# Create Templates to Automate Device Configuration Changes

# About Template Editor

Cisco DNA Center provides an interactive editor called Template Editor to author CLI templates. You can design templates easily with a predefined configuration by using parameterized elements or variables. After creating a template, you can reuse the template to deploy your devices in one or more sites that are configured anywhere in your network.

With Template Editor, you can:

- Create, edit, and delete a template
- Add interactive commands
- Validate errors in templates
- Version control the templates for tracking purposes
- Simulate templates

**Note** Be careful that your template does not overwrite a network-intent configuration pushed by Cisco DNA Center.

# Create Projects

**Step 1**     Click the menu icon ( ☰ ) and choose **Tools** > **Template Editor**.

**Step 2**     In the left pane, click  ⊕  > **Create Project**.

The **Add New Project** slide-in pane appears.

**Step 3**     In the **Name** field, enter a name for the project.

**Step 4**     (Optional) In the **Description** field, enter a description for the project.

**Step 5**     Click **Add**.

The project is created and appears in the left pane.

# Create Templates

Templates provide a method to easily predefine configurations using parameter elements and variables. Templates allow an administrator to define a configuration of CLI commands that can be used to consistently configure multiple network devices, reducing deployment time. Variables in the template allow customization of specific settings per device.

## Create a Regular Template

**Step 1**     Click the menu icon ( ☰ ) and choose **Tools** > **Template Editor**.

**Note**          By default, the **Onboarding Configuration** project is available for creating day-0 templates. You can create your own custom projects. Templates created in custom projects are categorized as day-N templates.

**Step 2**     In the left pane, select the project under which you are creating templates.

**Step 3**     Click the gear icon ⚙ and choose **Add Template** in the left pane.

**Note**          The template that you create for day-0 can also be applied for day-N.

**Step 4**     Configure the settings for the regular template:

   a)   For **Template Type**, leave the option set to **Regular Template**.
   b)   For **Template Language**, choose either the **Velocity** or **Jinja** language to be used for the template content.
   c)   In the **Name** field, enter a unique name for the template.
   d)   (Optional) In the **Description** field, enter a description for the template.
   e)   In the **Tags** field, click the drop-down list and choose tags for your template.

**Note** Tags are like keywords that help you locate your template more easily.

If you use tags to filter the templates, you must apply the same tags to the device to which you want to apply the templates. Otherwise, you get the following error during provisioning: `Cannot select the device. Not compatible with template.`

f) For **Device Type (s)**, click **Edit** to choose the device types that you want this template to apply to.

The **Select Device Type(s)** slide-in pane appears. By default, all device types are displayed.

**Note** • In the **Select Device Type(s)** slide-pane, you can toggle between the **Full Device List** view and **Favorite Devices** view.

• In the **Full Device List** view each device model in the device type hierarchy is sorted alphabetically.

• Use the **Find** feature to quickly search for the device by entering the device name or expand the device type and check the check boxes next to the device types that you want to apply to the template.

To view the devices that are selected, choose **Selected** from the **Show** drop-down list.

There are different granularity levels for selecting the device type from the hierarchical structure. The device type is used during provisioning to ensure that templates are deployed to devices that match the specified device-type criteria. This lets you create specialized templates for specific device models.

Template Editor does not show device product IDs (PIDs); instead, it shows the device series and model description. You can use cisco.com to look up the device data sheet based on the PID, find the device series and model description, and choose the device type appropriately.

g) In the hierarchy, expand the device type and click the star mark appearing next to the device model that you want mark as favorite.

**Note** You can toggle to **Favorite Devices** view to view the list of favorite marked device models.

h) After selecting device types, click **Back to Add New Template**.

i) For **Software Type**, click the drop-down list and choose the software type.

**Note** For more information on the Cisco Wireless Controller supported software versions and the minimum supported version, see the Cisco DNA Center Compatibility Matrix.

For example, if you select IOS as the software type, the commands apply to all software types, including IOS-XE and IOS-XR. This value is used during provisioning to check whether the selected device conforms to the selection in the template.

j) In the **Software Version** field, enter the software version.

**Note** During provisioning, Cisco DNA Center checks to see if the selected device has the software version listed in the template. If there is a mismatch, the template is not provisioned.

**Step 5** Click **Add**.

The template is created and appears under the project you selected in the left pane.

**Step 6** You can edit the template content by selecting the template that you created in the left pane. For more information about editing the template content, see Edit Templates, on page 6.

