

**Application Note**

# Cisco CNS Configuration Engine Provisioning with the Cisco Router and Security Device Manager

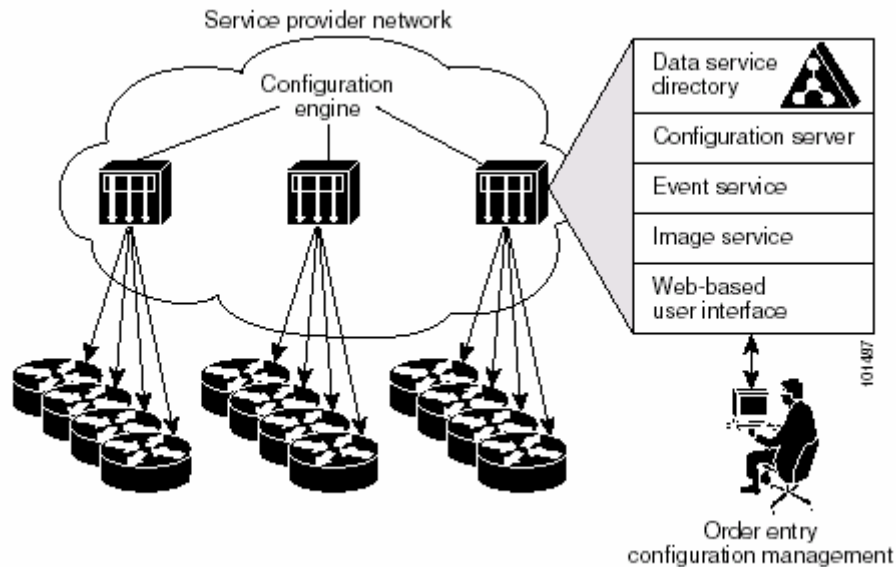
**Introduction**

The Cisco® CNS Configuration Engine is a network management application that acts as a configuration service for automating the deployment and management of network devices and services (Figure 1). The Cisco CNS Configuration Engine runs on the Cisco CNS 2100 Series Intelligence Engine hardware platform.

Each Cisco CNS Configuration Engine manages a group of Cisco devices and services, storing their configurations and delivering them as needed. The Cisco CNS Configuration Engine provides a scalable infrastructure for managing the large-scale deployment of Cisco devices.

The Cisco CNS 2100 Series platform is commonly deployed by service providers to enable a “zero-touch” deployment of Cisco low-end routers in customer premises equipment (CPE) environments.

**Figure 1 Cisco CNS Configuration Engine Architectural Overview**



**Technology**

The Cisco CNS Configuration Service is one of the core components of the Cisco CNS Configuration Engine. It consists of a configuration server located at the Cisco CNS Configuration Engine that works in conjunction with configuration agents located at Cisco IOS® Software-based routers. The CNS Configuration Service delivers device and service configurations to Cisco IOS routers for initial configurations and



mass reconfigurations. Routers receive their initial configurations from the CNS Configuration Service when they start up on the network the first time.

### **How to Configure CNS Configuration Agent on Cisco IOS Routers**

To start CNS Configuration Agent and begin an initial configuration in a router, take following steps:

- Configure the WAN interface for CNS configuration server connectivity
- Enable the CNS Configuration Agent and download the initial configuration
- Set the unique Cisco IOS router identifier used by Cisco CNS services.

In a Cisco deployment scenario:

- The Cisco CNS configuration server: 172.28.49.99
- The unique Cisco IOS router identifier (CNS ID string): cisco1712
- The router is connected to a DSL modem using Point-to-Point Protocol over Ethernet (PPPoE) encapsulation

### **Cisco Security Device Manager**

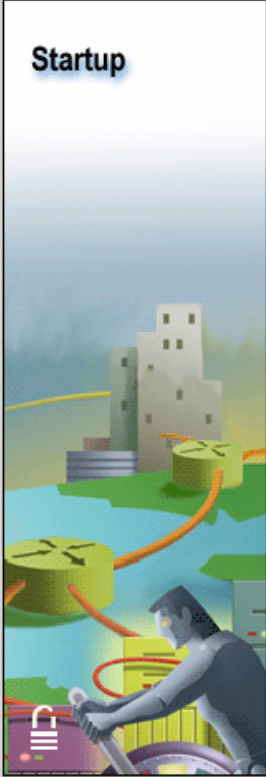
The Cisco Router and Security Device Manager (SDM) 1.1 Startup wizard is enhanced to include CNS Configuration Agent configuration to provision the Cisco CNS Configuration Engine. When the Cisco SDM is launched the first time, the Cisco SDM Startup wizard appears (Figure 2). Click **Next** to begin configuring the router.

