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## **Cisco Connected Grid Design Suite (CGDS) - Substation Workbench Designer User Guide**

Release 1.5

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**Cisco Systems, Inc.**  
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## Preface

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This preface describes the audience, organization, and conventions used in the Cisco Connected Grid Design Suite (CGDS)-Substation Workbench Designer User Guide, and provides information about the related documentation.

- [Audience, page v](#)
- [Organization, page v](#)
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## Audience

This guide is meant for customers who consume the CGDS services utility T&D Operations teams, such as substation and protection engineers, utility IT and security teams, potentially control center staff.

## Organization

Chapter Number	Chapter Title	Description
<a href="#">Chapter 1</a>	<a href="#">Getting Started</a>	Provides an overview of the CGDS Designer.
<a href="#">Chapter 2</a>	<a href="#">Roles</a>	Describes the various user roles that access the CGDS Designer, and also outlines the tasks that are typically performed by each user role.
<a href="#">Chapter 3</a>	<a href="#">Administration</a>	Describes the various tasks that are performed by the administrator in the CGDS Designer.
<a href="#">Chapter 4</a>	<a href="#">Designing</a>	Describes the various tasks that are performed by the designer in the CGDS Designer.
<a href="#">Chapter 5</a>	<a href="#">Management</a>	Describes the tasks that are performed by the manager in the CGDS Designer.

## Document Conventions

Convention	Indication
<b>bold font</b>	Commands and keywords and user-entered text appear in <b>bold font</b> .
<i>italic font</i>	Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic font</i> .
[ ]	Elements in square brackets are optional.
{ x   y   z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[ x   y   z ]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
<code>courier font</code>	Terminal sessions and information the system displays appear in <code>courier font</code> .
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.
Option > Option	Used to describe a series of menu options.



### Note

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

## Related Documentation

- *Cisco Connected Grid Design Suite (CGDS) – Substation Workbench Release 1.5 Release Notes*
- *Cisco Connected Grid Design Suite (CGDS) – Substation Workbench Quick Start Guide*
- *Cisco Connected Grid Design Suite (CGDS) – Substation Workbench Installation and Configuration*
- *Guide*
- *Cisco Connected Grid Design Suite (CGDS) – Substation Workbench Monitor User Guide*
- *Cisco Connected Grid Design Suite (CGDS) – Substation Workbench Troubleshooting Guide*

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## Getting Started

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The Cisco Connected Grid Design Suite (CGDS)- Substation Workbench Designer (CGDS Designer) is a full lifecycle grid modernization solution that enables utilities to accelerate their goal of grid modernization. It provides a portfolio of software modules, hardware appliances, and advanced services to support utility engineers throughout the design, modeling, visualization, and monitoring process.

- [About the CGDS Designer, page 1-1](#)
- [Modules, page 1-1](#)
- [Logging In, page 1-2](#)
- [Changing the User Password, page 1-2](#)
- [Retrieving Your Password, page 1-3](#)
- [Logging Out, page 1-3](#)

## About the CGDS Designer

The CGDS Designer is the first of several planned software modules to be released within the overall solution. It allows substation engineers to dynamically develop, model, and test the substation local area network (LAN) both before and after installation.

The CGDS Designer is focused on the intra-substation LAN to enable vendor-agnostic device configuration via standards-based configuration templates. It provides real-time visualization about the integrated substation LAN, IEDs, and switches to authorized and unauthorized IP-enabled devices.

The visualization includes the power delivery network, protection schemes, and telecommunications networks that are superimposed on one other within a familiar single one-line diagram format.

## Modules

The CGDS comprises the following modules that enable you to access its capabilities:

- [Administration, page 3-1](#)
- [Designing, page 4-1](#)
- [Management, page 5-1](#)

