



Planning Your Network Design

Cisco Prime Infrastructure templates allow you to create reusable design patterns to simplify device configurations. When you plan your network design and then create templates based on that design, you can increase operational efficiency, reduce configuration errors, and improve compliance to standards and best practices.

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Types of Configurations

It is important to plan for the following configurations:

- **Feature configurations**—Identify the features that you want to configure on a given device. You can use a composite template that includes multiple feature templates to define a complete device configuration.
- **Device role configurations**—Identify your devices and the roles they play. For example, you will want to design templates for routers that function as branch routers, and other templates for routers that function as WAN edge routers. You will also want to plan for access switch configurations, which differ from distribution switch configurations. You could have a number of specific devices for which you want to deploy the same configuration.
- **Site configurations**—Identify the various sites in your network and the different configurations that could be required in different sites. Different sites could require different configurations. For example, a large-sized retail store can contain devices with configurations that differ drastically from the same devices in a small-sized warehouse.
- **Monitoring configurations**—While planning your configuration design, consider what relevant information that you want to monitor. For example, you will want to ensure that the features you configured are being monitored. You can define or *design* monitoring templates that dictate how and what to monitor. After you deploy the monitoring templates, the results are displayed in dashboards, dashlets (see [Dashboards and Dashlets](#)), and reports.

Guidelines for Planning Your Network Design

Consider the following factors when using the Prime Infrastructure design tools:

- What is the size of your network?
- How diverse are the devices and services that you support?
- How many network designers do you have?
- What degree of precision do you need in controlling your network?

If you have a small network with only one or two designers and not much variation among device configurations, you could start by copying all CLI configurations you know are “good” into a set of configuration and monitoring templates, then create a composite template that contains these templates.

If you have a large network with many different devices, try to identify the configurations you can standardize. Creating feature and technology templates as exceptions to these standards allows you to turn features on and off as needed.

Planning Template Deployments

After you design your network, use the Deploy menu to reuse and deploy the designs you have created. You can deploy feature templates, composite templates, profiles, and so on. You need to determine answers to the following questions before deploying objects:

- What are you deploying? Determine whether you are deploying a configuration template, plug and play profile, and so on.
- Where is it being deployed? Determine which devices should be included in the deployment.
- When is it being deployed? Determine when the deployment should happen.

Deployment Scenarios

You can plan your template deployments based on the following device conditions:

- Existing devices—You can deploy a configuration or monitoring template to a device that is already in your network.
- New devices that are known—You can deploy a configuration or monitoring template based on the device type and function. For example, if a new WAN edge router is discovered, you can deploy a configuration template that configures the necessary features for the WAN edge router (pre-provisioning).
- New devices that are unknown or generic—You can deploy a generic configuration to a device that will provide a minimum set of configuration values.

Template Workflow for Switches

The following steps take you through a sample workflow for creating and deploying templates for switches:

1. Create templates for your switches, which can include:
 - *Feature-level* configuration templates (see [Creating Feature-Level Configuration Templates](#))
 - A *monitoring template* that monitors important features that you configured in the configuration templates (see [Creating Monitoring Templates](#))
 - A *composite template* that includes all the templates you want to deploy on the switches in your network (see [Creating Composite Templates](#))
2. Create a switch deployment profile, which requires that you specify:
 - The bootstrap configuration
 - The required image software on the device and the software image file location
 - The configuration template, which can be a single or composite template
3. Specify the devices on which to deploy the templates, and create a deployment profile that includes:
 - Device profile
 - Deployment target
 - Deployment-specific configuration information

Reusable Policy Objects

To improve efficiency and accuracy in your configuration templates, you can create shared policy objects to include in your configuration templates. You create interface roles or network objects that you can add to your configuration templates.

Interface roles allow you to define policies to specific interfaces on multiple devices without having to manually define the names of each interface. Interface roles can refer to any of the actual interfaces on the device, including physical interfaces, subinterfaces, and virtual interfaces such as loopback interfaces.

If you create an all-Ethernets interface role, you can define identical advanced settings for every Ethernet interface on the device with a single definition. You add this interface role to a configuration template, then deploy the template to the selected devices to configure the Ethernet interfaces.

Interface roles are especially useful when applying policies to new devices. As long as the devices that you are adding share the same interface naming scheme as existing devices, you can quickly deploy the necessary configuration template containing the interface role to the new devices.

Network objects are logical collections of IP addresses that represent networks. Network objects make it easier to manage policies. When you create a network object and include it in a configuration template,

For information about the shared policy objects, see [Creating Shared Policy Objects](#).

Template Testing

Before you roll out a template to a large number of devices, you will want to make sure it is correct and that no further adjustments or modifications are needed. After you create a template, deploy it to a single device to test and troubleshoot your design. You should plan for and schedule full deployment of a composite template.