**Figure 2 Cisco Security Device Manager Startup Wizard**



**Startup Wizard** [X]

## Startup

An illustration on the left side of the wizard window shows a person in a dark suit driving a car. The car is on a road that winds through a landscape of stylized buildings and network routers. The scene is set against a blue sky with a sun or moon. The person is looking forward, and the car is moving towards the right.

### Welcome to Cisco Security Device Manager Startup Wizard

The Cisco Security Device Manager (SDM) Startup wizard guides you through a basic configuration that will help you do the following:

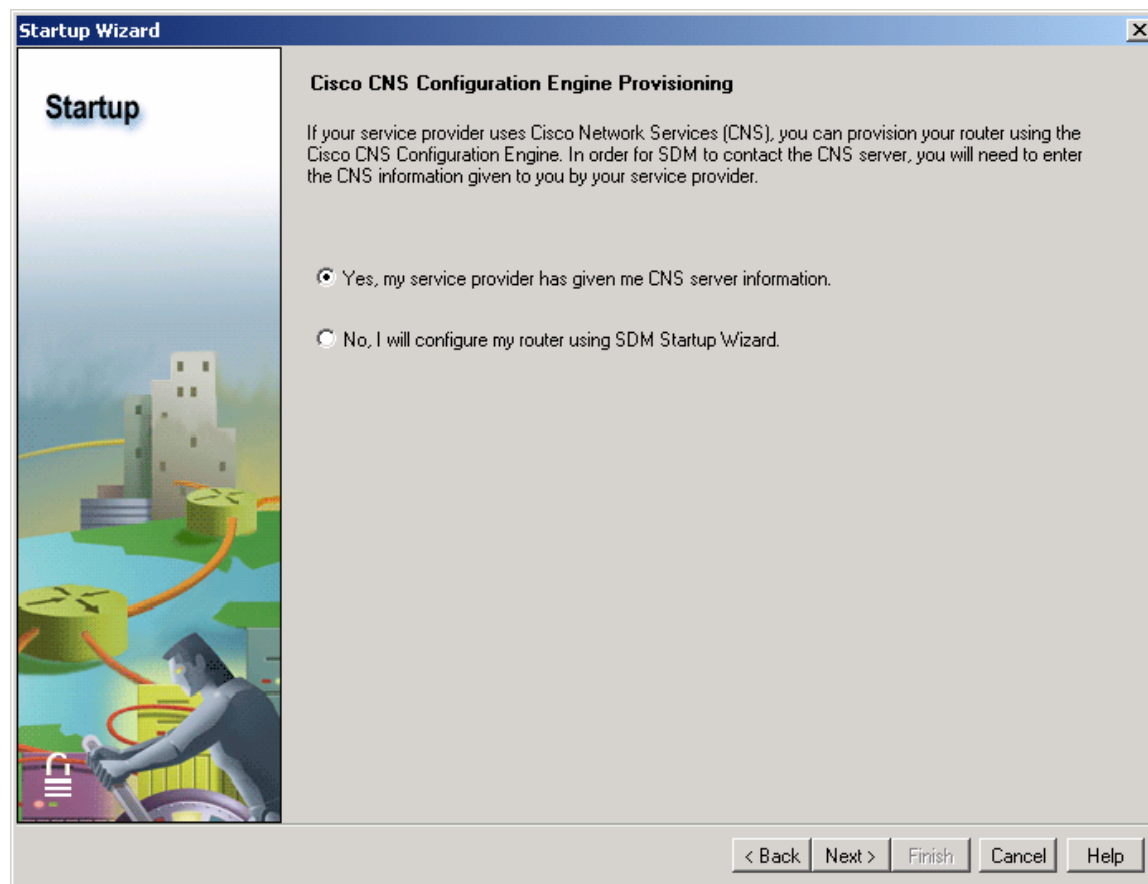
- Name the router.
- Change the factory default LAN IP address.
- Create a DHCP address pool for the LAN
- Identify DNS servers and your organization's domain name.  
(Consult your network administrator or Internet Service Provider for this information)
- Create a WAN connection.
- Create a Basic Firewall for the LAN and WAN connections.
- Make settings that will enhance network security and performance.
- Encrypt passwords.
- Allow you to obtain a router configuration from a remote Cisco CNS server.

