



# NetBrain<sup>®</sup> Integrated Edition 8.0

## Quick Setup Guide (ACI)

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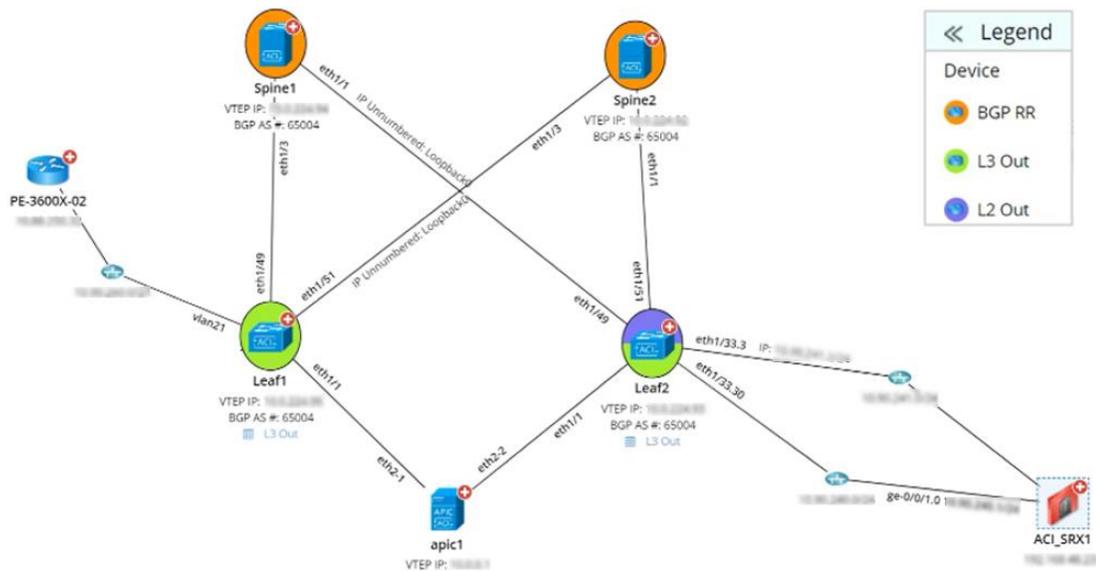
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# 1. Setting Up Cisco ACI Networks

With NetBrain, you can quickly visualize and understand a Cisco ACI fabric from the following aspects:

- What you have in your Cisco ACI Fabric, such as ACI PODs, IPN, ISN and their topology.
- The detail information about a node, such as properties, chassis, interfaces, and fabric extenders.
- The overlay design over a Cisco ACI Fabric, such as logical layer dependency, and connectivity inside or outside an application.
- More data information by applying data views.