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## Logging In

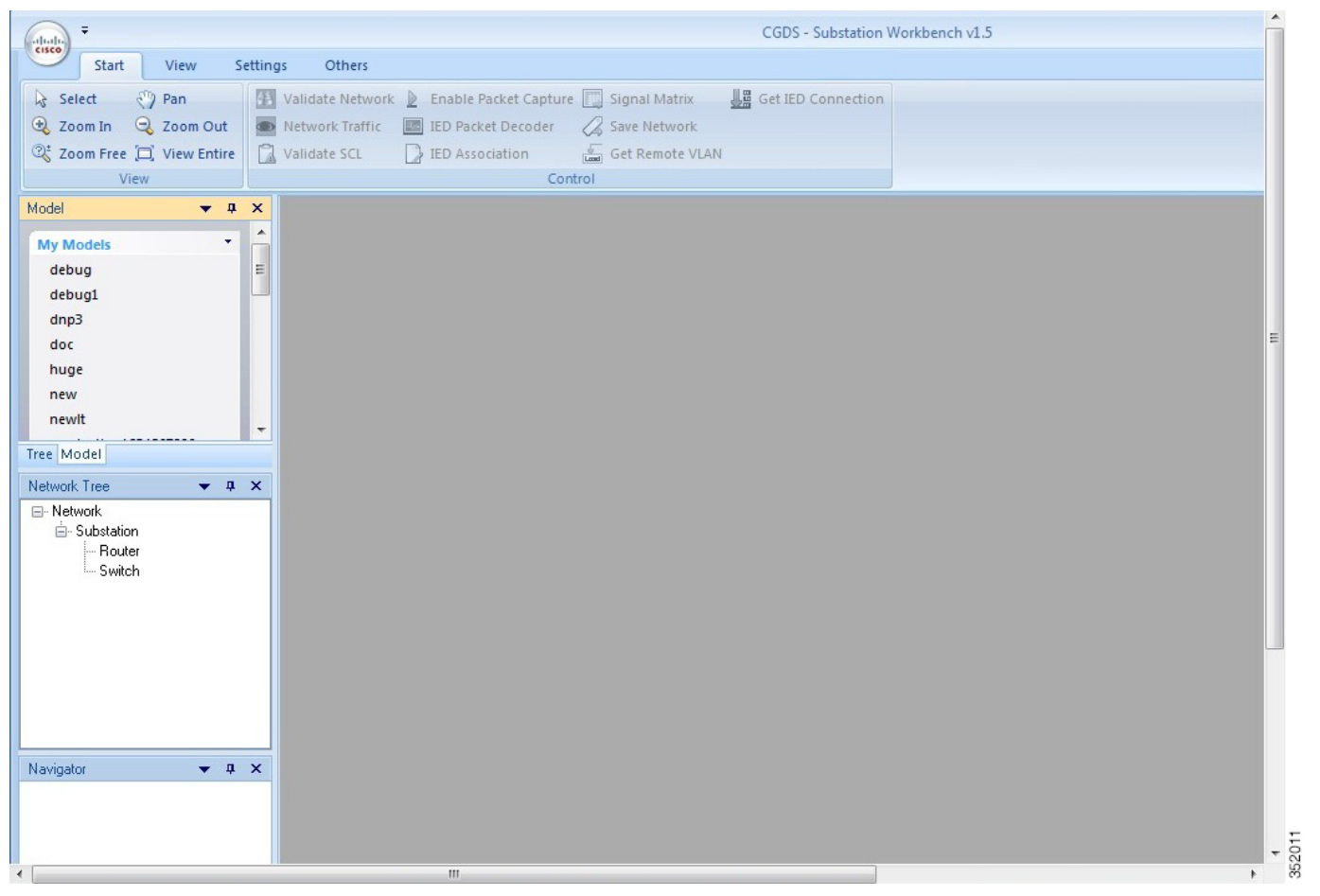
You can log in to the CGDS Designer as an administrator, a designer, a browser, or as a manager. You can subsequently log in to the CGDS Designer and perform tasks based on the assigned roles and permissions.

To log in to the CGDS Designer, perform the following steps:

- Step 1** Double-click the CGDS.exe file icon to launch the CGDS Designer.
- Step 2** Enter the CGDS username and password.
- Step 3** Click **Login**. The CGDS Designer home page appears.

You can view and access the CGDS tabs and features based on your assigned roles and permissions.

**Figure 1-1** CGDS Designer- Home Page



## Changing the User Password

To change the user password, perform the following steps:

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- 
- Step 1** Log in to the CGDS Designer.
- For more information on how to log in to the CGDS Designer, see the “Logging In” section on page 1-2 in Chapter 1, “Getting Started”.
- The home page appears.
- Step 2** Choose **Settings > Info**.
- The User Info window appears.
- Step 3** Click **Change Password**.
- Step 4** Enter the following user details:
- In the Old Password text box, enter the old password.
  - In the New Password text box, enter the new password.
  - In the Confirm Password text box, re-enter the new password to confirm the password.
- Step 5** Click **Save**.
- 


## Retrieving Your Password

You must contact the CGDS Designer administrator to retrieve the password.