< Back   Next >   Finish   Cancel   Help



Next, select **Yes, my service provider has given me CNS server information**, and click **Next** (Figure 3).

Figure 3 Cisco CNS Configuration Engine Provisioning



For Cisco CNS configuration server provisioning (Figure 4), take the following steps:

- Enter the Cisco CNS server IP address or hostname: in this case enter IP address **172.28.49.99**
- Enter the CNS ID string: in this case, enter the hostname of the router: **cisco1712**
- Enter the CNS password: **cisco1712** (the password displayed encrypted on screen)
- Click **Next**



Figure 4 Cisco CNS Configuration Server Provisioning

Startup Wizard

### Startup

#### CNS Configuration Engine provisioning

If your service provider uses CNS, you have been given the information SDM needs to contact the CNS server. Enter this information below. If you use a hostname to identify the CNS server (example www.myserver.com), you will need to provide the IP address of at least one domain name server in the next screen.

Enter the CNS server IP address/Hostname:

Enter the CNS ID string:

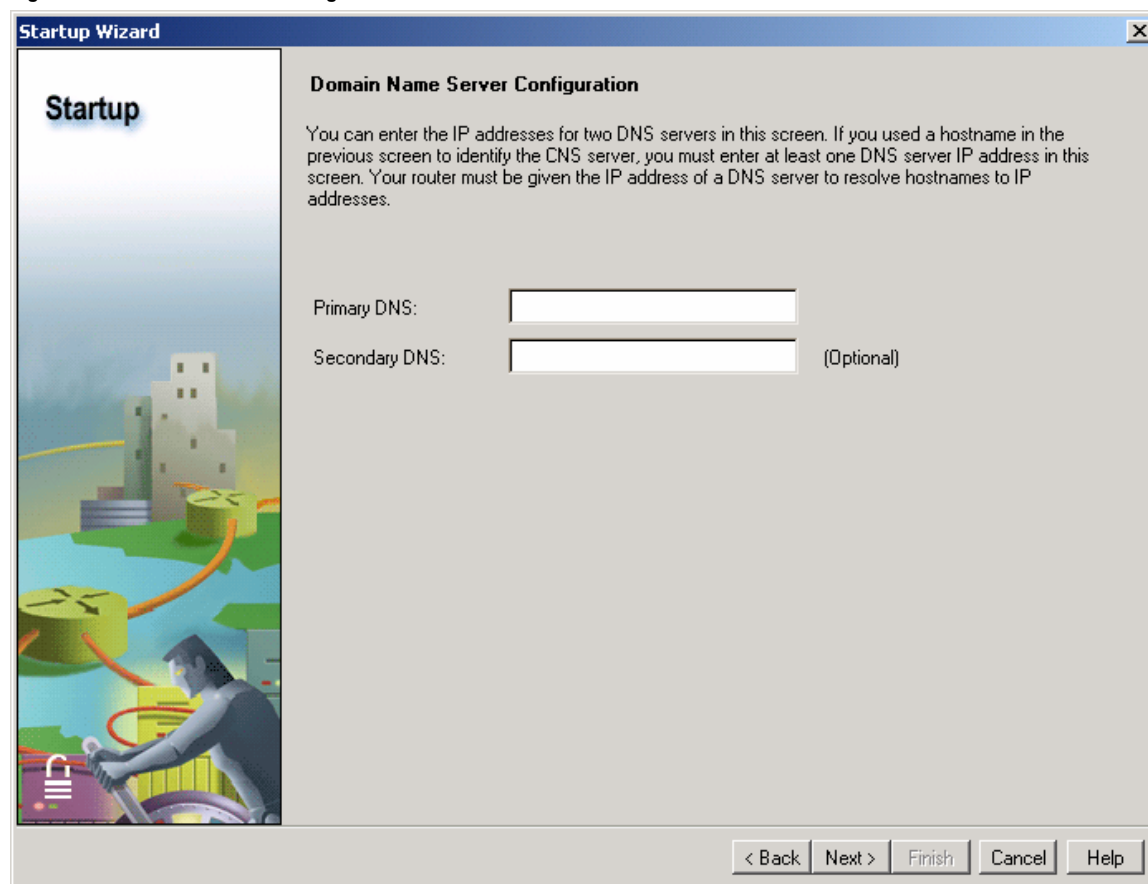
Enter the CNS password:

< Back   Next >   Finish   Cancel   Help



The IP address is used for the CNS configuration server. The Domain Name Server (DNS) is optional; leave it blank and click **Next** (Figure 5).