**Example:** A Visualized Topology Map of a Cisco ACI Fabric.

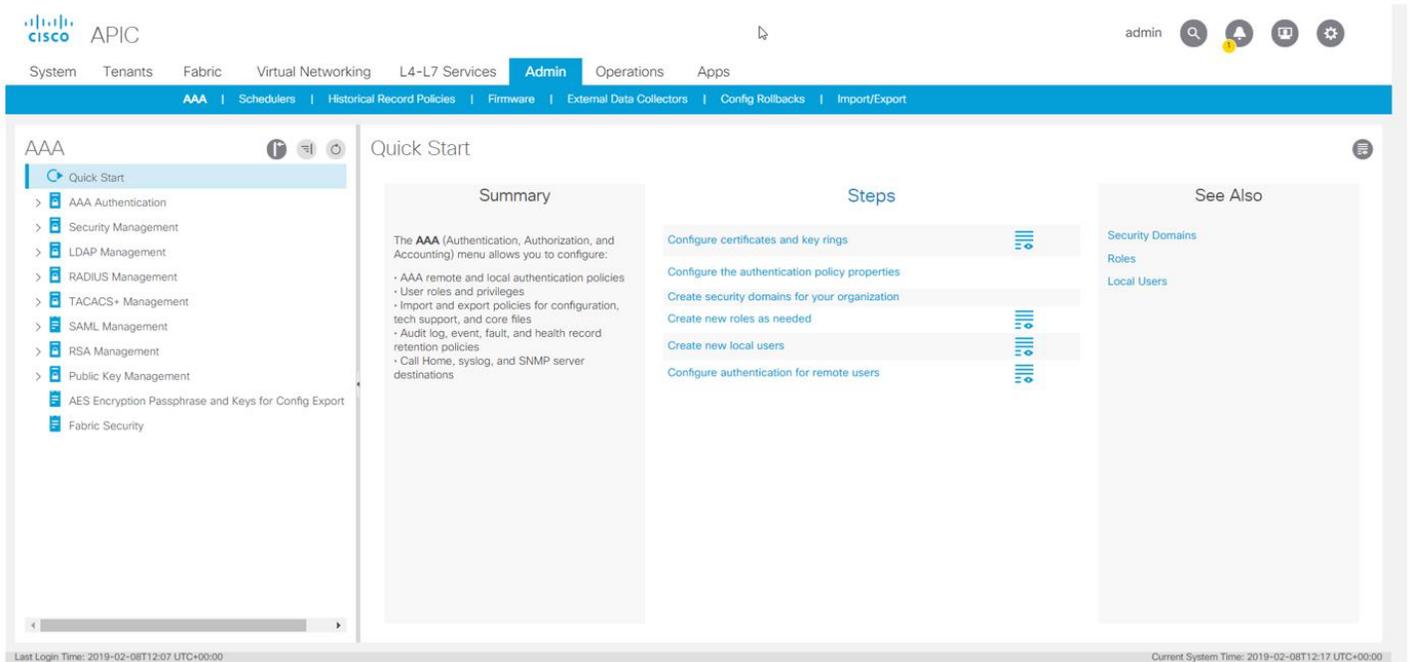


## 1.1. Setting Up APIC Server Access for NetBrain

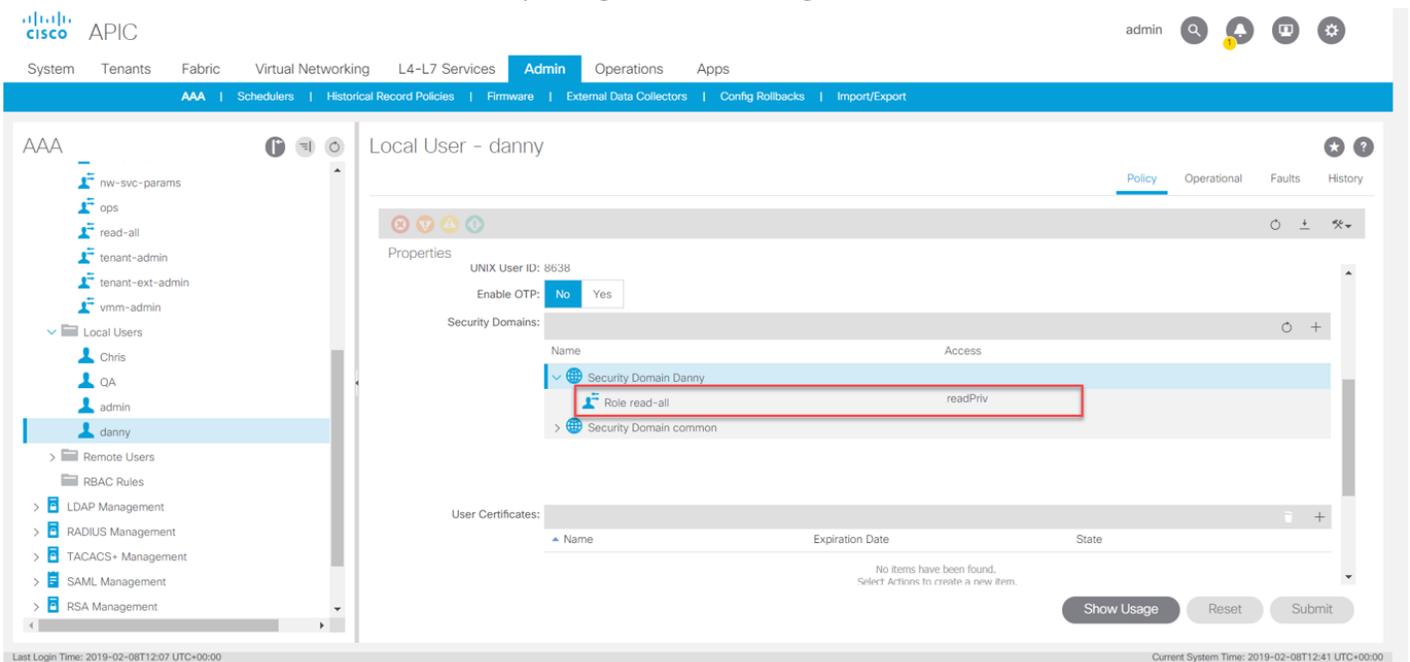
To enable NetBrain to discover a Cisco ACI network, you need to reserve an user account with the minimum privilege to read the data from your Application Policy Infrastructure Controller (APIC) and access the authorized tenants and fabric infrastructure.

Complete the following steps to double-check the configurations on your APIC server.