---

## Logging Out

To log out from the CGDS Designer, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on how to log in to the CGDS Designer, see the “Logging In” section on page 1-2 in Chapter 1, “Getting Started”.
- The home page appears.
- Step 2** Choose **Settings > Logout**.
- A confirmation dialog box appears.
- Step 3** Click **OK**.
- (Optional) Click the Cisco  icon from the menu and click **Close**.
-

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## Roles

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This chapter describes the various user roles that access the CGDS Designer. Roles define the tasks that a user can perform in the CGDS Designer, such as adding users, creating models, designing the network topology, validating the network, and so on. The four roles that are available in the CGDS Designer are as follows:

- [Administrator](#)
- [Browser](#)
- [Designer](#)
- [Manager](#)

## Administrator

The user who can access the CGDS Designer to administer and analyze the network topologies, output, and configurations. An administrator can perform the following tasks:

- Create and modify the network topology.
- Create users and assign them permissions.
- Perform all of the tasks that the Designer can perform. For more information on the Designer role tasks, see [Chapter 4, “Designing”](#).

For more information on the tasks that the Administrator can perform in the CGDS Designer, see [Table 2-1](#).

## Browser

The user who can access the CGDS Designer to only view the existing models that are created by an administrator, designer, or manager. For more information on the different tasks that the Browser can perform in the CGDS Designer, see [Table 2-1](#).

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## Designer

The user who can access the CGDS Designer to design the substation network by creating a model, designing and exporting the network topologies, validating the network, obtaining the VLAN information, and so on. This includes creating user accounts and assigning access permissions. For more information on the tasks that the Designer can perform in the CGDS Designer, see [Table 2-1](#).

## Manager

The user who can access the CGDS Designer to manage other roles and assign viewership rights to other users. This includes creating user accounts and assigning access permissions to them. For more information on the tasks that the Manager can perform in the CGDS Designer, see [Table 2-1](#).

## Key Tasks

The tasks performed by the different roles are as shown in [Table 2-1](#).

**Table 2-1**      **Tasks and Roles**

Tasks	Roles
<a href="#">Creating a User</a>	Administrator
<a href="#">Editing the User Details</a>	
<a href="#">Setting the Style for the IEDs in the Network</a>	
<a href="#">Creating the Style Information</a>	
<a href="#">Editing the Style Information</a>	
<a href="#">Deleting the Style Information</a>	
<a href="#">Applying the Style</a>	
<a href="#">Saving the Style</a>	
<a href="#">Loading the Style</a>	
<a href="#">Designing the Substation Topology</a>	Administrator, Designer, and Manager
<a href="#">Validating the Network Details</a>	
<a href="#">Exporting the Substation Topology Details</a>	
<a href="#">Assigning Viewership Rights to Users</a>	Manager
<a href="#">Viewing an Existing Model</a>	Administrator, Browser, Designer, and Manager



## Administration

---

You can create a user, edit user details, create, edit, delete style information, and set the style for IEDs in the network.

- [Creating a User, page 3-1](#)
- [Editing the User Details, page 3-2](#)
- [Setting the Style for the IEDs in the Network, page 3-2](#)
- [Creating the Style Information, page 3-3](#)
- [Editing the Style Information, page 3-3](#)
- [Deleting the Style Information, page 3-4](#)
- [Applying the Style, page 3-4](#)
- [Saving the Style, page 3-4](#)
- [Loading the Style, page 3-5](#)

### Creating a User

When creating users, you can assign different roles to a particular user.

To create a user, perform the following steps:

---

**Step 1** Log in to the CGDS Designer.

For more information on logging in to the CGDS Designer, see the “[Logging In](#)” section on [page 1-2](#) in [Chapter 1, “Getting Started”](#). The home page appears.

The home page appears.

**Step 2** Choose **Settings > User**.

The Users window appears.

**Step 3** Click **Create**.

The New User window appears.

**Step 4** Enter the following user details:

- In the Username text box, enter an unique user name.
- Select one of the following roles:
  - Browser

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- Designer
- Manager
- Admin

- In the Description text box, enter a unique description about the user.

**Step 5** Click **Save**.

---

## Editing the User Details

You can edit the role and description details of the user.

To edit the user details, perform the following steps:

**Step 1** Navigate to the Users window.

For more information on navigating to the Users window, perform [Step 1](#) through [Step 2](#) in the “[Creating a User](#)” section on page 3-1.

**Step 2** Select the name of the user name in the User Name column and click **Edit**.

The User Info window appears.