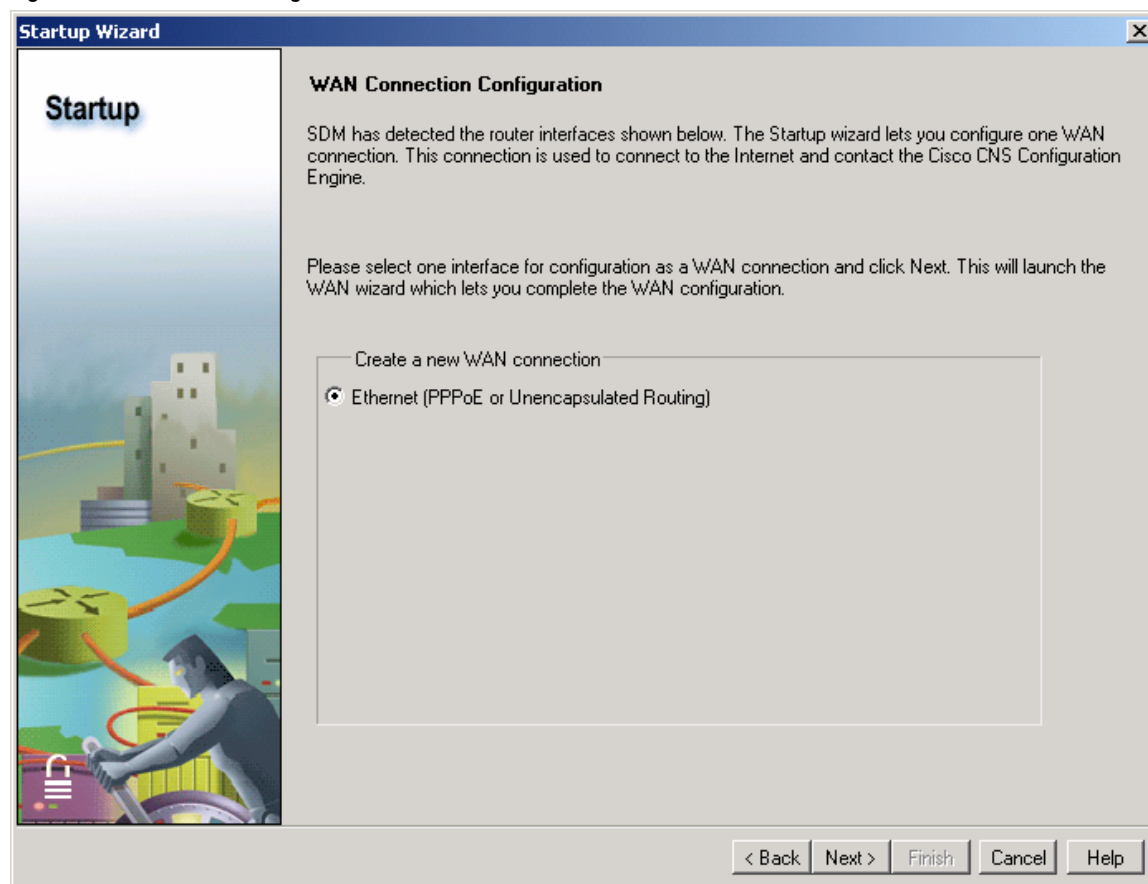
Figure 5 Domain Name Server Configuration





Select a WAN interface detected by Cisco SDM (Figure 6). In this case, only one interface is detected and selected by default. Click **Next**.

