Design Your Service

In the design phase of SAE, you create service definitions for virtual and physical services that you have identified to be part of your service design. Next, you create service chains by connecting the services. Consumers connect with providers through service chains.

The **Service Design** area is where you create services and service chains.

List View for Services and Service Chains

Step 1	Click **Configuration** at the top-right corner of the homepage.
Step 2	Click **Service Design**.
Step 3	Depending on your requirement, click one of the following tabs: **Virtual Services**, **Physical Services**, or **Service Chains**.
	Your services or service chains are displayed in card format by default, where each card represents a service or a service chain.
Step 4	Click the **List View** to view your services or service chains in a list format.

Add a Virtual Service

Service definitions include the following information about the virtual service: type of service, vendor, compute information, deployment flavors, storage profiles, and so on.

Step 1	Click **Configuration** at the top-right corner of the homepage.
Step 2	Choose **Service Design** > **Virtual Service**.

Your existing virtual services are displayed in card view by default. Click **List View** to view your existing virtual services as a list.

Step 3   Click **Add**.

Alternatively, click   to copy an existing service and edit and save it with a new name.

Step 4   Provide the requested information.
   a) **Name:** Enter the name of your service.
   b) **Service Type:** Specify the service type, such as, router, firewall, and so on. Based on the service type you select, the destination file may be auto-populated for some of the type.
   c) **Vendor:** Enter the name of the service provider. Example: Cisco, AVI, Fortinet and so on.
   d) **Version:** Enter the product version.
   e) **Software Version:** Version of the software used for the product.
   f) **Product Name:** Enter the product name of the service. Example: Cisco ASAv, CSR and so on.
   g) **Product Information:** Provide a description for the service.
   h) **VIM Type:** The server type where this service will be hosted.

Step 5   Click + next to **Flavor(s)**. In the section that expands, enter the required information.

Alternatively, click   to copy an existing flavor and edit and save it with a new name.

Click   to delete an existing flavour.

Table 1: Properties

Field	Description
Name	Enter a name for the flavor.
Description	Enter a description.
Virtual Memory	Enter the virtual memory in GB.
Virtual CPU	Enter the number of CPUs to be allocated to the service.

Storage: Click + to expand the field and enter the storage in GB to be allocated for this service.

Table 2: Image

Field	Description
Name	Enter the name of the software image.
URL	Provide the url to the software image.
Version	Enter the version number of the software image.
Disk Format	Choose one of the disk formats: qcow2, raw, vmdk.
Disk Type	Choose the disk type to be used while deploying the service. The options are ide or Virtio. However, we recommend you to use Virtio.

Field	Description
Serial Console	Choose True or False to enable or disable serial console connectivity to the service.

Day 0 Configuration Files

According to the **Service Type** selected the day0 file (bootstrap file) name will be auto populated.

- If applicable, click + to expand the field.

- Filename: Enter the name of the day-0 file as used in the service.

Table 3: Device Management Protocol

Field	Description
Device Type	From the drop-down list, choose one of the following: generic, netconf, CLI or none. NSO uses your selected protocol to communicate with the service and depending on the options chosed the **Protocol** and **Port** fields are displayed.
NED ID	From the drop-down, choose the NED ID that NSO should use to communicate with the service. The drop-down list only shows the NED IDs that have already been loaded on NSO.
Protocol	The protocol is used by NSO to communicate with this service. **Note** For **CLI** device type, choose from the drop-down list any one of the following protocol: Telnet or SSH.
Port	The port number is auto-populated according to you selction.

Table 4: VNIC

Field	Description
Name	Enter a name for the VNIC.
Interface-ID	Enter interface ID. This is the interface ID that is used within the service.
Management	Select the Management checkbox if this interface will be used for managing the service.
Logical Interface	Select this checkbox if the interface you are adding is a logical interface. This interface is used to create interfaces, which are not directly associated with a physical interface.

