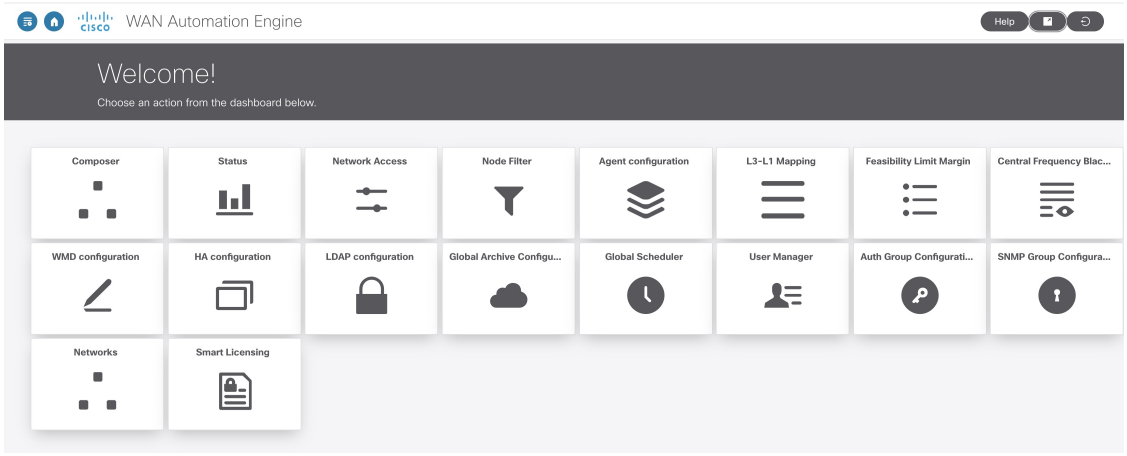
Network Model Configuration—Cisco WAE UI

This section contains the following topics:

Cisco WAE UI Overview

The Cisco WAE UI provides an easy-to-use configuration tool for device and network access, network model creation, user management, agent configuration, and so on.

For basic network model configuration we recommend starting with the Network Model Composer. You can also choose to perform certain operations using the Expert Mode or the Cisco WAE CLI. Regardless of the interface you use, the last committed configuration is saved.



Note Make sure that only a single session is active per user. Multiple sessions per user can create issues and is not recommended.

Icons	Description	For more information, see...
	Returns you to the main Cisco WAE UI landing page.	—
Composer	Opens the Network Model Composer, which lets you create and build a network model.	Use the Network Model Composer, on page 8
Status	The Status Dashboard helps to identify processes that cause system leaks or processes that completely use the resources.	Status Dashboard
Network Access	Opens the network access configuration page, which lets you configure global device and network credentials.	Configure Network Access Using the Cisco WAE UI, on page 4
Node Filter	Open Node Filter page which lets you to exclude or include individual nodes from collection.	Configure the Node Filter using Cisco WAE UI, on page 6
Agent Configuration	Opens the agent configuration page, which lets you create and modify agents.	Configure Agents Using the Cisco WAE UI, on page 6
L3-L1 Mapping	Opens the L3-L1 mapping configuration page, which lets you create and modify L3-L1 node and circuit mappings for multilayer collection.	Configure L3-L1 Mapping Information
Feasibility Limit Margin	Opens the feasibility limit margin configuration page, which lets you set the acceptable quality of the L1 circuit path.	"L1 Circuit Wavelengths" topic in the Cisco WAE Design User Guide.
Central Frequency Blacklists	Opens the central frequency blacklist configuration page, which lets you define the list of frequency IDs that may not serve as central frequency IDs for L1 circuit paths.	"L1 Circuit Wavelengths" and "Central Frequency ID Blacklist" topic in the Cisco WAE Design User Guide.
WMD configuration	Opens the WMD configuration page, which lets you view WMD options such as debugging, rpc and application subscriber connections, demands, and so on. To edit these options, use the Expert Mode or WAE CLI or WAE UI.	Cisco WAE Modeling Daemon (WMD) Configuration
HA configuration	Opens the high availability (HA) configuration page, which lets you designate which nodes are used for HA.	Configure High Availability
LDAP configuration	Opens the LDAP configuration page, which lets you enable and configure LDAP details.	• Configure LDAP • Configure LDAP Using the WAE UI
Global Archive Configuration	Opens Global Archive page from where plan files can be downloaded.	Download Plan Files, on page 15