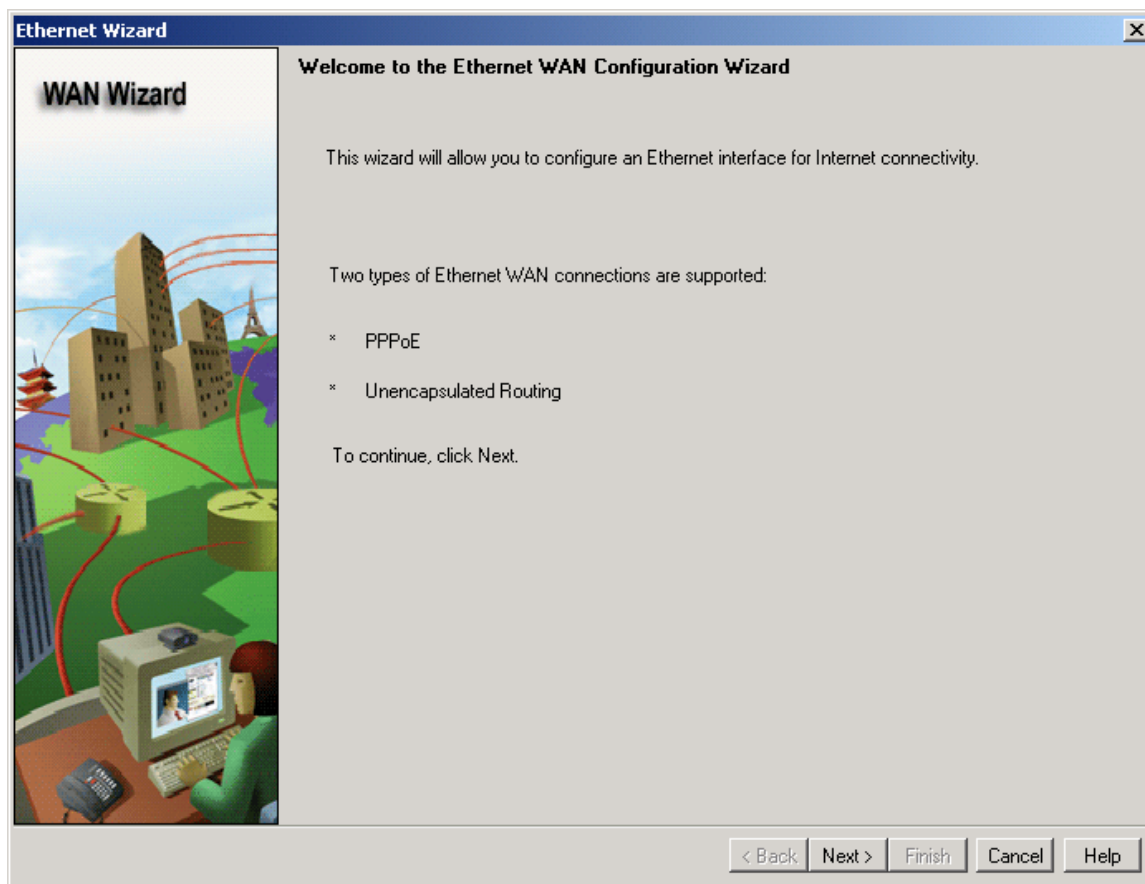
Figure 6 WAN Connection Configuration





The Ethernet WAN Configuration Wizard is activated to configure the selected Ethernet WAN interface (Figure 7). Click **Next**.