Field	Description
BIT Rate Requirement	Enter the bit rate that the interface requires. This information is used for computing used bandwidth of this VNIC when this interface is mapped to a physical link. **Note** If you don't specify the bit rate at the time of creating a service chain, the service chain bandwidth is used as the interface bandwidth.
Internal Virtual Link Descriptor	From the drop-down, choose any one of the following: inside, outside, out-inside or out-outside.
NW Type	From the drop-down, choose SRIOV or VIRTIO interface for the service.
NIC Type	Select a NIC type from the drop-down list. This is the physical NIC for this interface while mapping it to a physical port. You can select multiple NIC types using the multi select option. In such a case either of the NIC types may be used. If you don't select a NIC type, any of the available NICs is used. Note: It is recommended that you choose a single NIC type.

Table 5: Network Capabilities

Field	Description
Name	The GUI generates a random name for each new requirement.
Network Capabilities	You can configure one or more key-value pairs for each requirement.

Click **Add More VNICs** link at the right bottom corner to add additional VNICs.

Step 6   (Optional) Click **Validate** to verify that you have entered all the information on the page correctly. If not, an error report displays. Correct the errors, if any.

Step 7   Click **Save**.

Click ![icon] to export an existing virtual service.

Click ![icon] to go to the existing service instance card view page.

Click ![icon] an existing service to view and edit its details.

Click ![icon] to delete an existing virtual service.

Click **Back** to go back to the previous page.

What to do next

Repeat this procedure to add or seach any other services that you plan to include in your service chain.

On **Search Service**, enter the name of the service you want to search in the card view.

Click **Import** next to **Add** to import all the virtual service instances.

Click **Export** to export all the physical service instances in JSON or XML format.

Add a Physical Service

Service definitions include the following information about the service: name of service, vendor, geographical location information, funcion description, and so on.

Table 6: Feature History

Feature Name	Release Information	Description
Physical Service	Cisco SAE GUI Release 2.2.0	This feature enables you to add, export, import,and delete a physical service.

Step 1 Click **Configuration** at the top-right corner of the homepage.

Step 2 Choose **Service Design** > **Physical Service**.

Step 3 Your existing physical services are displayed in card view by default. Click **List View**to view your existing physical services as list.

Step 4 Click **Add**.

Alternatively, click ⬚ to copy an existing service and edit and save it with a new name.

Step 5 Provide the requested information.
   a) **Name:** Enter the name of your service.
   b) **Vendor:** Enter the name of the service provider. Example: Cisco, AVI, Fortinet and so on
   c) **Version:** Enter the product version.
   d) **Geographical Location Info:** Enter the geographical location of the physical network function.
   e) **Function Description:** Provide a description for the service.

Step 6 Click + next to **External Connection Point Descriptor**. In the section that expands, enter the required information.

Table 7: Properties

Field	Description
Name	Enter a name for the External Connection Point Descriptor
Interface ID	Enter the value of the interface ID

Step 7   (Optional) Click **Validate** to verify that you have entered all the information on the page correctly. If not, an error report displays. Correct the errors, if any.

Step 8   Click **Save** to save the service.

Click ⬇ to export an existing physical service.

Click ◆ to go to the existing service instance card view page.

Click ▣ an existing service to view and edit its details.

Click 🗑 to delete an existing physical service.

Click **Back** to go back to the previous page.

What to do next

Repeat this procedure to add or search any other services that you plan to include in your service chain.

On **Search Service**, enter the name of the service you want to search in the card view.

Click **Import** next to **Add** to import all the physical service instances.

Click **Export** to export in bulk all the physical service instances in JSON or XML format.

Create Service Chains

Consumers and providers connect through end-to-end, full service chains, or through two half chains that are connected. Typically, half service chains separate consumers and providers on the basis of trust and network speed.

Service chain creation can be broken down into the following steps.

1. Add services that you to include in your service chain.

2. Add external connections for your service chain. For end-to-end service chains, you should create one consumer endpoint, and one provider endpoint.