Icons	Description	For more information, see...
Global Scheduler	Opens Global Scheduler page which lets you to create a scheduled task.	Schedule Jobs Using the Network Model Composer, on page 14
User Manager	Opens the user management page, which lets you add, modify, and delete users.	Manage Users
Auth Group Configuration	Opens Auth Group Configuration page which lets you create a new authorization group.	Configure Network Access Using the Cisco WAE UI, on page 4
SNMP Group Configuration	Opens SNMP Group Configuration page which lets you create a new SNMP group.	Configure Network Access Using the Cisco WAE UI, on page 4
Networks	Opens Networks page which lets you to create a standalone network.	Create a Standalone Network, on page 7
Smart Licensing	Opens Smart Licensing page that allows you to enable and register smart license for Cisco WAE.	Cisco Smart Licensing
	Toggles the main Cisco WAE UI navigation menu on the left (also called the left sidebar menu).	—
	Launches the Online Help for Cisco WAE UI in a new tab. **Note** Documents are sometimes updated after original publication. Refer to the Cisco WAE 7.2.1 User Guide document on Cisco.com for latest updates.	—
	Launches the Expert Mode in another window.	Network Model Configuration—Expert Mode
	Logs the current user out.	—

Configure a Network Model Using the Cisco WAE UI

This workflow describes the high-level steps to create a network model using the Cisco WAE UI and the Network Model Composer.

Note In order for a network model configuration that was created using the Expert Mode or Cisco WAE CLI to appear in the Cisco WAE UI, it should be an aggregated network or added as a source to an aggregated network.

Step	For more information, see...
1. Configure device credentials (network authgroups and SNMP groups).	Configure Network Access Using the Cisco WAE UI, on page 4
2. (Optional) Create agents to collect specific information. Agents are needed for collecting information using XTC or for multilayer collection.	Configure Agents Using the Cisco WAE UI, on page 6
3. (Optional) Create a network which is not a DARE network	Create a Standalone Network, on page 7
Use the Network Model Composer to do the following:	
3. Create a network model and run topology collection.	Create a Network and Configure Topology Collection, on page 9
4. Configure additional data collections using NIMOs.	Configure Additional NIMOs Using the Network Model Composer, on page 10
5. Aggregate NIMOs to build a network.	Consolidate NIMO Collections Using the Network Model Composer, on page 11
6. (Optional) Configure traffic collection and customer scripts to run in your network.	Run Traffic Collection or a Custom Script Using the Network Model Composer, on page 12
8. (Optional) Configure archives.	Configure the Archive Using the Network Model Composer, on page 13
7. (Optional) Create scheduling jobs to run network collections and agents.	Schedule Jobs Using the Network Model Composer, on page 14

Configure Network Access Using the Cisco WAE UI

In this task, you are defining global device credentials by creating a network access profile.

Before you begin

Know the global network device credentials.

Step 1 From the WAE UI, click Network Access.

Step 2 Click **+ Create Network Access**.

Step 3 Enter the global device credentials:

- **Name**—Enter a name for the network access profile.
- **Login Type**—Choose which login protocol to use: SSH or Telnet. The SSH protocol is more secure. The Telnet protocol does not encrypt the username and password.
- **Authorization Group**—Choose default or create a new authorization group. If creating a new authorization group, enter a name for it and applicable information in the fields that follow.

Note You can also create a new Authorization Group directly from WAE UI. From Cisco WAE UI, select **Auth Group Configuration** and click **Create Auth Group** . Enter the details and click **Save**.

Step 4 Choose default or create a new SNMP group. If creating a new SNMP group, enter a name for it and select either SNMPv2c or SNMPv3.