1. Log in to your APIC server with the admin account, and go to the **Admin** tab.

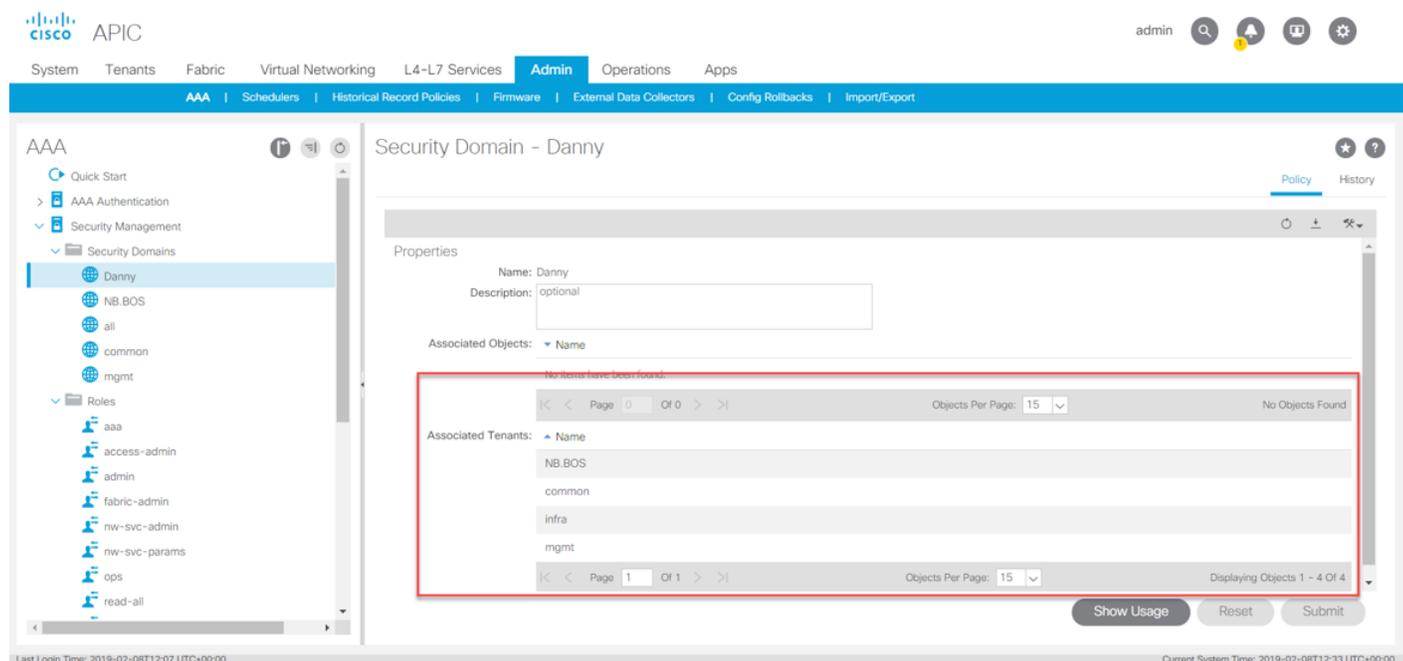


2. Select **Security Management > Local Users** in the navigation pane, and check whether the security domains that you want to discover and the corresponding role have been assigned to the user account reserved for NetBrain. Make sure at least the **readPriv** privilege has been assigned.

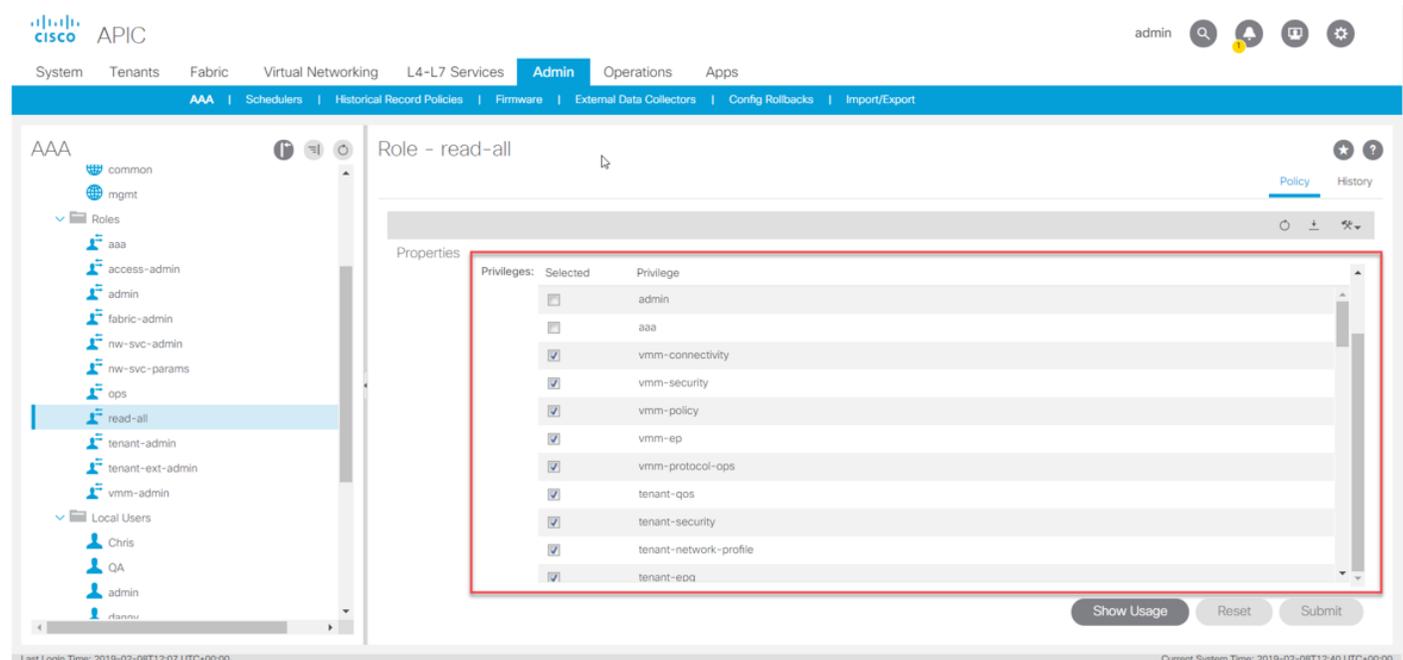


3. Select **Security Management > Security** in the navigation pane, and click the user account mentioned in step 2. In the **Associated Tenants** area, make sure the security domain includes all the system tenants (**common**,

infra and mgmt) and manually created customer tenants.



4. Select **Security Management > Roles** in the navigation pane, and click the role mentioned in step 2. Make sure that role includes the necessary privileges.



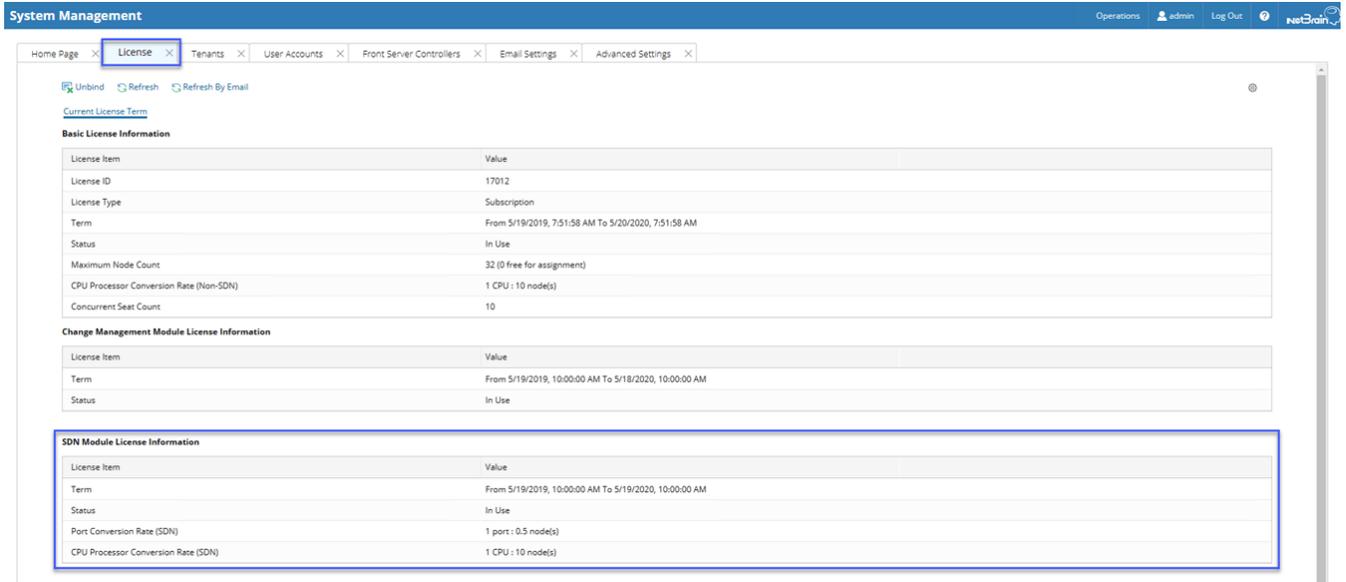
**Note:** The two privileges **admin** and **aaa** are not required.

