

Cisco IOS/CCP - Configurar DMVPN com Cisco CP

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[Introduction](#)

Este documento fornece uma configuração de exemplo para o túnel VPN Multiponto Dinâmico (DMVPN - Dynamic Multipoint VPN) entre roteadores hub e spoke usando o Cisco Configuration Professional (Cisco CP). Dynamic Multipoint VPN é uma tecnologia que integra diferentes conceitos, como GRE, criptografia IPSec, NHRP e roteamento para fornecer uma solução sofisticada que permite que os usuários finais se comuniquem com eficiência através dos túneis de IPSec spoke-to-spoke criados dinamicamente.

[Prerequisites](#)

[Requirements](#)

Para obter a melhor funcionalidade de DMVPN, é recomendável executar a versão principal do software Cisco IOS® 12.4, 12.4T e posterior.

[Componentes Utilizados](#)

As informações neste documento são baseadas nestas versões de software e hardware:

- Cisco IOS Router série 3800 com Software versão 12.4 (22)
- Cisco IOS Router série 1800 com Software versão 12.3 (8)
- Cisco Configuration Professional versão 2.5

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Consulte as [Convenções de Dicas Técnicas da Cisco para obter mais informações sobre convenções de documentos](#).

Informações de Apoio

Este documento fornece informações sobre como configurar um roteador como um spoke e outro roteador como um hub usando o Cisco CP. Inicialmente, a configuração do spoke é mostrada, mas posteriormente no documento, a configuração relacionada ao hub também é mostrada em detalhes para fornecer uma melhor compreensão. Outros spokes também podem ser configurados usando a abordagem semelhante para se conectar ao hub. O cenário atual usa estes parâmetros:

- Rede Pública do Roteador de Hub - 209.165.201.0
- Rede de túnel - 192.168.10.0
- Protocolo de roteamento usado - OSPF

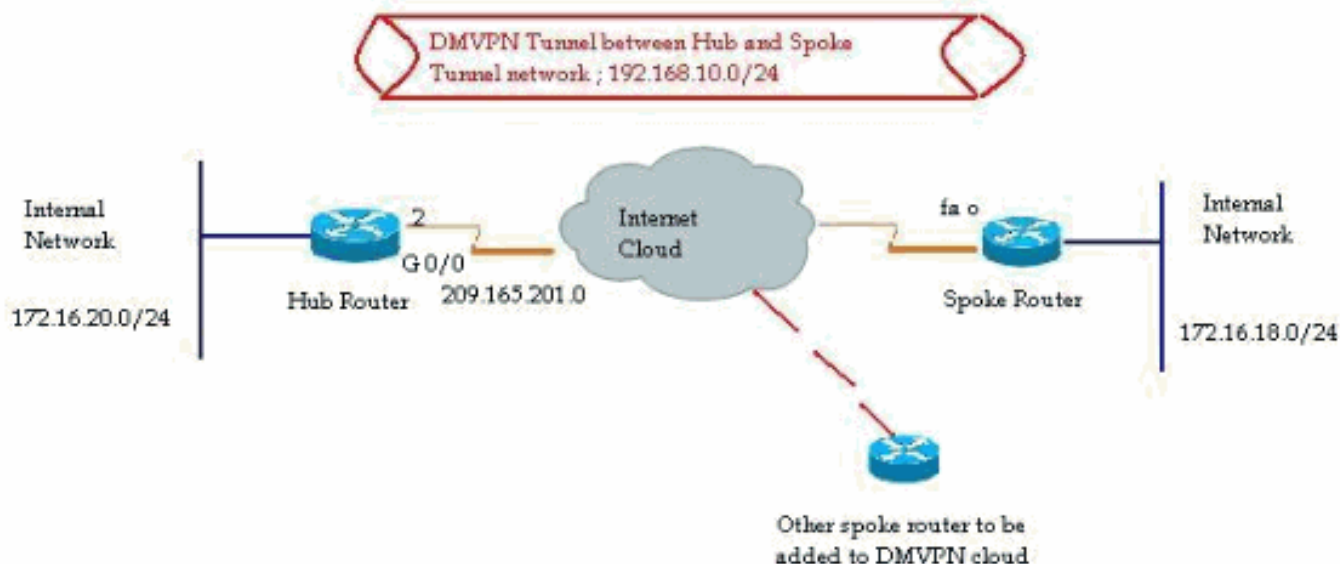
Configurar

Nesta seção, você encontrará informações para configurar os recursos descritos neste documento.

