DEPLOYMENT GUIDE

Infoblox Network Insight Integration with Cisco ACI

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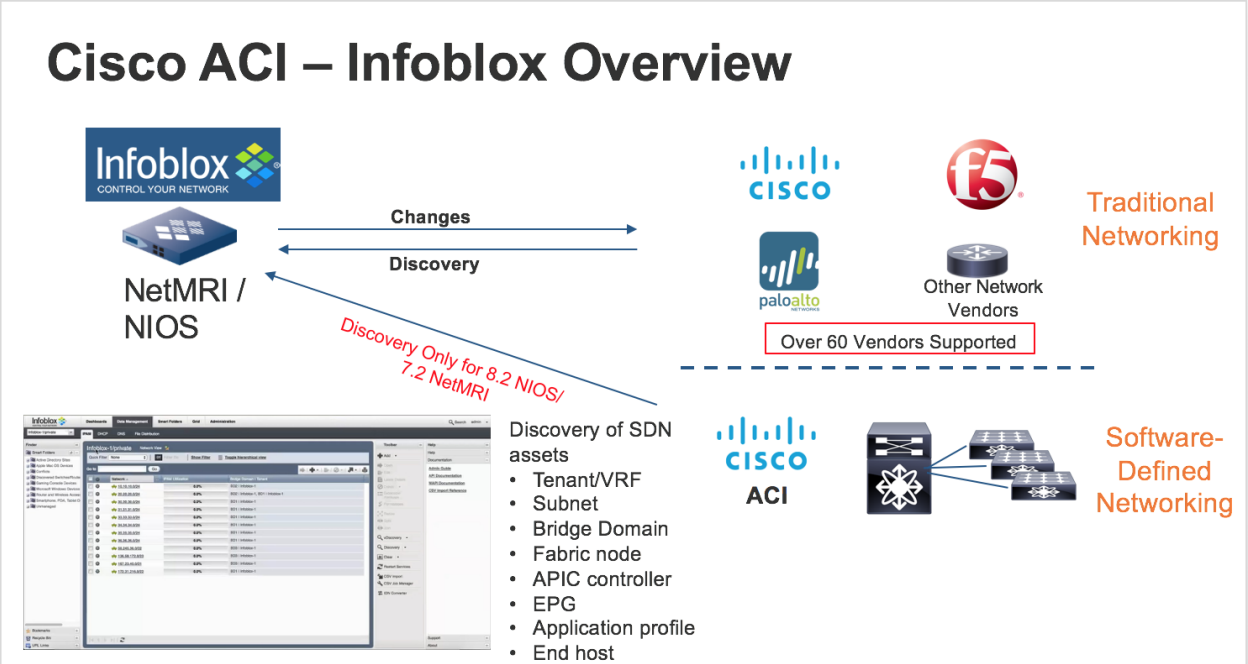
Introduction

Cisco ACI (Application Centric Infrastructure) is Cisco's SDN (software-defined networking) solution for data centers. This deployment guide illustrates how to configure Infoblox's Network Insight to discover Cisco ACI components and end hosts.

Overview



In addition to discovering various network devices and hosts in Network Insight, you can now discover assets within Cisco ACI such as:

- Tenants and VRFs
- IP subnets
- Bridge Domains
- Fabric Nodes
- APIC controller
- EPG
- Application profile (NetMRI only)
- End hosts

Requirements

The following items are required for Cisco ACI Integration in NIOS:

- Network Insight license.
- Infoblox Network Discovery Appliance.
- Infoblox NIOS 8.2.1 or later is required. NIOS 8.5.0 is the advised release

The following items are required for Cisco ACI Integration in NetMRI:

- NetMRI license.
- Infoblox NetMRI Appliance.
- Infoblox NetMRI 7.2.1 or later is required. NetMRI 7.4 is the advised release

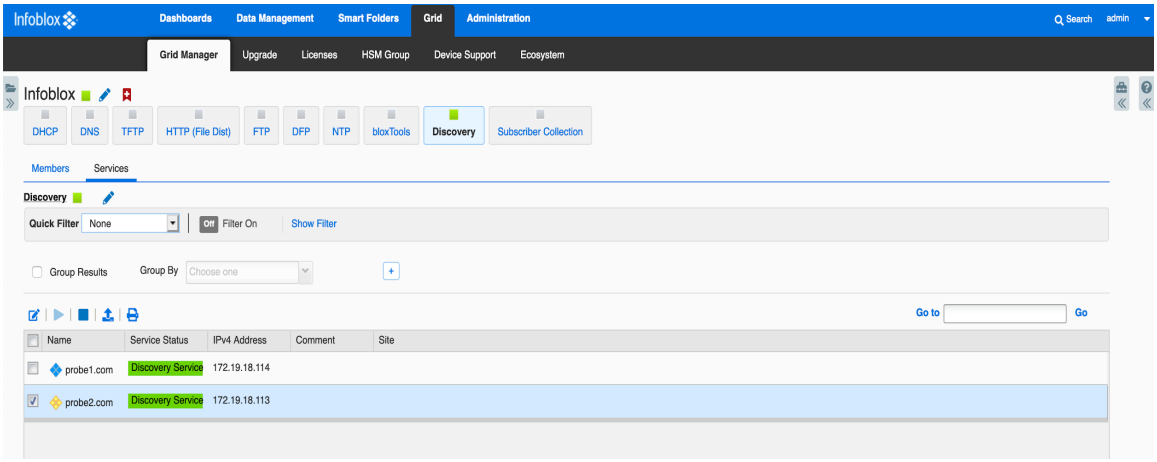
Deployment Instructions

Note: This deployment guide covers only Cisco ACI discovery deployment instructions. Please review the Network Insight Deployment Guide or NIOS Administrator's Guide for Network Insight configuration instructions. Please review the NetMRI Administrator Guide for NetMRI configuration instructions.

Configure Cisco APIC information for Network Insight.

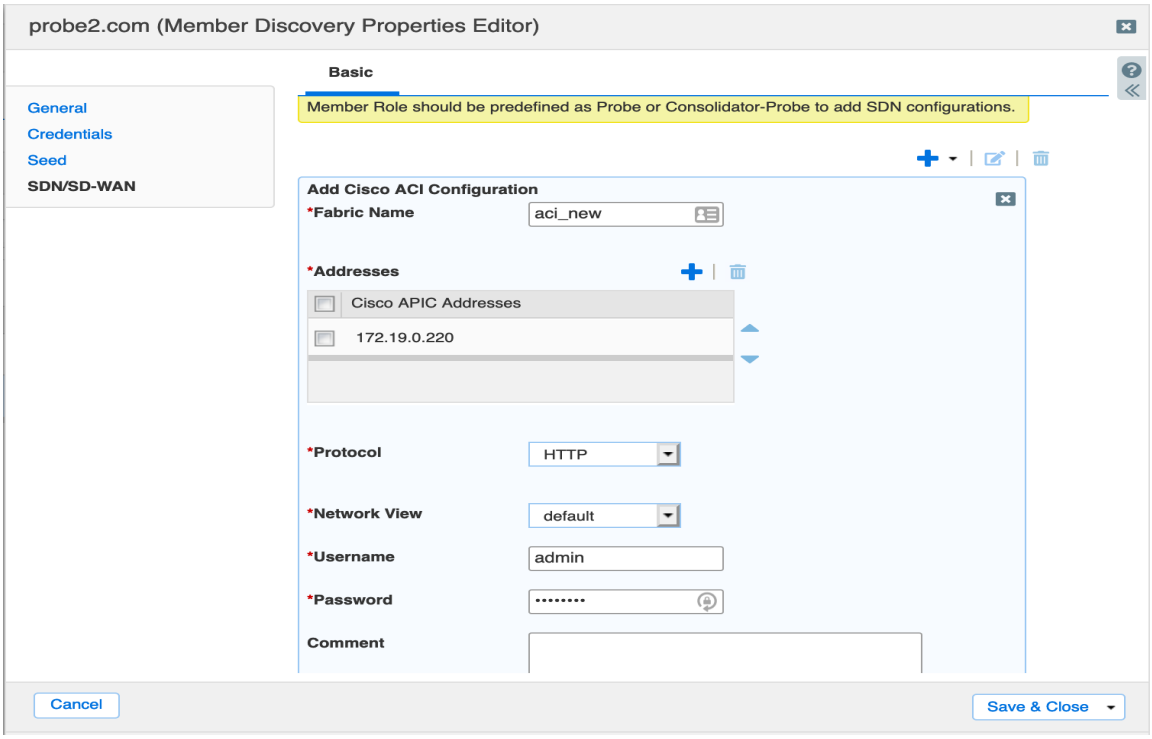
Note: Refer to the NIOS 8.2 Administrators Guide for Network View configuration.

1. Navigate to **Grid** → **Grid Manager** → **Discovery**. Click on the **Discovery member**.



2. Click on the **Edit** button on the **Services** screen. Click on the **SDN/SD-WAN** button. Select the **Cisco ACI** entry and click on the **Edit** button. *Note: Talk with your Cisco ACI administrator to get the IP*

address, username, and password. The Cisco ACI administrator can also provide a CA certificate from the APIC.