## 1.2. Allocating SDN License to Your NetBrain Tenant and Domain

Select an appropriate way to allocate SDN licenses to your tenant and domain.

- [Allocating SDN Licenses to a New Tenant and Domain](#)
- [Allocating SDN Licenses to an Existing Tenant and Domain](#)

**Note:** Before continuing with the following steps, make sure your SDN license has been activated. Here is an example:



The screenshot displays the 'System Management' interface with the 'License' tab selected. The interface shows three sections of license information:

- Current License Term**
- Basic License Information**
- Change Management Module License Information**
- SDN Module License Information** (highlighted with a blue border)

License Item	Value
License ID	17012
License Type	Subscription
Term	From 5/19/2019, 7:51:58 AM To 5/20/2020, 7:51:58 AM
Status	In Use
Maximum Node Count	32 (0 free for assignment)
CPU Processor Conversion Rate (Non-SDN)	1 CPU : 10 node(s)
Concurrent Seat Count	10

License Item	Value
Term	From 5/19/2019, 10:00:00 AM To 5/18/2020, 10:00:00 AM
Status	In Use

License Item	Value
Term	From 5/19/2019, 10:00:00 AM To 5/19/2020, 10:00:00 AM
Status	In Use
Port Conversion Rate (SDN)	1 port : 0.5 node(s)
CPU Processor Conversion Rate (SDN)	1 CPU : 10 node(s)

### Allocating SDN Licenses to a New Tenant and Domain

1. Log in to the System Management page.
2. Select the **Tenants** tab, and click **Add**.

3. Specify a tenant name and allocate a maximum number of nodes to the tenant.

**Add Tenant**

**Basic Information**

\* Tenant Name: License Demo ▶ **Advanced options**

Description:

\* Maximum Nodes: 15 (22 nodes available)

**Assign Users**

1 users with Tenant Access, 1 users with Tenant Admin

Search... Refresh

Authentication Type	Authentication Se...	User Group	Username	System Admin	Tenant Access	Tenant Admin
NetBrain	NetBrain	Local Group	admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Cancel OK

4. Click **OK** to submit.
5. Log in to the End User page.
6. Select the tenant you created from the quick access toolbar, and click **New Domain**.

Current Domain: **SDN License** [Manage Domain](#)

Tenant: License Demo Search... Refresh

Tenant Name	Domain Name	Maximum Nodes	Description	Creator
License Demo	SDN License	10 (0 used)		admin

**New Domain** Cancel Apply

7. Specify a domain name and allocate a maximum number of nodes to the domain.

Create Domain Wizard

\* Tenant Name: License Demo

\* Domain Name: Subscription License

\* Maximum Nodes: 3 (5 nodes available)

Description:

Three steps to build your domain:

Step 1: Define access credentials and proxies.

Step 2: Discover live network and build L3 topology.

Step 3: Assign privileges to users by defining the share policy.

Help

Next > Finish

8. Click **Finish**.

## Allocating SDN Licenses to an Existing Tenant and Domain

1. Log in to the System Management page.
2. Select the **Tenants** tab, and select **Edit** from the drop-down list of the desired existing tenant.

System Management

Operations admin Log Out NetBrain

Home Page x License x Tenants x User Accounts x Front Server Controllers x Email Settings x Advanced Settings x

+ Add Search... Refresh

Tenant Name	Maximum Nodes	Allowed Users	Description
Initial Tenant	10 (0 used)	1	This is the initial tenant
License Demo	15 (0 used)	1	

Edit Delete

- Allocate a maximum number of nodes to the tenant.

**Edit Tenant**

**Basic Information**

\* Tenant Name: Initial Tenant ▶ **Advanced options**

Description: This is the initial tenant

\* Maximum Nodes: 10 (17 nodes available)

**Assign Users**

1 users with Tenant Access, 1 users with Tenant Admin

Authentication Type	Authentication Se...	User Group	Username	System Admin	Tenant Access	Tenant Admin
NetBrain	NetBrain	Local Group	admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Cancel OK

- Click **OK** to submit.
- Log in to the End User page.
- Select the existing tenant from the quick access toolbar, and select **Edit** from the drop-down list of the existing domain.