Note You can also create a new SNMP Group directly from WAE UI. From Cisco WAE UI, select **SNMP Group Configuration** and click **Create SNMP Group**. Enter the details and click **Save**.

- If SNMPv2c, enter the SNMP RO community string that acts as a password. It is used to authenticate messages sent between the node and the seed router.
- If SNMPv3, enter the following default credentials:
  - **Security Level**—Select one of the following:
    - **noAuthNoPriv**—Security level that does not provide authentication or encryption. This level is not supported for SNMPv3.
    - **authNoPriv**—Security level that provides authentication but does not provide encryption.
    - **authPriv**—Security level that provides both authentication and encryption.
  - **Authentication Protocol and Password**—Select one of the following:
    - **md5**—HMAC-MD5-96 authentication protocol
    - **sha**—HMAC-SHA-96 authentication protocol
  - **Encryption Protocol and Password**—The priv option offers a choice of DES or 128-bit AES encryption for SNMP security encryption. The priv option and the aes-128 token indicates that this privacy password is for generating a 128-bit AES key #.The AES priv password can have a minimum of eight characters. If the passphrases are specified in clear text, you can specify a maximum of 64 characters. If you use the localized key, you can specify a maximum of 130 characters.

Step 5 Click **Save**.

Step 6 (Optional) To add or edit nodes associated with these network access credentials, do the following:

a) Click the **Edit Node Access** button and do one of the following:

- To Export a node list, click  .
- To import a node list, click  , and enter the CSV file path in **file-path** field and click **Done**. This overwrites nodes that were previously configured.

  Note Make sure that the CSV file is located on the server where WAE is installed.

- To add a node, click  , and enter node details.
- To edit a node, select a node, click  , and enter node details.
- To delete a node, select a node, click  .

b) Click **Done**.

Step 7 Click **Save**.

What to do next

Use the Network Model Composer to create a network model.

Configure Agents Using the Cisco WAE UI

Agents perform information-gathering tasks and should be configured before certain network collection operations. This section describes how to configure agents using the Cisco WAE UI.

Step 1 From the Cisco WAE UI, click Agent Configuration.

Step 2 Click **Create New Agent**.

Note Telemetry and Netflow agents are created with default config. You cannot add a new telemetry or a netflow agent. However, you can change or delete the configuration by clicking on the card.

To delete other agents use the trash icon.

Step 3 Enter a name for the agent.

Step 4 From the Collector Type drop-down list, select a collector.

Step 5 Click **Create Agent**.

Step 6 On the next window, enter applicable agent configuration values. To view field descriptions, hover the mouse pointer over the field name.

Step 7 Click **Save**.

Step 8 To run the agent, click **Actions** > **run-collection**.

What to do next

Use the Network Model Composer to configure NIMOs to build a network model. For more information on NIMO types, see NIMO Descriptions.

Configure the Node Filter using Cisco WAE UI

Cisco WAE UI enables you to include or exclude individual nodes from collection.

Note

- Node name/loopback IP can be added for node filter list, management IP must not be added in node filter IPs.
- Node name works with ISIS.
- OSPF database does not have node names, so filtering only works by IP address.
- Node filter does not support Segment List hops.

Step 1 From the Cisco WAE UI, click Node Filter.

Step 2 Click **Create Node Filter**.

Step 3 Enter the **Name** name for the Node Filter.

Step 4 Use the **Regex** option when multiple nodes are to be included/excluded with a single expression. Enter **Regex** and choose INCLUDE ONLY or EXCLUDE ONLY from **Regex Filter** dropdown.

Note Choose IGNORE FILTER if using **Node Filter** option.

Step 5 Alternatively, instead of **Regex**, you can add IPs or node names for each node. For this choose INCLUDE ONLY or EXCLUDE ONLY from **Node Filter** dropdown.

Click **Add New Node** to list the nodes to be included or excluded. You can select multiple nodes using comma as a separator.