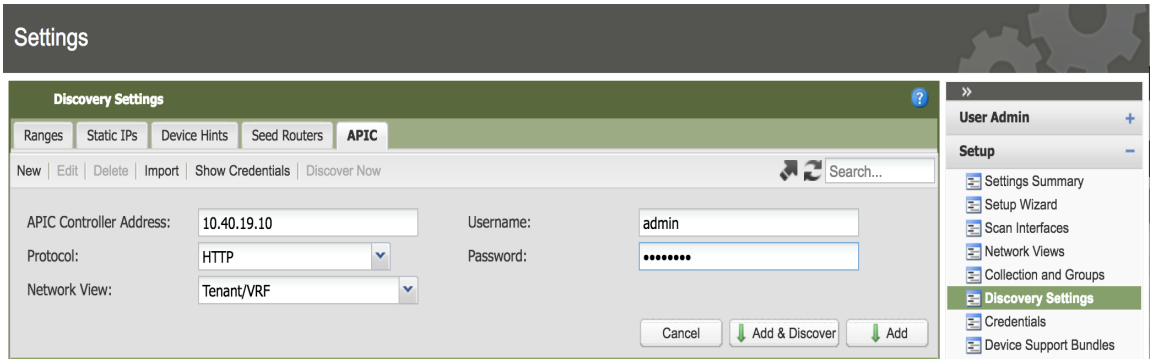
3. Enter the IP address of the Cisco APIC. *Note: Multiple entries are supported for redundancy.*
4. Select the **Protocol** which is either HTTP or HTTPS. If you decide to use HTTPS, you will need to add a CA certificate.
5. Select the **Network View**.
6. Enter the **Username** for the APIC login.
7. Enter the **Password** for the APIC login.
8. Click on the **Save** button and then the **Save & Close** button.

Configure Cisco APIC information for NetMRI.

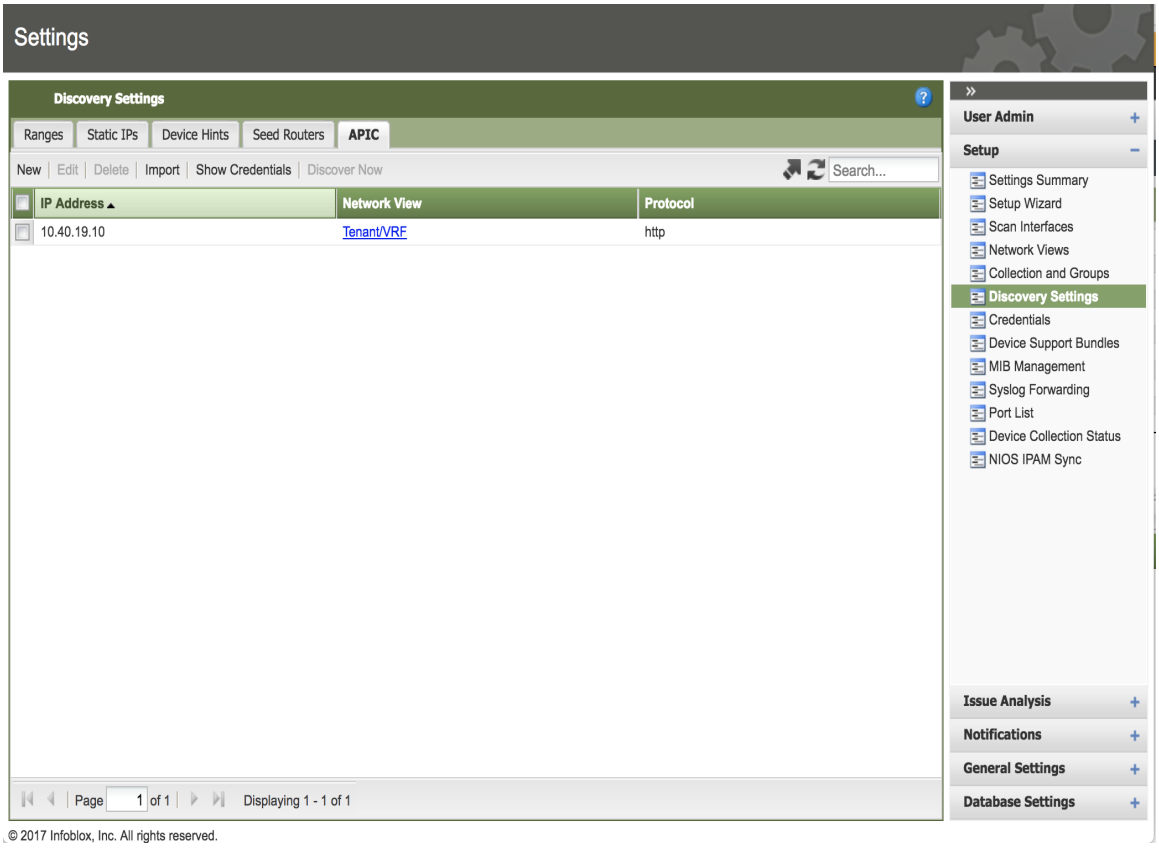
Note: Refer to the NetMRI Administrators Guide for Network View configuration.

1. Log into the NetMRI GUI.
2. Click on the **Settings** wheel.
3. Go to **Setup** → **Discovery Settings** → **APIC**.

4. Click on the **'New'** button. Fill in the fields for: APIC controller address, protocol, network view, username, and password.



5. Click on the **'Add & Discover'** or **'Add'** button.



Viewing Discovered Data for Network Insight.

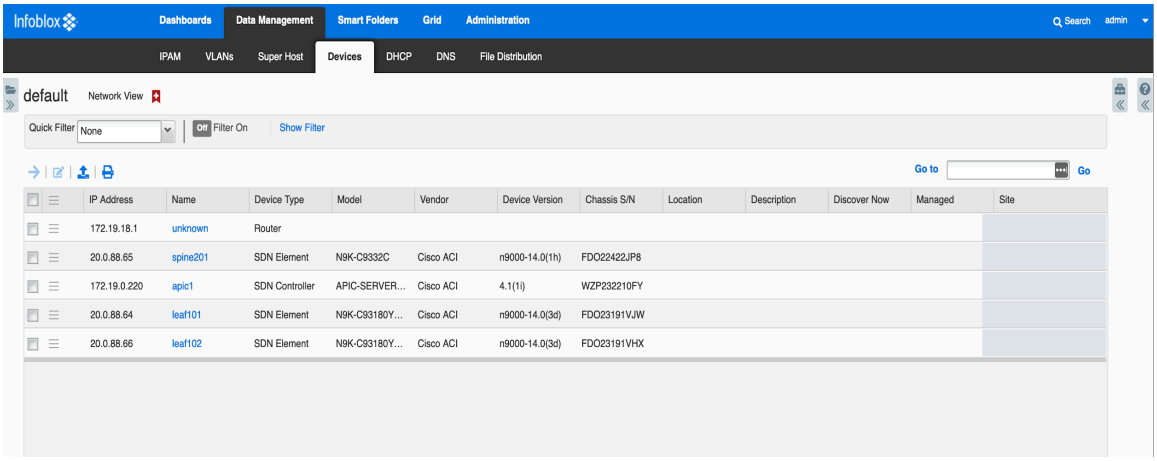
Below is a table showing the mappings of ACI specific components into IPAM objects.

ACI	Network Insight
Fabric Node (leaves and spine)	Device record under Devices tab
APIC Controller	Device record under Devices tab

Tenant	Tenant attribute for Networks and IP addresses under IPAM tab
Bridge Domain	Bridge Domain attribute for Networks and IP addresses under IPAM tab
EPG	EPG attribute for IP addresses under IPAM tab