Current Domain: **Subscription License** [Manage Domain](#)

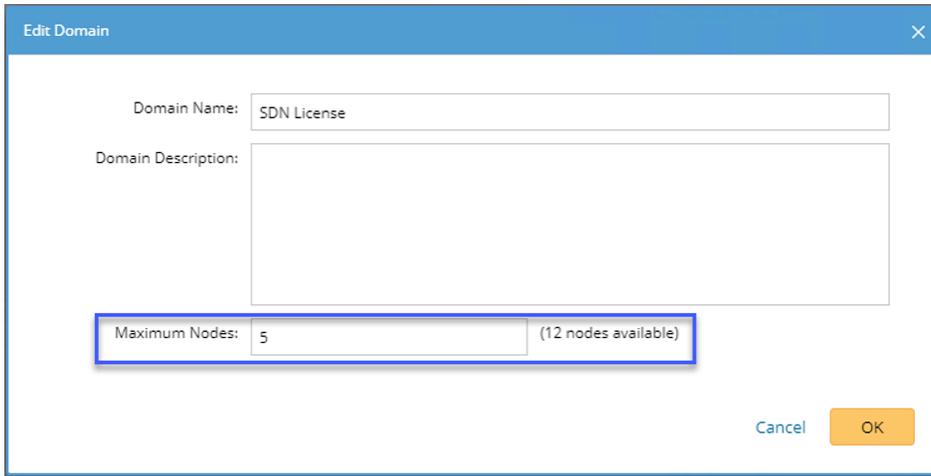
Tenant: License Demo Search... Refresh

Tenant Name	Domain Name	Maximum Nodes	Description	Creator
License Demo	SDN License	10 (0 used)		admin
License Demo	Subscription Lic...	3 (0 used)		

Open Domain in new tab  
Edit  
Delete

New Domain Cancel Apply

7. Specify a domain name and allocate a maximum number of nodes to the domain.



The screenshot shows a dialog box titled "Edit Domain". It has a blue header bar with a close button (X) on the right. The main area contains three input fields: "Domain Name" with the text "SDN License", "Domain Description" which is empty, and "Maximum Nodes" with the value "5". To the right of the "Maximum Nodes" field, the text "(12 nodes available)" is displayed. At the bottom right, there are two buttons: "Cancel" and "OK".

8. Click **OK**.

## 1.3. Discovering ACI Data in NetBrain Domain

To understand an ACI Network, you need to first discover the network data model (Single Site or Multi Site) in a NetBrain domain.

[Discovering ACI Single Site in NetBrain Domain](#)

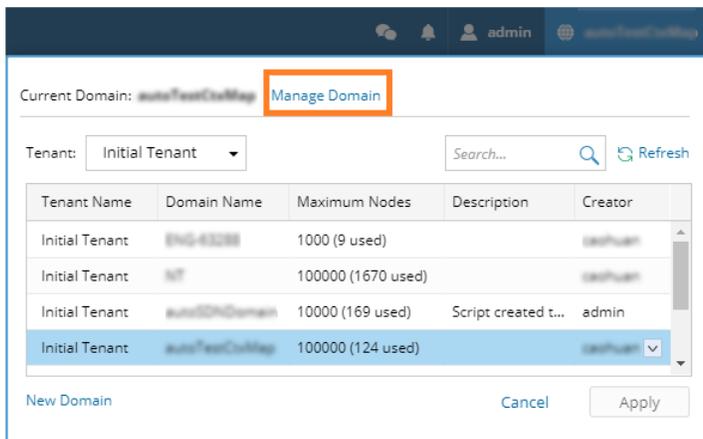
[Discovering ACI Multi Site in NetBrain Domain](#)

### 1.3.1. Discovering ACI Single Site in NetBrain Domain

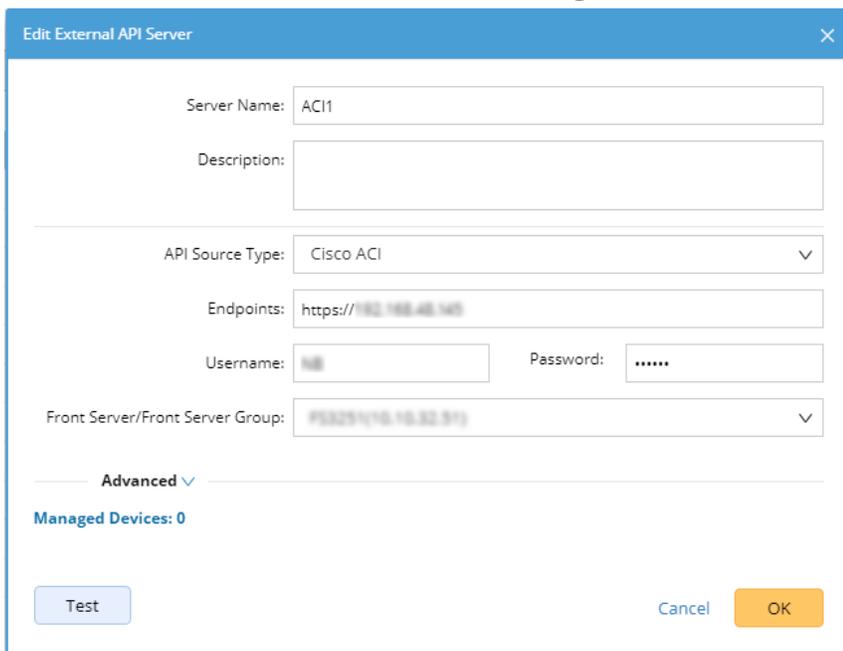
#### 1. Add an ACI Controller

The system retrieves ACI data through the ACI Controller by using APIs. Follow the steps below to add a controller and specify the address and user credentials to access the controller in the system.

- 1) Click the domain name from the quick access toolbar and select **Manage Domain**.



- 2) In the Domain Management page, select **Operations > Discover Settings > API Server Manager** from the quick access toolbar.
- 3) Click **Add API Server** on the **API Server Manager** tab.



- 4) Enter a unique name in the **Server Name** field.
- 5) Select **Cisco ACI** from the **API Source Type** drop-down menu.
- 6) In the **Endpoints** field, enter the URL of the controller.
- 7) Enter the username and password to access the controller. If more parameters are required when you access the controller or request data from the controller, you can click **Advanced** to configure the keys (parameter names) and values.

