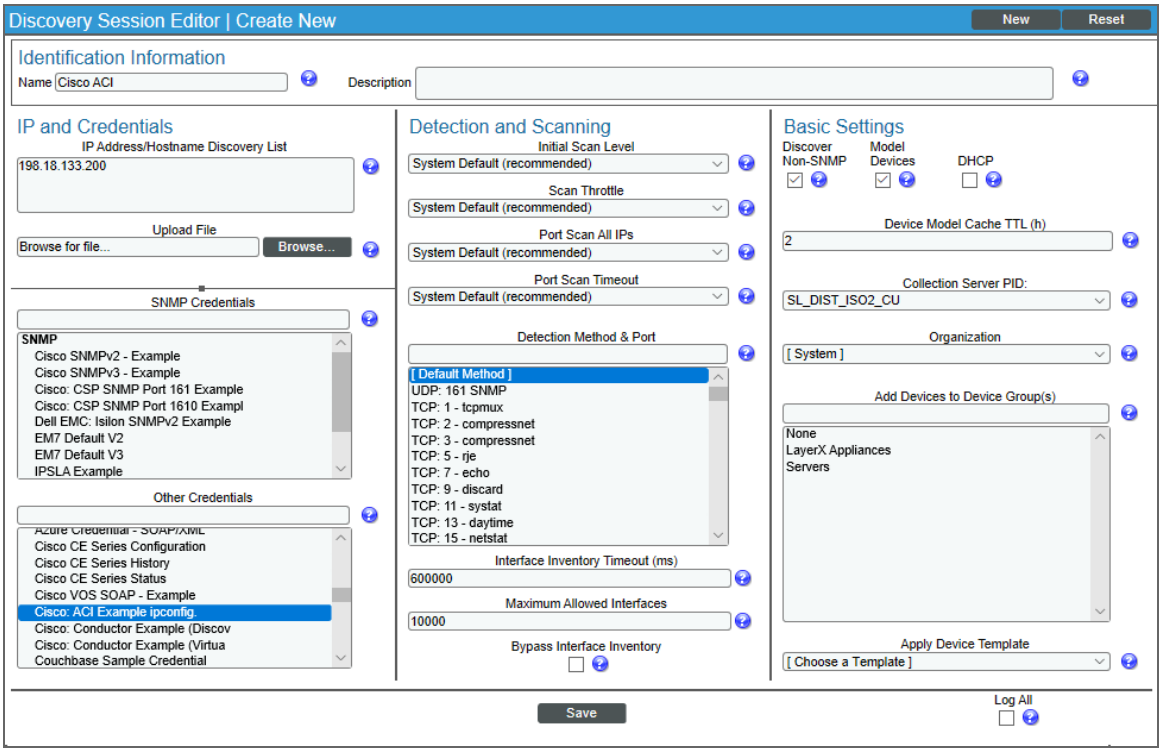
4. Click the **[Save As]** button.

Discovering a Cisco ACI System

To discover a Cisco ACI system, perform the following steps:

1. Go to the **Discovery Control Panel** page (System > Manage > Discovery).

2. Click the **[Create]** button. The **Discovery Session Editor** page appears:



3. Supply values in the following fields:

   - ***IP Address Discovery List***. Type the IP addresses of the APICs that you want to monitor.

NOTE: The **first** entry in the ***Embed Value [%3]*** field must be entered in the ***IP Address Discovery List*** field in the **Discovery Session Editor**.

   - ***Other Credentials***. Select the credential you created for the Cisco ACI system.
   - ***Discover Non-SNMP***. Select this checkbox.

4. Optionally, supply values in the other fields in this page. For a description of the fields in this page, see the ***Discovery & Credentials*** manual.
5. Click the **[Save]** button.
6. The **Discovery Control Panel** page will refresh. Click the lightning bolt icon ( ) for the discovery session you just created.
7. In the pop-up window that appears, click the **[OK]** button. The page displays the progress of the discovery session.

NOTE: In version 109 and later, the tenant's IP address will match the APIC used for the API calls. If failover occurs, the ACI root IP stays the same, but the tenants will get new IP addresses.

NOTE: If failover occurs during discovery of an ACI system using a SOAP/XML credential, it will fail over to the next IP address in the ***Embed Value [%3]*** field.

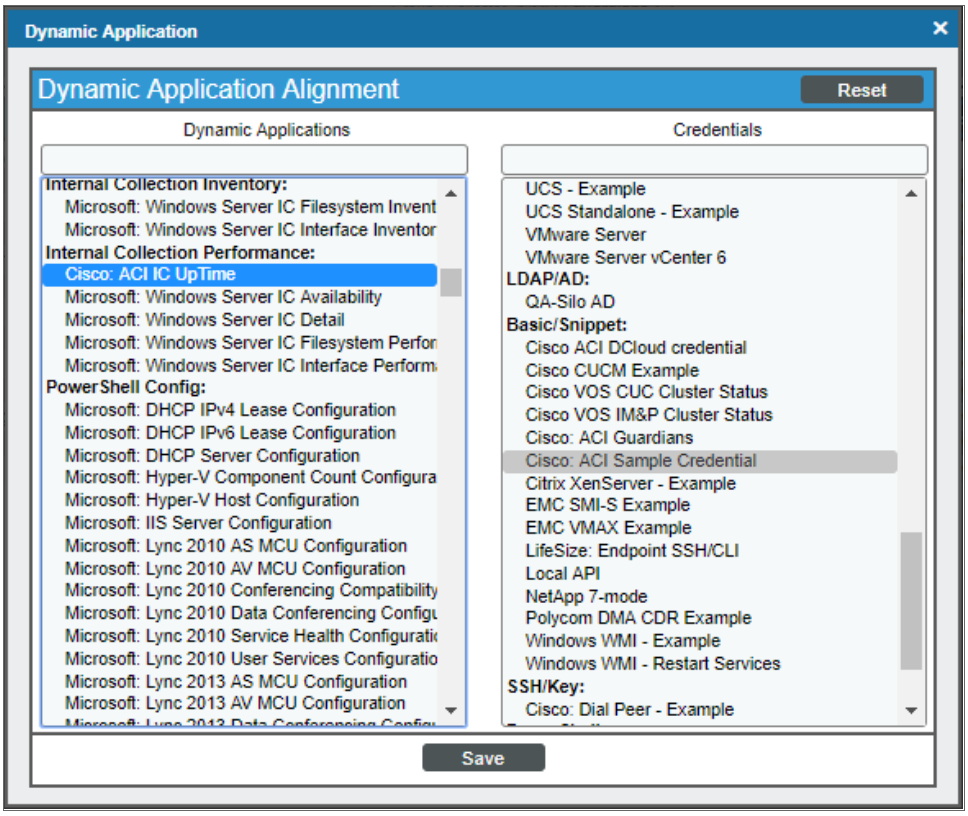
NOTE: If failover occurs during discovery of an ACI system using a Basic Snippet credential, the APIC with the subsequent controller ID will be used.

