This chapter contains the following:

- What is a Baseline Template?
- Features of Baseline Templates
- Baseline Template Management Window
- Running Compliance Check
- Deploying a Baseline Template
- Using Compliance and Deploy Jobs Window

What is a Baseline Template?

Baselining refers to identifying a set of standardized policy based commands that you would want to have on a set of devices. You can create a Baseline template containing a set of commands identified through the baselining process. This template contains placeholders for device-specific values to be substituted.

For example:

```
set vtp domain [name] password [xxx]
set snmp community read-write [Read write community string]
```

Where `name`, `xxx` and `Read write community string` are variables that are substituted with the values you provide.

You can compare the Baseline template with the configuration of devices in the archive. You can also generate a non-compliance configuration report and deploy this template onto the devices to make it compliant. You can deploy a Baseline template to a group of devices by just scheduling one job.

When you add a new device of the same type to the network, you can use the existing Baseline template, which consists of two parts, command and values. You can create configurations for any device of the same type in the network by specifying the values for the variables in the Baseline template.
What is a Baseline Template?

Sample Input file for Baseline Template

You can use the following input file for creating Baseline template:

```xml
<?xml version="1.0" encoding="UTF-8" ?>
- <ConfigTemplate Name="Banner1" DeviceFamily="268437899,268438038" Version="1">
  - <Commandlet Name="Commands" ControlStmt="false" Parent="none" Submode="false">
    - <CommandInfo CheckType="1">
      <Command>banner motd "******************** WARNING ****************************
      <NL>This is a private system and only authorized individuals are allowed!
      <NL>All others will be prosecuted to the fullest extent of the law!
      "**************
    </CommandInfo>
    </Commandlet>
</ConfigTemplate>
```
Handling Multi-line Commands in Baseline

Multi-line commands should be separated with `<NL>` tag and should be in the same line within the template.

You can use the following command to run the compliance check. This is considered as a single line command:

Below is the command that the customer can use in the compliance check for this use case. Please note this is a single line command.

```
+ banner motd "************************* WARNING **************************************
<NL> This is a private system and only authorized individuals are allowed!<NL> All others
will be prosecuted to the fullest extent of the law!
<NL>***************************************************************************
```

Features of Baseline Templates

The features of Baseline templates are:

- You can use this Baseline template to compare with other device configurations and generate a report that lists all the devices that are non-compliant with the Baseline template.
- You can easily deploy the Baseline template to the same category of devices in the network.
- You can schedule a compliance check job and deploy the Baseline template on the non-compliant devices. This can be performed as a single job or as a separate job.
- You can import or export a Baseline template. This template is stored in XML format.

Rules for Specifying Baseline Templates

The rules for specifying the Baseline templates are:

- All the commands that are disallowed should begin with a “-”.
- All commands that are mandatory should begin with a “+”.
- All comment entries should begin with a “#”.
- Commands that do not begin with (- or +) are considered as comments and ignored.
- The command values can be a wildcard match.

  `+ ip address [ip-address] [netmask]`
  `+ ip address [#10.76.38...#] [netmask]`
  `+ ip address [#10.72...#] [netmask]`

To find a match for any octet in an IP address you must use `. . .*`

In the examples shown above, the command will apply for all the devices with the IP address starting with 10.76.38.* [netmask] and 10.72.*.* [netmask].

- The regular expressions must be enclosed with `#`

  For example:

  `snmp-server location [#.*#]`

  This command will fail compliance check for snmp-server location loc1 loc2 loc3, because the check will be performed only for one word after snmp-server location.
To overcome this, you have to define the command as:

```
+ [!snmp-server location.*!]
```

Then the compliance check will be performed for all forms of snmp-server commands like
```
snmp-server location loc1 loc2......n, etc.
```

### Negation in Regular expressions:

Example 1: When there are multiple entries in the configuration files.

Let us say, the commands in the device configuration are:

```
logging name1
logging name2
logging name3
```

The command available in the template is:

```
+logging [#!name1#]
```

Based on the command in the template, the negation of name1 is done. This returns true as there are other logging commands present with other names. So the template is compliant.

Example 2: When there is only one entry in the device configuration file.

Let us say, the command in the device configuration is:

```
logging name1
```

The command available in the template is:

```
+logging [#!name1#]
```

Based on the command in the template, the negation of name1 is done. This returns False, as there is no other command in the device configuration file with logging statement except `logging name1`. So the template is non-compliant.

Example 3: When there are no logging commands in the device configuration files.

Let us say, the command in the device configuration is:

```
No logging commands
```

The command available in the template is:

```
+ logging [# !name1 #]
```

Based on the command in the template, the negation of name1 is done. This returns False, as there are no login commands. So the template is non-compliant.

### The Baseline template uses java.util.regex engine for regular expressions.

For more information, see the regex API guide for Java 1.4.2 from Oracle:

http://download.oracle.com/javase/1.4.2/docs/api/java/util/regex/Pattern.html

### Submode commands are provided only if the commands are to be compared inside a submode.

For example:

```
interface [#Ethernet.*#]
+ no shutdown
```

The no shutdown command will apply to all Ethernet interfaces.
Defining Commandsets

The commandsets are a set of one or more CLI commands. You can define a commandset while creating a Baseline template in the Advanced mode.

The features of the commandsets are:

- If the commands in commandset are in a submode (ip/interface) a submode command must be specified for such a commandset.
- Commandsets can have one or more child commandsets.
- Child commandsets inherit parent’s submode command.

You can define commandsets that have to be checked before running the actual commands.

The features of the prerequisite commandsets are:

- A commandset can have another commandset as its prerequisite.
- A prerequisite commandset is used only for comparison and is not deployed onto the device.
- A commandset is compared with the config only if its prerequisite condition is satisfied.

LMS evaluates the commandsets in different ways depending on whether you have defined the commandset as Parent or Prerequisite.

For example, assume that you have defined two commandsets, commandset1 and commandset2:

- Commandset defined as Prerequisite

  commandset1 as the Prerequisite of commandset2. When LMS evaluates the Baseline template, it evaluates commandset1 first, and commandset2 next.

  If commandset1 does not contain submode and is not present in a device, then commandset2 is not evaluated and the device is displayed in the excluded list in the compliance report.

  If commandset1 contains submode and is not present in applicable submodes, then commandset2 is not evaluated and the device is displayed in the excluded list in the compliance report.

- Commandset defined as Parent

  commandset1 as the Parent of commandset2. When LMS evaluates the Baseline template, it evaluates commandset1 first, and commandset2 next.

  If either of these commandsets are missing, the template is considered non-compliant.

Baseline Template Management Window

To access the Baseline Template Management Window go to Configuration > Compliance > Compliance Templates > Templates.

This window lists all the system-defined and user-defined Baseline templates. It also displays the following details of the Baseline template:
Chapter 7      Using Baseline Templates to Check Configuration Compliance

Baseline Template Management Window

**Column Name** | **Description**
--- | ---
Name | Name of the Baseline template.
The following template examples are displayed, by default:
- CISF_DHCP_Snooping—Template for Catalyst Integrated Security Feature
- TemplateExample1—Basic template with Regular expression
- TemplateExample2—Advanced template with Submode, Parent and child options
- TemplateExample3—Advanced template with prerequisite options
- TemplateExample4—Advanced template with ordered set options
- VRFCompliance—Template for VRF Compliance
Click the template name to view the command sets. For more information, see Command Sets.

Device Type | Type of device for which the defined Baseline template can be used.

Description | Description of the Baseline template.
If you have imported Baseline templates, the description given is \*Imported\*.

Created On | Displays the Baseline template creation date and time.

You can click on any column to sort the information by that column. If you double-click a heading, the order is reversed.