3. Connect the services to each other. Services are connected to each other through internal connections. When you draw a connection between services, the pop-up menu to add information about internal connections displays.

4. Connect the external connections to the services.

Limitations for Creating Service Chains Through the GUI

- Service chain flavors cannot be created using the SAE GUI. Although you can create service chain flavors using CLI, it is not recommended because such service chains will not be supported in the GUI.

- If you have created service chains using CLI, the UI supports them only if they have the configuration that is supported by the UI. For example, service chain flavors that are created using the CLI are not supported on the UI.

- Any service chains created using CLI must be edited in the Service Design area. You may have to reorder some of the services and draw connections between endpoints and services, if they are missing. Unless this step is completed for service chains created using CLI, you will not be able to deploy these chains using the GUI.

Step 1   Click **Configuration** at the top-right corner of the homepage.

Step 2   Choose **Service Design** > **Service Chain**.

Step 3   Click **Add**.

Alternatively, click to copy an existing service chain and edit and save it with a new name.

Step 4   Provide the requested information.

a) **Name:** Enter a name for your service chain.

b) **NSD Group Name:** From the drop-down list, choose any one of the NSD group name or you can enter your own group name for the service.

c) **NSD Version:** Enter the NSD Version for your service chain.

Step 5   Click + next to **Affinity** to expand the section and provide the requested information.

The following table shows the different combinations of affinity type and affinity scope and the resulting affinity behavior.

Affinity Type	Affinity Scope	Result
Affinity	server	The services are placed on the same CSP server
Affinity	zone	The services are placed on CSP servers within the same zone
Anti-affinity	server	The services will not be placed on the same CSP server
Anti-affinity	zone	The services will not be placed on servers in the same zone.

Step 6   **Note**   You can choose to add virtual service and the add physical service or vice-versa depending on your requirement. Follow te below steps to add virtual service:

Click **Add Virtual Service**. Select a virtual service from the list of services.

Step 7   Choose the service flavor, Management VNIC, and Affinity from the drop-down lists.

Step 8   Click **OK**.

Repeat steps 6-7 as many times as needed until you have added all the virtual services that will be part of your service chain.

Step 9   **Note**   The next step is to add physical service.

Click **Add Physical Service** and choose the pysical service from the drop-down list.

Step 10   Click **OK**.

Repeat steps 9 as many times as needed until you have added all the physical services that will be part of your service chain.

Step 11   **Note**   The next step is to add external connections. You need to add two external connections, one for each end of the service chain.

Click **Add External Connection** and provide the required information.

a) **Name:** Enter a name for your external connection.
b) **SAPD:** Choose a Service Access Point Descriptor (SAPD) from the drop-down list. For end-to-end service chains, choose consumer from the drop-down list. For half chains, choose chain from the drop-down list.

Repeat step 11 to add the second external connection. For end-to-end service chains, choose provider from the SAPD drop-down list. For half chains, choose chain again.

At this point, you should see all the services you want included in the service chain on the screen. You should also have two external connections.

Step 12   Ensure that the external endpoints and the services are arranged in a sequence from left to right, starting from the consumer-endpoint and ending with the provider-endpoint, with services in the middle.
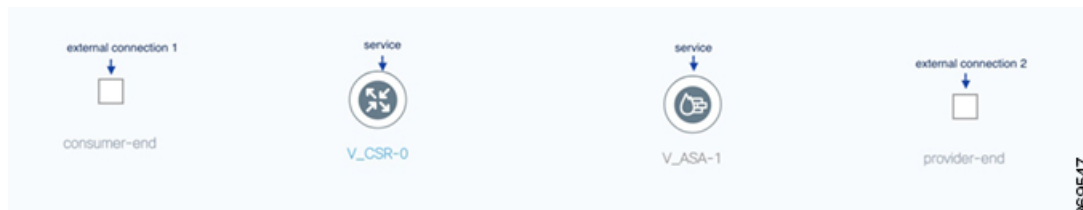

Step 13   In this step, you will connect the endpoints and services to form a service chain. There are two ways of connecting the components.