NOTE: If your discovery session causes an HTTP 403 error, edit the credential so that the ***Hostname/IP*** field contains ***only a single IP address*** and then re-try discovery.

The initial discovery of a Cisco ACI system will align most Dynamic Applications; however, you will need to manually align the "Cisco: ACI IC UpTime" Dynamic Application for the internal collections data to be displayed on the **Device Properties** page (Registry > Devices > wrench icon).

To manually align the "Cisco: ACI IC UpTime" Dynamic Application:

1. From the **Device Properties** page for the Cisco ACI system, click the **[Collections]** tab. The **Dynamic Application Collections** page appears.
2. In the **Dynamic Application Collections** page, click the **[Action]** button and then select *Add Dynamic Application* from the menu. The **Dynamic Application Alignment** page appears.
3. In the ***Dynamic Applications*** field, select *Cisco: ACI IC UpTime*.



4. In the ***Credentials*** field, select the credential you created for the Cisco ACI system.
5. Click the **[Save]** button.
6. After aligning the Dynamic Application, click the **[Reset]** button and then click the plus icon (+) for the Dynamic Application. If collection for the Dynamic Application was successful, the graph icons ( ) for the Dynamic Application are enabled.

Viewing Information About the ACI System

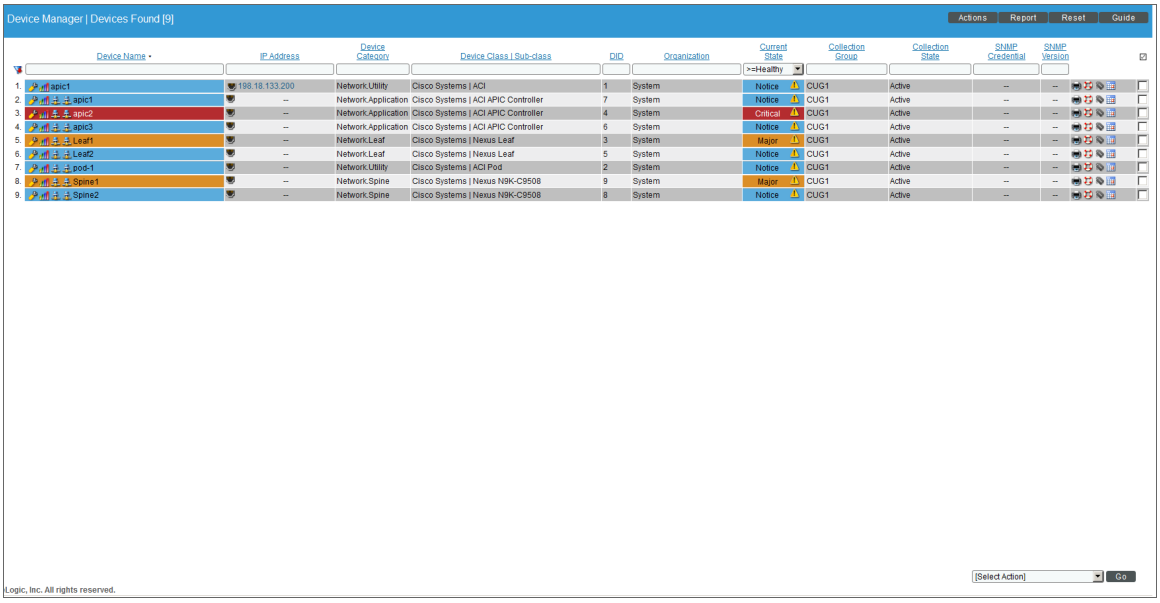
When SL1 performs collection for the ACI cluster, SL1 will create component devices for the components associated with the ACI system and align other Dynamic Applications to those component devices. Some of the Dynamic Applications aligned to the component devices will also be used to create additional component devices.

NOTE: You cannot change the name of the APIC controller that is used as the root device for your ACI system. If the controller name is changed in ACI, then you must rediscover your ACI system in SL1.

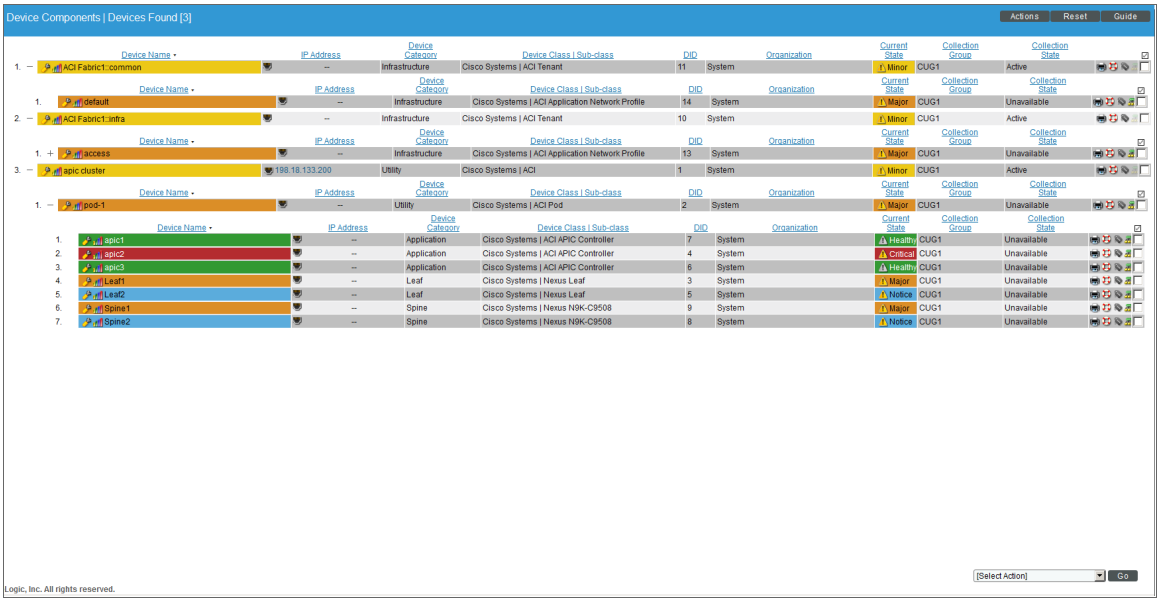
NOTE: If you delete a Tenant in a monitored device, that component device will still appear in SL1 but the Dynamic Applications aligned to it will stop collecting data, and a message indicating "Failed Availability" will appear in the device log of its child component devices.