## Blocked List Commands

Blocked list commands are commands that cannot be added to a template or provisioned through a template. If you use blocked list commands in your templates, it shows a warning in the template that it may potentially conflict with some of the Cisco DNA Center provisioning applications.

The following commands are blocked in this release:

- **router lisp**
- **hostname**

## Sample Templates

Refer to these sample templates while creating variables for your template.

### Configure Hostname

```
hostname$name
```

### Configure Interface

```
interface $interfaceName
description $description
```

### Configure NTP on Cisco Wireless Controllers

```
config time ntp interval $interval
```

# Create a Composite Template

Two or more regular templates are grouped into a composite sequence template. You can create a composite sequential template for a set of templates, which are applied collectively to devices. For example, when you deploy a branch, you must specify the minimum configurations for the branch router. The templates that you create can be added to a single composite template, which aggregates all the individual templates that you need for the branch router. You must specify the order in which templates that are in the composite template are deployed to devices.

**Note** You can add only a committed template to a composite template.

**Step 1** Click the menu icon ( ≡ ) and choose **Tools** > **Template Editor**.

**Step 2** In the left pane, select the project under which you are creating templates.

**Step 3** Click the gear icon 🔧 > **Add Template** in the left pane.

The **Add New Template** slide-in pane appears.

**Step 4** Configure the settings for the composite template:

a) For **Template Type**, choose **Composite Sequence** for a composite template.

b) For **Template Language**, choose either the **Velocity** or **Jinja** language to be used for the template content.

c) In the **Name** field, enter a unique name for the template.

d) (Optional) In the **Description** field, enter a description for the template.

e) In the **Tags** field, click the drop-down list and choose tags for your template.

> **Note**     Tags are like keywords that help you locate your template more easily.
>
> f you use tags to filter the templates, you must apply the same tags to the device to which you want to apply the templates. Otherwise, you get the following error during provisioning: Cannot select the device. Not compatible with template.

f) For **Device Type (s)**, click **Edit** to choose the device types that you want this template to apply to.

The **Select Device Type(s)** slide-in pane appears. By default, all device types are displayed.

> **Note**     • In the **Select Device Type(s)** slide-pane, you can toggle between the **Full Device List** view and **Favorite Devices** view.
>
> • In the **Full Device List** view each device model in the device type hierarchy is sorted alphabetically.

> • Use the **Find** feature to quickly search for the device by entering the device name or expand the device type and check the check boxes next to the device types that you want to apply to the template.
>
> To view the devices that are selected, choose **Selected** from the **Show** drop-down list.

g) In the hierarchy, expand the device type and click the star mark appearing next to the device model that you want mark as favorite.

> **Note**     You can toggle to the **Favorite Devices** view to view the list of favorite marked device models.

h) After selecting device types, click **Back to Add New Template**.

i) For **Software Type**, click the drop-down list and choose the software type.

> **Note**     You can select the specific software type (such as IOS-XE or IOS-XR) if there are commands specific to these software types. If you select IOS as the software type, the commands apply to all software types, including IOS-XE and IOS-XR. This value is used during provisioning to check whether the selected device confirms to the selection in the template.

j) In the **Software Version** field, enter the software version.

> **Note**     During provisioning, Cisco DNA Center checks to see if the selected device has the similar software version listed in the template. If there is a mismatch, the provision skips the template.

**Step 5**     Click **Add**.

The composite template is created and appears under the project you selected in the left pane.

**Step 6**     Click the composite template that you created in the left view pane.

**Step 7**     In the **Template Editor** window, drag and drop templates from the left pane to order or sequence the templates.

The templates are deployed based on the order in which they are sequenced. You can change the order of templates in the **Template Editor** window.

| Note | By default, the **Applicable** option is chosen in the **View** filter. Only the applicable templates that can be added to the composite template are shown in the **Template Editor** window. You can choose the **All** option in the **View** filter to view all the templates in the **Template Editor** window. In the **All** option view, the templates that match the chosen device types and software version are marked by a plus icon. |
|------|---|
|      | You can drag and drop templates that have the same device type, software type, and software version as that of the composite template. |

**Step 8** To cancel the deployment process upon failure of the first template, select the first template in the **Template Editor** window and check the **Abort sequence on targets if deployment fails** check box.

**Step 9** From the **Actions** drop-down list, choose **Commit** to commit the template content.

# Edit Templates

After creating a template, you can edit the template to include content.