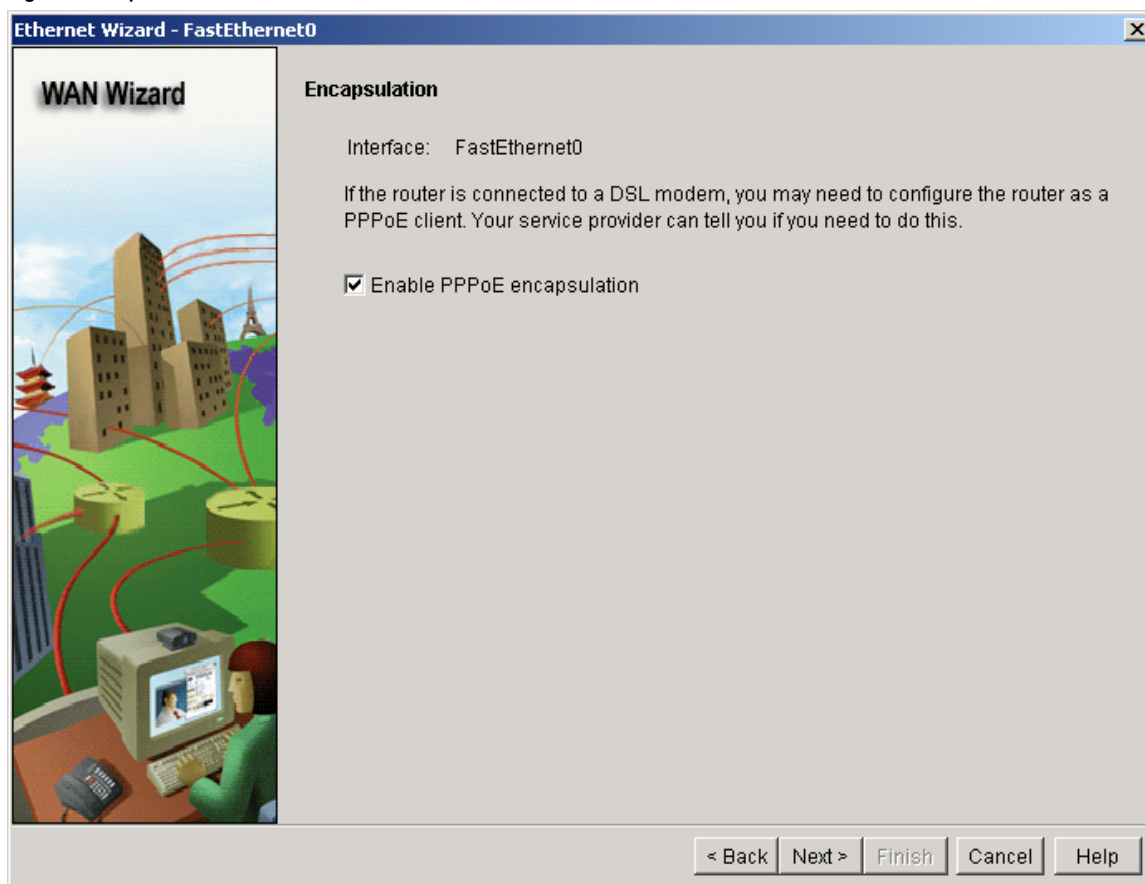
Figure 7 Ethernet WAN Configuration Wizard





In this case, the Cisco 1712 Security Access Router is connected to a DSL modem. The router will be configured as a PPPoE client. Check **Enable PPPoE encapsulation** (Figure 8).