**Step 3** Modify the required details and click **Save**.

Alternatively, you can edit the description from the Info option.

**Step 4** To edit the user info, in the home page, choose **Settings > Info**.

The User Info window appears.

**Step 5** Modify the required information and click **Save**.



**Note**

The Designer role also has the ability to modify the user information.

---

## Setting the Style for the IEDs in the Network

To customize the appearance of an IED in your network, you can change the device size, color, and symbol for the IEDs and apply the style to the model.

To set the style for the IEDs in the network, perform the following steps:

**Step 1** Log in to the CGDS Designer.

For more information on logging in to the CGDS Designer, see the “[Logging In](#)” section on page 1-2 in [Chapter 1, “Getting Started](#)”. The home page appears.

The home page appears.

**Step 2** Choose **View > ViewSet** and select **StyleSet**.

The Device Style Set window appears.



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The Device Style List area displays the following details about the device styles that are added in the CGDS Substation Workbench:

- Device—The type of device.
  - State—The current state of the device.
  - Value—The style applied to the device.
  - Symbol—The pre-populated symbol for a device.
  - Size—The size of the device.
  - Expression— The unique description of the device.
  - Back Color—The background color of the device.
- 

## **Creating the Style Information**

To create the style information, perform the following steps:

- 
- Step 1** Navigate to the Device Style Set window.
- For more information on navigating to the Device Style Set window, perform [Step 1](#) through [Step 2](#) in the “[Setting the Style for the IEDs in the Network](#)” section on page 3-2.
- Step 2** Click **New**.
- The Style Information window appears.
- Step 3** Enter the following details:
- From the Device drop-down list, choose the particular device.
  - In the StyleValue text box, enter the style value of the device.
  - In the description text box, enter an unique description of the device.
  - From the Symbol drop-down list, choose a number.
  - In the Size text box, a default value exists Modify the field to re-enter any other value.
  - From the Property drop-down lists, choose the preferred property value and property symbol. In the text box, enter the defined text, and click **Add Expression**. After clicking **Add Expression**, the text automatically appears in the Expression text box, you can modify the Expression text box.
  - In the BackColor field, click the color box to choose the preferred color. To select more colors, choose **Define Custom Colors > Add to Custom Colors**.
- Step 4** Click **OK**.
- 

## **Editing the Style Information**

To edit the style information, perform the following steps:

- 
- Step 1** Navigate to the Device Style Set window.

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For more information on navigating to the Device Style Set window, perform [Step 1](#) through [Step 2](#) in the “[Setting the Style for the IEDs in the Network](#)” section on page 3-2.

- Step 2** Select the device that you want to modify from the Device column, and click **Edit**.  
The Style Information window appears.
  - Step 3** Modify the necessary details.
  - Step 4** Click **OK**.
- 

## **Deleting the Style Information**

To delete the style information, perform the following steps:

- Step 1** Navigate to the Device Style Set window.  
For more information on navigating to the Device Style Set window, perform [Step 1](#) through [Step 2](#) in the “[Setting the Style for the IEDs in the Network](#)” section on page 3-2.  
The Style Information window appears
  - Step 2** From the Device column, select the device that you want to delete, and click **Delete**.  
The system deletes the style information after the confirmation.
- 

## **Applying the Style**

To apply the style information, perform the following steps:

- Step 1** Navigate to the Device Style Set window.  
For more information on navigating to the Device Style Set window, perform [Step 1](#) through [Step 2](#) in the “[Setting the Style for the IEDs in the Network](#)” section on page 3-2.
  - Step 2** From the Device column, select the device that you want to apply the style on, and click **Apply Style**.  
A confirmation dialog box appears.
  - Step 3** Click **OK**.
- 

## **Saving the Style**

To save the style information, perform the following steps:

- Step 1** Navigate to the Device Style Set window.  
For more information on navigating to the Device Style Set window, perform [Step 1](#) through [Step 2](#) in the “[Setting the Style for the IEDs in the Network](#)” section on page 3-2.
- Step 2** From the Device column, select the device for which you want to save the style, and click **Save Style**.

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The location to where you need to save the style appears.

**Step 3** Click **Save**.

---

## Loading the Style

To load the style information, perform the following steps:

---

**Step 1** Navigate to the Device Style Set window.

For more information on navigating to the Device Style Set window, perform [Step 1](#) through [Step 2](#) in the “[Setting the Style for the IEDs in the Network](#)” section on page 3-2.

**Step 2** From the Device column, select the device for which you want to load the style, and click **Load Style**.  
The location from which you want to load the style appears.