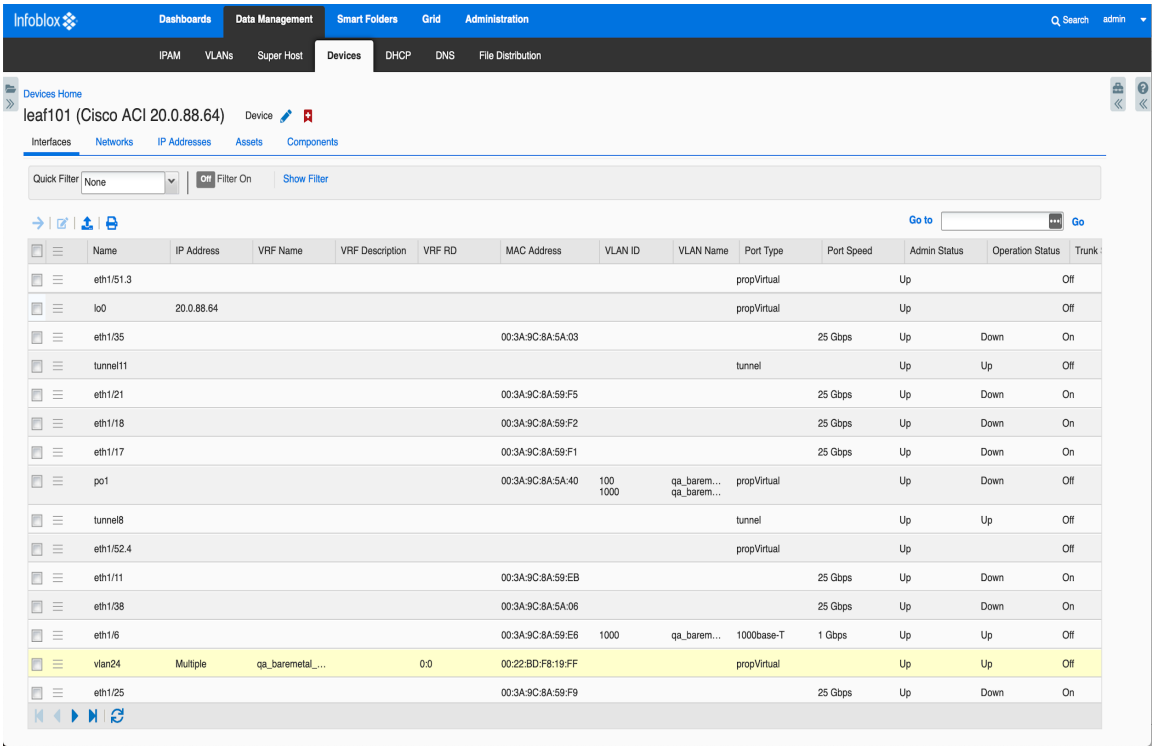
After waiting about 15 minutes for the discovery to complete, you can now view your discovered devices.

1. Navigate to **Data Management→ Devices**. Change to the network view that was used to enter the **Cisco ACI** details. For example, network view default was chosen.