You can view all the devices, virtual devices, and component devices in the Cisco ACI system in the following places in the user interface:

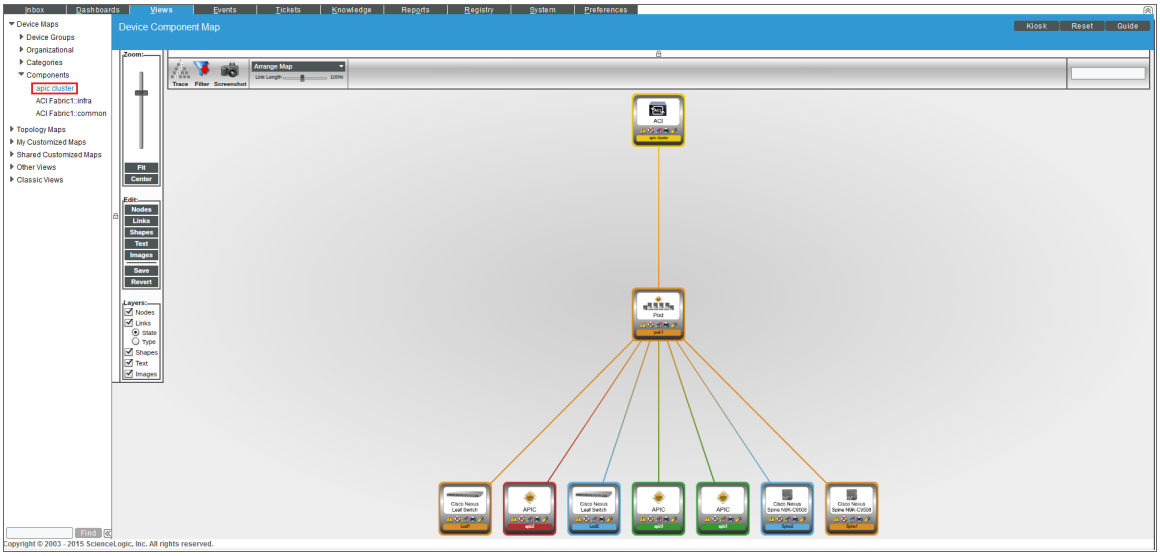
- All devices, virtual devices, and component devices appear in the **Device Manager** page (Registry > Devices > Device Manager).



- The **Device Components** page (Registry > Devices > Device Components) displays a list of all root devices and component devices discovered by SL1 in an indented view, so you can easily view the hierarchy and relationships between child devices, parent devices, and root devices. To view the component devices associated with Cisco ACI, find the Cisco ACI root device and click its plus icon (+):



- The **Device Component Map** page (Views > Device Maps > Components) allows you to view devices by root node and view the relationships between root nodes, parent components, and child components in a map. This makes it easy to visualize and manage root nodes and their components. SL1 automatically updates the **Component Map** as new component devices are discovered. The platform also updates each map with the latest status and event information. To view the map for Cisco ACI devices, go to the **Component Map** page and select the map from the list in the left NavBar. To learn more about the **Component Map** page, see the ***Views*** manual.



Chapter 3

Dashboards

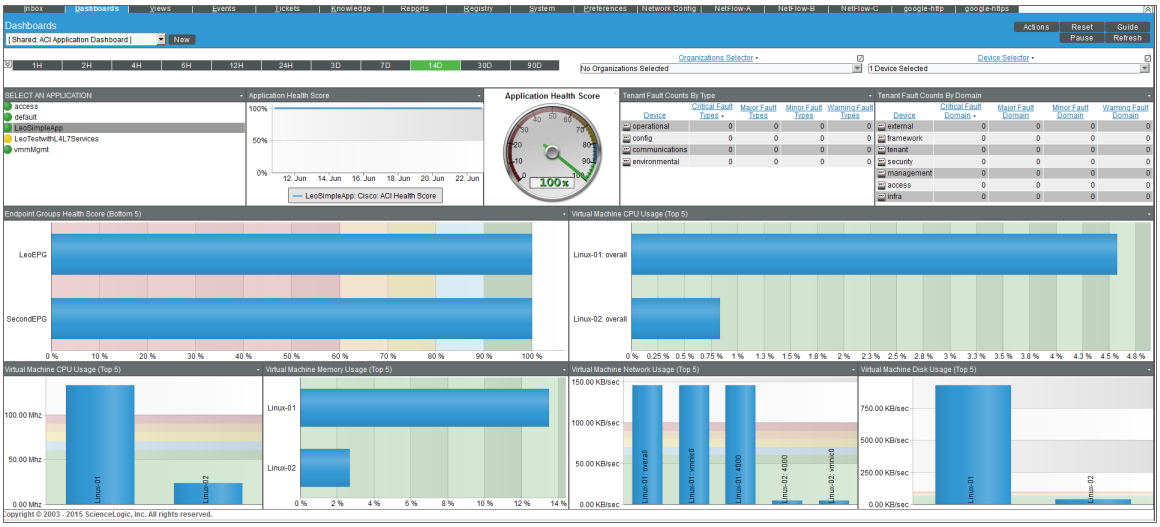
Overview

The *Cisco: ACI* PowerPack comes paired with the *Cisco: ACI Dashboards* PowerPack. The *Cisco: ACI Dashboards* PowerPack contains dashboards that present data related to different aspects of a Cisco ACI system.