**Step 1** Click the menu icon ( ≡ ) and choose **Tools** > **Template Editor**.

**Step 2** In the left pane, choose the template that you want to edit.

The **Template Editor** window appears.

**Step 3** In the **Template Editor** window, enter the template content. You can have a template with a single-line configuration or a multi-select configuration.

**Step 4** From **Template Language**, choose the language with which to write the content:

- **Velocity**: Use the Velocity Template Language (VTL). For information, see http://velocity.apache.org/engine/devel/vtl-reference.html.

  The Velocity template framework restricts the use of variables that start with a number. Make sure that the variable name starts with a letter and not with a number.

  | Note | Do not use the dollar ($) sign while using the velocity templates. If you have used the dollar($) sign, any value behind it is treated as a variable. For example, if a password is configured as "$a123$q1ups1$va112", then the Template Editor treats this as variables "a123", "q1ups", and "va112". To workaround this issue, use Linux shell style for text processing with Velocity templates. |
  |------|---|

  | Note | Use the dollar ($) sign in the velocity templates only when declaring a variable. |
  |------|---|

- **Jinja**: Use the Jinja language. For information, see https://www.palletsprojects.com/p/jinja/.

**Step 5** From the **Actions** drop-down list, choose **Check for errors** to validate the template.

Cisco DNA Center checks for these errors and reports them:

- Language syntax errors.

- Conflicts with blocked list commands. For more information, see Blocked List Commands, on page 4.

**Step 6** From the **Actions** drop-down list, choose **Save**.

After saving the template, Cisco DNA Center checks for any errors in the template. If there are any syntax errors, the template content is not saved and all input variables that are defined in the template are automatically identified during the save process. The local variables (variables that are used in **for** loops, assigned though a set, and so on) are ignored.

**Step 7**      From the **Actions** drop-down list, choose **Commit**.

> **Note**      You can associate only a committed template to a network profile.
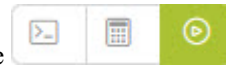
## Template Simulation

The interactive template simulation lets you simulate the CLI generation of templates by specifying test data for variables before sending them to devices. You can save the test simulation results and use them later, if required.

**Step 1**      Click the menu icon ( ☰ ) and choose **Tools** > **Template Editor**.

**Step 2**      From the left pane, expand a project and click a template to run a simulation for.

The template appears.

**Step 3**      In the top-right corner, click the **Simulator Editor** toggle [icon] .

**Step 4**      Click the **Actions** drop-down list and choose **Create Simulation**.

The **Simulation Input** form appears.

**Step 5**      In the **Simulation Name** field, enter a name for the simulation.

> **Note**      If there are implicit variables in your template then click **edit** link to select a device or site in the **Simulation Input** form to run the simulation against real devices based on your bindings.

**Step 6**      In the **Simulation Input** form, complete the required fields, and click **Run**.

The results are displayed in the **Template Preview** window.

## Export Template(s)

You can export a template or multiple templates to a single file, in JSON format.

**Step 1**      Click the menu icon ( ☰ ) and choose **Tools** > **Template Editor**.

**Step 2**      In the left pane, select the template that you want to export. Choose ⚙ > **Export**.

- To export multiple templates under a project, select a project in the left pane and choose ⚙ > **Export Template(s)**.

  Select the templates from the **Export Template(s)** window and, click **Export**.

- To export multiple templates under different projects, click ⊕ > **Export Project(s)**, in the left pane.

Select the templates to be exported, from the **Export Project(s)** window, and click **Export**.

**Step 3**     Click **Save**, if prompted.

The latest version of the template is exported.

To export an earlier version of the template, open the template from **Actions** > **Show History** > **View**.

Click **Actions** > **Export**.

# Import Template(s)

You can import a template or multiple templates under a project.

**Step 1**     Click the menu icon ( ☰ ) and choose **Tools** > **Template Editor**.

**Step 2**     In the left pane, select a project to which you want to import the template(s). Choose ⚙ > **Import Template(s)**.

**Step 3**     Click **Select a File from your computer** on the **Import Template(s)** window and browse to the location of your JSON template file.

**Step 4**     Select the JSON file and click **Open**.

The template is imported under the selected project. If a template with the same name exists, Cisco DNA Center displays an error message and does not import the template.

**Note**        To import a template with the same name as an existing one, check the **Create new version of imported template/project when template/project with the same name already exists in the hierarchy** check box on the **Import Template(s)** window.