2. In the previous screen shot, you can now see the SDN Controller and 3 SDN elements; leaf01, leaf02, and spine201.

3. You can drill down on the SDN Controller and SDN elements to gather information on interfaces, networks, IP addresses, assets, and components. Below are screen shots of each for one of the leaf nodes: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Off Filter On
Show Filter
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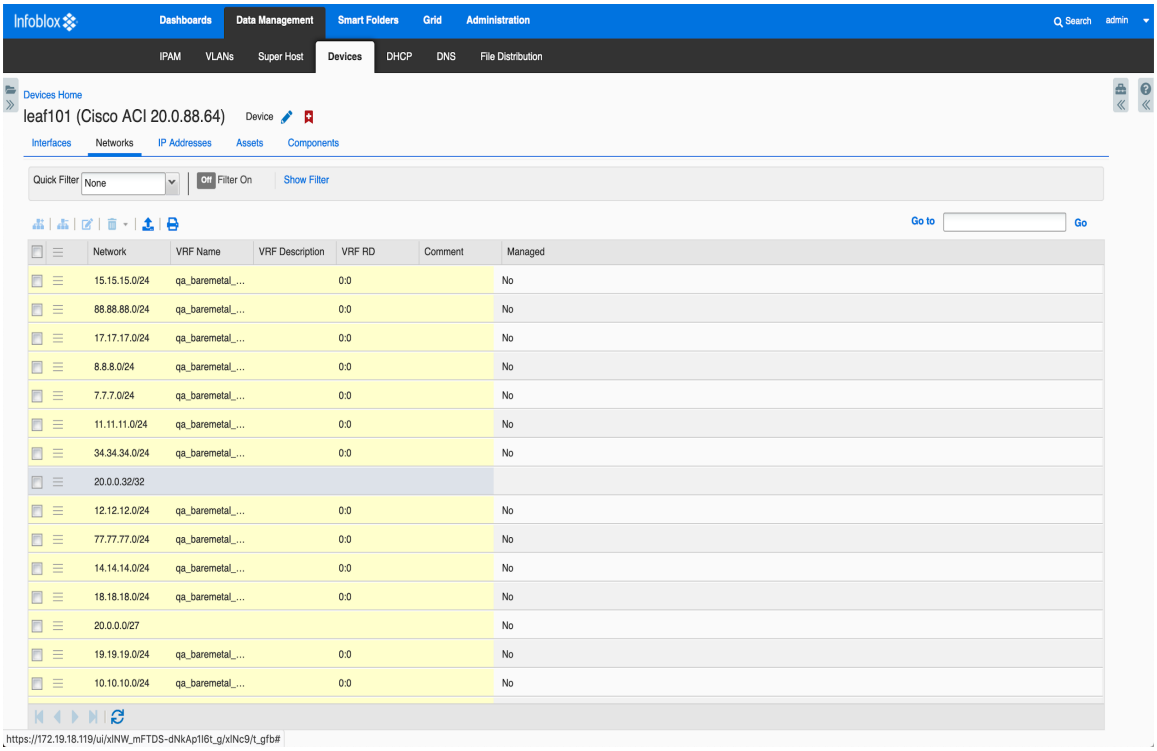
IP Address
VRF Name
VRF Description
VRF RD
MAC Address
VLAN ID
VLAN Name
Port Type
Port Speed
Admin Status
Operation Status
Trunk
eth1/51.3 propVirtual Up Off
lo0 20.0.88.64 propVirtual Up Off
eth1/35 00:3A:9C:8A:5A:03 25 Gbps Up Down On
tunnel11 tunnel Up Up Off
eth1/21 00:3A:9C:8A:59:F5 25 Gbps Up Down On
eth1/18 00:3A:9C:8A:59:F2 25 Gbps Up Down On
eth1/17 00:3A:9C:8A:59:F1 25 Gbps Up Down On
po1 00:3A:9C:8A:5A:40 100 1000 qa_barem... qa_barem... propVirtual Up Down Off
tunnel8 tunnel Up Up Off
eth1/52.4 propVirtual Up Off
eth1/11 00:3A:9C:8A:59:EB 25 Gbps Up Down On
eth1/38 00:3A:9C:8A:5A:06 25 Gbps Up Down On
eth1/6 00:3A:9C:8A:59:E6 1000 qa_barem... 1000base-T 1 Gbps Up Up Off
vlan24 Multiple qa_baremetal_... 0:0 00:22:BD:F8:19:FF propVirtual Up Up Off
eth1/25 00:3A:9C:8A:59:F9 25 Gbps Up Down On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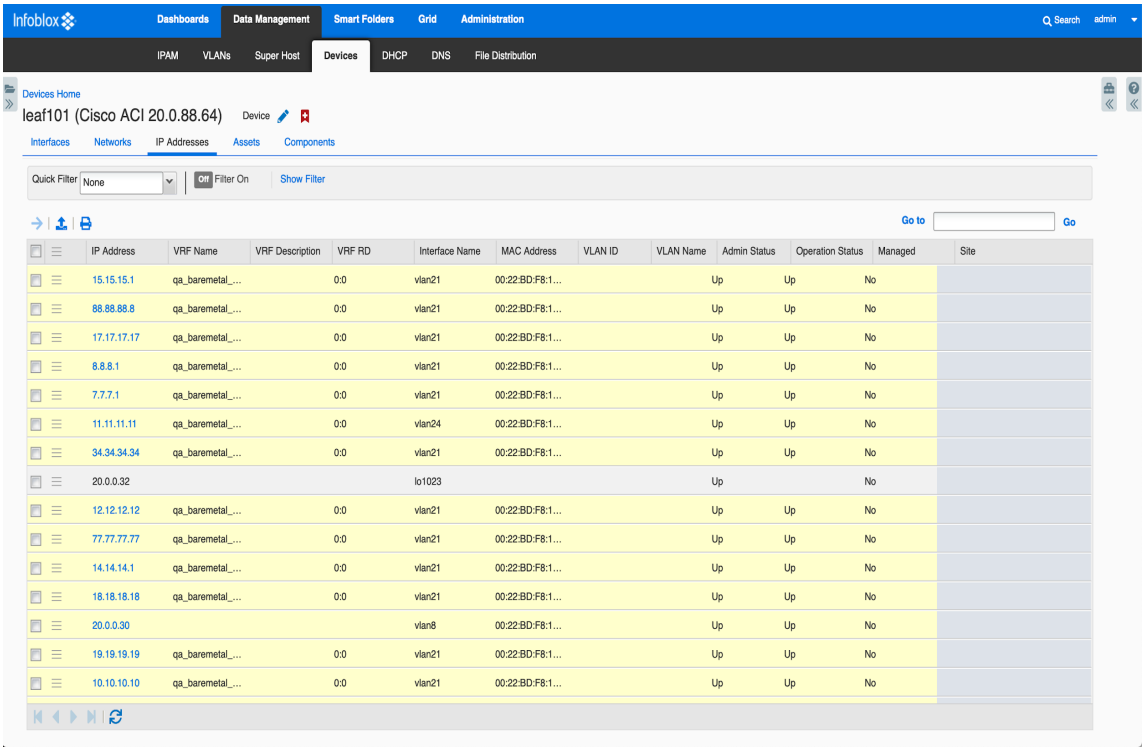
Off Filter On
Show Filter
Go to
Go
Network
VRF Name
VRF Description
VRF RD
Comment
Managed
15.15.15.0/24 qa_baremetal_... 0:0 No
88.88.88.0/24 qa_baremetal_... 0:0 No
17.17.17.0/24 qa_baremetal_... 0:0 No
8.8.8.0/24 qa_baremetal_... 0:0 No
7.7.7.0/24 qa_baremetal_... 0:0 No
11.11.11.0/24 qa_baremetal_... 0:0 No
34.34.34.0/24 qa_baremetal_... 0:0 No
20.0.0.32/32
12.12.12.0/24 qa_baremetal_... 0:0 No
77.77.77.0/24 qa_baremetal_... 0:0 No
14.14.14.0/24 qa_baremetal_... 0:0 No
18.18.18.0/24 qa_baremetal_... 0:0 No
20.0.0.0/27 No
19.19.19.0/24 qa_baremetal_... 0:0 No
10.10.10.0/24 qa_baremetal_... 0:0 No
https://172.19.18.119/ui/xlNW_mFTDS-dNkAp1l6t_g/xlNc9/t_gfb#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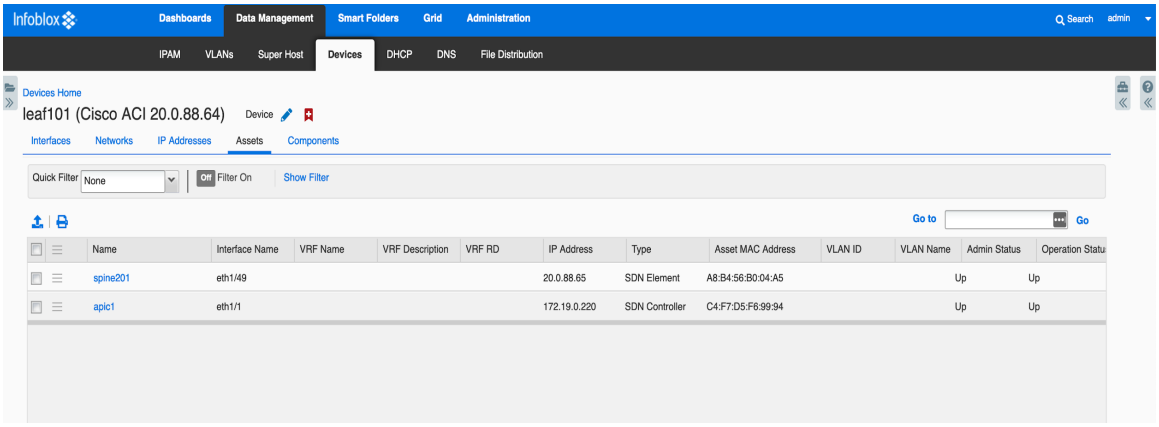
VRF Name
VRF Description
VRF RD
Interface Name
MAC Address
VLAN ID
VLAN Name
Admin Status
Operation Status
Managed
Site
15.15.15.1 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
88.88.88.8 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
17.17.17.17 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
8.8.8.1 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
7.7.7.1 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
11.11.11.11 qa_baremetal_... 0:0 vlan24 00:22:BD:F8:1... Up Up No
34.34.34.34 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
20.0.0.32 lo1023 Up No
12.12.12.12 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
77.77.77.77 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
14.14.14.1 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
18.18.18.18 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
20.0.0.30 vlan8 00:22:BD:F8:1... Up Up No
19.19.19.19 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No
10.10.10.10 qa_baremetal_... 0:0 vlan21 00:22:BD:F8:1... Up Up No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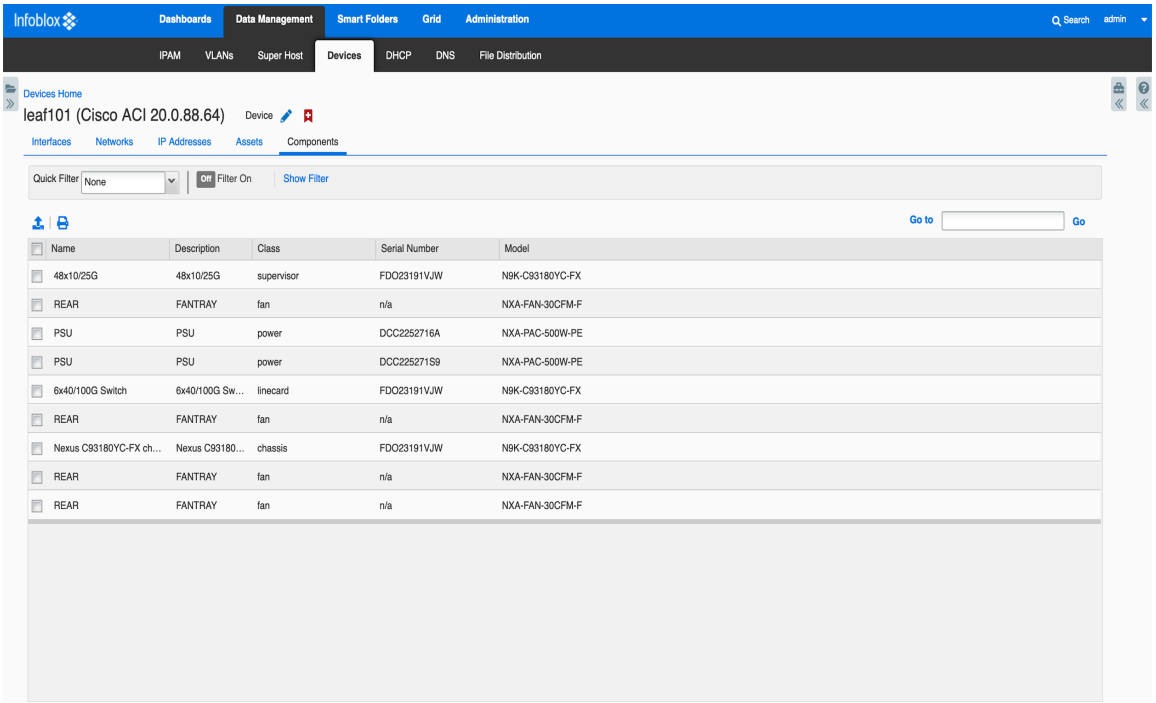
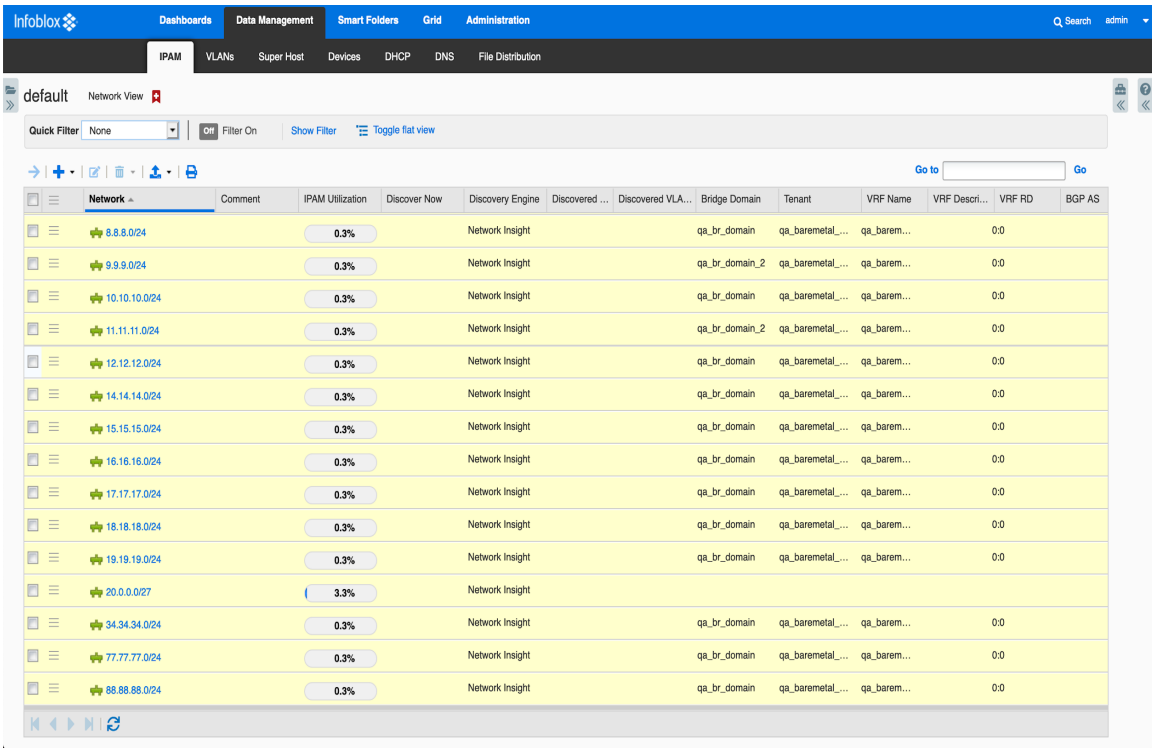
Name
Interface Name
VRF Name
VRF Description
VRF RD
IP Address
Type
Asset MAC Address
VLAN ID
VLAN Name
Admin Status
Operation Statu
spine201 eth1/49 20.0.88.65 SDN Element A8:B4:56:B0:04:A5 Up Up
apic1 eth1/1 172.19.0.220 SDN Controller C4:F7:D5:F6:99:94 Up Up