**Step 3** Browse and upload the file.

---

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## Designing

The CGDS Designer allows you create a substation topology. The Cisco Connected Grid Design Suite (CGDS) application allows you to design the integrated substation LAN by analyzing configurations for the switches and intelligent electronic devices (IEDs). This enables you to visualize, design, and validate the LAN design before and after installing it in a substation.

You can create different network topologies such as star and ring topologies. A star topology consists of a central switch, which acts as a conduit to transmit messages. This consists of a central node to which all of the other nodes are connected; this central node provides a common connection point for all of the nodes through a hub. A ring topology is a network topology in which each node connects to exactly two other nodes, forming a single continuous pathway for signals through each node that forms a ring. The data travels from node to node, with each node along the way handling every packet.

The CGDS Designer supports the CISCO CGS2520 and RuggedCom RSG2200 switches, GOOSE and DNP IEDs. The supported functionalities for these switches and IEDs are as follows:

**Table 4-1**      **Supported Functionalities - Switches and IEDs**

Functionality	Switch	IED
Validate network	Both CISCO and RuggedCom	NA
Get IED connection	Only CISCO	Both GOOSE and DNP IEDs are connected to the CISCO switches
Get remote VLAN	Only CISCO switches display the VLAN ID and switch ports active to these VLAN ID	NA

- [Designing the Substation Topology, page 4-1](#)
- [Validating the Network Details, page 4-7](#)
- [Exporting the Substation Topology Details, page 4-9](#)

## Designing the Substation Topology


- [Creating a Model, page 4-2](#)
- [Viewing an Existing Model, page 4-2](#)

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- [Manually Designing the Substation Topology, page 4-3](#)
- [Designing the Topology using a Template, page 4-5](#)
- [Designing the Topology using the Autodiscovery Result, page 4-5](#)
- [Binding an SCL Version to a Model, page 4-6](#)
- [Finding Differences between the SCL Files, page 4-7](#)
- [Generating an Auto Bay View, page 4-7](#)

## Creating a Model

To create a model, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#). The home page appears.
- Step 2** Click the Cisco  icon, and click **New**.
- The Model dialog box appears.
- Step 3** Enter the following details:
- In the Name text box, enter the name of the model.
  - In the Description text box, enter an unique description.
  - From the Map drop-down list, choose the required criteria.
  - Click **Select Users**.
- The Select Users dialog box appears.
- Step 4** Select the users and click **OK**. The Creator and the Time fields are set by default.
- Step 5** Click **Create**.
- The model is created.
- 

## Viewing an Existing Model



To view an existing model, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#). The home page appears.
- Step 2** In the View Models pane, click one of the existing models to view it.
-

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## Manually Designing the Substation Topology

To manually design the substation topology, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the “[Logging In](#)” section on page 1-2 in [Chapter 1, “Getting Started](#)”. The home page appears.
- Step 2** Click the Cisco  icon and choose Network Design Wizard from the menu. The Network Design Wizard -- SCL File Setup dialog box appears.
- Step 3** Add a new SCL file. To add a new SCL file, perform the following steps:
- a. Click **Add new SCL file**.  
The SCL Version Controller window appears. You can add, delete, and rename the version group.
  - b. Click **Add Group** to add a new group.
  - c. Click **Rename** to rename the version group.
  - d. Click **Delete** under the Version Group to delete the version group.
  - e. Click **Add Version** to create a new version of the SCL file and perform the following steps:
    1. In the SCL file text box, browse for and choose the SCL file that contains the details about the substation, IED (Intelligent Electronic Device), and so on.
    2. In the Description and Version Detail text box, enter the description and version details of the of the SCL file.
    3. Click **OK**. The Selected SCL file is imported into the CGDS Designer.
- 
-  **Note** You must create different versions of the SCL file for different models. It is recommended to have one group for one SCL file. If you want to create new groups, you can add them.
- 
- f. (Optional) To find the difference between the versions of the SCL files, select the desired versions, and click **Difference**.
  - g. To delete the version, select the desired version and click **Delete**.
  - h. Click **Close** to close the SCL Version Controller window.
- Step 4** To select an existing SCL file, choose the desired group from the Group drop-down list and choose the version from the Version drop-down list.
- Step 5** Click **Next**. The Network Design Wizard -- Connection dialog box appears.
- Step 6** Choose the Auto generate connection radio button. Click **Next**. The Network Design Wizard -- Select Network Devices dialog box appears.
- Step 7** Click **Add**. To add the switch information, perform the following steps:
1. From the Voltage Level Type drop-down list, choose the desired voltage level.
  2. From the Vendor drop-down list, choose the desired vendor. The available options are Cisco and RuggedCom.
  3. From the Switch Type drop-down list, choose the desired switch type.
    - If you have chosen Cisco as the vendor, then the available options are CGS2520, CGS-1000-16TC, CGS-1000-8TC, and CGS-10004TC.