• Connect the services to each other first and then connect the endpoints to the services.

• Start from the left and connect the first endpoint to the first service. Next, connect the service to the other services in the sequence, and then connect the last service in the sequence to the other endpoint.

You can choose any way of connecting the endpoints and services. This topic shows the first option.

Step 14   To connect the services to each other, click the first service in the sequence. The connectors display around the service. Drag one of the connectors towards the other. The internal connection pop-up menu displays. Provide the requested
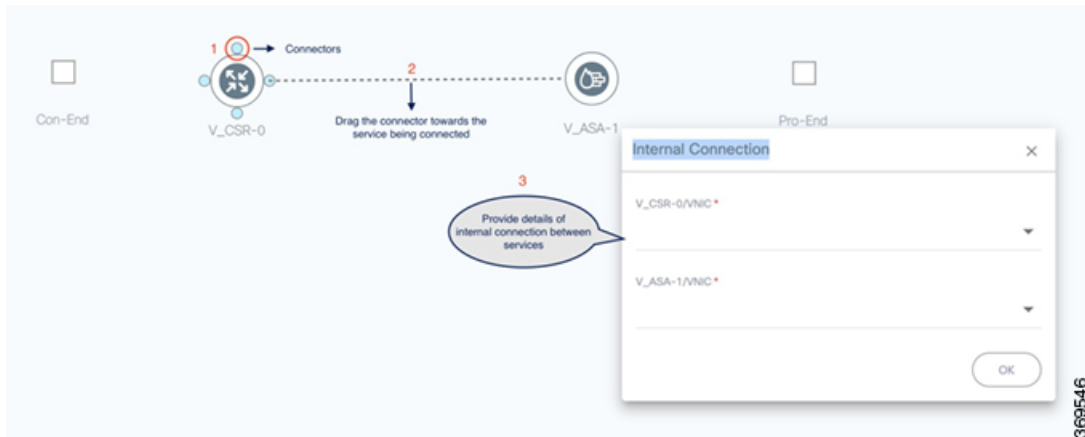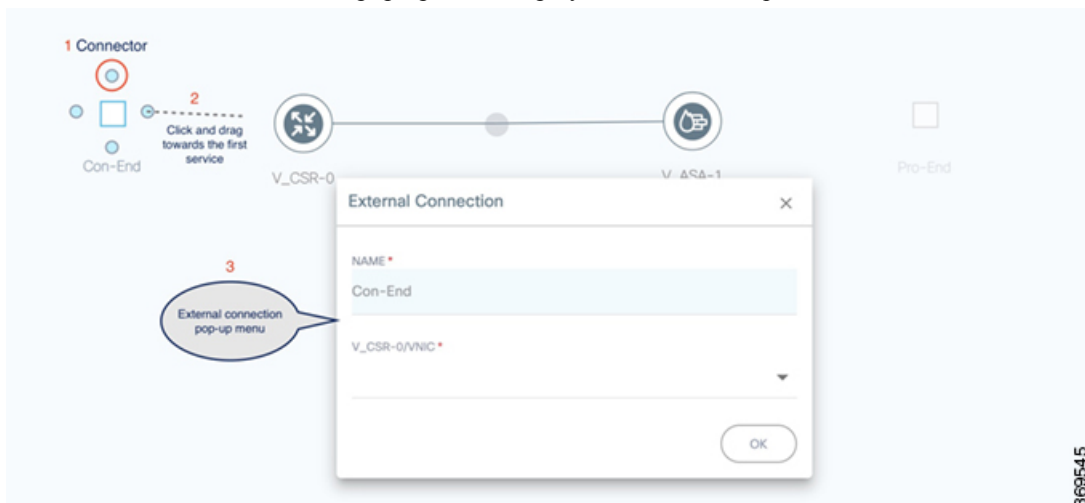

information.

Repeat step 14 to connect any other services to each other.