Note Choose IGNORE FILTER if using **Regex** option.

Step 6 Click **Save**.

Create a Standalone Network

Use the following steps to create a separate network which is not a DARE network.

Step 1 From the Cisco WAE UI, click **Networks**.

Step 2 Click **Create New Network**.

Step 3 Enter a name for the network.

Note The network model name cannot be changed after it is entered.

Step 4 Click **Create Network**.

Note After network creation, the type of network is 'unknown'. You need to configure the network.

Step 5 Click the new network that you just created.

Step 6 Click **Choose NIMO Type** and select a NIMO from the drop down list. Click **Next**.

Step 7 Click the Collector icon to configure collection.

Step 8 Enter applicable configuration details. Hover the mouse pointer over each field to view field descriptions.

Step 9 Click **Save**. You are brought back to the main network model window.

Step 10 Click **Archive Config** to archive the configuration.

a) Enter the **Archive Path**
b) In the **Include NetInt Tables** field, select true or false.
c) Enter values for cleanup action.
d) Click **Save**.

Note Use different directories for different network archives. Using the same directory for multiple archives can cause loss/corruption of plan files.

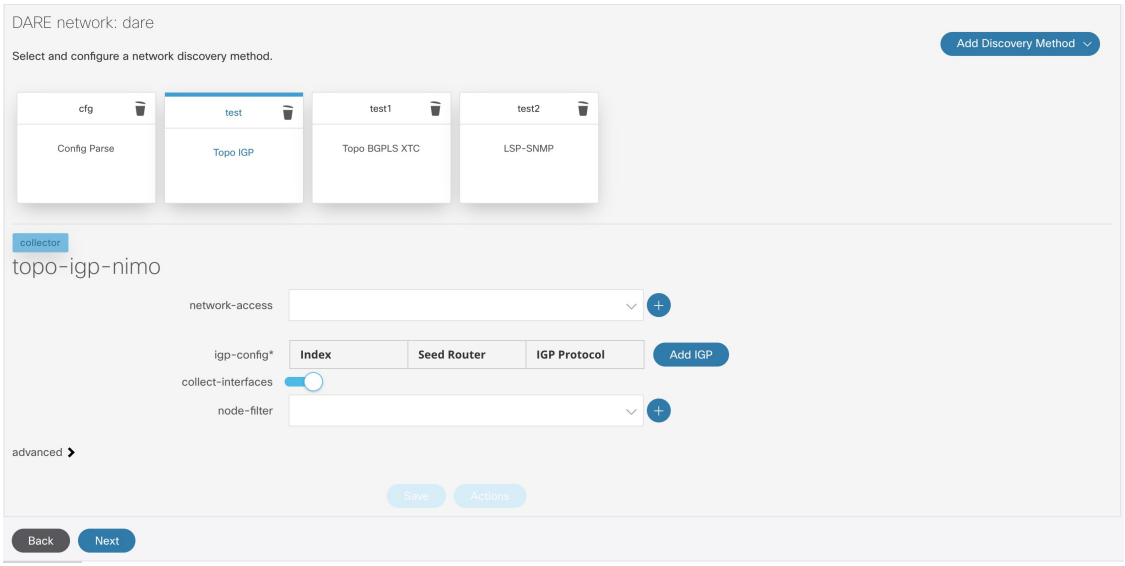
Step 11 Click the Collector icon and click **Actions**.

Step 12 Click the button that will start the NIMO collection (typically "run-collection").

Use the Network Model Composer

The Network Model Composer hides the complexity of network model configuration. It provides a visual workflow to guide you from creating a network model using various NIMOs to setting up a schedule to run collections and configuring an archive to store the network model plan files.

The Network Model Composer provides the following general controls.



Add section on the right of the screen starts the process of creating a network model, an agent, a NIMO, a scheduled task, or an archive.

The numbered navigation at the top of the page displays where you are in the network model configuration process. As you complete each step, you may click on a step that you may want to skip or go back to.