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- If you have chosen RuggedCom as the vendor, then the available option is RSG2200.
- 4. In the Name text box, enter the name of the switch.
- 5. From the Ports Connection drop-down list, choose the desired port connection.
- 6. Enter the relevant details in the following text boxes:
  - Description
  - Username
  - Password
  - IP Address
  - Subnet Mask
  - Gateway
- 7. (Optional) Click **Save As** to save the switch information. The information is stored in the XML format.
- 8. (Optional) To import the existing switch information, click **Load**. Browse for the XML file that contains the switch information.
- 9. Click **Add** to add the switch information.

**Step 8** (Optional) For the star topology, choose one of the switches to be the main switch and click **Main Switch**.

**Step 9** Click **Next**. The Network Design Wizard -- IED Association dialog box appears.

**Step 10** From the IED Type drop-down list, choose the desired IED type. The available options are DNP, IEC61850, IEC60870.5-103, IEC60870.5-101.

**Step 11** Click **Add** to add the IEDs. The IED Association dialog box appears.




---

**Note** You must enter the IP address of the switch for the DNP protocol and MAC address for the GOOSE protocol.

---

You can associate either a DNP or GOOSE IED. To associate the DNP IED, continue with [Step 12](#). To associate the GOOSE IED, continue with [Step 13](#).

**Step 12** To associate the DNP IED, perform the following steps:

- a. From the IED Name drop-down list, choose the desired IED that is available in the SCL file.
- b. From the Switch drop-down list, choose the switch for which you want to associate the IED.
- c. From the Switch Port drop-down list, choose the desired switch port.
- d. From the Sub Network drop-down list, choose the sub network. The available option is SF-SubNectWork.
- e. In the VLAN ID text box, enter the VLAN ID.
- f. In the Subnet Mask text box, enter the subnet mask ID.
- g. In the Gateway text box, enter the gateway ID.
- h. Click **Add**. The IED association success message appears.
- i. Click **Close**.

**Step 13** To associate the IEC61850 IED type, perform the following steps:

- a. From the IEDs drop-down list, choose the desired IED that is available in the SCL file.




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- b. From the IED port type drop-down list, choose the desired IED port type. The available options are RJ45 for electrical plug and ST for bajonet plug.
  - c. From the Sub Network drop-down list, choose the sub network. The available option is SF-SubNectWork.
  - d. From the Switch drop-down list, choose the switch for which you want to associate the IED.
  - e. From the Switch Port drop-down list, choose the desired switch port.
  - f. In the IED Port Description text box, enter a short description for the IED port.
  - g. Select the desired binding access point from the Bind Access Point check boxes.
  - h. From the Communication Interface drop-down list, choose the desired type of the interface.
  - i. Click **Add**. The IED association success message appears.
  - j. Click **Close**.
- Step 14** Click **Next**. The Network Design Wizard - - VLAN Information wizard dialog box appears.
- Step 15** Click **Next**. The Network Design Wizard - - Summary dialog box appears displaying the information about the SCL file, connection topology file, network device, and switch details.
- Step 16** Click **Finish**. The network topology is created.
- 

## **Designing the Topology using a Template**


To design the network topology using a template, perform the following steps:

- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#). The home page appears.
- Step 2** Click the Cisco  icon and choose Network Design Wizard from the menu.
- The Network Design Wizard -- SCL File Setup dialog box appears.
- Step 3** Add a new SCL file. To add a new SCL file, perform [Step 3](#) of the [“Manually Designing the Substation Topology” section on page 4-3](#).
- Step 4** To select an existing SCL file, choose the desired group from the Group drop-down list, and choose the version from the Version drop-down list.
- Step 5** Click **Next**. The Network Design Wizard -- Connection dialog box appears.
- Step 6** Select the Use a connection template radio button. The existing template is loaded with the switch details.
- Step 7** You can choose to edit the switch details. Perform [Step 7](#) through [Step 16](#) in [Manually Designing the Substation Topology, page 4-3](#).
- 