This window contains the following buttons:

**Button** | **Description**
--- | ---
Edit | Edit a Baseline template.
This button is active only after you select a Baseline Template.
See [Editing a Baseline Template](#) for further details.

Export | Export a Baseline template file.
This button is active only after you select a Baseline Template.
See [Exporting a Baseline Template](#) for further details.

Delete | Delete a Baseline template.
This button is active only after you select a Baseline Template.
See [Deleting a Baseline Template](#) for further details.

Create | Create a Baseline template.
See [Creating a Baseline Template](#) for further details.

Import | Import a Baseline template file.
See [Importing a Baseline Template](#) for further details.
Command Sets
To view the template command sets:

**Step 1** Go to Configuration > Compliance > Compliance Templates > Templates.
The Baseline Templates window appears, displaying the list of all the user-defined Baseline templates.

**Step 2** Click the template name. For example, CISF_DHCP_Snooping.
The BaseLine Config Viewer window appears, displaying the command sets used in the template.
Table 7-1 provides information on the command sets used in the template examples.

### Table 7-1 Command Sets

<table>
<thead>
<tr>
<th>Template</th>
<th>Command Sets</th>
</tr>
</thead>
</table>
| CISF_DHCP_Snooping| Name: Commands SubMode: No isPrerequisite: No Ordered: No Prerequisite-Commandset: none Parent: none  
|                   | + ip dhcp snooping                                                        |
| TemplateExample1  | Name: Commands SubMode: No isPrerequisite: No Ordered: No Prerequisite-Commandset: none Parent: none  
|                   | + snmp-server community [#.*#] RW                                          |
| TemplateExample2  | Name: Global SubMode: No isPrerequisite: No Ordered: No Prerequisite-Commandset: none Parent: none  
|                   | Name: parent SubMode: Yes isPrerequisite: No Ordered: No Prerequisite-Commandset: none Parent: none policy-map V3PN-teleworker  
|                   | Name: child SubMode: Yes isPrerequisite: No Ordered: No Prerequisite-Commandset: none Parent: parent class VOICE  
|                   | + priority 64                                                             |
| TemplateExample3  | Name: Global SubMode: No isPrerequisite: No Ordered: No Prerequisite-Commandset: none Parent: none  
|                   | Name: prereq SubMode: No isPrerequisite: Yes Ordered: No Prerequisite-Commandset: none Parent: none  
|                   | + class-map match-all GOLD                                                 |
|                   | Name: parent SubMode: Yes isPrerequisite: No Ordered: No Prerequisite-Commandset: prereq Parent: none policy-map GSB_Policy  
|                   | Name: child SubMode: Yes isPrerequisite: No Ordered: No Prerequisite-Commandset: none Parent: parent class GOLD  
|                   | + bandwidth percent 25                                                    |
### Table 7-1  Command Sets

<table>
<thead>
<tr>
<th>Template</th>
<th>Command Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>TemplateExample4</td>
<td>Name: Global SubMode: No isPrerequisite: No Ordered: No Prerequisite-Commandset: none Parent: none</td>
</tr>
<tr>
<td></td>
<td>Name: acceslist SubMode: No isPrerequisite: No Ordered: Yes Prerequisite-Commandset: none Parent: none</td>
</tr>
<tr>
<td></td>
<td>+  access-list 101  deny  tcp  10.77.209.0  0.0.0.255  any</td>
</tr>
<tr>
<td></td>
<td>+  access-list 101  deny  tcp  any  gt  1023  host  10.1.1.1  eq  23</td>
</tr>
<tr>
<td></td>
<td>+  access-list 101  permit  ip  any  any</td>
</tr>
<tr>
<td>VRFCompliance</td>
<td>Name: Commands SubMode: Yes isPrerequisite: No Ordered: No Prerequisite-Commandset: none Parent: none interface [#.*#]</td>
</tr>
<tr>
<td></td>
<td>+  ip  vrf  forwarding  [#red</td>
</tr>
</tbody>
</table>
Chapter 7  Using Baseline Templates to Check Configuration Compliance

Editing a Baseline Template

You can edit all Baseline template fields except for Template Name.

Note  View Permission Report (Reports > System > Users > Permission) to check if you have the required privileges to perform this task.

To edit the Baseline templates:

Step 1  Select Configuration > Compliance > Compliance Templates > Templates.

The Baseline Templates dialog box appears.

Step 2  Select a Baseline template.

Step 3  Click Edit.

The Select Creation Mode dialog box appears. The mode that you have selected while creating the Baseline template is retained. You cannot change this mode.

• You can provide a description in the Description text field.

• You can select or deselect devices in the Device Type Selector listbox.

Step 4  Click Next.

The Add Template Details dialog box appears.

Step 5  Select the commandset that you want to edit.

Step 6  Edit the required information.

See Creating an Advanced Baseline Template for more information on field descriptions for the fields that appear in the Add Template Details dialog box.

Step 7  Click Finish.

A message appears, Template is modified. Do you wish to save the changes?

Step 8  Click OK.

A notification appears, Successfully updated the template BaselineTemplateName.

Step 9  Click OK to save changes.
Exporting a Baseline Template

You can export a Baseline template. The exported file is in XML format.
The default path in the LMS Server to which the XML file is exported to is:
- \NMSROOT\files\rme\dcma\baselinetemplates (On Windows)
- /var/adm/CSCOpx/files/rme/dcma/baselinetemplates (On Solaris and Soft Appliance)
Where, \NMSROOT\ is the LMS installed directory.
You cannot change the default export path in the LMS Server. If you do so, an error message will be displayed.

Note View Permission Report (Reports > System > Users > Permission) to check if you have the required privileges to perform this task.

To export a Baseline Template:

Step 1 Select Configuration > Compliance > Compliance Templates > Templates.
The Baseline Templates dialog box appears.
Step 2 Select one or more Baseline templates and click Export.
The Export a Baseline Template dialog box appears.
Step 3 Click Browse.
The Server Side File Browser dialog box appears.
Step 4 Select a folder.
Step 5 Click OK in the Server Side File Browser dialog box.
Step 6 Click OK.
A message appears, CMA0086: Selected Template(s) are successfully exported.
The naming convention followed for the baseline parameter file is Template Name.xml.
The file will be exported to the default location at the specified path in XML format.
Deleting a Baseline Template

To delete a baseline template:

Note View Permission Report (Reports > System > Users > Permission) to check if you have the required privileges to perform this task.

---

Step 1 Select Configuration > Compliance > Compliance Templates > Templates.

Step 2 Select one or more Baseline templates and click Delete.

A message appears, The selected Template will be permanently deleted.

You can delete only user-defined templates and not system-defined templates.

Step 3 Click OK.

A message appears, Successfully deleted the template.

Step 4 Click OK.

The selected Baseline Template is removed from the Baseline Templates window

Note You cannot delete Example Templates.

---

Creating a Baseline Template

You can create a Baseline Template by:

- Creating a Basic Baseline Template
- Creating an Advanced Baseline Template

There are few example templates that are available. You can use these templates as a base to create new templates.

- Creating a Basic Baseline Template - an Example
- Creating an Advanced Baseline Template - an Example

Note View Permission Report (Reports > System > Users > Permission) to check if you have the required privileges to perform this task.
Creating a Basic Baseline Template

To create a Basic Baseline template:

**Step 1** Select **Configuration > Compliance > Compliance Templates > Templates**.
The Baseline Templates window appears.