Selecting this option creates a new version of the existing template.

# Clone a Template

You can make a copy of a template to reuse portions of it.

**Step 1**     Click the menu icon ( ☰ ) and choose **Tools** > **Template Editor**.

**Step 2**     In the left pane, select the template that you want to export. Choose ⚙ > **Clone**.

**Step 3**     Enter the name of the cloned template in the **Name** field of the **Clone Template** window.

**Step 4**     Choose a project from the **Project Name** drop-down list.

**Step 5**     Click **Clone**.

**Step 6**     To commit the cloned template, select the template from the left pane of the window and click **Actions** > **Commit**.

The latest version of the template is cloned.

To clone an earlier version of the template, open the template from **Actions** > **Show History** > **View**.

Click **Actions** > **Clone**.

# Export Project(s)

You can export a project or multiple projects, including their templates, to a single file in JSON format.

**Step 1**    Click the menu icon ( ☰ ) and choose **Tools** > **Template Editor**.

**Step 2**    In the left pane, select the project that you want to export. Choose ⚙ > **Export Project**.

To export projects in bulk, click ➕ > **Export Project(s)** in the left pane.

Select the projects to be exported and click **Export**.

**Step 3**    Click **Save**, if prompted.

# Import Project(s)

You can import a project or multiple projects with their templates, into the Cisco DNA Center Template Editor.

**Step 1**    Click the menu icon ( ☰ ) and choose **Tools** > **Template Editor**.

**Step 2**    In the left pane, click ➕ > **Import Project(s)**.

**Step 3**    Click **Select a File from your computer** on the **Import Project(s)** window and browse to the location of your JSON project file.

**Step 4**    Select the JSON file and click **Open**.

The project and its templates are imported. If a project with the same name exists, Cisco DNA Center displays an error message and does not import the project.

**Note**    To import a project with the same name as an existing one, check the **Create new version of imported template/project when template/project with the same name already exists in the hierarchy** check box on the **Import Project(s)** window.

Selecting this option creates a new version of the existing project.

# Template Form Editor

The Template form editor is used for adding additional metadata information to the template variables in the template. You can also use the form editor to provide validations for variables such as maximum length, range, and so on.

**Step 1**     Click the menu icon ( ≡ ) and choose **Tools** > **Template Editor**.

**Step 2**     From the left pane, expand a project and click a template.

The template appears.

**Step 3**     Click the **Form Editor** toggle                          .

The Form Editor enables you to add meta data to the template variables. All the variables that are identified in the template are displayed. You can configure the following metadata:

- Choose the variable and check the **Not a Variable** check box if you do not want the string to be considered as a variable.

- Enter the field name in the **Field Name** text box. This is the label that is used for the UI widget of each variable during provisioning.

- Enter the tooltip text that is displayed for each variable in the **Tooltip** text box.

- Enter the default value in the **Default Value** text box. This value appears during provisioning as the default value.

- Enter any instructional text in the **Instructional Text** text box. Instructional text appears within the UI widget (for example, **Enter the hostname here**). The text within the widget is cleared when you click the widget to enter any text.

- Choose the data type from the **Data Type** drop-down list: **String**, **Integer**, **IP Address**, or **Mac Address**.

- Check the **Required** check box if this is a required variable during the provisioning. All the variables by default are marked as Required, which means you must enter the value for this variable at the time of provisioning. If the parameter is not marked as **Required** and if you do not pass any value to the parameter, it substitutes an empty string at run time. A lack of a variable can lead to command failure, which may not be syntactically correct. If you want to make an entire command optional based on a variable not marked as **Required**, use the **if-else** block in the template.

- Choose the type of UI widget you want to create at the time of provisioning from the **Display Type** drop-down list: **Text Field**, **Single Select**, or **Multi Select**.

- Enter the number of characters that are allowed in the **Maximum Characters** text box. This is applicable only for the string data type.

**Step 4**     After configuring metadata information, from the **Actions** drop-down list, choose **Save**.

**Step 5**     After saving the template, you must version it. You must version the template every time you make changes to it. From the **Actions** drop-down list, choose **Commit**. The **Commit** window appears. You can enter a commit note in the **Commit Note** text box. The version numbers are automatically generated by the system.

**Step 6**     To view the history, from the **Actions** drop-down list, select **Show History** to view previously created and versioned templates.

A pop-up window appears.

- Click **View** in the pop-up window to see the content of the old version.