## **Designing the Topology using the Autodiscovery Result**

To design the network using the autodiscovery result, perform the following steps:

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- 
- Step 1** Log in to the CGDS Designer.  
For more information on logging in to the CGDS Designer, see the “Logging In” section on page 1-2 in Chapter 1, “Getting Started”. The home page appears.
- Step 2** Click the Cisco  icon and choose Network Design Wizard from the menu.  
The Network Design Wizard -- SCL File Setup dialog box appears.
- Step 3** Add a new SCL file. To add a new SCL file, perform Step 3 of the “Manually Designing the Substation Topology” section on page 4-3.
- Step 4** To select an existing SCL file, choose the desired group from the Group drop-down list, and choose the version from the Version drop-down list.
- Step 5** Click **Next**. The Network Design Wizard -- Connection dialog box appears.
- Step 6** Select the Import the AutoDiscovery Result radio button and browse for the autodiscovery result file. Click **Next**. The Network Design Wizard -- Select Network Devices dialog box appears.



**Note** When creating the network topology using the autodiscovery result, you cannot add or modify the switch and IED information.

- 
- Step 7** Click **Next**. The Network Design Wizard -- IED Association dialog box appears.
- Step 8** Click **Next**. The Network Design Wizard -- VLAN Information dialog box appears.
- Step 9** Click **Next**. The Network Design Wizard -- Summary dialog box appears.
- Step 10** Click **Finish**. The network topology is created.
- 

## Binding an SCL Version to a Model

To bind the SCL version to a model, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.  
For more information on logging in to the CGDS Designer, see the “Logging In” section on page 1-2 in Chapter 1, “Getting Started”. The home page appears.
- Step 2** Choose **Others > Bind**.  
The Version Bind dialog box appears.  
The Version Bind area displays the following details about the versions that are binded in the CGDS:
- Step 3** In the Bind Information area, perform the following steps:
- From the Group drop-down list, choose the group criteria.
  - From the Bind Version drop-down list, choose the version criteria.
  - Select the Always bind last version check box, if you want to bind the last version.
- Step 4** In the Version Information area, enter the following details:
- Version
  - Time
  - Description

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- Detail

**Step 5** Click **Bind**.

---

## Finding Differences between the SCL Files

To determine the differences between the SCL files, perform the following steps:

**Step 1** Log in to the CGDS Designer.

For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#). The home page appears.

**Step 2** Choose **Others > File Diff**.

The SCL Version Difference dialog box appears.

**Step 3** In the SCL File1 and SCL File2 text boxes, browse for and select the files for which you want to find the difference.

**Step 4** Click **Difference**.

The differences between the two files are summarized in the SCL File difference table.

---

## Generating an Auto Bay View

An auto bay view displays a pictorial view of grouping IEDs with different subnets under different voltage levels.

To generate an auto bay view, perform the following steps:

**Step 1** Log in to the CGDS Designer.

For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#). The home page appears.

**Step 2** Choose **View > AutoBay**.

A confirmation dialog box appears.

**Step 3** Click **OK**.

You can view the generated auto bay view.

---

## Validating the Network Details

After designing the substation topology in the CGDS Designer, you must validate the IED connections, switch connections, and VLAN information.

- [Validating the Network Details, page 4-7](#)
- [Obtaining the IED Connection, page 4-8](#)

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- [Obtaining the VLAN Information, page 4-9](#)
- [Validating the SCL File, page 4-9](#)

## Validating the Network

You must ensure that all of the switches are reachable in the network. A switch may be unreachable due to one of the following reasons:

- The IP address is not reachable.
- The login name or password for the switch is incorrect.
- There is a network issue.

To validate the network, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#). The home page appears.
- Step 2** In the My Models pane, click the model for which you want to validate the network.
- The selected model is loaded.
- Step 3** Click **Validate Network**. The log files display the information about whether the switch is valid or not reachable.
- 

## Obtaining the IED Connection

You must ensure that all of the IEDs are connected and securely communicating with each other. An IED that is physically connected to a switch appears with an IED media access control (MAC) address, whereas an IED that is logically connected appears with the unknown value.

The IED connection status appears as connected if the IED is securely connected, whereas the status appears as not connected if the IED is not connected. The IED may not be connected due to the following reasons:

- The IED is connected to an unreachable switch.
- The IED is connected to more than one switch due to which there is a configuration error.

This feature is used to validate the connection status of all of the IEDs with the switch in the substation topology.