Nota: Use a Command Lookup Tool (somente clientes registrados) para obter mais informações sobre os comandos usados nesta seção.

Diagrama de Rede

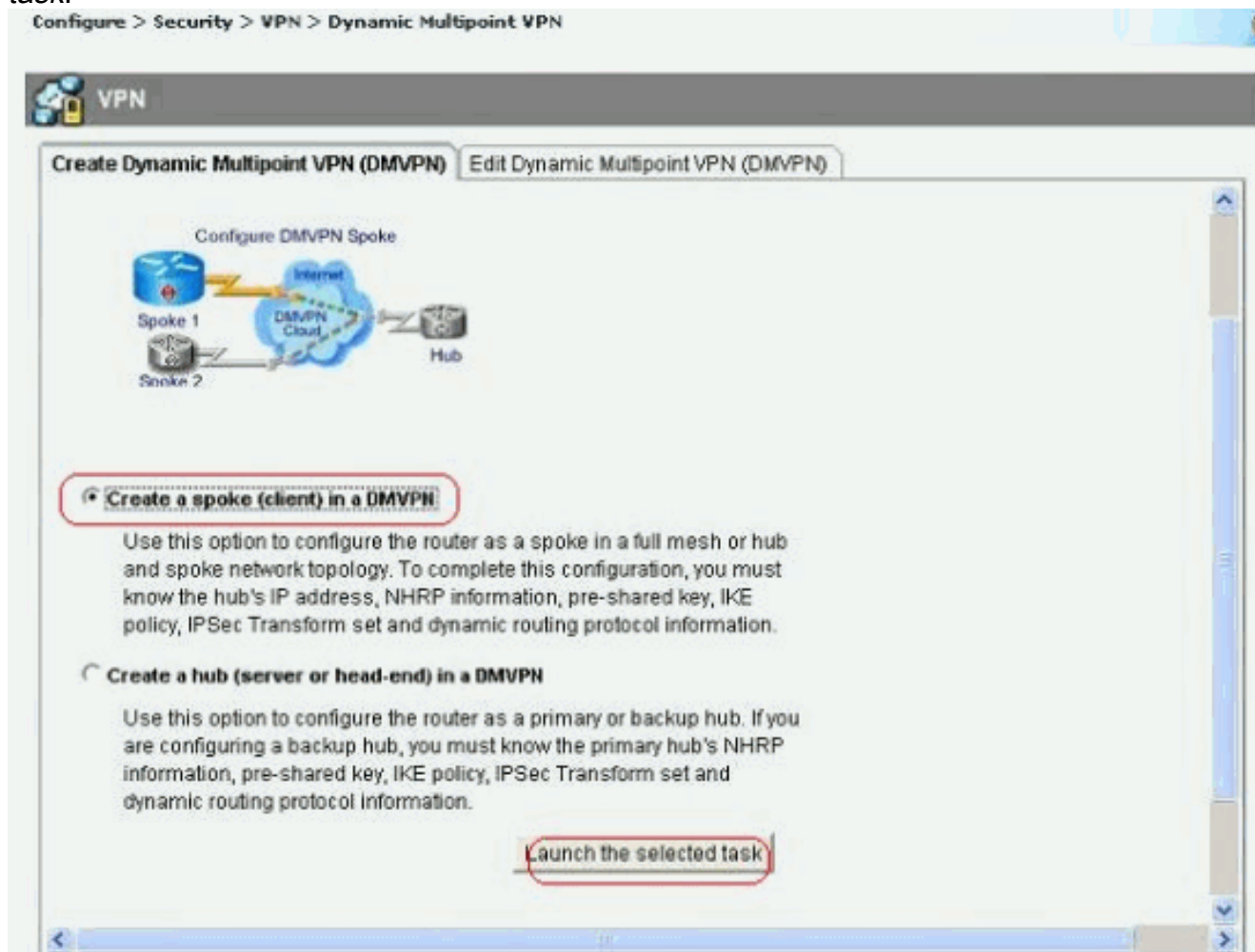
Este documento utiliza a seguinte configuração de rede:



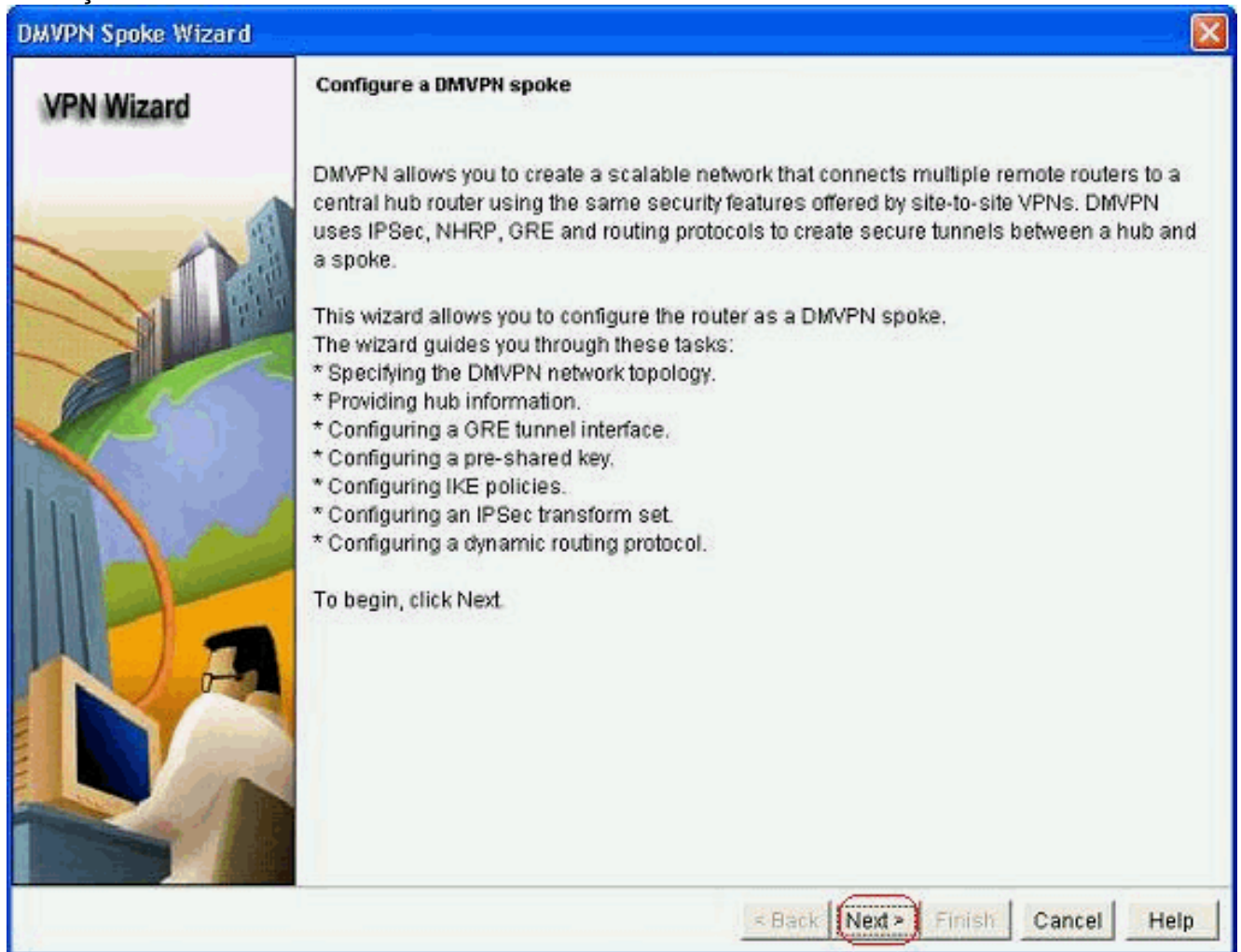
Configuração de spoke usando o Cisco CP

Esta seção mostra como configurar um roteador como um spoke usando o assistente de DMVPN passo a passo no Cisco Configuration Professional.

1. Para iniciar o aplicativo Cisco CP e iniciar o assistente DMVPN, vá para *Configurar > Segurança > VPN > Dynamic Multipoint VPN*. Em seguida, selecione a opção *Create a spoke in a DMVPN* e clique em *Launch the selected task*.



2. Clique em *Next (Avançar)* para começar.



3. Selecione a opção *Hub and Spoke network* e clique em *Next*.

DMVPN Spoke Wizard - 10% Complete

VPN Wizard

DMVPN Network Topology

Select the DMVPN network topology.