The network model you are configuring - collections (NIMOs), scheduling tasks, or archives for is displayed on the left area followed by configured components (NIMOs, scheduling tasks, or archives) that have been created for the selected network model.

The configuration options for the selected component is displayed at the bottom.

Create a Network and Configure Topology Collection

The initial step in configuring a complete network model is to create a new network with topology collection. In this task, you are configuring a topology collection that will be the source network for additional network collections. After the initial collection, the node IP address table is populated and you can add management IP addresses. For more information on basic topology collections, see Basic Topology Collection.

Note It is recommended that you configure network access and any necessary agents as described in Configure a Network Model Using the Cisco WAE UI, on page 3 before you use the Network Model Composer. However, you have the opportunity to configure network access and agents in the Network Model Composer.

Step 1 From the Cisco WAE UI, click Network Model Composer.

Step 2 Click **+ Create New Network**.

Step 3 Enter a network model name and click **Create Network**.

Note The network model name cannot be changed after it is entered.

Step 4 Click **Add Discovery Method**.

Step 5 Enter a **Name** for the collector and select a NIMO from the **Type** dropdown.

To select from an existing network, click **Existing network** checkbox and choose **Name** and **Type** from the dropdown.

Note Name of the collector must not include any space.

Step 6 Click **+ Add**.

Step 7 Click the topology icon (Topo IGP or Topo BGPLS XTC or SR Traffic Matrix) to configure collection.

Step 8 Enter applicable configuration details. Hover the mouse pointer over each field to view field descriptions.

Step 9 Select **node-filter** from the dropdown. If you have not defined a node-filter, click **+** and enter the details. Choose between Include Filter, Exclude Filter and Ignore Filter. See Configure the Node Filter using Cisco WAE UI, on page 6

Step 10 Click **Save**. You are brought back to the main network model window.

Step 11 Click the topology icon (Topo IGP or Topo BGPLS XTC) again.

Step 12 Click **Actions** and select one of the following:

- **run collection** or **run-xtc-collection**—Starts collection.
- **Update Node List**—Allows you to delete, add, or edit existing nodes.
- **Done**—Takes you back to the previous window.

Step 13 Click **Save**.

What to do next

You can configure more collections using other NIMOs to create a complete network model.

Configure Additional NIMOs Using the Network Model Composer

This topic describes the general procedure to configure additional NIMOs using the Network Model Composer. For NIMO descriptions, see NIMO Descriptions.

Note

- The term "Collector" is displayed in the Network Model Composer when you are prompted to enter or select a NIMO. The terms NIMO and Collector are used interchangeably in the Network Model Composer.
- Configure additional topology NIMOs at this step. It is recommended that non-topology NIMOs (layout, inventory, demand deduction, and so on) are configured in the external-executable-nimo after topology aggregation.

Before you begin

Confirm that the network model you are working with has a basic topology NIMO configured.

Step 1 From the Cisco WAE UI, click Network Model Composer and click a network model that you want to configure a NIMO for.

Step 2 Click **Add Discovery Method**.

Step 3 Enter a **Name** for the collector and select a NIMO from the **Type** dropdown.

To select from an existing network, click **Existing network** checkbox and choose **Name** and **Type** from the dropdown.

Note Name of the collector must not include any space.

Step 4 Click + **Add**.

Step 5 Click the Collector icon to configure collection.

Step 6 Enter applicable configuration details. Hover the mouse pointer over each field to view field descriptions.

Note You can also refer to the Network Interface Modules (NIMOs) topic. This topic links to NIMOs and associated configuration options.

Step 7 Click **Save**. You are brought back to the main network model window.

Step 8 Click the Collector icon and click **Actions**.

Step 9 Click the button that will start the NIMO collection (typically "run-collection").