The following sections describe each of these dashboards:

ACI Application Dashboard

The ACI Application Dashboard provides an overview of a selected Application Network Profile running on a Cisco ACI system.



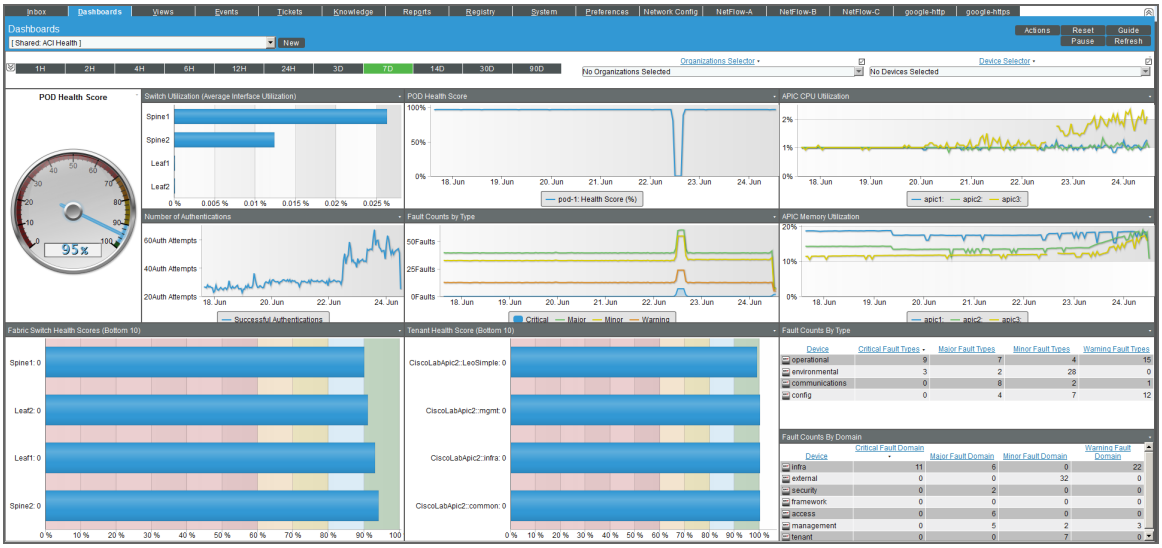
The ACI Application Dashboard displays the following widgets:

- ***Context Quick Selector***. This widget allows the user to set the timespan for the dashboard.
- ***SELECT AN APPLICATION***. This widget allows the user to select an Application Network Profile running on the Cisco ACI system (from a list of applications) to display in the dashboard.
- ***Application Health Score*** (graph). This widget displays a line graph that depicts the average Health Score for the selected Application Network Profile over time.
- ***Application Health Score*** (gauge). This widget displays a gauge that depicts the average Health Score for the selected application. The gauge is updated every five minutes.
- ***Tenant Fault Counts by Type***. This widget displays the 10 tenants with the most faults, by fault type. The table displays a row for each type and four columns, one for each fault severity: Critical faults, major faults, minor faults, and warning faults.
- ***Tenant Fault Counts by Domain***. This widget displays the 10 tenants with the most faults, by fault domain. The table displays a row for each domain and four columns, one for each fault severity: Critical faults, major faults, minor faults, and warning faults.
- ***Endpoint Groups Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five Endpoint Groups with the lowest ACI Health Score. Each bar represents an Endpoint Group and displays the average health score in percent.
- ***Virtual Machine CPU Usage (Top 5)*** (percent). This widget displays a bar graph that depicts the five VMWare virtual machines (that host EPGs) with the highest average CPU usage. Each bar represents a virtual machine and displays the average CPU usage in percent.
- ***Virtual Machine CPU Usage (Top 5)*** (mHz). This widget displays a bar graph that depicts the five VMWare virtual machines (that host EPGs) with the highest average CPU usage. Each bar represents a virtual machine and displays the average CPU usage in mHz.
- ***Virtual Machine Memory Usage (Top 5)***. This widget displays a bar graph that depicts the five VMWare virtual machines (that host EPGs) with the highest average memory usage. Each bar represents a virtual machine and displays the average memory usage in percent.

- ***Virtual Machine Network Usage (Top 5)***. This widget displays a bar graph that depicts the five VMWare virtual machines (that host EPGs) with the highest average network usage. Each bar represents a virtual machine and displays the average network usage in KB/second.
- ***Virtual Machine Disk Usage (Top 5)***. This widget displays a bar graph that depicts the five VMWare virtual machines (that host EPGs) with the highest average disk usage. Each bar represents a virtual machine and displays the average disk usage in KB/second.

ACI Health Dashboard

The ACI Health dashboard provides an overview of the health of the ACI system.



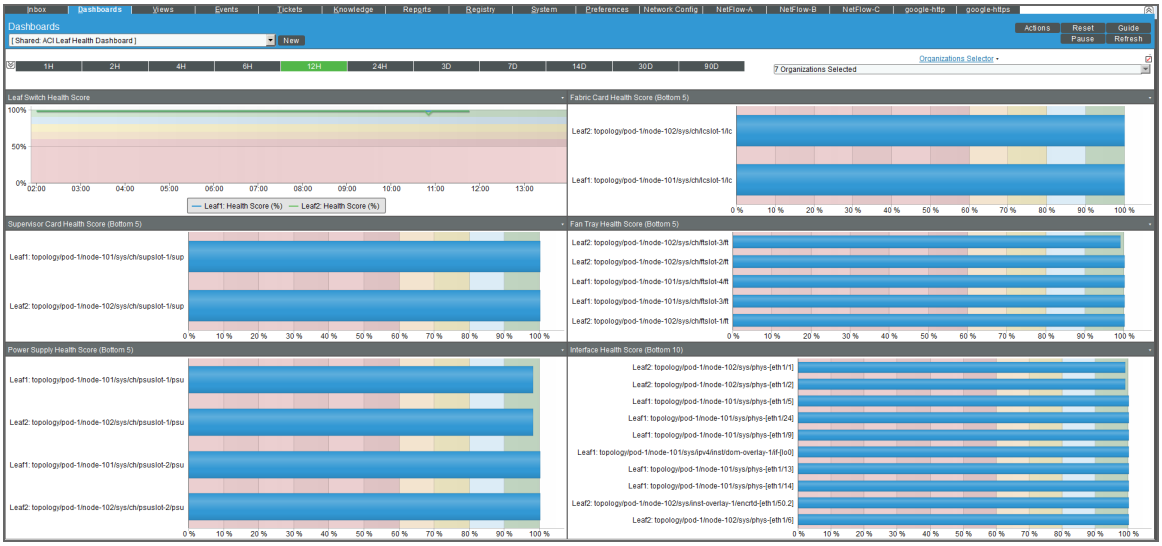
The ACI Health dashboard displays the following widgets:

- ***Context Quick Selector***. This widget allows the user to set the timespan for the dashboard.
- ***Organization Selector***. This widget allows the user to specify the organization(s) to include in the dashboard.
- ***Device Selector***. This widget allows the user to specify the device(s) to include in the dashboard. If the user selects one or more values in the Organization Selector widget, only devices from the selected organization (s) appear in the Device Selector.
- ***Pod Health Score***. This widget displays a gauge that depicts the average Health Score for the full system under an ACI pod. The gauge is updated every five minutes.
- ***Switch Utilization (Average interface Utilization)***. This widget displays a bar graph that depicts the 10 switches with the highest average interface utilization. Each bar represents a switch (spine or leaf) and displays the average interface usage in percent.
- ***Pod Health Score***. This widget displays a line graph that depicts the average Health Score for the full system under an ACI pod. The graph displays health in percent over time.

- ***APIC CPU Utilization***. This widget displays a line graph that depicts the average CPU usage for each APIC in the ACI system. The graph displays a line for each APIC. Each line displays average CPU usage in percent over time.
- ***Number of Authentications***. This widget displays a line graph that depicts the number of successful authentications to the cluster that hosts the APIC(s). The line graph displays the number of successful authentications over time.
- ***Fault Counts by Type***. This widget displays a line graph that depicts the type of faults that have occurred on the cluster that hosts the APIC(s). The graph displays a line for each fault severity (critical faults, major faults, minor faults, and warning faults). Each line displays the number of faults over time.
- ***APIC Memory Utilization***. This widget displays a line graph that depicts the average memory usage for each APIC in the ACI system. The graph displays a line for each APIC. Each line displays average memory usage in percent over time.
- ***Fabric Switch Health Scores (Bottom 10)***. This widget displays a bar graph that depicts the 10 switches (both spines and leaf) with the lowest health scores. Each bar represents a switch and displays health in percent.
- ***Tenant Health Score (Bottom 10)***. This widget displays a bar graph that depicts the 10 tenants with the lowest health scores. Each bar represents a tenant and displays health in percent.
- ***Fault Counts by Type***. This widget displays the 10 devices with the most faults, by fault type. The table displays a row for each type and four columns, one for each fault severity: Critical faults, major faults, minor faults, and warning faults.
- ***Fault Counts by Domain***. This widget displays the 10 devices with the most faults, by fault domain. The table displays a row for each domain and four columns, one for each fault severity: Critical faults, major faults, minor faults, and warning faults.

ACI Leaf Health Dashboard

The ACI Leaf Health dashboard provides an overview of the health of each leaf and its components.

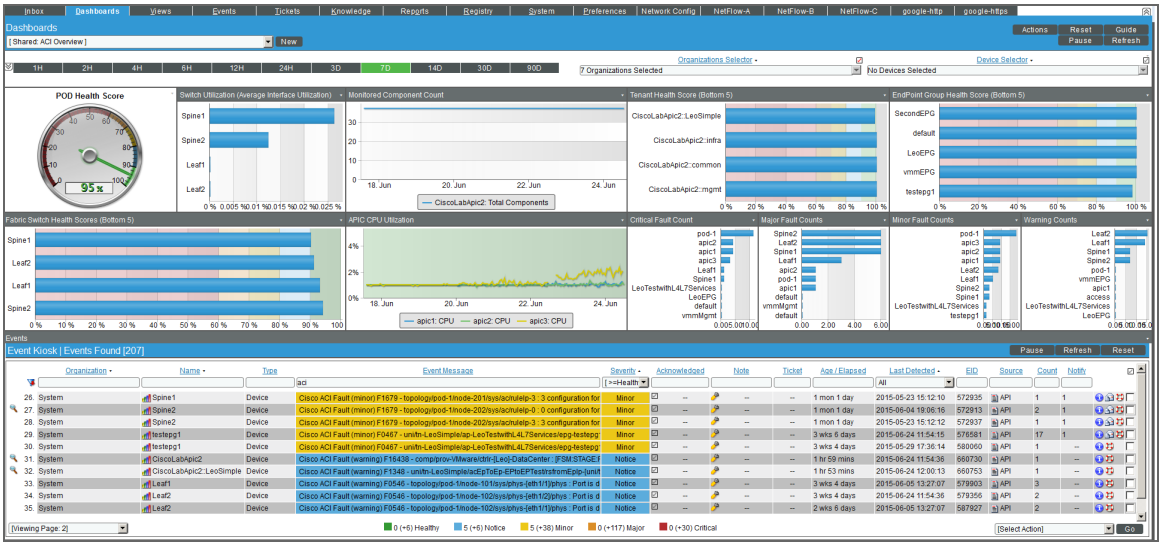


The ACI Leaf Health dashboard displays the following widgets:

- ***Context Quick Selector***. This widget allows the user to set the timespan for the dashboard.
- ***Organization Selector***. This widget allows the user to specify the organization(s) to include in the dashboard.
- ***Leaf Switch Health Score***. This widget displays a line graph that depicts the Health Score for each leaf in the ACI system. The graph displays a line for each leaf switch. Each line displays health in percent over time.
- ***Fabric Card Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five fabric cards (among all the leaf switches) with the lowest health scores. Each bar represents a fabric card and displays health in percent.
- ***Supervisor Card Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five supervisor cards (among all the leaf switches) with the lowest health scores. Each bar represents a supervisor card and displays health in percent.
- ***Fan Tray Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five fan trays (among all the leaf switches) with the lowest health scores. Each bar represents a fan tray and displays health in percent.
- ***Power Supply Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five power supplies (among all the leaf switches) with the lowest health scores. Each bar represents a power supply and displays health in percent.
- ***Interface Health Score (Bottom 10)***. This widget displays a bar graph that depicts the 10 interfaces (among all the leaf switches) with the lowest health scores. Each bar represents an interface and displays health in percent.