8) Select a Front Server or Front Server Group from the **Front Server/Front Server Group** drop-down menu.

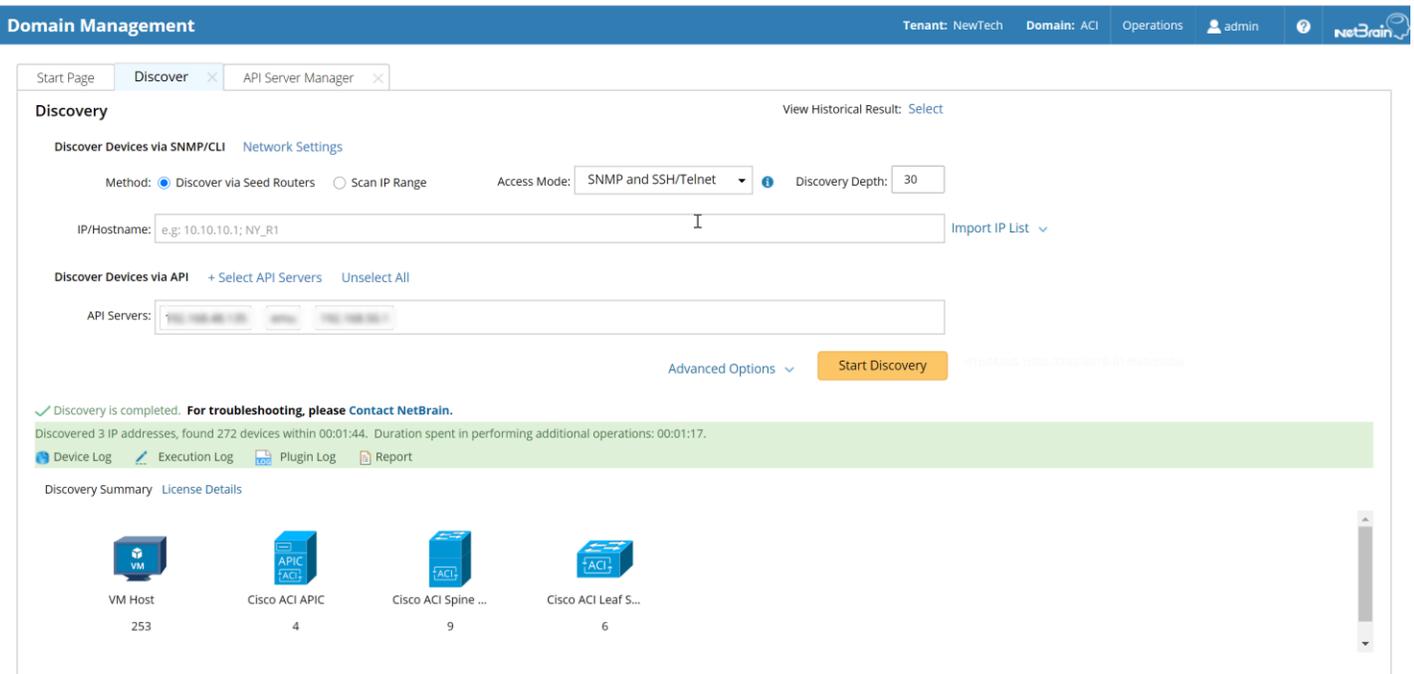
**Note:** Make sure that the port 7086 of your NetBrain Front Server is not occupied by other applications, because this port is used by the service components of a Front Server to communicate with each other.

9) Click **OK**.

## 2. Discover Your ACI Network

**Note:** The Inter-Pod Network (IPN) is connecting different ACI Pods allowing for the establishment of Pod-to-Pod communication (also known as east-west traffic). To successfully discover a multi-pod network, IPN nodes must be discovered prior to discovering APIC domains.

- 1) In the Domain Management page, select **Operations > Discover** from the quick access toolbar.
- 2) Click **Select API Servers** and select API server(s) from the list.
- 3) Click **Start Discovery**.



The screenshot shows the NetBrain Domain Management interface. The top navigation bar includes 'Tenant: NewTech', 'Domain: ACI', 'Operations', and 'admin'. The main content area is titled 'Discovery' and includes a 'View Historical Result: Select' link. Under 'Discover Devices via SNMP/CLI', there are options for 'Method' (Discover via Seed Routers, Scan IP Range) and 'Access Mode' (SNMP and SSH/Telnet). The 'Discovery Depth' is set to 30. The 'IP/Hostname' field contains 'e.g. 10.10.10.1; NY\_R1'. Below this, the 'Discover Devices via API' section is active, showing a '+ Select API Servers' button and an 'Unselect All' button. The 'API Servers' list is empty. A 'Start Discovery' button is visible. A green banner at the bottom of the main content area contains the following text: 'Discovery is completed. For troubleshooting, please Contact NetBrain. Discovered 3 IP addresses, found 272 devices within 00:01:44. Duration spent in performing additional operations: 00:01:17.' Below the banner are links for 'Device Log', 'Execution Log', 'Plugin Log', and 'Report'. At the bottom, the 'Discovery Summary' section shows four categories: 'VM Host' (253), 'Cisco ACI APIC' (4), 'Cisco ACI Spine ...' (9), and 'Cisco ACI Leaf S...' (6).