**Step 2** Click **Create**.
The Select Creation Mode dialog box appears.

**Step 3** In the Template Details section, select **Basic** as the mode.
**Step 4** Enter the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the Baseline template. You can enter up to 254 alphanumeric characters (including underscores). Do not enter special characters, including spaces and hyphens.</td>
</tr>
<tr>
<td>Description</td>
<td>Description for the Baseline template. You can enter up to 254 characters.</td>
</tr>
<tr>
<td>Device Type Selector</td>
<td>Device family to which you can apply this template. Click the check box to select the device family.</td>
</tr>
</tbody>
</table>

**Step 5** Click **Next**.
The Add Template Details dialog box appears.

**Step 6** Enter the following in the Baseline Template page:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditional Block</td>
<td></td>
</tr>
</tbody>
</table>

**Check for compliance only if the following condition is satisfied.**
Check this option if you want to run a compliance check based on any condition.

<table>
<thead>
<tr>
<th>Global</th>
<th>Select this option if you want to check the conditional commands in Global mode. This option is activated only if <strong>Check for compliance only if the following condition is satisfied</strong> is checked.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Submode</th>
<th>Select this option if you want to check the conditional commands in a specific submode. If you select this option, the textbox next to this option is activated. Enter the command for the required submode. For example: <strong>interface [#Ethernet.*#]</strong> This option is activated only if the <strong>Check for compliance only if the following condition is satisfied</strong> option is checked.</th>
</tr>
</thead>
</table>
Chapter 7  Using Baseline Templates to Check Configuration Compliance

Baseline Template Management Window

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| CLI Commands                | Enter the conditional CLI commands in this text area. This option is activated only if **Check for compliance only if the following condition is satisfied** is checked. Enter the Conditional CLI commands. For example:  
  # Routers CLI Commands  
  + set snmp community read-write [read-write-community-name-string]  
  - set snmp community read-only public  
  Explanation:  
  • The first line is considered as a comment as it does not begin with either “+” or “-”.  
  • The second line is mandatory as it begins with “+”.  
  • The third line is disallowed as it begins with “-”.  
  In the above example, **read-write-community-name-string** is a command value. The command value should not contain spaces. |
| Compliance Block            | Select this option if you want to check the compliance commands in global mode. Use the SubMode of above condition  
  This option is activated only if the Conditional Block options, **Check for compliance only if the following condition is satisfied** and the Submode options are selected.  
  The submode command entered in the submode textbox under the Conditional Block appears in the submode textbox of Compliance Block. So, the submode command of the Conditional Block is used by the Compliance Block.  
  You cannot edit the submode commands in the Compliance Block. However, you can edit the submode commands in the Conditional Block, which in turn updates the submode commands in the Compliance Block. |
| Submode                     | Select this option if you want to check the compliance commands in a specific submode. If you select this option, the textbox next to this option is activated. Enter the command for the required submode.  
  The compliance command will be checked for the submode that you enter. |
Baseline Template Management Window

Chapter 7   Using Baseline Templates to Check Configuration Compliance

Baseline Template Management Window

- If you want to preview the changes to the template command details before the template is created, click Preview. The changed template details are displayed in a window.
- If you want to reset the changes click Reset.
- If you want to know about the options and the functionality of Basic flow click Help.

You can perform a Compliance check without using the Conditional Block.

A message appears, Successfully created the template BaselineTemplateName.

Where BaselineTemplateName is the Template Name as given by you.

Step 7   Click OK.

The Baseline Templates window appears with the newly created Baseline template.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLI Commands</td>
<td>Enter the Compliance CLI commands. This is a mandatory field.</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>For example, you can enter:</td>
</tr>
<tr>
<td></td>
<td>Routers CLI Commands</td>
</tr>
<tr>
<td></td>
<td># this is the Compliance Block</td>
</tr>
<tr>
<td></td>
<td>+ set snmp community read-write [read-write-community-name-string]</td>
</tr>
<tr>
<td></td>
<td>- set snmp community read-only public</td>
</tr>
<tr>
<td></td>
<td>Explanation:</td>
</tr>
<tr>
<td></td>
<td>• The first line is considered as a comment as it does not begin with either “+” or “-”.</td>
</tr>
<tr>
<td></td>
<td>• The second line is also considered as a comment as it begins with a “#”.</td>
</tr>
<tr>
<td></td>
<td>• The third line is mandatory as it begins with “+”.</td>
</tr>
<tr>
<td></td>
<td>• The fourth line is disallowed as it begins with “-”.</td>
</tr>
<tr>
<td></td>
<td>In the above example, read-write-community-name-string is a command value. The command value should not contain spaces.</td>
</tr>
<tr>
<td>Order Sensitive</td>
<td>Select this option to make the system consider the order of the commands while performing a compliance check.</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>In other words, the commands in the device config should appear in the same order as that of the CLI commands definition order in the Command Set.</td>
</tr>
</tbody>
</table>

|                                |”}|
# Creating a Basic Baseline Template - an Example

You want to create a baseline template to check if all Ethernet interfaces that are up and running have "10.77.*.*" IP Address configured with the subnet mask 255.255.255.128.

To perform this task, you must create a template that checks for the following compliances:

- If there are interfaces that do not contain the `shutdown` command.
- If all Ethernet interfaces are configured with IP address 10.77.*.* 255.255.255.128.

You can create a Basic Baseline Template by entering the condition check, as well as the compliance check.

To create a Basic Baseline Template for the above scenario:

1. Select `Configuration > Compliance > Compliance Templates > Templates`.
The Baseline Templates window appears.

2. Click `Create`.
The Select Creation Mode dialog box appears.

3. In the Template Details section, select Basic as the mode.

4. Enter the following information:

5. Click `Next`.
The Add Template Details dialog box appears.

6. Select `Check for compliance only if the following condition is satisfied` so that you can enter the condition to be checked.

7. Select `Submode`.
The textbox next to Submode is activated.

8. Enter the following command in the Submode textbox:
   ```bash
   interface [#Ethernet.*#]
   ```

9. Enter the following Conditional CLI commands in the Conditional Block CLI command text area:
   ```bash
   - shutdown
   ``
   This command indicates that `shutdown` should not be present in the Ethernet interfaces.

10. Go to Compliance Block.
The Use the SubMode of above condition option is selected automatically.

### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| Name                   | Enter *NewBaseline*  
  *NewBaseline* is the name of the new template. |
| Description            | Enter the following description:  
  This is a Basic Baseline template that checks if all Ethernet interface are up and running and have "10.77.*.*" IP address configured with the subnet mask 255.255.255.128 |
| Device Type Selector   | Check the Routers checkbox to select all routers. |

---

**Step 5**  
Click `Next`.  
The Add Template Details dialog box appears.

**Step 6**  
Select **Check for compliance only if the following condition is satisfied** so that you can enter the condition to be checked.

**Step 7**  
Select **Submode**  
The textbox next to Submode is activated.

**Step 8**  
Enter the following command in the Submode textbox:  
```bash
interface [#Ethernet.*#]
```  

**Step 9**  
Enter the following Conditional CLI commands in the Conditional Block CLI command text area:  
```bash
- shutdown
```
  This command indicates that `shutdown` should not be present in the Ethernet interfaces.

**Step 10**  
Go to Compliance Block.  
The Use the SubMode of above condition option is selected automatically.
Step 11 Enter the following CLI commands in the Compliance Block CLI command text area:

```
+  ip address [10.77.*.*] 255.255.255.128
```

This command helps you to ascertain if the specified IP addresses are configured on the Ethernet interfaces.

Step 12 Click Finish.

A message appears, Successfully created the template NewBaseline.

Where NewBaseline is the Template Name as entered by you.

Step 13 Click OK.

The Baseline Templates window appears with the newly created Baseline template.

---

Creating an Advanced Baseline Template

To create an Advanced Baseline template:

Step 1 Select Configuration > Compliance > Compliance Templates > Templates.

The Baseline Templates dialog box appears.

Step 2 Click Create.

The select Creation Mode dialog box appears.

Step 3 Select Advanced as the mode from the Template Details section.

Step 4 Enter the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the Baseline template.</td>
</tr>
<tr>
<td>Description</td>
<td>Description for the Baseline template.</td>
</tr>
<tr>
<td>Device Type Selector</td>
<td>Device family for which you can apply this template.</td>
</tr>
</tbody>
</table>

Step 5 Click Next.

The Add Template Details dialog box appears.

Step 6 Enter the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commandset Options</td>
<td>Name of the commandset.</td>
</tr>
</tbody>
</table>

You can enter only alphanumeric characters up to 254 characters. Do not enter any special characters. This includes spaces, underscores and hyphens.
### Field | Description
---|---
Parent | Enter the parent name for the commandset, if required. This is case sensitive.
| You can also use this to logically group the commandsets.
| For example: To work on ATM permanent virtual connections (PVCs) commands, you must first get into the interface mode from the global mode and then run the PVC specific-commands.
| Commandset 1: ATM
| `interface [#atm.*#]`
| `+ ip address [ip-addr] [net-mask]`
| Commandset 2: PVC
| `[#pvc.*#]`
| `+ encapsulation aal5 [encap-type]`
| `+ abr [output-pcr1] [output-mcr]`
| `+ ubr [output-pcr2]`
| `+ vbr-nrt [output-pcr3] [output-scr] [output-mbs]`
| `+ vbr-rt [peak-rate] [average-rate] [burst]`
| `+ protocol ip [proto-ip] [type]`
| `+ exit`
| Here, commandset 1 is the parent for commandset 2.
| LMS evaluates the Baseline template, commandset1 is evaluated first and commandset2 is evaluated next. If either of these commandsets is missing, the template is considered as non-compliant.

Prerequisite | Select the mandatory commandset name that you must enter before running the current commandset.
| In the example (See Mark as Prerequisite row), if you had marked commandset 1 as the Prerequisite, you can select `commandset 1: IntCheck` from the drop-down menu.
| Before running the commandset 2, the commandset 1 is run. That is, commandset1 is evaluated first and commandset2 is evaluated next.
| If there is no commandset1 or if commandset1 failed, commandset2 is not evaluated and the devices will be moved to excluded state. In this case, the template will be considered as non-compliant.
### Baseline Template Management Window

#### Field | Description
---|---
Mark as Prerequisite | 1. Select the checkbox to mark a particular commandset as a prerequisite. For example,  
   Commandset 1: IntCheck  
   ```  
   interface [intname]  
   + ip address [#10.76.38..*#] [net-mask]  
   ```  
   (To find a match for any octet in an IP address you must use `\..*\`).  
2. Select the Mark as Prerequisite check box for the Commandset 1: IntCheck. For example,  
   Commandset 2: IntDownload  
   ```  
   interface [intname]  
   + no cdp enable  
   ```  
3. Select the Prerequisite from the dropdown menu for the Commandset 2: IntDownload. If a commandset has a Prerequisite commandset, you cannot select the Mark as Prerequisite check box for that particular commandset. That is, in the above example, you cannot select the checkbox Mark as Prerequisite for Commandset 2: IntDownload.

#### CLI Commands

| Submode | Description |
---|---|
| Enter the command to get into interface mode from the global mode. For example: `interface [intname]`  
Here, `interface` is a command keyword and `intname` is command value. The command value should not contain spaces. 
You can also run the command for a set of interfaces. For example: `interface [#Ethernet.*#]` | Here, the command will be executed on all the interfaces having Ethernet. |
Baseline Template Management Window

• If you want to add a new commandset to the template click Add. The CLI Commands window is displayed with the default help comments. These help comments serve as guidelines to create commandsets.

• If you want to delete a Commandset from the Command set list, click Delete.

• If you want to preview the changes to the Commandset details before finishing up the creation of the template, click Preview. The changed Commandset details is displayed in a window.

• If you click Save, for the first time, the following message appears,
  Do you wish to create a new template?

• If you click Save, for the second time, the following message appears,
  Successfully updated the template BaselineTemplateName.

Note: If the Commandsets consist of Prerequisite commandset then these commandsets appear in red color in the Preview details.

• If you want to reset the changes made to a Commandset, click Reset

Step 7  Click OK.

A message appears,
Successfully created the template BaselineTemplateName.

Where BaselineTemplateName is the name of the Baseline Template.
Step 8   Click **OK**.
If you want to add one more commandset repeat this procedure from **Step 4**.

Step 9   Click **Finish**.
A message appears,  
**Do you wish to save the changes?**

Step 10   Click **OK**.
A message appears,  
**Successfully created the template.**

Step 11   Click **OK**.
The Baseline Configs window appears with all the available Baseline templates.

---

**Creating an Advanced Baseline Template - an Example**

This section consists of two examples:
- [Example 1](#)
- [Example 2](#)

**Example 1**
This is a procedure to create a Baseline template to disable CDP on an interface that belongs to a specific subnet.

---

**Step 1**   Select **Configuration > Compliance > Compliance Templates > Templates**.
The Baseline Templates dialog box appears.

**Step 2**   Click **Create**.
The Select Creation Mode dialog box appears.

**Step 3**   Select **Advanced** and click **Next**.
The Create a Baseline dialog box appears.

**Step 4**   Enter the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>User data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Template Name</td>
<td>DisablingCDP</td>
</tr>
<tr>
<td></td>
<td>You can enter up to 254 alphanumeric characters. Do not enter any special characters, except underscores.</td>
</tr>
<tr>
<td>Device Type</td>
<td>Routers</td>
</tr>
<tr>
<td>Description</td>
<td>Baseline Template for DisablingCDP</td>
</tr>
<tr>
<td>Commandset Option</td>
<td>PrerequisiteCheck.</td>
</tr>
<tr>
<td></td>
<td>You can enter up to 254 alphanumeric characters. Do not enter any special characters including spaces, underscores and hyphens.</td>
</tr>
</tbody>
</table>
Chapter 7  Using Baseline Templates to Check Configuration Compliance

Baseline Template Management Window

<table>
<thead>
<tr>
<th>Field</th>
<th>User data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent</td>
<td>Global</td>
</tr>
<tr>
<td>Prerequisite</td>
<td>Do not select any value.</td>
</tr>
<tr>
<td>Mark as Prerequisite</td>
<td>Select the check box to mark the commandset as prerequisite.</td>
</tr>
</tbody>
</table>

**CLI Commands**

**Submode**  
interface [intname]  
Where, intname is a variable. The variables should not contain spaces.

**Ordered Set**  
Select this so that the system orders commands while performing compliance check.  

**CLI Commands**  
+ ip address [#10.76.38.*#] [netmask]  
To find a match for any octet in an IP address you must use \.[0-9]{1,3}.  
This checks for subnet mask with IP address starting from 10.76.38.*.

**Step 5**  
Click **Save**.  
A message appears to say that the template will be created.

**Step 6**  
Click **OK**.  
A message appears to say that the template is created.

**Step 7**  
Click **OK**.  
To add another commandset to the same Baseline template, Disabling-CDP, enter the following information.

<table>
<thead>
<tr>
<th>Field</th>
<th>User Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commandset Option</td>
<td></td>
</tr>
</tbody>
</table>
| Name                   | DisableCDP.  
You can enter up to 254 alphanumeric characters. Do not enter any special characters. This includes spaces, underscores and hyphens. |
| Parent                 | Global                                                                    |
| Prerequisite           | Select the PrerequisiteCheck from the dropdown menu.                     |
| Mark as Prerequisite   | Do not select the checkbox.                                              |

**CLI Commands**

**Submode**  
interface [intname]  