Note   • When you are creating a service chain diagram by connecting all the components together, ensure that the diagram is placed at the center of the page. This placement is crucial because how the service chain displays at the time of deployment depends on this placement.

• Place the consumer endpoint to the left of the services you are connecting, and the provider endpoint to the right.

Step 15   Click the endpoint on the left to view its connectors. Click and drag any of the four connectors toward the first service in the service chain. The external connection pop-up menu displays. Provide the requested


information.

Step 16   Click the endpoint on the right to view its connectors. Click and drag any of the four connectors towards the last service in the service chain. The external connection pop-up menu displays. Provide the requested information.

Step 17   (Optional) Click **Validate** to verify your inputs.

Step 18   Click **Save** to save the service chain.

Step 19   **Note**   Click the eye icon on the top right corner to view the SAPDs.

When all your services and endpoints are connected, the service chain should look as follows.
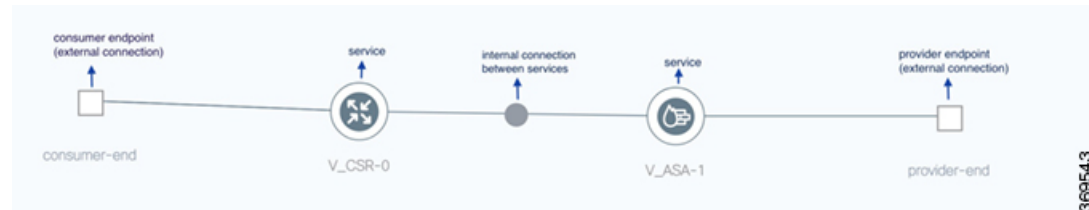
What to do next

Repeat this procedure to create any other service chains.

Click **Back** to go back to the previous page.

Note   On the existing service chain, you can do the following tasks:

Click an existing service to view and edit its details. You cannot edit the service chain name however, you can redraw the service chain.

Click the download icon to export an existing service.

Click ⬚ on a service chain to delete it.

On **Search Service**, enter the name of the service you want to search in the card view.

Click **Import** next to **Add** to import the backup file.

Click **Export** next to **Import** to export in bulk all the physical service instances in JSON or XML format.

Note   When you delete a service chain, it goes to the list of deleted chains, from where you must delete it again to remove it permanently.

Import and Export Services and Service Chains

This topic describes the following:

- How to import services and service chains individually or in bulk.

- How to export individual services and service chains.

To be able to import files, they should be in XML format. Similarly, the files are also exported in XML format.

Step 1   Click **Configuration** at the top-right corner of the homepage

Step 2   Click the **Service Design** > **tab**.

Step 3   Depending on your requirement, click one of the tabs: **Virtual Service**, **Physical Service**, or **Service Chains**

Action	Result
Click **Virtual Service**	Your virtual services are displayed in card view. **Import Virtual Services in Bulk** • Click the **Import** button to import XML files containing configuration for single or multiple virtual services. **Export Virtual Services in Bulk** • Click the **Export** button to export your existing virtual services in bulk in JSON and XML. **Export Individual Virtual Services** • Click the ⬇ icon on the card of the virtual service to export in JSON and XML.
Click **Physical Service**	Your physical services are displayed in card view. **Import Physical Services in Bulk** • Click the **Import** button to import XML files containing configuration for single or multiple physical services. **Export Physical Services in Bulk** • Click the **Export** button to export your existing physical services in bulk in JSON and XML. **Export Individual Physical Services** • Click the ⬇ icon on the card of the virtual service to export in JSON and XML.
Click **Service Chains**	Your existing service chains are displayed in card view. **Import Service Chains in Bulk** • Click the **Import** button to import XML files containing configuration for single or multiple service chains. **Export Service Chain in Bulk** • Click the **Export** button to export your existing service chain in bulk in JSON and XML. **Export Individual Service Chains** • Click the ⬇ icon on the card of the virtual service to export in JSON and XML.