What to do next

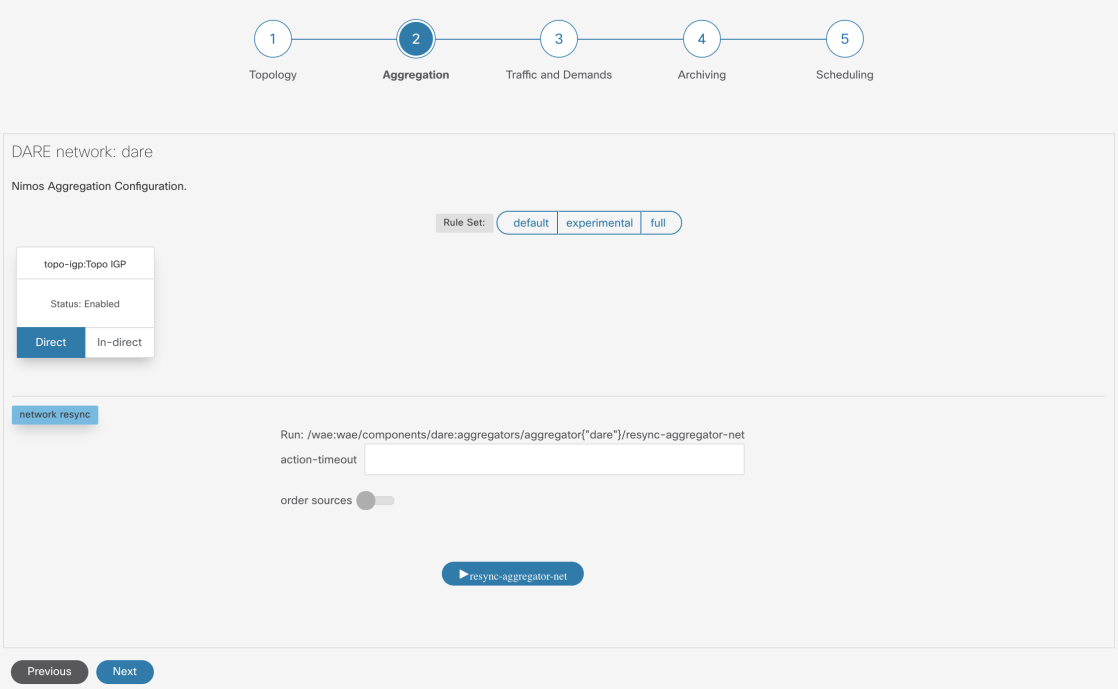
You can do the following:

- Configure and run more collections
- Consolidate NIMO Collections Using the Network Model Composer

Consolidate NIMO Collections Using the Network Model Composer

After you configure multiple NIMOs, you will want to consolidate all the collection models to build a complete network model. After NIMO aggregation, you can collect traffic statistics (traffic-poll-nimo) and run custom scripts (external-executable-nimo) against your network model.

Figure 1: Network Model Composer—Aggregation



Step 1 Click Network Model Composer and choose a network model.