Figure 8 Encapsulation

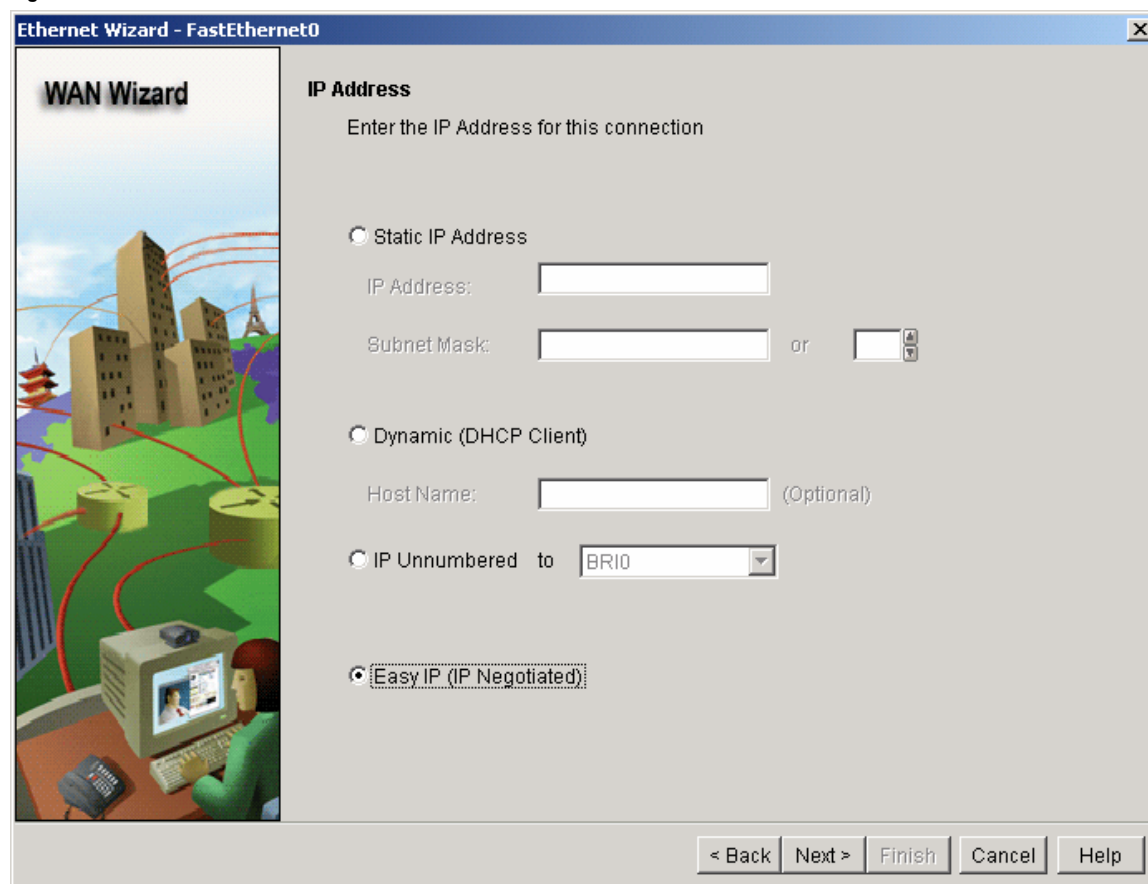




Select the IP address. Figure 9 shows **Easy IP (IP Negotiated)**. Then click **Next**.

Note: The IP address for the dialer interface can be obtained dynamically via IP Control Protocol (IPCP) (IP negotiated) from the service provider, as in this case, therefore Easy IP (IP Negotiated) is used.

Figure 9 IP Address

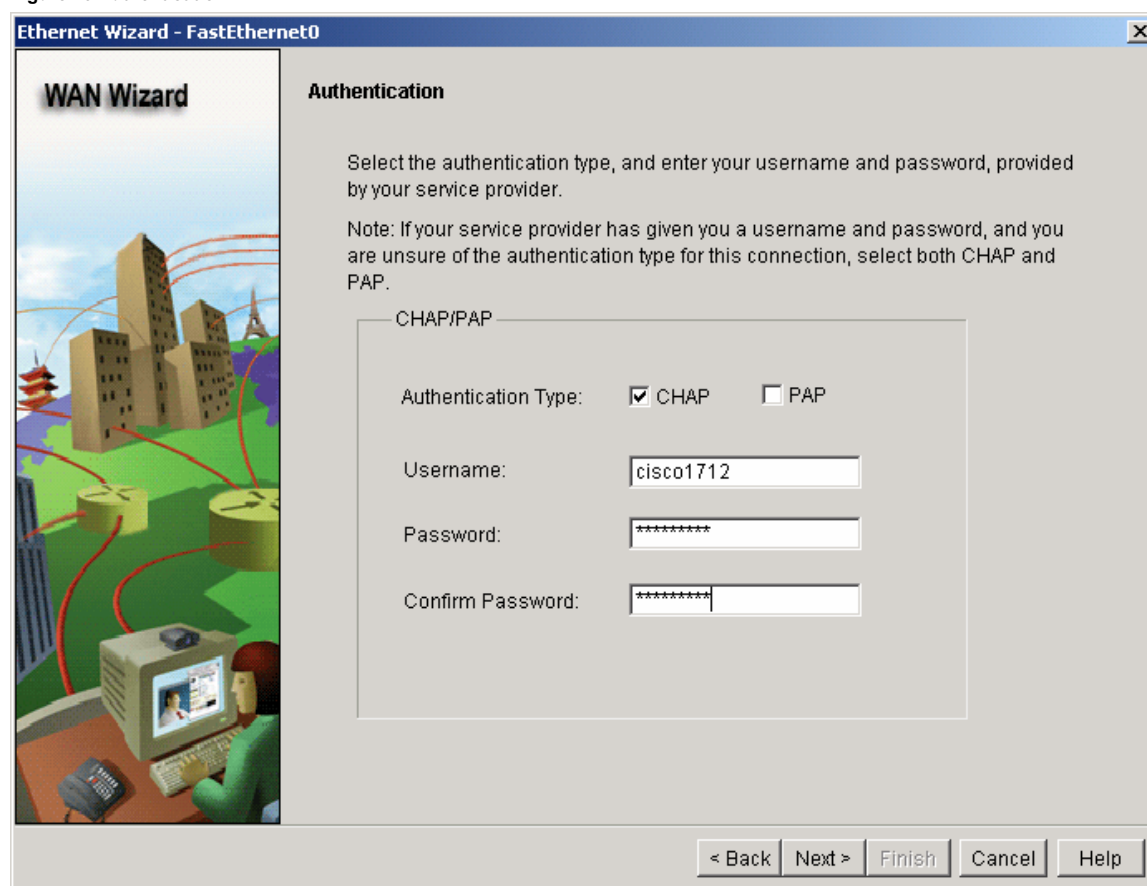


For authentication configuration (Figure 10), take the following steps:

- Authentication Type: in this case use **CHAP**
- Username: **cisco1712**
- Password: **cisco1712** (the password is displayed encrypted on screen)
- Confirm Password: **cisco1712** (the Confirm Password is displayed encrypted on screen)



Figure 10 Authentication

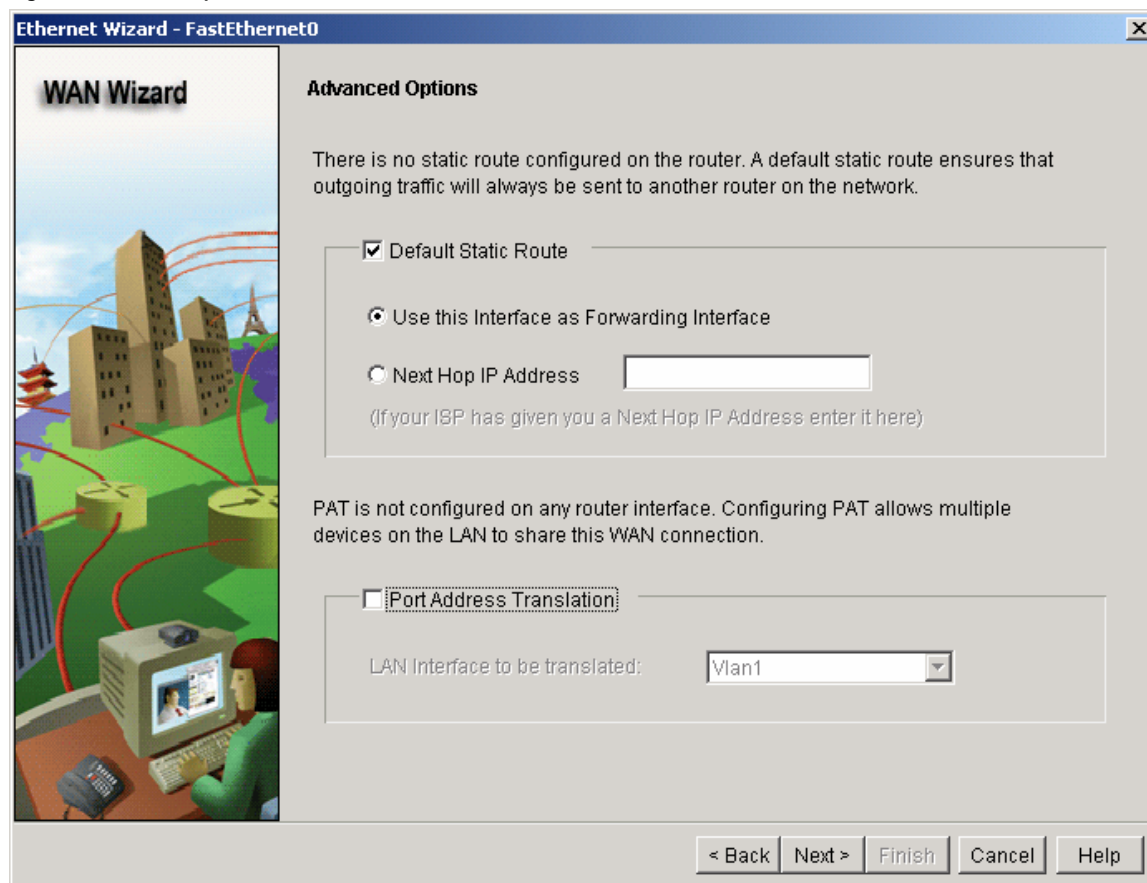


For Advanced Options (Figure 11), take the following steps:

- Check **Default Static Route**
- Select **Use this Interface as Forwarding Interface** for connecting the Cisco CNS configuration server to download initial configuration
- Uncheck **Port Address Translation**; there is no need to configure the Port Address Translation (PAT) because the initial configuration will include it
- Click **Next**



Figure 11 Advanced Options



Next, click **Finish** and deliver the configuration.

Note: **Save to router's startup config** is checked by default. When the router restarts, there is no need to reconfigure the CNS Configuration Agent.

In summary, the Cisco CNS Configuration Engine provisioning Startup wizard facilitates router management when starting up configuration. The user does not need any Cisco IOS router knowledge except the Cisco CNS configuration server and the WAN interface parameters provided by the service providers.

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