**Ordered Set**  
Select this so that the system orders commands while performing compliance check.

**CLI Commands**  
+ no cdp enable  
This will disable the CDP in all the interfaces even if any one interface contains the subnet mask starting with IP address 10.76.38.*.

**Step 8**  
Click **Save**.  
A message appears to say that the template is updated.
Step 9  Click OK.
Step 10 Click Finish.
A message appears to say that the template will be saved.
Step 11  Click OK.
A message appears to say that the template is updated.
Step 12 Click OK.
The Baseline Configs window appears with the details of Disabling-CDP Baseline template.

Example 2
This is a procedure to create an Advanced Baseline Template to check the presence of the command "ip address 10.77.209.8 255.255.255.224" in the Ethernet interfaces that have CDP disabled.

Step 1 Select Configuration > Compliance > Compliance Templates > Templates.
The Baseline Templates dialog box appears.
Step 2 Click Create.
The Select Creation Mode dialog box appears.
Step 3 Select Advanced and click Next.
The Create a Baseline dialog box appears.
Step 4 Enter the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>User Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Template Name</td>
<td>CheckIPTemplate</td>
</tr>
<tr>
<td></td>
<td>You can enter up to 254 alphanumeric characters. Do not enter any special</td>
</tr>
<tr>
<td></td>
<td>characters except underscores.</td>
</tr>
<tr>
<td>Device Type</td>
<td>Routers</td>
</tr>
<tr>
<td>Description</td>
<td>Baseline Template for Interface level check.</td>
</tr>
<tr>
<td>Commandset Option</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>PrerequisiteCheck.</td>
</tr>
<tr>
<td></td>
<td>You can enter up to 254 alphanumeric characters. Do not enter any special</td>
</tr>
<tr>
<td></td>
<td>characters including spaces, underscores and hyphens.</td>
</tr>
<tr>
<td>Parent</td>
<td>Do not enter anything.</td>
</tr>
<tr>
<td>Prerequisite</td>
<td>Do not select any value.</td>
</tr>
<tr>
<td>Mark as Prerequisite</td>
<td></td>
</tr>
</tbody>
</table>

CLI Commands

<table>
<thead>
<tr>
<th>Submode</th>
<th>interface [#Ethernet.*#]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordered Set</td>
<td>Do not select the checkbox.</td>
</tr>
<tr>
<td>CLI Commands</td>
<td>+ no cdp enable</td>
</tr>
</tbody>
</table>
Step 5  Click **Save**.
A message appears to say that the template will be created.

Step 6  Click **OK**.
A message appears to say that the template is created.

Step 7  Click **OK**.
To add another commandset to the same Baseline template, CheckIPTemplate, enter the following information.

<table>
<thead>
<tr>
<th><strong>Field</strong></th>
<th><strong>User data</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Commandset Option</strong></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>IPCheck.</td>
</tr>
<tr>
<td></td>
<td>You can enter up to 254 alphanumeric characters. Do not enter any special characters including</td>
</tr>
<tr>
<td></td>
<td>spaces, underscores and hyphens.</td>
</tr>
<tr>
<td>Parent</td>
<td>PrerequisiteCheck</td>
</tr>
<tr>
<td>Prerequisite</td>
<td>Select the PrerequisiteCheck from the dropdown menu.</td>
</tr>
<tr>
<td>Mark as Prerequisite</td>
<td>Do not select the checkbox.</td>
</tr>
<tr>
<td><strong>CLI Commands</strong></td>
<td></td>
</tr>
<tr>
<td>Submode</td>
<td>Do not enter anything</td>
</tr>
<tr>
<td>Ordered Set</td>
<td>Do not select the checkbox.</td>
</tr>
<tr>
<td>CLI Commands</td>
<td>+ ipaddress 10.77.209.8 255.255.255.224</td>
</tr>
<tr>
<td></td>
<td>The above command will be deployed on the Ethernet interfaces that have CDP disabled.</td>
</tr>
</tbody>
</table>

Step 8  Click **Save**.
A message appears to say that the template is updated.

Step 9  Click **OK**.

Step 10 Click **Finish**.
A message appears to say that the template will be saved.

Step 11 Click **OK**.
A message appears to say that the template is updated.

Step 12 Click **OK**.
The Baseline Configs window appears with the details of CheckIPTemplate Baseline template.
Behavior of Ordered Set for Access Lists

1. Create a baseline template with few commands and ordered set option checked.
2. Compare the configurations in the device with the baseline template, to check for Compliance
   The commands available in the device is compared in the same order as available in the Baseline
   template.
3. If the commands found in the device are not compliant with the Baseline template, the same
   configlet commands available in the device are negated first and then the commands available in the
   Baseline template are deployed on the device.
This is the recommended behavior for Access lists. This behavior is also supported by the submodes.

Importing a Baseline Template

You can import a template as Baseline template. The imported file must be in XML format.
The default path in the LMS Server from which the XML file is imported is
- \NMSROOT\files\rme\dcma\baselinetemplates (On Windows)
- /var/adm/CSCOpx/files/rme/dcma/baselinetemplates (On Solaris and Soft Appliance)
Where, NMSROOT is the LMS installed directory.
You cannot change the default import path in the LMS Server. If you do so, an error message will be
displayed.
To import a Baseline Template:

Note: View Permission Report (Reports > System > Users > Permission) to check if you have the required
privileges to perform this task.

1. Select Configuration > Compliance > Compliance Templates > Templates.
The Baseline Templates dialog box appears.
2. Select a Baseline template and click Import.
The Import a Baseline Template dialog box appears.
   Click Browse.
The Server Side File Browser dialog box appears.
3. Select the XML file.
4. Click OK in the Server Side File Browser dialog box.
5. Click OK.
   A message appears, Template successfully imported.
6. Click OK.
The imported file appears in the Baseline Templates window with the description, Imported baseline.
Running Compliance Check

To run a compliance check:

---

**Step 1** Select Configuration > Compliance > Compliance Templates > Compliance Check.

The Baseline Templates dialog box appears.

**Step 2** Select the template and click Compliance Check.

The Select Devices dialog box appears.

**Step 3** Select either:

- Device Selector, if you want to schedule a job for a static set of devices. See Inventory Management with Cisco Prime LAN Management Solution 4.2 for information on how to use the Device Selector.

  Or

- Group Selector, if you want to schedule a job for a dynamic group of devices.

  The job is scheduled only for the devices that are present in the selected group at the time when the job is run. The customizable group selector for jobs evaluate static groups also as dynamic during run time.

**Step 4** Click Next.

The Schedule dialog box appears.

**Step 5** Enter the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scheduling</strong></td>
<td></td>
</tr>
<tr>
<td>Run Type</td>
<td>You can specify when you want to run the Baseline template compliance job. To do this, select one of these options from the drop-down menu:</td>
</tr>
<tr>
<td></td>
<td>- Immediate—Runs this task immediately.</td>
</tr>
<tr>
<td></td>
<td>- Once—Runs this task once at the specified date and time.</td>
</tr>
<tr>
<td></td>
<td>- Daily—Runs daily at the specified time.</td>
</tr>
<tr>
<td></td>
<td>- Weekly—Runs weekly on the specified day of the week and at the specified time.</td>
</tr>
<tr>
<td></td>
<td>- Monthly—Runs monthly on the specified day of the month and at the specified time.</td>
</tr>
<tr>
<td></td>
<td>The subsequent instances of periodic jobs will run only after the earlier instance of the job is complete.</td>
</tr>
<tr>
<td></td>
<td>For example, if you have scheduled a daily job at 10:00 a.m. on November 1, the next instance of this job will run at 10:00 a.m. on November 2 only if the earlier instance of the November 1 job has completed.</td>
</tr>
<tr>
<td></td>
<td>If the 10:00 a.m. November 1 job has not been completed before 10:00 a.m. November 2, the next job will start only at 10:00 a.m. on November 3.</td>
</tr>
<tr>
<td>Date</td>
<td>You can select the date and time (hours and minutes) at which to schedule. The Date field is enabled only if you have selected an option other than Immediate in the Run Type field.</td>
</tr>
</tbody>
</table>
Running Compliance Check

### Field          Description

**Job Info**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Description</td>
<td>Enter a description for the job. This is mandatory. You can enter only alphanumeric characters.</td>
</tr>
<tr>
<td>E-mail</td>
<td>Enter e-mail addresses to which the job sends messages at the beginning and at the end of the job. You can enter multiple e-mail addresses separated by commas. Configure the SMTP server to send e-mails in the View / Edit System Preferences dialog box (Admin &gt; System &gt; System Preferences). We recommend that you configure the LMS E-mail ID in the View / Edit System Preferences dialog box (Admin &gt; System &gt; System Preferences). When the job starts or completes, an e-mail is sent with the LMS E-mail ID as the sender’s address.</td>