To obtain the IED connection, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#). The home page appears.
- Step 2** In the My Models pane, click the model for which you want to obtain the IED connection.
- The selected model is loaded.
- Step 3** Click **Get IED Connection**.

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The Get IED Connection dialog box appears with the following detailed information about the IEDs:

- IED Name—Name of the IED.
  - IED Port No—Port number of the IED.
  - Mac Address/IP Address—MAC address or IP address of the IED. If the MAC address exists, it indicates that the IED is connected to the switch.
- 

## **Obtaining the VLAN Information**

The virtual local area network (VLAN) addresses and active ports are connected to the VLAN ID. To obtain the VLAN information, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the “[Logging In](#)” section on page 1-2 in [Chapter 1, “Getting Started](#)”. The home page appears.
- Step 2** In the My Models pane, click the model for which you want to obtain the VLAN information.
- The selected model is loaded.
- Step 3** Click **Get Remote VLAN**. This displays all of the available VLANs and the associated switches and the port details.
- 

## **Validating the SCL File**

The Validate SCL File command examines the syntax, tags, and the duplicate information that is present in the SCL file.

To obtain the VLAN information, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the “[Logging In](#)” section on page 1-2 in [Chapter 1, “Getting Started](#)”. The home page appears.
- Step 2** In the My Models pane, click the model for which you want to validate the SCL file.
- The selected model is loaded.
- Step 3** Click **Validate SCL**.
- The SCL file is validated. If there any errors in the file, then it is displayed.
- 

## **Exporting the Substation Topology Details**

- [Exporting a Network Configuration, page 4-10](#)
- [Exporting the Substation Topology, page 4-10](#)

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- [Exporting the IED Topology, page 4-10](#)
- [Exporting the Signal Matrix, page 4-11](#)

## Exporting a Network Configuration

After the network engineer completes the designing and validation process, the existing topology can be exported and shared with other users, even for the users who are not in the same facility.


Exporting creates an XML version of the physical network topology and logical network topology, which can be imported into the Monitoring & Analysis configuration.

To export the network configuration in the XML format, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#). The home page appears.
- Step 2** Click the Cisco  icon. Choose **Export > Export Network Configuration** from the menu.
- Step 3** The Save As screen appears. Enter the file name and browse for the location where you would like to save the file.
- Step 4** Click **Save**. The file is saved in the XML format.
- 


## Exporting the Substation Topology

To export the substation topology, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#).
- Step 2** Click the Cisco  icon. Choose **Export > Export Substation Topology** from the menu.
- Step 3** The Save As screen appears. Enter the file name and browse for the location where you want to save the file.
- Step 4** Click **Save**. The file is saved in the XML format.
- 

## Exporting the IED Topology

To export the IED topology, perform the following steps:


- 
- Step 1** Log in to the CGDS Designer.
- For more information on logging in to the CGDS Designer, see the [“Logging In” section on page 1-2 in Chapter 1, “Getting Started”](#). The home page appears.
- Step 2** Click the Cisco  icon and choose **Export > Export IED Topology** from the menu.

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- Step 3** The Save As screen appears. Enter the file name and browse for the location where you want to save the file.
  - Step 4** Click **Save**. The file is saved in the XML format.
- 

## Exporting the Signal Matrix

To export the signal matrix, perform the following steps:

- Step 1** Log in to the CGDS Designer.  
For more information on logging in to the CGDS Designer, see the “[Logging In](#)” section on page 1-2 in [Chapter 1, “Getting Started](#)”. The home page appears.
  - Step 2** Click the Cisco  icon and choose **Export > Export Signal Matrix** from the menu.
  - Step 3** The Save As screen appears. Enter the file name and browse for the location where you want to save the file.
  - Step 4** Click **Save**. The file is saved in the XML format.
-

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## Management

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The manager is a senior personnel in the control center, and performs the function of assigning viewership rights to users.

### Assigning Viewership Rights to Users

The manager can assign viewership rights to the user and also design models.

To assign viewership rights to a user, perform the following steps:

- 
- Step 1** Log in to the CGDS Designer.  
For more information on how to log in to the CGDS Designer, see the [“Logging In”](#) section on page 1-2 in [Chapter 1, “Getting Started”](#).  
The home page appears.
  - Step 2** Choose **Settings > Model Access**.  
The Manage Model Access List window appears.
  - Step 3** From the Model Name column, click the name of the model.  
The Select Users Window appears.
  - Step 4** From the list of users, select the users to whom you want to assign the viewership rights.
  - Step 5** Click **OK**.
-

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