- Click **Edit** in the pop-up window to edit the template.

# Variable Binding

While creating a template, you can specify variables that are contextually substituted. Many of these variables are available in the Template Editor drop-down list.

Template Editor provides an option to bind or use variables in the template with the source object values while editing or through the input form enhancements; for example, DHCP server, DNS server, and syslog server.

Some variables are always bound to their corresponding source and their behavior cannot be changed. To view the list of implicit variables, click the **Template System Variables** link in the **Code Editor** or the **Form Editor** window.

The predefined object values can be one of the following:

- Network Profile
    - SSID
    - Policy profile
    - AP group
    - Flex group
    - Flex profile
    - Site tag
    - Policy tag

- Common Settings
    - DHCP server
    - Syslog server
    - SNMP trap receiver
    - NTP server
    - Timezone site
    - Device banner
    - DNS server
    - NetFlow collector
    - AAA network server
    - AAA endpoint server
    - AAA server pan network
    - AAA server pan endpoint
    - WLAN info
    - RF profile info

- Cloud Connect

- Cloud router-1 Tunnel IP

- Cloud router-2 Tunnel IP

- Cloud router-1 Loopback IP

- Cloud router-2 Loopback IP

- Branch router-1 Tunnel IP

- Branch router-2 Tunnel IP

- Cloud router-1 Public IP

- Cloud router-2 Public IP

- Branch router-1 IP

- Branch router-2 IP

- Private subnet-1 IP

- Private subnet-2 IP

- Private subnet-1 IP mask

- Private subnet-2 IP mask

- Inventory

  - Device

  - Interface

  - AP group

  - Flex group

  - WLAN

  - Policy profile

  - Flex profile

  - Webauth parameter map

  - Site tag

  - Policy tag

  - RF profile

- **Common Settings**: Settings available under **Design** > **Network Settings** > **Network**. The common settings variable binding resolves values that are based on the site to which the device belongs.

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**Step 1**  Click the menu icon ( ≡ ) and choose **Tools** > **Template Editor**.

**Step 2**  Choose the template and click the **Input Form** icon to bind variables in the template to network settings.

**Step 3**  Select the variables in the **Input Form** pane and check the **Required** check box to bind variables to the network settings.

**Step 4** From the **Display** drop-down list, choose the type of UI widget to create at the time of provisioning: **Text Field**, **Single Select**, or **Multi Select**.

**Step 5** To bind variables to network settings, select each variable in **Input Form**, and check the **Bind to Source** check box under **Content**.

- Choose the **Source**, **Entity**, and **Attributes** from the respective drop-down lists.

- For the source type **CommonSettings**, choose one of these entities: **dhcp.server**, **syslog.server**, **snmp.trap.receiver**, **ntp.server**, **timezone.site**, **device.banner**, **dns.server**, **netflow.collector**.

  You can apply a filter on the **dns.server** or **netflow.collector** attributes to display only the relevant list of **bind** variables during provisioning of devices. To apply a filter on an attribute, select an attribute from the **Filter by** drop-down list. From the **Condition** drop-down list, select a condition to match the **Value**.

- For the source type **NetworkProfile**, choose **SSID** as the entity type. The SSID entity that is populated is defined under **Design** > **Network Profile**. The binding generates a user-friendly SSID name, which is a combination of SSID name, site, and SSID category. From the **Attributes** drop-down list, choose **wlanid**. This attribute is used during the advanced CLI configurations at the time of template provisioning.

- For the source type **Inventory**, choose one of these entities: **Device**, **Interface**, **AP Group**, **Flex Group**, **Wlan**, **Policy Profile**, **Flex Profile**. For the entity type **Device** and **Interface**, the **Attribute** drop-down list shows the device or interface attributes. The variable resolves to the AP Group and Flex Group name that is configured on the device to which the template is applied.

  You can apply filter on the **Device**, **Interface**, or **Wlan** attributes to display only the relevant list of **bind** variables during provisioning of devices. To apply a filter on an attribute, select an attribute from the **Filter by** drop-down list. From the **Condition** drop-down list, select a condition to match the **Value**.

After binding variables to a common setting, when you assign templates to a wireless profile and provision the template, the network settings that you defined under **Network Settings** > **Network** appear in the drop-down list. You must define these attributes under **Network Settings** > **Network** at the time of designing your network.

**Step 6** If the template contains variable bindings that bind to specific attributes and the template code accesses those attributes directly, you must do one of the following:

- Change the binding to the object instead of to the attributes.
- Update the template code to not access the attributes directly.