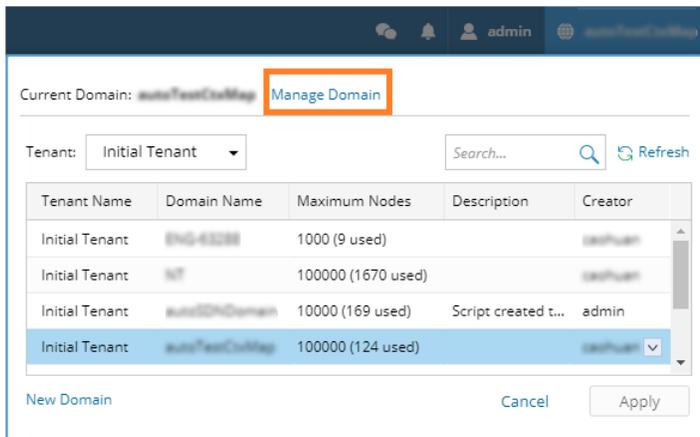
**Note:** The SDN discovery only retrieves basic data of your network and builds L3 topology. After the discovery, you need to execute a benchmark task to retrieve all data and build all components, including visual spaces and data views. See [Auto-Updating ACI Data in NetBrain through Benchmark](#) for details.

## 1.3.2. Discovering ACI Multi Site in NetBrain Domain

### 1. Add MSO and APIC Controllers

The system retrieves ACI data through the ACI Controllers by using APIs. Follow the steps below to add MSO/ACI controllers and specify the address and user credentials to access the controllers in the system.

- 1) Click the domain name from the quick access toolbar and select **Manage Domain**.



- 2) In the Domain Management page, select **Operations > Discover Settings > API Server Manager** from the quick access toolbar.
- 3) Click **Add API Server** on the **API Server Manager** tab.

The screenshot shows the 'Edit External API Server' form. It has a title bar with 'Edit External API Server' and a close button. The form contains several fields: 'Server Name' (text input with 'MSO'), 'Description' (text area), 'API Source Type' (dropdown menu with 'ACI MSO'), 'Endpoints' (text input with 'https://'), 'Username' (text input with 'admin'), 'Password' (password input with '.....'), and 'Front Server/Front Server Group' (dropdown menu with 'autoTestCurlMap'). Below the form, there is an 'Advanced' section with a dropdown arrow, and a 'Managed Devices: 0' label. At the bottom, there are three buttons: 'Test', 'Cancel', and 'OK'.

- 4) Enter a unique name in the **Server Name** field.
- 5) Select **ACI MSO** from the **API Source Type** drop-down menu.

- 6) In the **Endpoints** field, enter the URL of the controller.
- 7) Enter the username and password to access the controller. If more parameters are required when you access the controller or request data from the controller, you can click **Advanced** to configure the keys (parameter names) and values.
- 8) Select a Front Server or Front Server Group from the **Front Server/Front Server Group** drop-down menu.

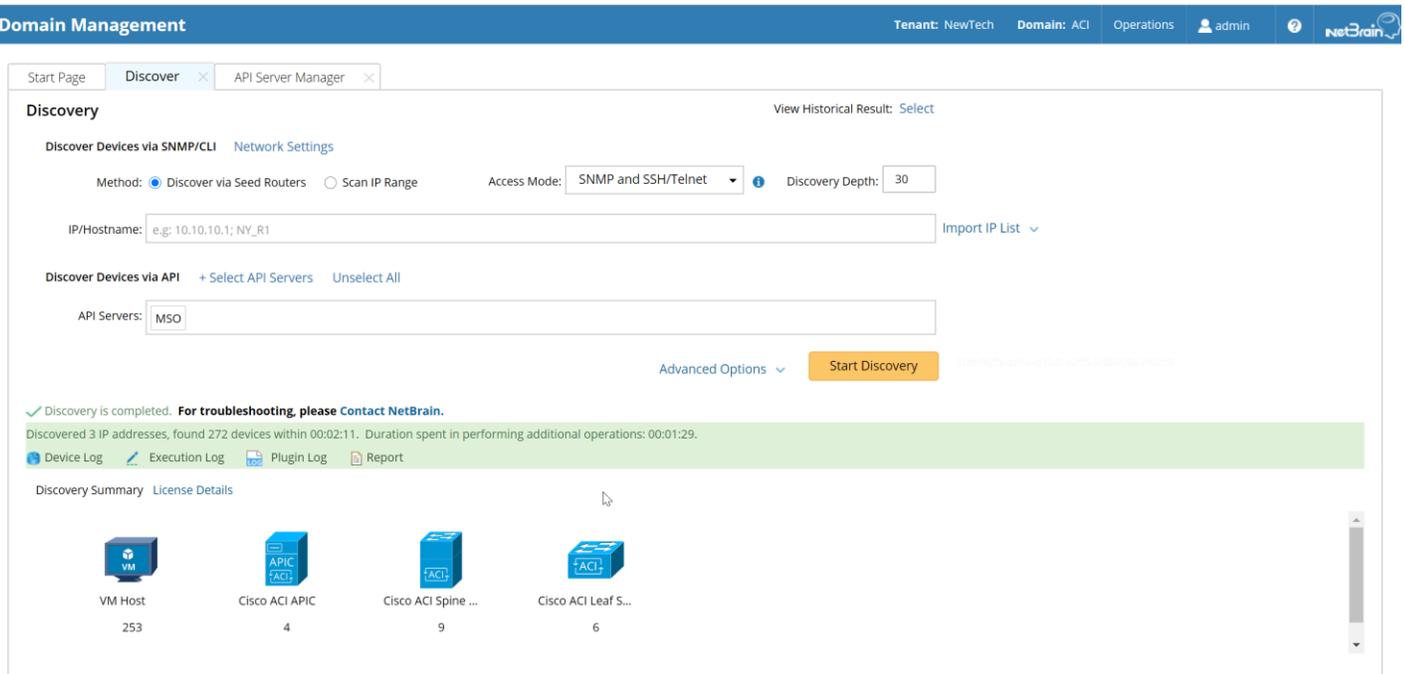
**Note:** Make sure that the port 7086 of your NetBrain Front Server is not occupied by other applications, because this port is used by the service components of a Front Server to communicate with each other.

- 9) Click **OK**.
- 10) Add APIC Controllers of each ACI Site.