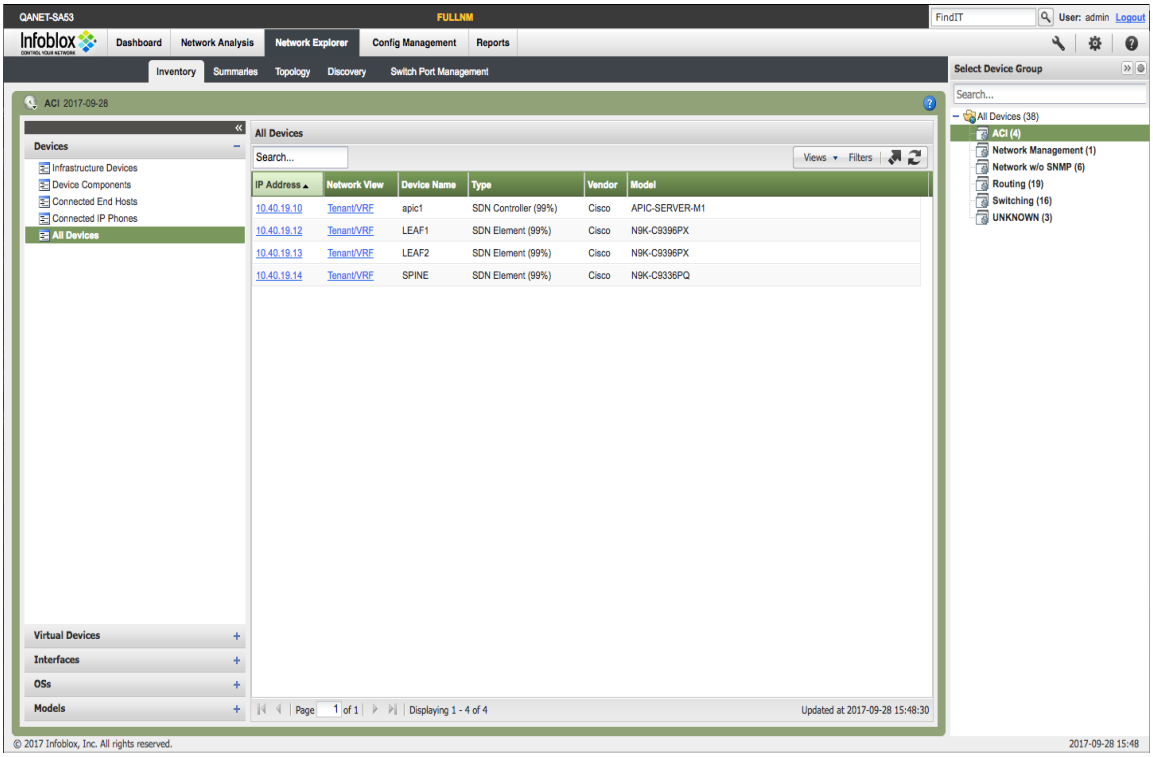
4. Navigate to **Data Management** → **IPAM** to view the discovered networks. Take note of the networks with bridge domains and tenants.



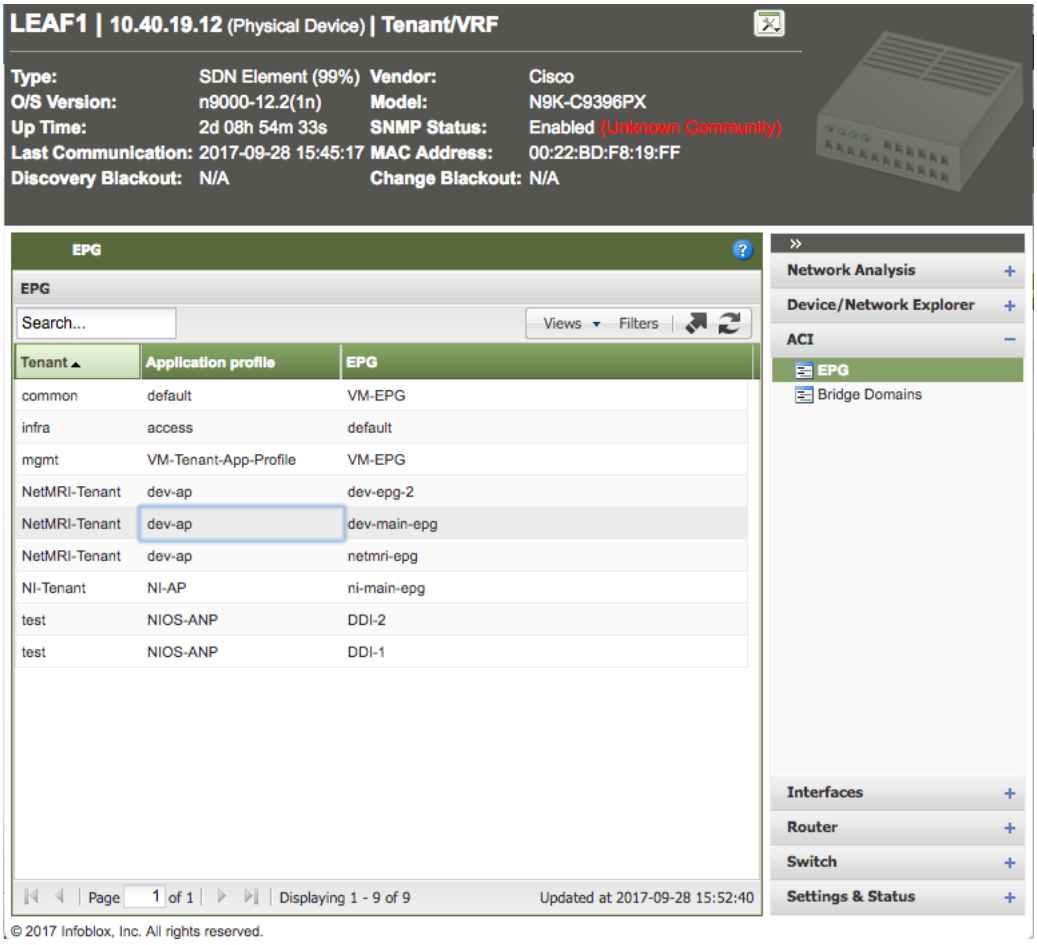
Viewing Discovered Data for NetMRI.

1. After upgrading NetMRI to 7.2.1 and above, a device group called ACI is used to hold all of the Cisco ACI components such as the APIC, leaves, and spine. Select the ACI device group from the Device Group panel.

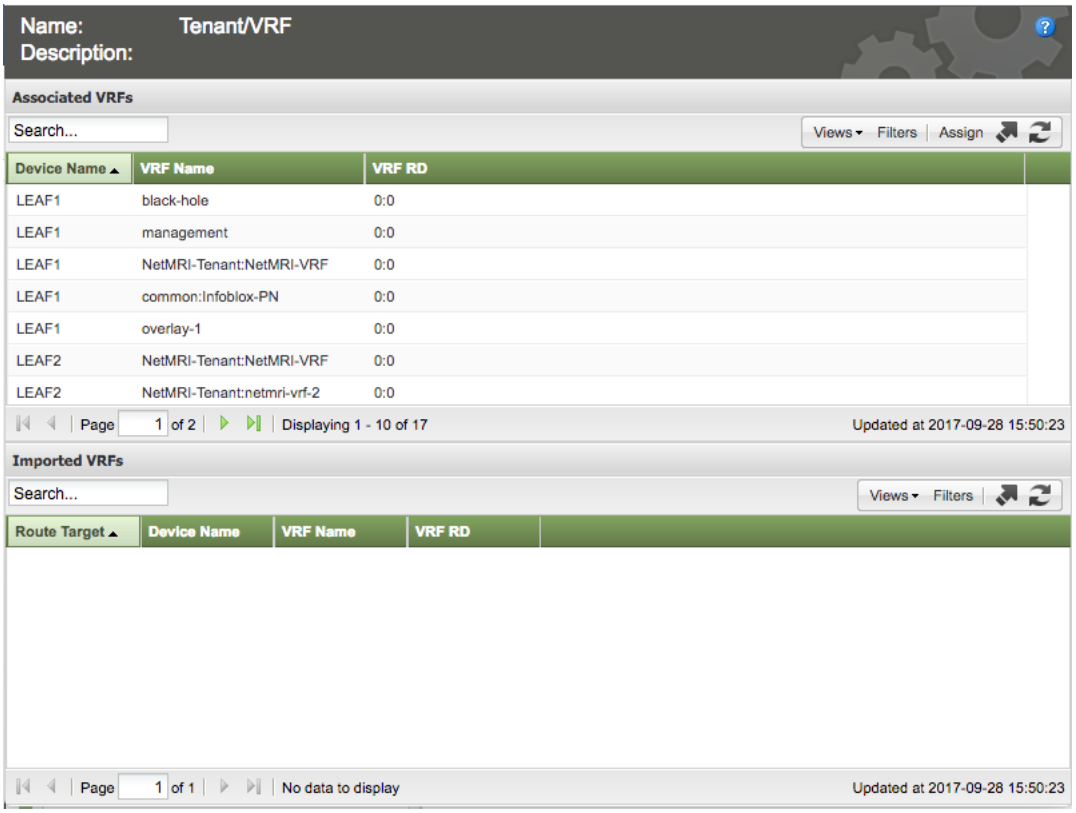
2. Navigate **Network Explorer → Inventory → Devices → All Devices**.