ACI Overview Dashboard

The ACI Overview dashboard provides an overview of the status of the entire ACI system.

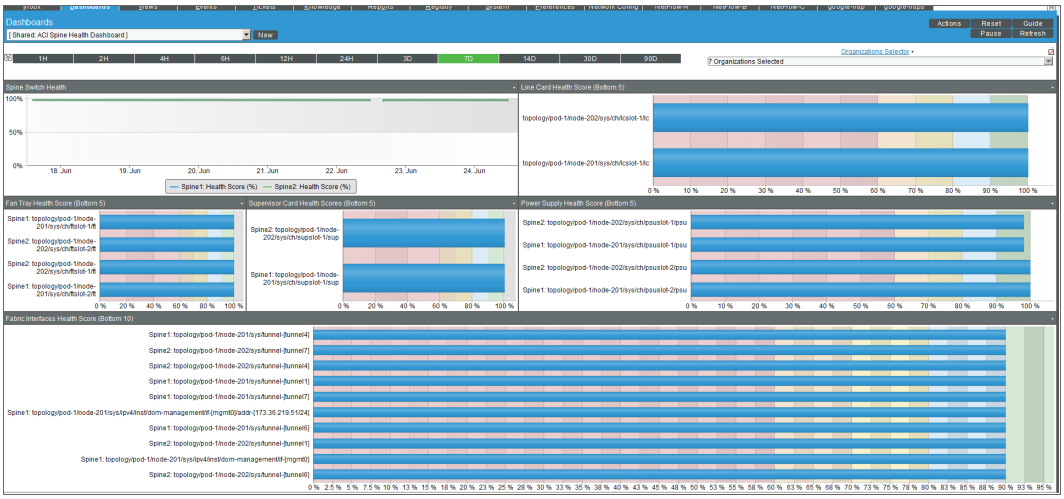


The ACI Health dashboard displays the following widgets:

- ***Context Quick Selector***. This widget allows the user to set the timespan for the dashboard.
- ***Organization Selector***. This widget allows the user to specify the organization(s) to include in the dashboard.
- ***Device Selector***. This widget allows the user to specify the device(s) to include in the dashboard. If the user selects one or more values in the Organization Selector widget, only devices from the selected organization (s) appear in the Device Selector.
- ***Pod Health Score***. This widget displays a gauge that depicts the average Health Score for the full system under an ACI pod. The gauge is updated every five minutes.
- ***Switch Utilization (Average interface Utilization)***. This widget displays a bar graph that depicts the 10 switches with the highest average interface utilization. Each bar represents a switch (spine or leaf) and displays the average interface usage in percent.
- ***Monitored Component Count***. This widget displays a line graph that depicts the number of monitored components in the ACI system. The graph displays number of components over time.
- ***Tenant Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five tenants with the lowest health scores. Each bar represents a tenant and displays health in percent.
- ***Endpoint Group Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five endpoint groups with the lowest health scores. Each bar represents an endpoint group and displays health in percent.
- ***Fabric Switch Health Scores (Bottom 5)***. This widget displays a bar graph that depicts the five switches (both spines and leaf) with the lowest health scores. Each bar represents a switch and displays health in percent.
- ***APIC CPU Utilization***. This widget displays a line graph that depicts the average CPU usage for each APIC in the ACI system. The graphs displays a line for each APIC. Each line displays average CPU usage in percent over time.
- ***Critical Fault Count***. This widget displays a bar graph that depicts each part of the ACI system where a critical fault occurred. Each bar represents a component of the ACI system where a critical fault occurred and displays the number of critical faults.
- ***Major Fault Count***. This widget displays a bar graph that depicts each part of the ACI system where a major fault occurred. Each bar represents a component of the ACI system where a major fault occurred and displays the number of major faults.
- ***Minor Fault Count***. This widget displays a bar graph that depicts each part of the ACI system where a minor fault occurred. Each bar represents a component of the ACI system where a minor fault occurred and displays the number of minor faults.
- ***Warning Fault Count***. This widget displays a bar graph that depicts each part of the ACI system where a warning fault occurred. Each bar represents a component of the ACI system where a warning fault occurred and displays the number of warning faults.
- ***Event Kiosk***. This widget displays a list of all events associated with the ACI system. The interface is the same as that of the Events Console.

ACI Spine Health Dashboard

The ACI Spine Health dashboard provides an overview of the health of each spine and its components.

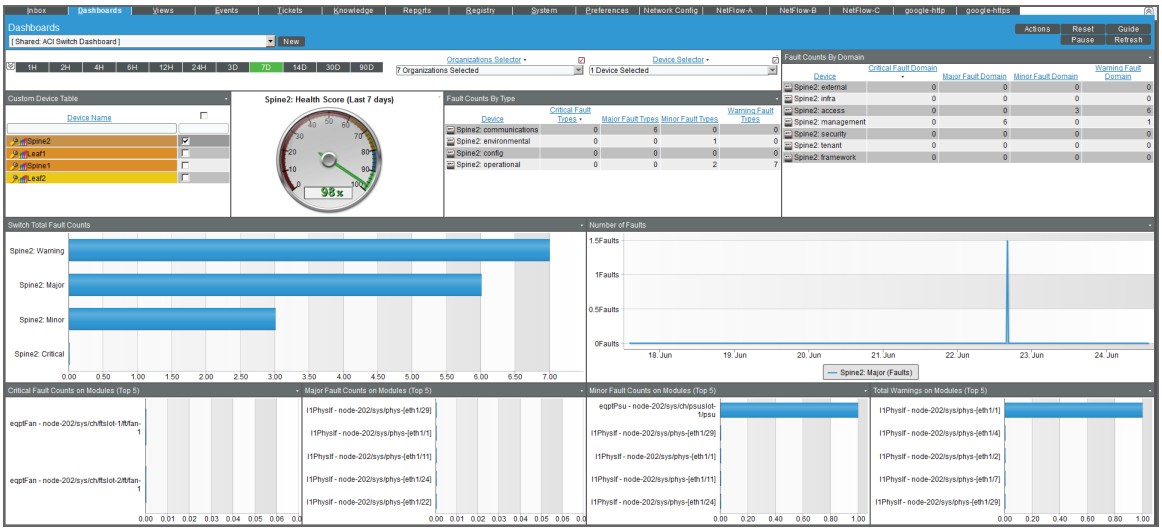


The ACI Spine Health dashboard displays the following widgets:

- ***Context Quick Selector***. This widget allows the user to set the timespan for the dashboard.
- ***Organization Selector***. This widget allows the user to specify the organization(s) to include in the dashboard.
- ***Spine Switch Health Score***. This widget displays a line graph that depicts the Health Score for each spine in the ACI system. The graph displays a line for each spine switch. Each line displays health in percent over time.
- ***Line Card Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five line cards (among all the spine switches) with the lowest health scores. Each bar represents a line card and displays health in percent.
- ***Fan Tray Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five fan trays (among all the spine switches) with the lowest health scores. Each bar represents a fan tray and displays health in percent.
- ***Supervisor Card Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five supervisor cards (among all the spine switches) with the lowest health scores. Each bar represents a supervisor card and displays health in percent.
- ***Power Supply Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five power supplies (among all the spine switches) with the lowest health scores. Each bar represents a power supply and displays health in percent.
- ***Interface Health Score (Bottom 10)***. This widget displays a bar graph that depicts the 10 interfaces (among all the spine switches) with the lowest health scores. Each bar represents an interface and displays health in percent.

ACI Switch Dashboard

The ACI Switch dashboard provides an overview of the health of all the switches (spine and leaf) in the ACI system.



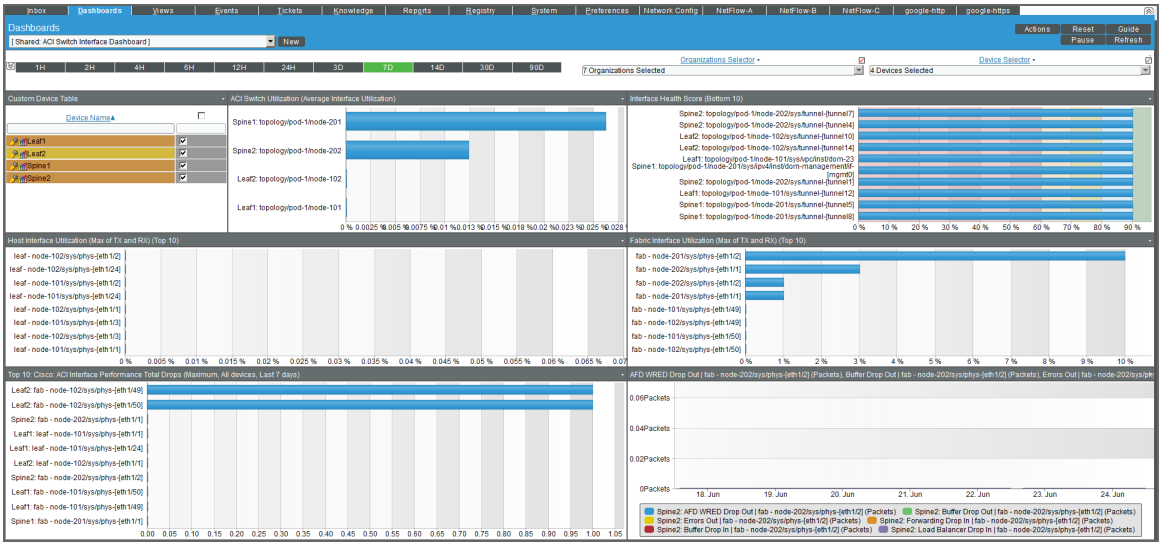
The ACI Switch dashboard displays the following widgets:

- ***Context Quick Selector***. This widget allows the user to set the timespan for the dashboard.
- ***Organization Selector***. This widget allows the user to specify the organization(s) to include in the dashboard.
- ***Device Selector***. This widget allows the user to specify the device(s) to include in the dashboard. If the user selects one or more values in the Organization Selector widget, only devices from the selected organization (s) appear in the Device Selector.
- ***Custom Device Table***. This widget displays a table that lists the spine switches and leaf switches in the ACI system. This widget allows the user to specify the switches to include in the dashboard.
- ***Health Score (Last 7 days)***. This widget displays a gauge that depicts the average Health Score for the previous seven days for the switch selected in the ***Custom Device Table*** widget. The gauge is updated every five minutes. You can view the health score for only one switch at a time.
- ***Fault Counts by Type***. This widget displays a table that lists each switch and the type where faults occurred. The table displays a row for each switch/type and four columns, one for each fault severity: Critical faults, major faults, minor faults, and warning faults.
- ***Fault Counts by Domain***. This widget displays a table that lists each switch and the domain where faults occurred. The table displays a row for each switch/domain and four columns, one for each fault severity: Critical faults, major faults, minor faults, and warning faults.
- ***Switch Total Fault Counts***. This widget displays a bar graph that depicts each switch where a fault occurred, the severity of the fault, and the number of faults. Each bar represents a switch/fault severity and the number of times the fault occurred.
- **[Number of Faults]**. This widget displays a line graph that depicts the average CPU usage for each APIC in the ACI system. The graph displays a line for each switch. Each line displays the total number of faults over time.

- ***Critical Fault Count***. This widget displays a bar graph that depicts the five components of a switch where the most critical faults occurred. Each bar represents a component of a switch where a critical fault occurred and displays the number of critical faults.
- ***Major Fault Count***. This widget displays a bar graph that depicts the five components of a switch where the most major faults occurred. Each bar represents component of a switch where a major fault occurred and displays the number of major faults.
- ***Minor Fault Count***. This widget displays a bar graph that depicts the five components of a switch where the most minor faults occurred. Each bar represents a component of a switch where a minor fault occurred and displays the number of minor faults.
- ***Warning Fault Count***. This widget displays a bar graph that depicts the five components of a switch where the most warning faults occurred. Each bar represents component of a switch where a warning fault occurred and displays the number of warning faults.

ACI Switch Interface Dashboard

The ACI Switch Interface dashboard provides an overview of the status of the interfaces on all the switches (spine and leaf) in the ACI system.