For example, if the template code is as follows, where **$interfaces** binds to specific attributes, you must update the code as shown in the following example, or modify the binding to the object instead of to the attributes.

Old sample code:

```
#foreach ( $interface in $interfaces )
 $interface.portName
     description "something"
#end
```

New sample code:

```
#foreach ( $interface in $interfaces )
 interface $interface
         description "something"
#end
```

# Special Keywords

All commands executed through templates are always in the **config t** mode. Therefore, you do not have to specify the **enable or config t** commands explicitly in the template.

Day-0 templates do not support special keywords.

### Enable Mode Commands

Specify the **#MODE_ENABLE** command if you want to execute any commands outside of the **config t** command.

Use this syntax to add **enable mode** commands to your CLI templates:

```
#MODE_ENABLE
<<commands>>
#MODE_END_ENABLE
```

### Interactive Commands

Specify **#INTERACTIVE** if you want to execute a command where a user input is required.

An interactive command contains the input that you must enter following the execution of a command. To enter an interactive command in the CLI Content area, use the following syntax:

```
CLI Command<IQ>interactive question 1 <R> command response 1 <IQ>interactive question
2<R>command response 2
```

Where **<IQ>** and **<R>** tags evaluate the text provided against what is seen on the device.

The Interactive question uses regular expressions to validate if the text received from the device is similar to the text entered. If the regular expressions entered in the **<IQ><R>** tags are found, then the interactive question passes and a part of the output text appears. This means that you need to enter a part of the question and not the entire question. Entering Yes or No between the **<IQ>** and **<R>** tags is sufficient but you must make sure that the text Yes or No appears in the question output from the device. The best way to do this is by running the command on the device and observing the output. In addition, you need to ensure that any regular expression metacharacters or newlines entered are used appropriately or avoided completely. The common regular expression metacharacters are **. ( ) [ ] { } | * + ? \ $ ^ : &**.

For example, the following command has output that includes metacharacters and newlines.

```
Switch(config)# no crypto pki trustpoint DNAC-CA
% Removing an enrolled trustpoint will destroy all certificates received from the related
Certificate Authority
Are you sure you want to do this? [yes/no]:
```

To enter this in a template, you need to select a portion that does not have any metacharacters or newlines. Here are a few examples of what could be used.

```
#INTERACTIVE
no crypto pki trustpoint DNAC-CA<IQ>yes/no<R>yes
#ENDS_INTERACTIVE
```

```
#INTERACTIVE
no crypto pki trustpoint DNAC-CA<IQ>Removing an enrolled<R>yes
#ENDS_INTERACTIVE
```

```
#INTERACTIVE
no crypto pki trustpoint DNAC-CA<IQ>Are you sure you want to do this<R>yes
#ENDS_INTERACTIVE
```

```
#INTERACTIVE
crypto key generate rsa general-keys <IQ>yes/no<R> no
#ENDS_INTERACTIVE
```

Where **<IQ>** and **<R>** tags are case-sensitive and must be entered in uppercase.

**Note**　In response to the interactive question after providing a response, if the newline character is not required, you must enter the **<SF>** tag. Include one space before the **<SF>** tag. When you enter the **<SF>** tag, the **</SF>** tag pops up automatically. You can delete the **</SF>** tag because it is not needed.

For example:

```
#INTERACTIVE
config advanced timers ap-fast-heartbeat local enable 20 <SF><IQ>Apply(y/n)?<R>y
#ENDS_INTERACTIVE
```

### Combining Interactive Enable Mode Commands

Use this syntax to combine interactive **Enable Mode** commands:

```
#MODE_ENABLE
#INTERACTIVE
commands<IQ>interactive question<R> response
#ENDS_INTERACTIVE
#ENDS_END_ENABLE
```

```
#MODE_ENABLE
#INTERACTIVE
mkdir <IQ>Create directory<R>xyz
#ENDS_INTERACTIVE
#MODE_END_ENABLE
```

### Multiline Commands

If you want multiple lines in the CLI template to wrap, use the **MLTCMD** tags. Otherwise, the command is sent line by line to the device. To enter multiline commands in the CLI Content area, use the following syntax:

```
<MLTCMD>first line of multiline command
second line of multiline command
...
...
last line of multiline command</MLTCMD>
```

- Where **<MLTCMD>** and **</MLTCMD>** are case-sensitive and must be in uppercase.