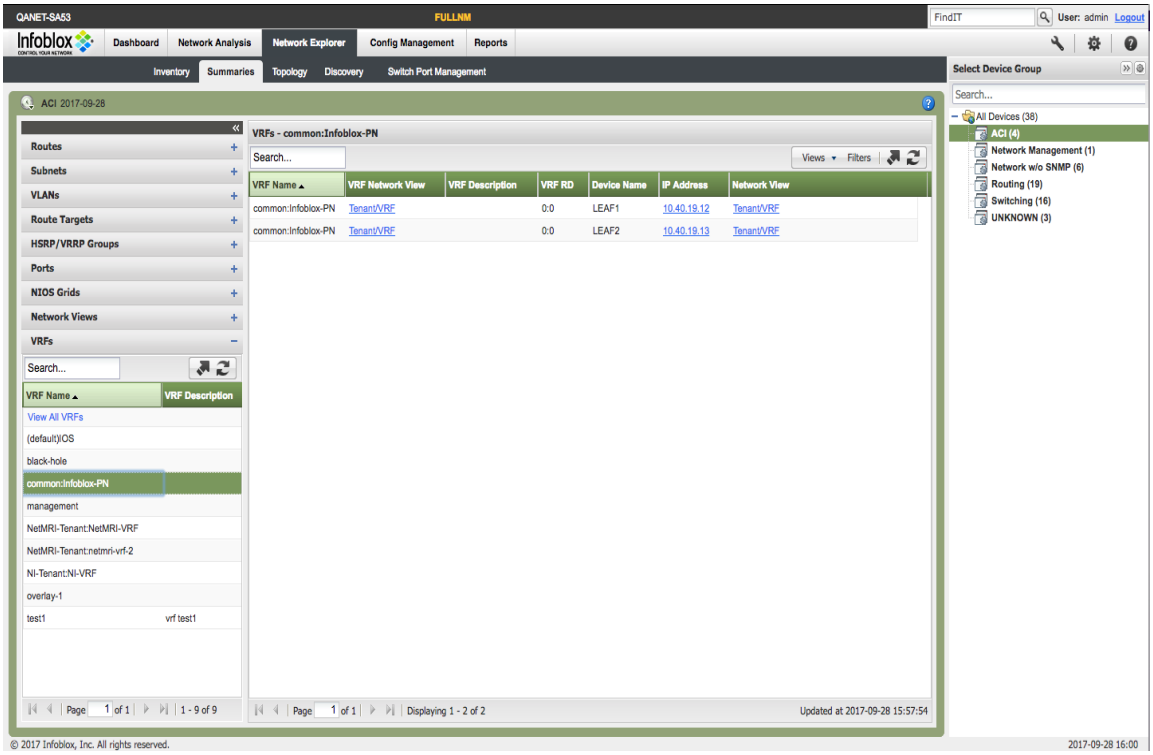
3. If you click on the IP address, you will get the device viewer for that IP address. You will then be able to view the EPG, Bridge Domains, VLANs and interfaces.



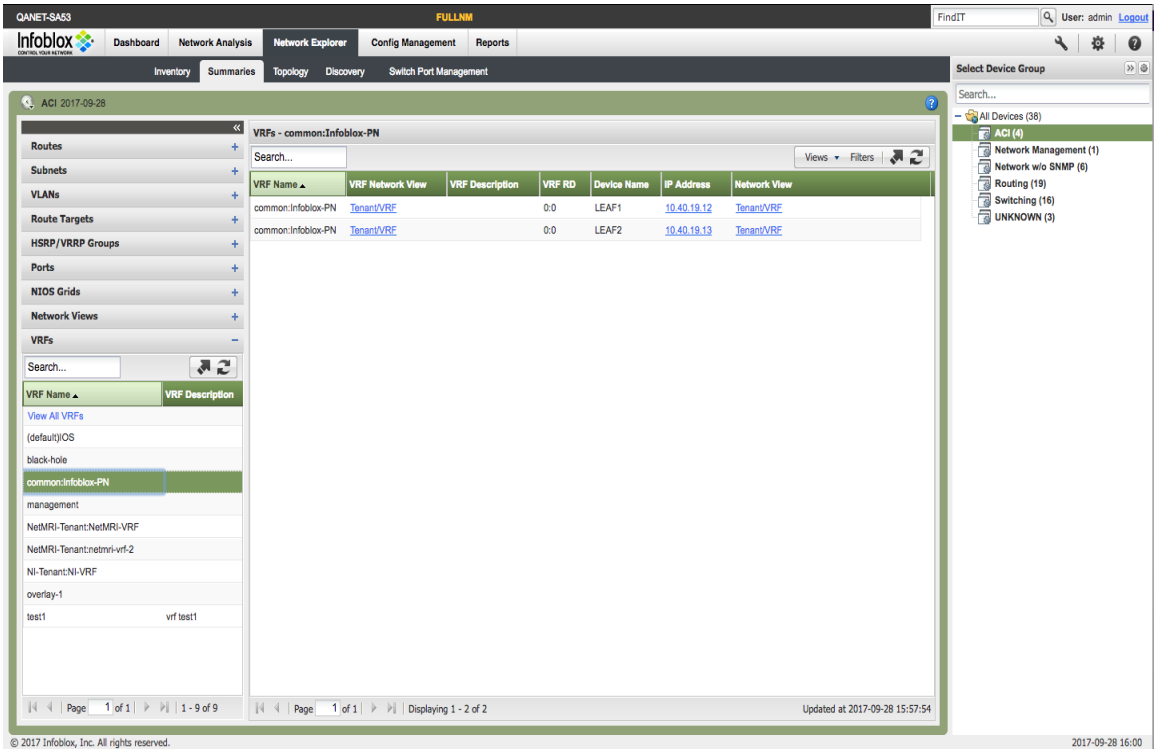
4. If you click on the **Network View**, you will be able to see the VRFs.



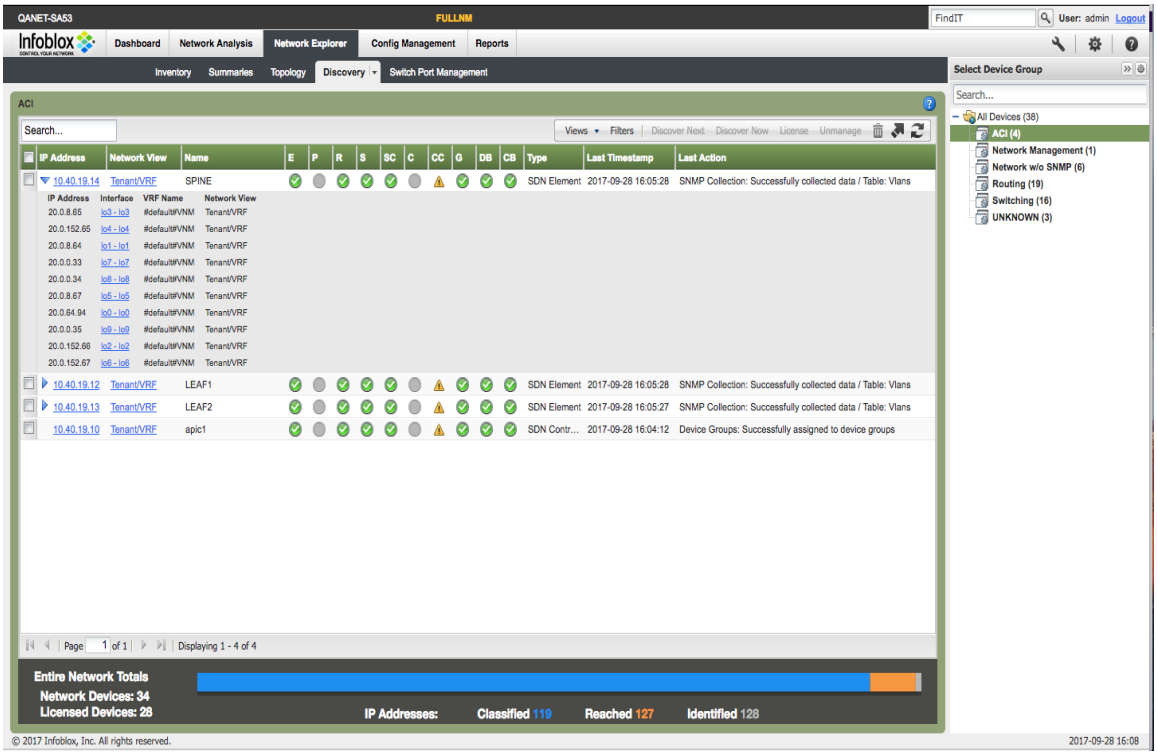
5. When clicking on **Summaries** → **Network Views**, you will be able to see details of the network view.