</tr>
</tbody>
</table>

**Attachment**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check this option if you want the job notification mail to consist of attachments in either CSV or PDF format. Select either:</td>
<td></td>
</tr>
<tr>
<td>- CSV if you want the attachment in CSV format. Or</td>
<td></td>
</tr>
<tr>
<td>- PDF if you want the attachment in PDF format. This is the default format.</td>
<td></td>
</tr>
<tr>
<td>The CSV and PDF radio options will be enabled only if the Attachment checkbox is checked. If the Attachment option is disabled, go to Admin &gt; System &gt; System Preferences to change the settings. For more information on configuring attachment settings as well as the maximum size of attachments allowed in notification mails, see Administration Online Help.</td>
<td></td>
</tr>
</tbody>
</table>

**Job Options**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check compliance and deploy</td>
<td>Enable this to check the compliance of the archived file with that of the Baseline template and deploy the commands if it is non-compliant. This option is not supported for Group selector.</td>
</tr>
<tr>
<td>Copy Running Config to Startup</td>
<td>This option is active only if you select the Check compliance and deploy option. Select to make the job write the Running configuration to the Startup configuration on each device after configuration changes are made successfully. Does not apply to Catalyst OS devices.</td>
</tr>
</tbody>
</table>

**Job Password**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>- If you have enabled the Job Password option and disabled the User Configurable option in the Job Policy dialog box (Admin &gt; Network &gt; Configuration Job Settings &gt; Config Job Policies) enter the device login user name and password and device Enable password.</td>
<td></td>
</tr>
<tr>
<td>- If you have enabled the Enable Job Password option and enabled the User Configurable option in the Job Policy dialog box (Admin &gt; Network &gt; Configuration Job Settings &gt; Config Job Policies) either:</td>
<td></td>
</tr>
<tr>
<td>- Enter the device login user name and password and device Enable password Or</td>
<td></td>
</tr>
<tr>
<td>- Disable the Job Password option in the Job Schedule and Options dialog box.</td>
<td></td>
</tr>
</tbody>
</table>
Step 6  Click Next.
The Job Work Order window appears with the job details that you have selected.

Step 7  Click Finish.
A message appears, Job JobID is created successfully.
Where JobID is a unique Job number.

Step 8  Click OK.
You can check the status of your scheduled job by selecting Configuration > Job Browsers > Configuration Archive.

---

Note  View Permission Report (Reports > System > Users > Permission) to check if you have the required privileges to perform this compliance check task.

The compliance check job requires approval if you have enabled Job Approval during the compliance check job scheduling.
For further details on the baseline template, see Understanding the Baseline Compliance Report.

Understanding the Baseline Compliance Report

The Baseline Compliance Report contains the following information:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>Template Name</td>
<td>Name of the Baseline template entered at the time of creating the Baseline template.</td>
</tr>
<tr>
<td>Number of Non-Compliant devices</td>
<td>Number of devices that are non-compliant.</td>
</tr>
<tr>
<td>Number of Compliant devices</td>
<td>Number of devices that are compliant.</td>
</tr>
<tr>
<td>Number of Excluded devices:</td>
<td>List of devices in which the job did not run. The jobs may have failed either because:</td>
</tr>
<tr>
<td></td>
<td>• The device configuration was not archived.</td>
</tr>
<tr>
<td></td>
<td>Or</td>
</tr>
<tr>
<td></td>
<td>• The device was not reachable.</td>
</tr>
<tr>
<td></td>
<td>Further details of the failed job are given in the Configuration &gt; Job Browsers &gt; Configuration Archive (See Using Configuration Archive Job Browser).</td>
</tr>
<tr>
<td>Compliant Devices</td>
<td></td>
</tr>
<tr>
<td>Device Name</td>
<td>Device Name as entered in Device and Credential Repository.</td>
</tr>
<tr>
<td>Latest Version</td>
<td>Version of configuration file against which the compliance was checked.</td>
</tr>
<tr>
<td></td>
<td>Click on the version to display Config Viewer (see Understanding the Config Viewer Window).</td>
</tr>
<tr>
<td></td>
<td>This shows the contents of the corresponding configuration file against which the compliance was checked.</td>
</tr>
</tbody>
</table>
Deploying a Baseline Template

When you add a new device of the same type to the network, you can use the existing Baseline template. This template consists of two parts, command and values.

You can create configurations for any device of the same type in the network by specifying the values for the variables in the Baseline template.

You can deploy Baseline template on the devices in two ways:
- User Interface (See Deploying a Baseline Template Using User Interface for the procedure.)
- File System (See Deploying a Baseline Template Using File System for the procedure.)

View Permission Report (Reports > System > Users > Permission) to check if you have the required privileges to perform this task.

The deployment job requires approval if you have enabled Job Approval during the deployment job scheduling.
Deploying a Baseline Template Using User Interface

To deploy a Baseline template using User Interface:

**Step 1** Select Configuration > Compliance > Compliance Templates > Direct Deploy.

The Baseline Templates dialog box appears.

**Step 2** Select a Baseline template and click Deploy.

The Deploy Input Options dialog box appears.

**Step 3** Select Enter Data From User Interface and click Next.

The Select Devices dialog box appears.

The device list contains only devices of the type devices selected while creating the Baseline Template. For example, if you have selected Device Type as Router, only routers are listed.

**Step 4** Select devices under the following tabs:

- In the All tab,
  
  Devices are grouped under All Applicable Devices and All Applicable Device Groups. All Applicable Device Groups categorizes devices under Routers, Switches, and so on.

- In the Search Results tab,
  
  The results of simple search and advanced search are listed here.

- In the Selection tab,
  
  All the devices that are selected are listed and you can deselect the devices.

**Step 5** Click Next.

The Commands Generation dialog box appears.

**Step 6** Perform the following tasks:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description and Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device list</td>
<td>This pane lists the selected devices that you have selected in the Select Devices dialog box. Select the device for which you want to deploy the Baseline template.</td>
</tr>
<tr>
<td>Edit</td>
<td>Select a device from the device drop-down list and click Edit to edit information for the device.</td>
</tr>
<tr>
<td>Save</td>
<td>Click Save to save the changes made for the selected device. You can change the details for multiple devices in one go, by using the Save button.</td>
</tr>
<tr>
<td>Device</td>
<td>The selected device in the Device List pane is displayed in this text box.</td>
</tr>
<tr>
<td>Commandsets</td>
<td>The pane contains all the commandsets that are defined in the Baseline template. Select a commandset. While creating the Baseline template, if you have defined the multiple occurrences as the commandset feature, after selecting that particular commandset, the Add Instance button is activated.</td>
</tr>
</tbody>
</table>
Deploying a Baseline Template

### Field Name | Description and Action
--- | ---
Add Instance | This button is active only if you have selected a commandset with multiple occurrences. The occurrences of a commandset are defined while creating the Baseline template. When you click on the Add Instance button, one more instance of multiple commandset is added in the Commandsets pane. Enter the command value for that commandset in the Device Data pane.

Delete Instance | Use the Delete Instance button to delete the instance after selecting the instance from the Commandsets pane. You can select one or more instances and click on the Delete Instance button to delete the instances. You can delete the selected instances. The exception being that at least one instance of the commandset is available.

Templates | The pane contains the CLI commands for the selected commandset. You cannot modify the commands in this pane.

Device Data | The field displays the command values that you have defined in your Baseline template. The command value is appended with a unique number. Enter the command value. For example: If your Baseline template contains this command:

```
interface [#Ethernet[.*]]#
+ no shutdown
```

Then, `#Ethernet[.*]` is the command value. The Device Data field names appear as:

```
#Ethernet.*[0]
```

If the commandset is a prerequisite commandset, you do not need to specify parameter values for the Device data field as they are not deployed.

### Step 7
Click **Next**.
The Job Schedule dialog box appears.
Step 8 Enter the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scheduling</strong></td>
<td>You can specify when you want to run the Baseline template deploy job.</td>
</tr>
<tr>
<td>Run Type</td>
<td>To do this, select one of these options from the drop-down menu:</td>
</tr>
<tr>
<td></td>
<td>• Immediate—Runs this task immediately.</td>
</tr>
<tr>
<td></td>
<td>• Once—Runs this task once at the specified date and time.</td>
</tr>
<tr>
<td></td>
<td>• Daily—Runs daily at the specified time.</td>
</tr>
<tr>
<td></td>
<td>• Weekly—Runs weekly on the specified day of the week and at the specified time.</td>
</tr>
<tr>
<td></td>
<td>• Monthly—Runs monthly on the specified day of the month and at the specified time.</td>
</tr>
<tr>
<td></td>
<td>The subsequent instances of periodic jobs will run only after the earlier instance of the job is complete. For example, if you have scheduled a daily job at 10:00 a.m. on November 1, the next instance of this job will run at 10:00 a.m. on November 2 only if the earlier instance of the November 1 job has completed. If the 10:00 a.m. November 1 job has not completed before 10:00 a.m. November 2, the next job will start only at 10:00 a.m. on November 3.</td>
</tr>
<tr>
<td>Date</td>
<td>You can select the date and time (hours and minutes) to schedule the job.</td>
</tr>
<tr>
<td></td>
<td>The Date field is enabled only if you have selected an option other than Immediate in the Run Type field.</td>
</tr>
<tr>
<td><strong>Job Info</strong></td>
<td>Enter a description for the job. This is mandatory. You can enter only alphanumeric characters.</td>
</tr>
<tr>
<td>Job Description</td>
<td>Enter e-mail addresses to which the job sends messages at the beginning and at the end of the job. You can enter multiple e-mail addresses separated by commas. Configure the SMTP server to send e-mails in the View / Edit System Preferences dialog box (Admin &gt; System &gt; System Preferences). We recommend that you configure the LMS E-mail ID in the View / Edit System Preferences dialog box (Admin &gt; System &gt; System Preferences). When the job starts or completes, an e-mail is sent with the LMS E-mail ID as the sender's address.</td>
</tr>
<tr>
<td><strong>Job Options</strong></td>
<td>Enter comments for the job approver. This field appears only if you have enabled job approval for Configuration Archive.</td>
</tr>
<tr>
<td>Approver Comments</td>
<td>Enter the e-mail-ID of the job creator. This is a mandatory field. This field appears only if you have enabled job approval for Configuration Archive.</td>
</tr>
</tbody>
</table>
**Deploying a Baseline Template**

**Using Baseline Templates to Check Configuration Compliance**

### Deploying a Baseline Template

### Deploying a Baseline Template Using File System

You can deploy a Baseline template using the Baseline Parameter file.

The parameter file specifies the variable values for template deployment. To generate the parameter file:

- **Step 1** Select **Configuration > Compliance > Compliance Templates > Templates**.
- **Step 2** Click the hyperlink of the required template. The Baseline Config Viewer popup appears.
- **Step 3** Click **Generate Param File**. A popup appears.
- **Step 4** Click **Browse** to specify the folder with the parameter file.

See [Exporting a Baseline Template](#) for further information.
To deploy a Baseline template using File System:

**Step 1**
Select **Configuration > Compliance > Compliance Templates > Direct Deploy**.
The Baseline Templates dialog box appears.

**Step 2**
Select a Baseline template and click **Deploy**.
The Deploy Input Options dialog box appears.

**Step 3**
Select **Enter Data From File System** and click **Next**.
The Select Input File dialog box appears.

**Step 4**
Enter the folder name and the file name with the file format extension XML.
- Click **Browse**.
The Server Side File Browser dialog box appears.
- Select the XML file.
- Click **OK**.
The Select Input File dialog box appears with the selected Baseline Parameter file.

**Step 5**
Click **Next**.
The Job Schedule dialog box appears.

**Step 6**
Enter the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduling</td>
<td>You can specify when you want to run the Baseline template deploy job. To do this, select one of these options from the drop-down menu:</td>
</tr>
<tr>
<td>Run Type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Immediate—Runs this task immediately.</td>
</tr>
<tr>
<td></td>
<td>• Once—Runs this task once at the specified date and time.</td>
</tr>
<tr>
<td></td>
<td>• Daily—Runs daily at the specified time.</td>
</tr>
<tr>
<td></td>
<td>• Weekly—Runs weekly on the specified day of the week and at the specified time.</td>
</tr>
<tr>
<td></td>
<td>• Monthly—Runs monthly on the specified day of the month and at the specified time.</td>
</tr>
<tr>
<td></td>
<td>The subsequent instances of periodic jobs will run only after the earlier instance of the job is complete.</td>
</tr>
<tr>
<td></td>
<td>For example, if you have scheduled a daily job at 10:00 a.m. on November 1, the next instance of this job will run at 10:00 a.m. on November 2 only if the earlier instance of the November 1 job has completed.</td>
</tr>
<tr>
<td></td>
<td>If the 10:00 a.m. November 1 job has not completed before 10:00 a.m. November 2, the next job will start only at 10:00 a.m. on November 3.</td>
</tr>
<tr>
<td>Date</td>
<td>You can select the date and time (hours and minutes) to schedule the job. The Date field is enabled only if you have selected an option other than Immediate in the Run Type field.</td>
</tr>
</tbody>
</table>
### Deploying a Baseline Template

#### Chapter 7  Using Baseline Templates to Check Configuration Compliance

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Info</td>
<td></td>
</tr>
<tr>
<td>Job Description</td>
<td>Enter a description for the job. This is mandatory. You can enter only alphanumeric characters.</td>
</tr>
<tr>
<td>E-mail</td>
<td>Enter e-mail addresses to which the job sends messages at the beginning and at the end of the job.</td>
</tr>
<tr>
<td></td>
<td>You can enter multiple e-mail addresses separated by commas.</td>
</tr>
<tr>
<td></td>
<td>Configure the SMTP server to send e-mails in the View / Edit System Preferences dialog box (Admin &gt; System &gt; System Preferences).</td>
</tr>
<tr>
<td></td>
<td>We recommend that you configure the LMS E-mail ID in the View / Edit System Preferences dialog box (Admin &gt; System &gt; System Preferences).</td>
</tr>
<tr>
<td></td>
<td>When the job starts or completes, an e-mail is sent with the LMS E-mail ID as the sender's address.</td>
</tr>
</tbody>
</table>
Step 7  Click Next.

The Work Order dialog box appears with job details that you have entered.

Step 8  Click Finish.

A message appears, Job JobID is created successfully.

Where JobID is a unique Job number.

If you have specified incorrect filename/XML file format or if the hostname field is not updated, an error message appears, Specified file could not be read. Please specify a valid file name.

See Exporting a Baseline Template for further information.

Check the XML file format or update the hostname field and restart this procedure from Step 2.

Step 9  Click OK.

You can check the status of your scheduled job using Configuration > Job Browsers > Configuration Archive. The Job Type for this deploy job is Deploy Baseline template result.
Using Compliance and Deploy Jobs Window

You can check the status of the Baseline jobs using Configuration > Compliance > Compliance Templates > Jobs.

This section contains:
- Deploying the Commands
- Deleting the Compliance Jobs

This window contains the following information:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job ID</td>
<td>Unique number assigned to the job when it is created. For periodic jobs such as Daily, Weekly, the job IDs are in the number.x format. The x represents the number of instances of the job. For example, 1001.3 indicates that this is the third instance of the job ID 1001.</td>
</tr>
<tr>
<td>Description</td>