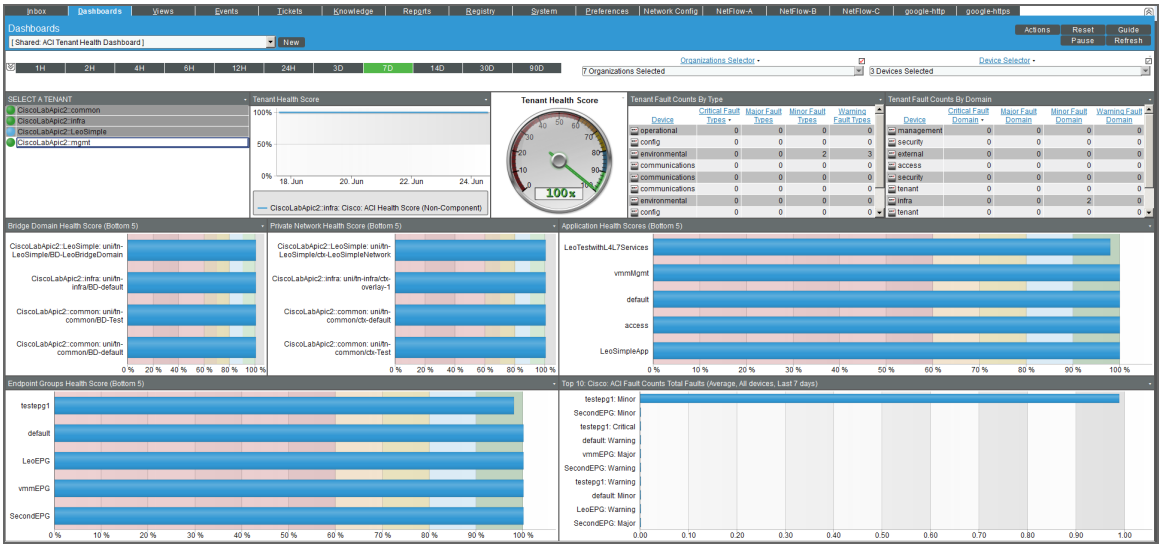
The ACI Switch Interface dashboard displays the following widgets:

- ***Context Quick Selector***. This widget allows the user to set the timespan for the dashboard.
- ***Organization Selector***. This widget allows the user to specify the organization(s) to include in the dashboard.
- ***Device Selector***. This widget allows the user to specify the device(s) to include in the dashboard. If the user selects one or more values in the Organization Selector widget, only devices from the selected organization (s) appear in the Device Selector.

- ***Custom Device Table***. This widget displays a table that lists the spine switches and leaf switches in the ACI system. This widget allows the user to specify the switches to include in the dashboard.
- ***ACI Switch Utilization (Average Interface Utilization)***. This widget displays a bar graph that displays the 10 switch interfaces with the highest utilization. Each bar represents an interface and displays utilization in percent.
- ***Interface Health Score (Bottom 10)***. This widget displays a bar graph that displays the 10 switch interfaces with the lowest health scores. Each bar represents an interface and displays health in percent.
- ***Host Interface Utilization (Max of TX and RX) (Top 10)***. This widget displays a bar graph that displays the 10 host-facing switch interfaces with the highest utilization. Each bar represents an interface and displays utilization in percent.
- ***Fabric Interface Utilization (Max of TX and RX) (Top 10)***. This widget displays a bar graph that displays the 10 fabric-facing switch interfaces with the highest utilization. Each bar represents an interface and displays utilization in percent.
- ***Top 10: Cisco: ACI Interface Performance Total Drops (Maximum, All devices, Last <timespan>)***. This widget displays a bar graph. The bar graph displays the 10 switch interfaces with the highest number of drops over the timespan. Each bar represents an interface and displays the total number of drops for the timespan.
- ***Interface Drops and Errors (Top 5)***. This widget displays a line graph that depicts drops and errors over time. The graph includes a line for each type of drop or error: SFD WRED Drop Out, Buffer Drop Out, Errors Out, Forward Drop In, Buffer Drop In, and Load Balancer Drop In. Each line displays the number of drops or errors over time.

ACI Tenant Health Dashboard

The ACI Tenant Health dashboard provides an overview of the status of a selected tenant in the ACI system.



The ACI Tenant Health dashboard displays the following widgets:

- ***Context Quick Selector***. This widget allows the user to set the timespan for the dashboard.
- ***Organization Selector***. This widget allows the user to specify the organization(s) to include in the dashboard.
- ***Device Selector***. This widget allows the user to specify the device(s) to include in the dashboard. If the user selects one or more values in the Organization Selector widget, only devices from the selected organization (s) appear in the Device Selector.
- ***SELECT A TENANT***. This widget displays a table that lists the tenants in the ACI system. This widget allows the user to specify the switches to include in the dashboard.
- ***Tenant Health Score*** (graph). This widget displays a line graph that depicts the average Health Score for one or more selected tenants over time. The graph includes a line for tenant. Each line displays health in percent over time.
- ***Tenant Health Score*** (gauge). This widget displays a gauge that depicts the average Health Score for one or more selected tenants. The gauge is updated every five minutes.
- ***Tenant Fault Counts by Type***. This widget displays the 10 tenants with the most faults, by fault type. The table displays a row for each type and four columns, one for each fault severity: Critical faults, major faults, minor faults, and warning faults.
- ***Tenant Fault Counts by Domain***. This widget displays the 10 tenants with the most faults, by fault domain.The table displays a row for each domain and four columns, one for each fault severity: Critical faults, major faults, minor faults, and warning faults.
- ***Bridge Domain Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five bridge domains with the lowest ACI Health Score. Each bar represents a bridge domain and displays the average health score in percent.
- ***Private Network Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five private networks with the lowest ACI Health Score. Each bar represents a private network and displays the average health score in percent.
- ***Application Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five applications with the lowest ACI Health Score. Each bar represents an application and displays the average health score in percent.
- ***Endpoint Groups Health Score (Bottom 5)***. This widget displays a bar graph that depicts the five endpoint groups with the lowest ACI Health Score. Each bar represents an endpoint group and displays the average health score in percent.
- ***Top 10: Cisco: ACI Fault Counts Total Faults (Average, All devices, Last <timespan>)***. This widget displays a bar graph that depicts the ACI tenants with the highest number of total faults over the timespan. Each bar represents a tenant/fault severity and the number of times the fault occurred.

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