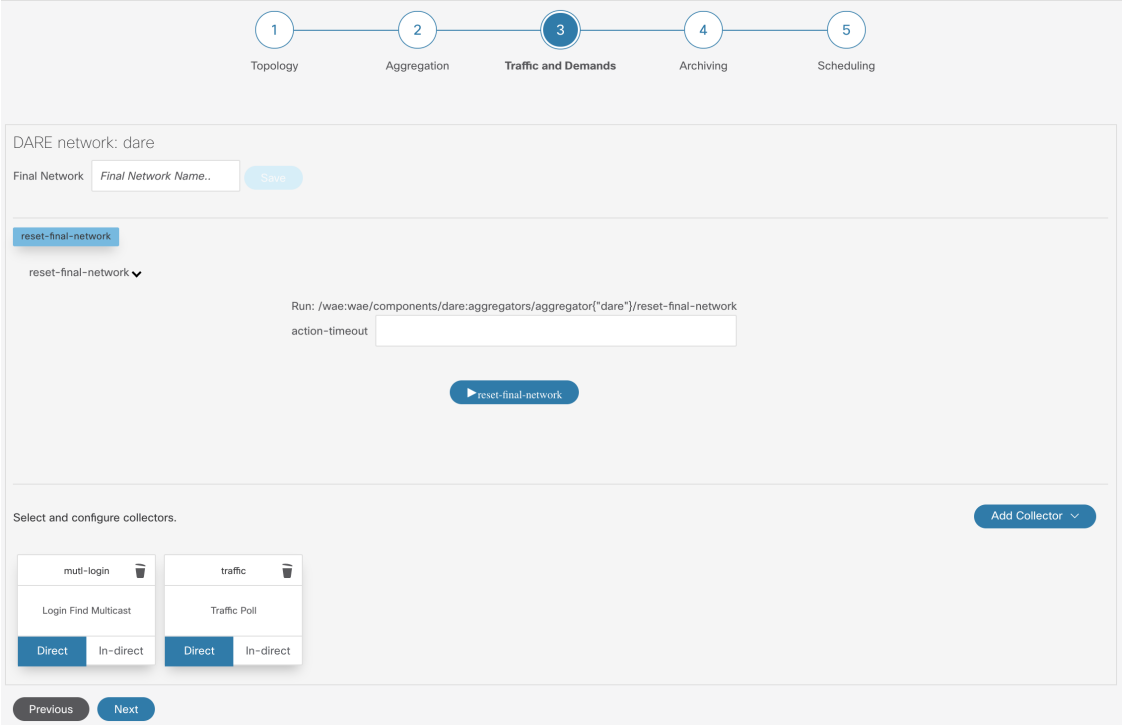
Step 2 Click the **Aggregation** icon from the top navigation bar. The Aggregation page should look similar to the one above.

Step 3 By default, all NIMOs are included in the aggregation. To exclude any NIMOs from aggregation, click **Indirect**. Any changes on that collection model will not be included during aggregation.

Step 4 In the **network rebuild** section, you can choose to modify the order of the sources. Enable **order source** and use the arrows to change the order from the **Ordered Sources** list. For more information on aggregation, refer to the NIMO Collection Consolidation topic.

Run Traffic Collection or a Custom Script Using the Network Model Composer

Figure 2: Network Model Composer—Traffic and Demands



Before you begin

Confirm you have completed the preliminary tasks described in Configure a Network Model Using the Cisco WAE UI, on page 3 and have aggregated collection models.

Step 1 Click Network Model Composer and choose a network model.

Step 2 Click **Traffic and Demands**.

Step 3 (Optional) In the **Final Network** field, type a name to configure the final SAGE network and click **Save**.

Leave the **Final Network** field blank if you do not want to configure a SAGE network.

Note Click **reset-final-network** to reset the final network.

Step 4 Click **Add Collector**.

Step 5 Enter a **Name** for the collector and select a NIMO from the **Type** dropdown.

To select from an existing network, click **Existing network** checkbox and choose **Name** and **Type** from the dropdown.

Note Name of the collector must not include any space.

Step 6 Click **Add**. The new collector appears.

Step 7 Click the collector you just created.

Step 8 Enter applicable configuration details. Hover the mouse pointer over each field to view field descriptions.

Step 9 Click **Save**. You are brought back to the main network model window.

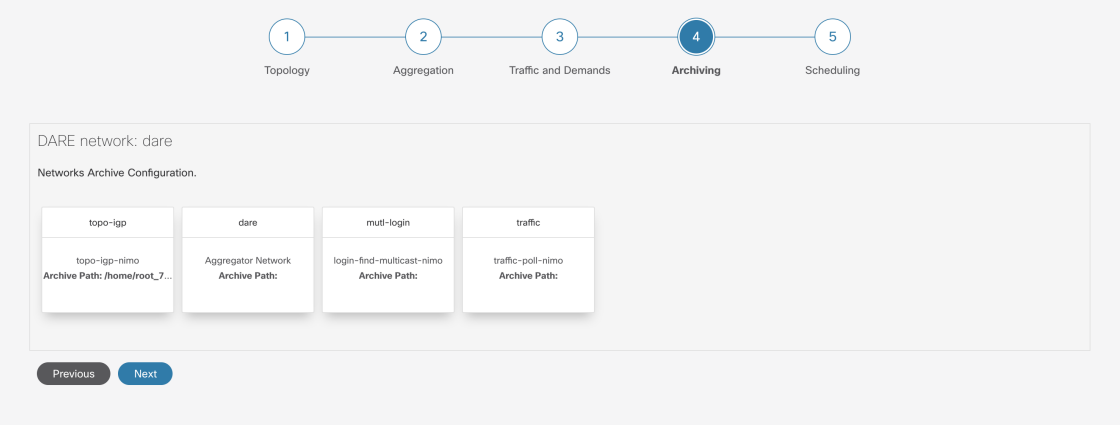
Configure the Archive Using the Network Model Composer