6. When clicking on **Summaries** → **VRFs**, you will be able to see the VRFs that are assigned to the devices.



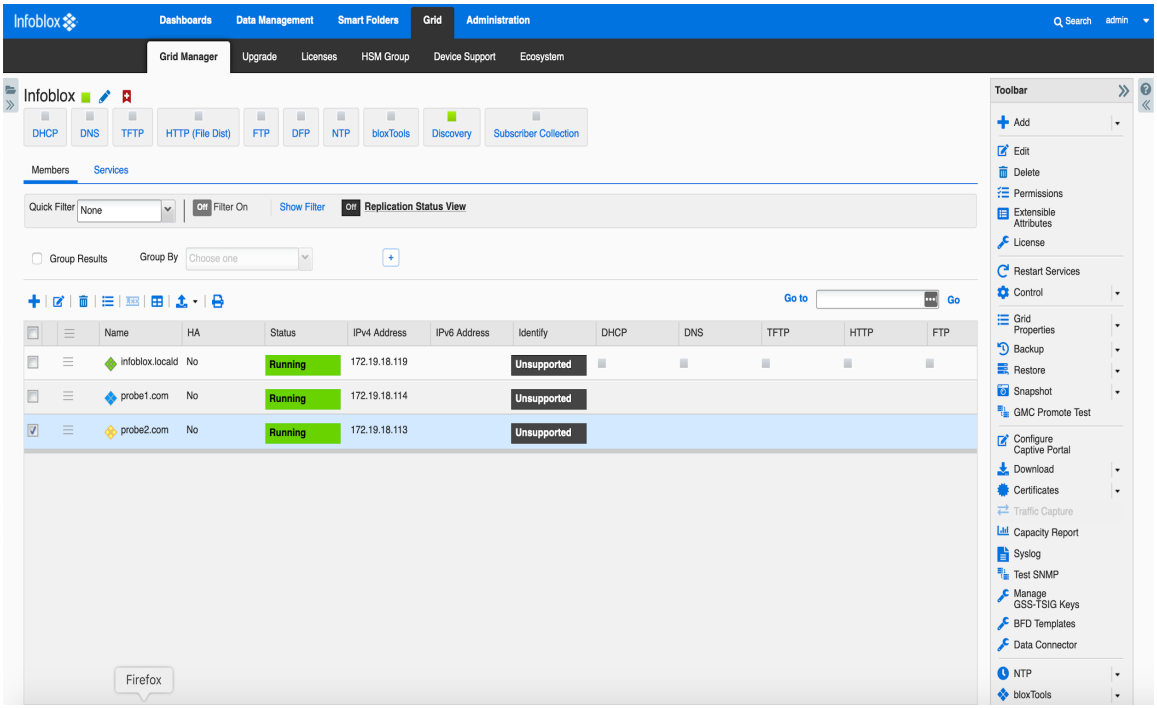
7. Navigating to **Network Explorer** → **Discovery** will show the discovery status, IP addresses, interfaces, VRF names, and network views.



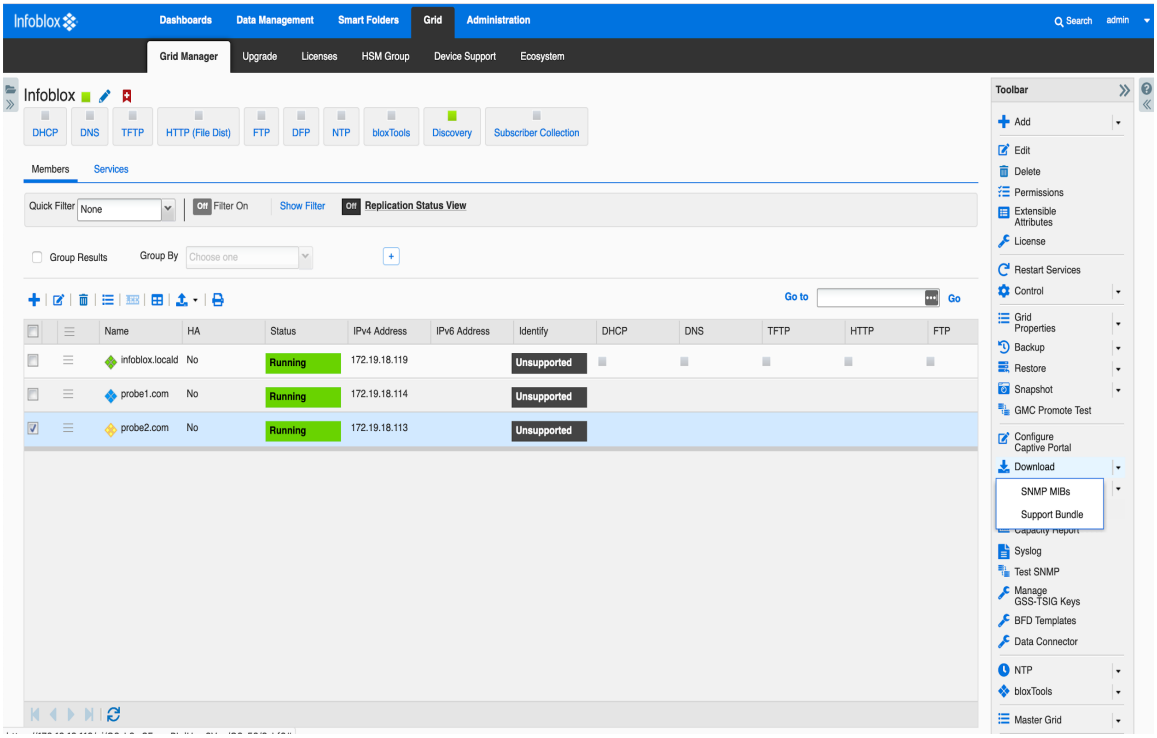
Troubleshooting - NIOS

1. Try to ping the IP address of the APIC. If successful, then go to the next step.

2. Download a support bundle. Navigate to **Grid → Grid Manager →Members.**



3. Click on the Discovery member which is probe2.com in this example. Navigate to **Toolbar →** **Download** and click on **Support Bundle**.



4. A compressed file will be created and can be downloaded to your Downloads directory. The file name is supportBundle.tar.gz. Uncompress this file.

5. After uncompressing, change directory to the newly created subdirectory called **SupportBundle**. Search for the compressed file called nm_discovery_support_bundle.tgz. Uncompress this file.

6. The subdirectory Augusta is now created in the subdirectory supportBundle. Change directory to Augusta/snmp_logs. Open the latest `dataEngine.log.<year>-<month>-<day>` file. The information related to Cisco ACI can be found by searching string 'AciObject' or IP address of Cisco APIC/LEAF. For example:

2017-08-01 16:11:47 [info] 13627 (worker14) 10.40.19.10/AciObject-3707429403927922829: AciObject: **collection completed**

2017-08-01 16:11:47 [info] 13627 (worker14) 10.40.19.10/AciObject-3707429403927922829: Done (663ms)

2017-08-01 16:20:24 [info] 22904 (worker01) 10.40.19.12/AciObject-4004721853816867796: ACI request POST /api/aaaLogin.json failed: **Request to ACI failed: 401 Unauthorized**

(401: **Username or password is incorrect - FAILED local authentication**)

2017-08-01 16:20:24 [error] 22904 (worker01) 10.40.19.12/AciObject-4004721853816867796: Cannot login to ACI controller 10.40.19.10: Request to ACI failed: 401 Unauthorized (401: **Username or password is incorrect - FAILED local authentication**)

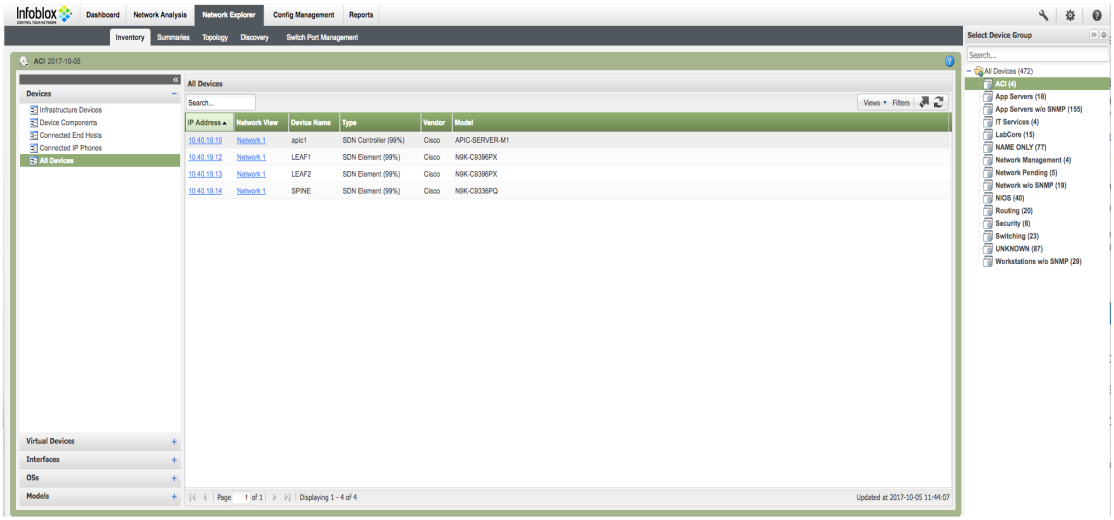
2017-08-01 16:22:25 [info] 23101 (worker13) 1.1.1.1/AciObject-6001678353361986687: ACI request POST /api/aaaLogin.json failed: **Request to ACI failed: 500 Can't connect to 1.1.1.1:80 (Connection timed out)**