**Tip:** Refer to **Add an ACI Controller** in [Discovering ACI Single Site in NetBrain Domain](#) for details.

## 2. Discover Your ACI Network

- 1) In the Domain Management page, select **Operations > Discover** from the quick access toolbar.
- 2) Click **Select API Servers** and select MSO server from the list.
- 3) Click **Start Discovery**.



The screenshot shows the NetBrain Domain Management interface. At the top, there's a navigation bar with 'Domain Management' and user information. The main content area is titled 'Discovery' and has tabs for 'Discover' and 'API Server Manager'. Under 'Discover', there are two sections: 'Discover Devices via SNMP/CLI' and 'Discover Devices via API'. The 'Discover Devices via API' section is active, showing 'API Servers: MSO' and a 'Start Discovery' button. Below this, a green banner indicates 'Discovery is completed. For troubleshooting, please Contact NetBrain.' and 'Discovered 3 IP addresses, found 272 devices within 00:02:11. Duration spent in performing additional operations: 00:01:29.' The bottom section shows a 'Discovery Summary' with icons and counts for VM Host (253), Cisco ACI APIC (4), Cisco ACI Spine (9), and Cisco ACI Leaf (6).

**Note:** Selecting MSO as API Server is adequate to complete the multi-site discovery, as all sites belonging to the MSO will be auto discovered by NetBrain.

**Note:** The SDN discovery only retrieves basic data of your network and builds L3 topology. After the discovery, you need to execute a benchmark task to retrieve all data and build all components, including visual spaces and data views. See [Auto-Updating ACI Data in NetBrain through Benchmark](#) for details.

## 1.4. Auto-Updating ACI Data in NetBrain through Benchmark

The discovery only retrieves basic data of your ACI network and builds L3 topology. After the discovery, you need to execute a benchmark task to retrieve all data and build all components, including visual spaces and data views.

**Example:** Benchmark Cisco ACI Fabric in a NetBrain Domain.

1. On the Start Page, click **Schedule Task**.
2. On the **Schedule Discovery/Benchmark** tab, click **Add Benchmark Task**.
3. On the **Frequency** tab, define the task frequency.
4. On the **Device Scope** tab, check the **Select external API servers to retrieve data of SDN nodes** check box and select controllers.

The screenshot shows the 'Device Scope' configuration page in NetBrain. The 'Select Device' section is checked, and the 'All Devices' radio button is selected. The device list includes Router(1), L3 Switch(3), Firewall(1), and End System(47). The 'Select external API servers to retrieve data of SDN nodes' checkbox is checked. Below this, a table lists the selected API servers:

<input checked="" type="checkbox"/>	API Source Type	Server Name	Endpoint	Description
<input checked="" type="checkbox"/>	Cisco ACI	AC1	https://192.168.48.211	
<input checked="" type="checkbox"/>	Cisco ACI	AC2	https://192.168.48.145	

5. On the **Retrieve Live Data** tab, select the **Cisco ACI** check box.

The screenshot shows the 'Retrieve Live Data' configuration window. At the top, there are three tabs: 'Frequency', 'Device Scope', and 'Retrieve Live Data' (which is highlighted in blue). Below the tabs, there is a section for 'Stop retrieving after' with a text input field containing '0' and the label 'Minutes'. Below this is a scrollable list of device types, each with a main checkbox and a 'Basic Data' sub-option. The 'Cisco ACI' main checkbox and its 'Basic Data' sub-option are both checked. Other device types listed include VMware NSX-V, VMware vCenter, Versa SD-WAN, VMware VeloCloud SD-WAN, AVI, ACI MSO, Viptela SD-WAN, and Ruckus SmartZone, all of which have their main checkboxes unchecked.

- Stop retrieving after  Hours  Minutes
- ▶  VMware NSX-V
  - Basic Data
- ▶  Cisco ACI
  - Basic Data
- ▶  VMware vCenter
  - Basic Data
- ▶  Versa SD-WAN
  - Basic Data
- ▶  VMware VeloCloud SD-WAN
  - Basic Data
- ▶  AVI
  - Basic Data
- ▶  ACI MSO
  - Basic Data
- ▶  Viptela SD-WAN
  - Basic Data
- ▶  Ruckus SmartZone
  - Basic Data

6. On the **Additional Operation After Benchmark** tab, select all the check boxes in the **Build Topology** and **Rebuild Visual Space** areas.

The screenshot shows the 'Edit Benchmark Task' window with the following details:

- Task Name: test
- Description: [Empty]
- Navigation tabs: Frequency, Device Scope, Retrieve Live Data, CLI Commands, **Additional Operations after Benchmark**, Plugins, Summary
- Checkboxes:
  - L2 Overlay Topology
- System Operations:

Enable	Operation Name
<input type="checkbox"/>	Recalculate Dynamic Device Groups
<input type="checkbox"/>	Recalculate Site
<input type="checkbox"/>	Build Default Device Data View
<input type="checkbox"/>	Qualify Data View Templates
- Rebuild Visual Space:

Enable	Operation Name
<input checked="" type="checkbox"/>	Visual Space Templates\Built-in Visual Space Templates\ACI Application
<input checked="" type="checkbox"/>	Visual Space Templates\Built-in Visual Space Templates\ACI Overlay
<input checked="" type="checkbox"/>	Visual Space Templates\Built-in Visual Space Templates\Default Visual Space
<input checked="" type="checkbox"/>	Visual Space Templates\Built-in Visual Space Templates\ESXi Host to Network
<input checked="" type="checkbox"/>	Visual Space Templates\Built-in Visual Space Templates\ESXi Physical and Virtual Relationship
<input checked="" type="checkbox"/>	Visual Space Templates\Built-in Visual Space Templates\NSX Relationship of Components Visual Space
<input checked="" type="checkbox"/>	Visual Space Templates\Built-in Visual Space Templates\NSX Transport Zone View Network Visual Space

Buttons: Cancel, Submit

7. Click **Submit**.