☒ Hub and Spoke network

In this topology, all DMVPN traffic is routed through the hub. A point-to-point GRE interface will be configured on the spoke, and the spoke will use it to create a tunnel to the hub which will remain up. Spokes do not create GRE tunnels to other spokes in this topology.

☐ Fully meshed network

In this topology, the spoke dynamically establishes a direct tunnel to another spoke device, and sends DMVPN traffic directly to it. A multipoint GRE tunnel interface is configured on the spoke to support this functionality.

Note: Cisco supports fully meshed DMVPN networks only in the following Cisco IOS images: 12.3(8)T1 and 12.3(9) or later.

Hub and Spoke Network

< Back Next > Finish Cancel Help

4. Especifique as informações relacionadas ao Hub, como a interface pública do roteador Hub e a interface de túnel do roteador Hub.

DMVPN Spoke Wizard (Hub and Spoke Topology) - 20% Complete

VPN Wizard

Specify Hub Information

Enter the IP address of the hub and the IP address of the hub's mGRE tunnel interface. Contact your network administrator to get this information.

Hub Information

IP address of hub's physical interface: 209.165.201.2

IP address of hub's mGRE tunnel interface: 192.168.10.2

< Back | **Next >** | Finish | Cancel | Help

5. Especifique os detalhes da interface túnel do spoke e a interface pública do spoke. Em seguida, clique em *Avançado*.

DMVPN Spoke Wizard (Hub and Spoke Topology) - 30% Complete

VPN Wizard

GRE Tunnel Interface Configuration

Select the interface that connects to the Internet: **FastEthernet0**

Warning: Selecting an interface configured for a dialup connection may cause the connection to be always up.

GRE Tunnel Interface

A GRE tunnel interface will be created for this DMVPN connection. Please enter the address information for this interface.

IP address of the tunnel interface

IP Address:

Subnet Mask:

Advanced settings

Click Advanced to verify that values match peer settings. **Advanced...**

Interface connected to Internet. This is the interface from which GRE/mGRE Tunnel originates.

Logical GRE/mGRE Tunnel interface. IP address of GRE/mGRE tunnel interface on all hubs and spoke routers are private IP addresses and must be in the same subnet.

For more information please click the help button.

Buttons: < Back, Next >, Finish, Cancel, Help

6. Verifique os parâmetros do túnel e os parâmetros NHRP e certifique-se de que eles correspondam perfeitamente aos parâmetros do

Advanced configuration for the tunnel inter...

Some of the following parameters should be identical in all devices in this DMVPN. Obtain the correct values from your network administrator before changing the Cisco CP defaults.

NHRP

NHRP Authentication String:

NHRP Network ID:

NHRP Hold Time:

GRE Tunnel Interface Information

Tunnel Key:

Bandwidth:

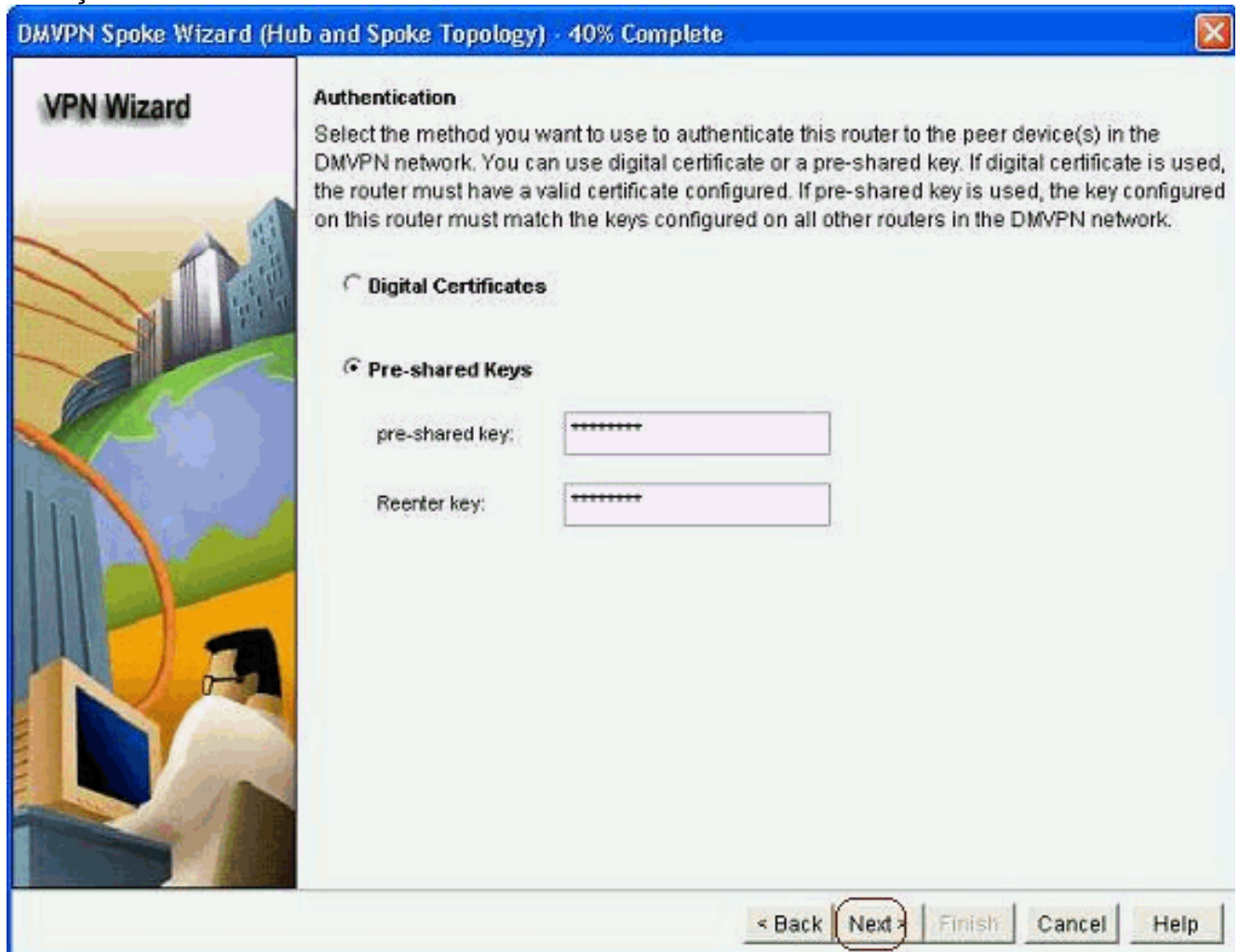
MTU:

Tunnel Throughput Delay:

Buttons: OK, Cancel, Help

Hub.

7. Especifique a chave pré-compartilhada e clique em *Avançar*.



DMVPN Spoke Wizard (Hub and Spoke Topology) - 40% Complete

VPN Wizard

Authentication

Select the method you want to use to authenticate this router to the peer device(s) in the DMVPN network. You can use digital certificate or a pre-shared key. If digital certificate is used, the router must have a valid certificate configured. If pre-shared key is used, the key configured on this router must match the keys configured on all other routers in the DMVPN network.