- The multiline commands must be inserted between the **<MLTCMD>** and **</MLTCMD>** tags.

- The tags cannot start with a space.

- The **<MLTCMD>** and **</MLTCMD>** tags cannot be used in a single line.

# Associate Templates to Network Profiles

**Before you begin**

Before provisioning a template, ensure that the template is associated with a network profile and the profile is assigned to a site.

During provisioning, when the devices are assigned to specific sites, the templates associated with the site through the network profile appear in the advanced configuration.

**Step 1**    Click the menu icon ( ≡ ) and choose **Design** > **Network Profiles**, and click **Add Profile**.

The following types of profiles are available:

- **Firewall**: Click this to create a firewall profile.
- **Routing**: Click this to create a routing profile.
- **Switching**: Click this to create a switching profile.
  - Click the **Onboarding Templates** or **Day-N Templates**, as required.

  - In the **Profile Name** field, enter the profile name.

  - Click +**Add Template** and choose the device type, tag, and template from the **Device Type**, **Tag Name**, and **Template** drop-down lists.

    If you do not see the template that you need, create a new template in Template Editor. See .

  - Click **Save**.

- **Telemetry Appliance**: Click this to create a Cisco DNA Traffic Telemetry Appliance profile.
- **Wireless**: Click this to create a wireless profile. Before assigning a wireless network profile to a template, ensure that you have created wireless SSIDs.
  - In the **Profile Name** field, enter the profile name.

  - Click + **Add SSID**. The SSIDs that were created under **Network Settings** > **Wireless** are populated.

  - Under **Attach Template(s)**, from the **Template** drop-down list, choose the template that you want to provision.

  - Click **Save**.

**Note**    You can view the Switching and Wireless profiles in the **Cards** and the **Table** view.

**Step 2**    The **Network Profiles** window lists the following:

- **Profile Name**
- **Type**
- **Version**
- **Created By**
- **Sites**: Click **Assign Site** to add sites to the selected profile.

**Step 3**  For Day-N provisioning, choose **Provision** > **Network Devices** > **Inventory**.

a) Check the check box next to the device name that you want to provision.

b) From the **Actions** drop-down list, choose **Provision**.

c) In the **Assign Site** window, assign a site to which the profiles are attached.

d) In the **Choose a Site** field, enter the name of the site to which you want to associate the controller, or choose from the **Choose a Site** drop-down list.

e) Click **Next**.

f) The **Configuration** window appears. In the **Managed AP Locations** field, enter the AP locations managed by the controller. You can change, remove, or reassign the site. This is applicable only for wireless profiles.

g) Click **Next**.

h) The **Advanced Configuration** window appears. The templates associated with the site through the network profile appear in the advanced configuration.

  • Check the **Provision these templates even if they have been deployed before** check box if you overwrote any configurations from intent in the template, and you want your changes to override. (This option is disabled by default.)

  • The **Copy running config to startup config** option is enabled by default, which means that after deploying the template configuration, write mem will be applied. If you don't want to apply the running config to the startup config, you must uncheck this check box.

  • Use the **Find** feature to quickly search for the device by entering the device name, or expand the templates folder and select the template in the left pane. In the right pane, select values for those attributes that are bound to the source.

  • To export the template variables into a CSV file while deploying the template, click **Export** in the right pane. You can use the CSV file to make necessary changes in the variable configuration and import it into Cisco DNA Center at a later time by clicking **Import** in the right pane.

i) Click **Next** to deploy the template.

j) Choose whether you want to deploy the template **Now** or schedule it for later.
The **Status** column in the **Device Inventory** window shows SUCCESS after the deployment succeeds.

**Step 4**  Click **Export Deployment CSV** to export template variables from all the templates in a single file.

**Step 5**  Click **Import Deployment CSV** to import template variables from all the templates in a single file.

**Step 6**  For Day-0 provisioning, choose **Provision** > **Network Devices** > **Plug and Play**.

a) Choose a device and from the **Actions** drop-down list, choose **Claim**.

b) Click **Next**, and in the **Site Assignment** window, choose a site from the **Site** drop-down list.

c) Click **Next**, and in the **Configuration** window, choose the image and the Day-0 template.

d) Click **Next**, and in the **Advanced Configuration** window, enter the location.

e) Click **Next** to view the **Device Details**, **Image Details**, **Day-0 Configuration Preview**, and **Template CLI Preview**.