<td>Job description entered during job definition.</td>
</tr>
<tr>
<td>Compliant/Deployed</td>
<td>Displays the number of devices that are compliant out of the total number of devices that were selected while creating the compliance job.</td>
</tr>
<tr>
<td>Devices</td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>Status of the job. The status can be Successful, Failed, and Running. The jobs may have failed either because: The device configuration is not archived. Or The device is not reachable. Further details of the failed job are given in the Configuration &gt; Job Browsers &gt; Configuration Archive. You can also check the status of the Baseline job at Configuration &gt; Job Browsers &gt; Configuration Archive.</td>
</tr>
</tbody>
</table>

The Baseline Jobs window contains the following buttons:

<table>
<thead>
<tr>
<th>Buttons</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deploy</td>
<td>You can schedule a job to deploy the standard configuration on all non-compliant devices. This button is active only after selecting a Job. See Deploying the Commands.</td>
</tr>
<tr>
<td>Retry</td>
<td>You can reschedule a failed job using this button. This button is active only on selecting a Failed job. Reschedule the deployment job by providing the required information.</td>
</tr>
</tbody>
</table>
For usecases and examples on Baseline Templates, refer to the Baseline Template Whitepaper.

### Deploying the Commands

You can deploy the commands on the devices that are non-complaint.

Before you use this Deploy button, you must run the Compliance Report,
- If there are any non-complaint device, you must select the relevant compliance job and deploy the baseline template.
- If there are no non-complaint device and if you click on the Deploy button, a message appears,

\[\text{Could not deploy selected Job.} \]
\[\text{Reason: No Non-Compliant devices present in the report.} \]

Click on the Job ID to view the Baseline Compliance Report. See Understanding the Baseline Compliance Report for further details.

**Note**

View Permission Report (Reports > System > Users > Permission) to check if you have the required privileges to perform this task.

To deploy the commands:

**Step 1** Select Configuration > Compliance > Compliance Templates > Jobs.

The Baseline Jobs dialog box appears.

**Step 2** Select a Compliance Job.

**Step 3** Click Deploy.

The Substitute Parameters for Devices dialog box appears.

**Step 4** Perform the following:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description and Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device list</td>
<td>The list contains all the devices which are non-complaint. Select a device.</td>
</tr>
<tr>
<td>Device</td>
<td>The selected device in the Device List pane appears in this text box.</td>
</tr>
</tbody>
</table>
Chapter 7      Using Baseline Templates to Check Configuration Compliance

Using Compliance and Deploy Jobs Window

If you have more than one device to deploy then you have to repeat Step 4 for all the devices.

**Step 5**  Click Next.

The Job Schedule dialog box appears.

**Step 6**  Enter the following information:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description and Action</th>
</tr>
</thead>
</table>
| Commandsets | The pane contains all the commandsets that are defined in the Baseline template.  
In the Baseline template, if you have defined the multiple occurrences as the commandset feature then based on the compliance check, the commandset will appear more than once.  
Select a commandset. |
| Templates | The pane contains the CLI commands for the selected commandset.  
You cannot modify the commands in this pane. |
| Device Data | The field displays the command values that you have defined in your Baseline template.  
The command value is appended with a unique number.  
Enter the command value.  
For example: If your Baseline template contains this command:  
```bash
+ ip address [#10.76.38..*#] [netmask]
```
Then, `#10.76.38..*#` and `netmask` are the command values.  
The Device Data field names appear as:  
`#10.76.38..*[1000]`  
`netmask[1000]` |

Field Name | Description |
------------|-------------|
Scheduling | You can specify when you want to run the deploy configuration job.  
To do this, select one of these options from the drop-down menu:  
• Immediate—Runs this task immediately.  
• Once—Runs this task once at the specified date and time. |
Date | You can select the date and time (hours and minutes) to schedule.  
The Date field is enabled only if you have selected an option other than Immediate in the Run Type field. |
**Field** | **Description**
--- | ---
**Job Info** |  
Job Description | Enter a description for the job. This is mandatory. You can enter only alphanumeric characters.  
E-mail | Enter e-mail addresses to which the job sends messages at the beginning and at the end of the job. You can enter multiple e-mail addresses separated by commas.  
Configure the SMTP server to send e-mails in the View / Edit System Preferences dialog box (Admin > System > System Preferences).  
We recommend that you configure the LMS E-mail ID in the View / Edit System Preferences dialog box (Admin > System > System Preferences). When the job starts or completes, an e-mail is sent with the LMS E-mail ID as the sender's address.  
**Attachment** | Check this option if you want the job notification mail to consist of attachments in either CSV or PDF format.  
Either select:  
- CSV if you want the attachment in CSV format.  
  Or  
- PDF if you want the attachment in PDF format. This is the default format.  
The CSV and PDF radio options will be enabled only if the Attachment checkbox is checked.  
If the Attachment option is disabled, go to Admin > System > System Preferences to change the settings. For more information on configuring attachment settings as well as the maximum size of attachments allowed in notification mails, see Administration Online Help.  
**Job Options** |  
Approver Comments | Enter comments for the job approver. This field appears only if you have enabled job approval for Configuration Archive.  
Maker E-Mail | Enter the e-mail-ID of the job creator. This is a mandatory field. This field appears only if you have enabled job approval for Configuration Archive.  
Copy Running Config to Startup | Select to make the job to write the Running configuration to the Startup configuration on each device after configuration changes are made successfully. Does not apply to Catalyst OS devices.  
Job Password |  
- If you have enabled the Enable Job Password option and disabled the User Configurable option in the Job Policy dialog box (Admin > Network > Configuration Job Settings > Config Job Policies) enter the device login user name and password and device Enable password.  
- If you have enabled the Enable Job Password option and enabled the User Configurable option in the Job Policy dialog box (Admin > Network > Configuration Job Settings > Config Job Policies) either:  
  – Enter the device login user name and password and device Enable password  
  Or  
  – disable the Job Password option in the Job Schedule and Options dialog box.  

**Step 7**  
Click Next.  
The Work Order dialog box appears with job details that you have entered.
Chapter 7  Using Baseline Templates to Check Configuration Compliance

Using Compliance and Deploy Jobs Window

Step 8  Click Finish.
A message appears, Job ID is created successfully.
Where ID is a unique Job number.

Step 9  Click OK.
You can check the status of your scheduled job using Configuration > Job Browsers > Configuration Archive. The Job Type for this deploy job is Deploy Baseline comparison result.

Deleting the Compliance Jobs

You can delete the job that have been completed or stopped. You cannot delete a running job.

Note  View Permission Report (Reports > System > Users > Permission) to check if you have the required privileges to perform this task.

To delete Compliance jobs:

Step 1  Select Configuration > Compliance > Compliance Templates > Jobs.
The Compliance Jobs dialog box appears.

Step 2  Select a job and click Delete.
A message appears, The selected job will be deleted.

Step 3  Click OK.
The selected Compliance job is removed from the Compliance Jobs window.

You can also delete the compliance jobs from Configuration > Job Browsers > Configuration Archive window (see Using Configuration Archive Job Browser)