2017-08-01 16:22:25 [error] 23101 (worker13) 1.1.1.1/AciObject-6001678353361986687: AciObject: Failed collection: **Cannot login to ACI controller 1.1.1.1: Request to ACI failed: 500 Can't connect to 1.1.1.1:80 (Connection timed out)**

Troubleshooting – NetMRI

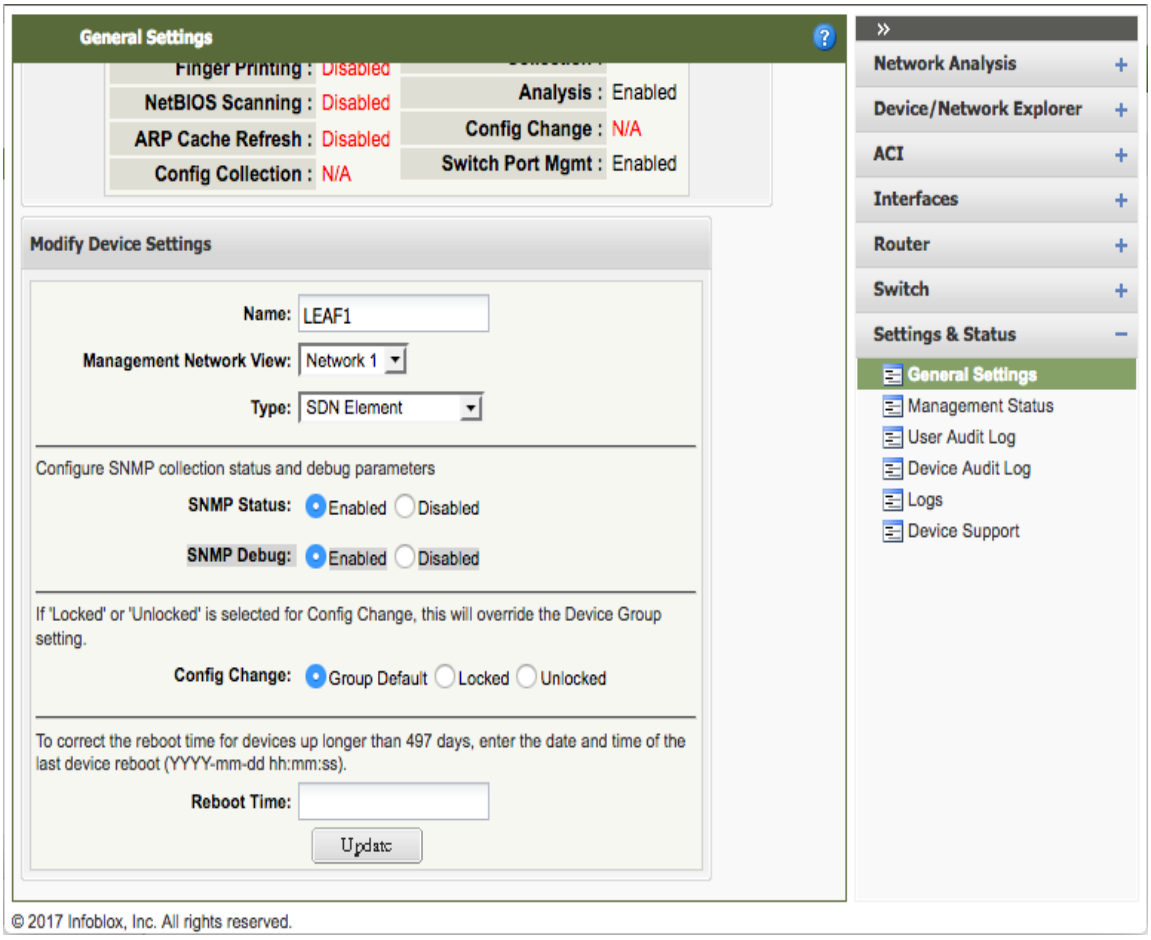
1. Try to ping the IP address of the APIC from within NetMRI. If successful, then go to the next step.

2. Navigate to any of the ACI devices in **Network Explorer** → **Inventory** → **All Devices**. Make sure the ACI device group is highlighted.



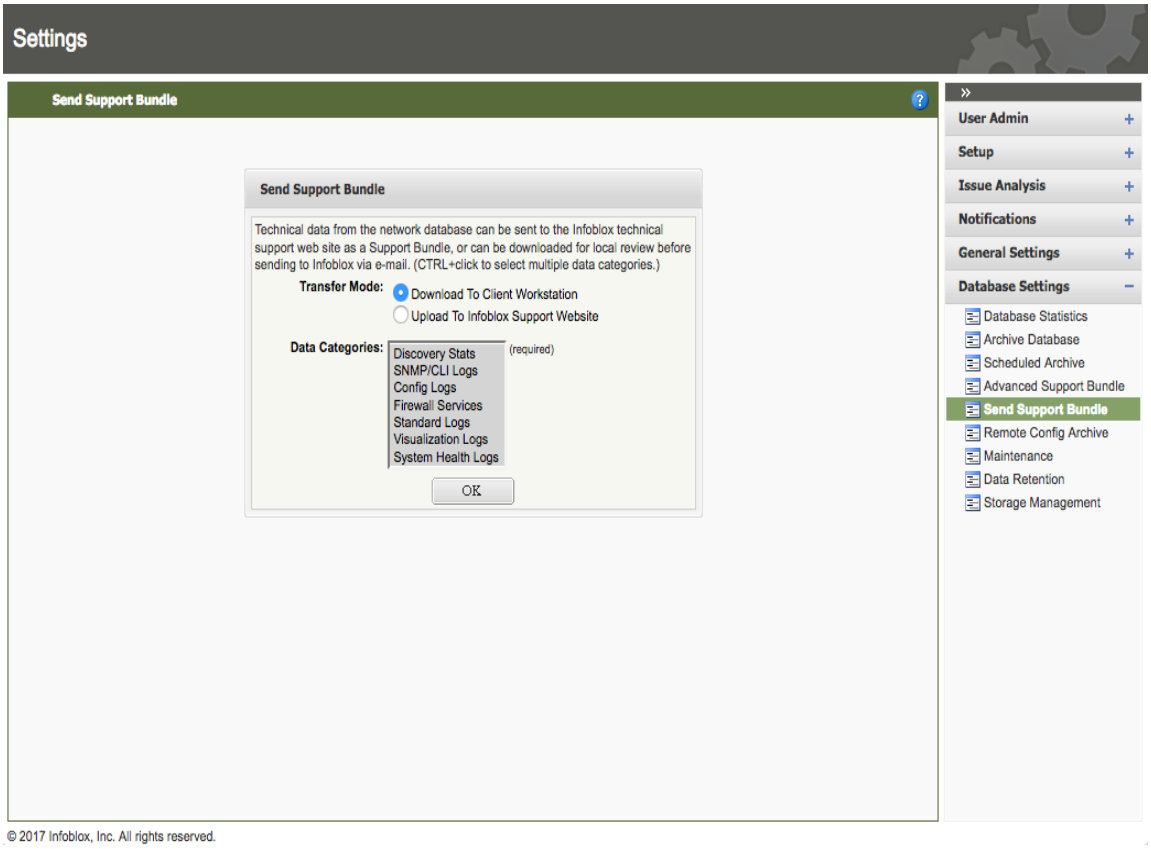
3. Pick the device in question by clicking on the IP address to bring up the Device Viewer.

4. Within the Device Viewer, navigate to **Settings & Status → General Settings → Enable SNMP** debug.



5. Click on the **Update** button.

6. Navigate to **Settings→ Database Settings→ Send Support Bundle**. Highlight all of the Data Categories and click on the **OK** button.



7. You can then either review the **`dataEngine.log`** file or submit a support bundle to Infoblox TAC for further review.

Infoblox unites networking and security to deliver unmatched performance and protection. Trusted by Fortune 100 companies and emerging innovators, we provide real-time visibility and control over who and what connects to your network, so your organization runs faster and stops threats earlier.

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