After creating a network model and running collections, you have the option to retrieve and view plan files. Plan files capture all relevant information about a network at a given time, and can include topology, traffic, routing, and related information.

The Archive is a repository for plan files. See also Configure the Archive Using the WAE CLI, which describes how to configure the Archive using the Cisco WAE CLI.

Note To schedule archiving, see Schedule Jobs Using the Network Model Composer, on page 14

Figure 3: Network Model Composer - Archiving



Step 1 Click Network Model Composer and choose a network model.

Step 2 Click **Archiving**.

Step 3 Click a NIMO or the network model you want to configure the archive for.

Step 4 The Archive path might be populated if they were configured when the network was initially created. If not, or if you want to change them, enter new values.

Step 5 Select the source that the Archive will retrieve from.

Step 6 In the Cleanup section, select a value for **Enable** field and enter **Retain Number of Days** value.

Step 7 Click **Save**.

Step 8 Click **Enable** to enable the archive.

Note Archiving must be configured first before it is enabled.

Schedule Jobs Using the Network Model Composer

This procedure describes how to schedule different network collections and agents to run using the Network Model Composer. For more information on additional scheduling jobs and configuration options that can be configured using the Expert Mode, see Scheduler Configuration.

Figure 4: Network Model Composer - Scheduling

Step 1 Click Network Model Composer and choose a network model.

Step 2 Click **Scheduling**.

You can also create a scheduled task directly from WAE UI. From Cisco WAE UI, select **Global Scheduler** and click **+ Create Scheduled Task**. Enter a name for the scheduler and click **Create Scheduled Task**. Click the new scheduler you just created and enter the necessary details.

The **Global Scheduler** page lists all the schedulers that are configured irrespective of the network.

Step 3 Click **Add Scheduler**.

Step 4 Enter a name for the scheduling job.

Step 5 Click **Add**.

Step 6 Click the scheduling job icon.

Step 7 To add an action, click  and enter an action name.

Step 8 Enter the order number in the **order** field.

Step 9 Choose whether the action will be performed on a NIMO or agent or an aggregated network.

Step 10 Select the NIMO or agent or Aggregated network from the drop-down list.

Step 11 If the action-type and path fields are not populated, enter applicable values.

Step 12 Click **Save**.

Step 13 (Optional) Add more actions.

Step 14 To add a trigger, click  and enter a trigger name.

Step 15 Select **Every**. In the **Run Every** field, enter the time interval and select the appropriate unit of time.

If you are familiar with cron configuration, select **Cron Expression** and configure the time interval to run the actions.

Step 16 Click **Save**.

Step 17 Click **Run Task**.

Note Each action is done in the order it is listed and configured.

Download Plan Files

The network model is saved in a plan file (.pln format) which can be downloaded.

Before you begin

Make sure that archive has been configured.

Step 1 From the Cisco WAE UI, click **Global Archive Configuration**.

Step 2 Use **TimeZone** option to change the default value to your local time zone. For example, +530, -7, etc. Click **Add Time Zone**.

Step 3 Click the network that you have configured for archiving.

Step 4 Month view of the calendar opens. Click the date for which you intend to download the plan file.

Step 5 Day view opens along with the list of .pln files that are archived.

Step 6 Click the .pln file to download the file.