☐ Digital Certificates

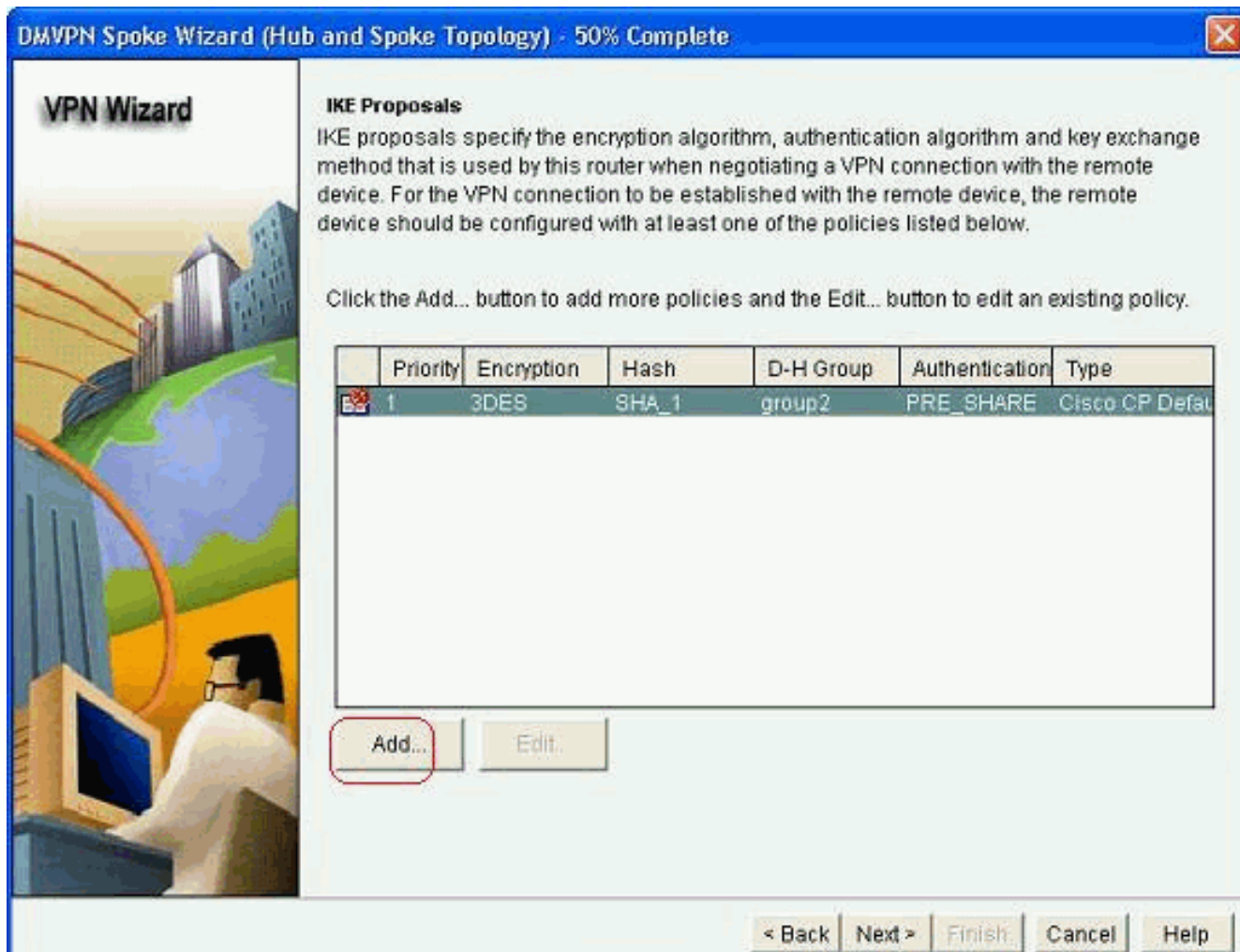
☒ Pre-shared Keys

pre-shared key:

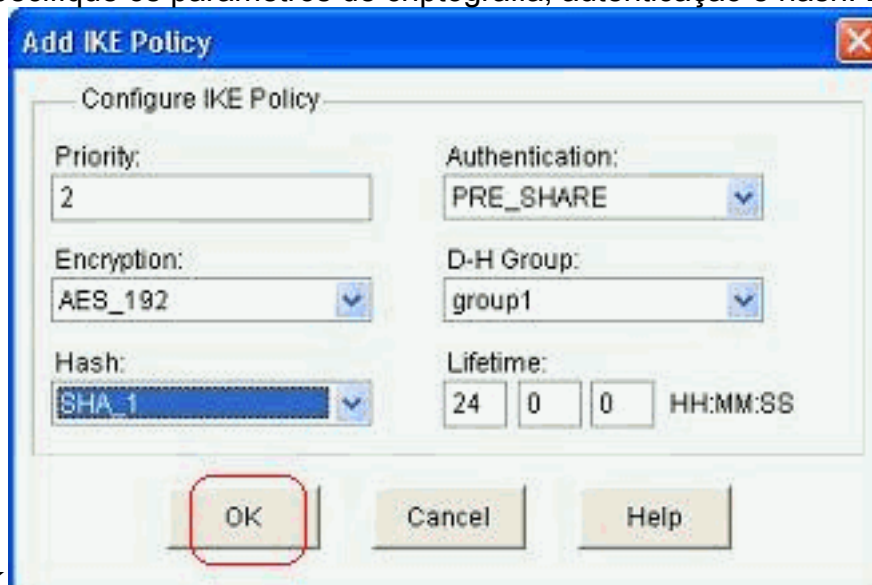
Reenter key:

< Back **Next >** Finish Cancel Help

8. Clique em *Adicionar* para adicionar uma proposta IKE separada.

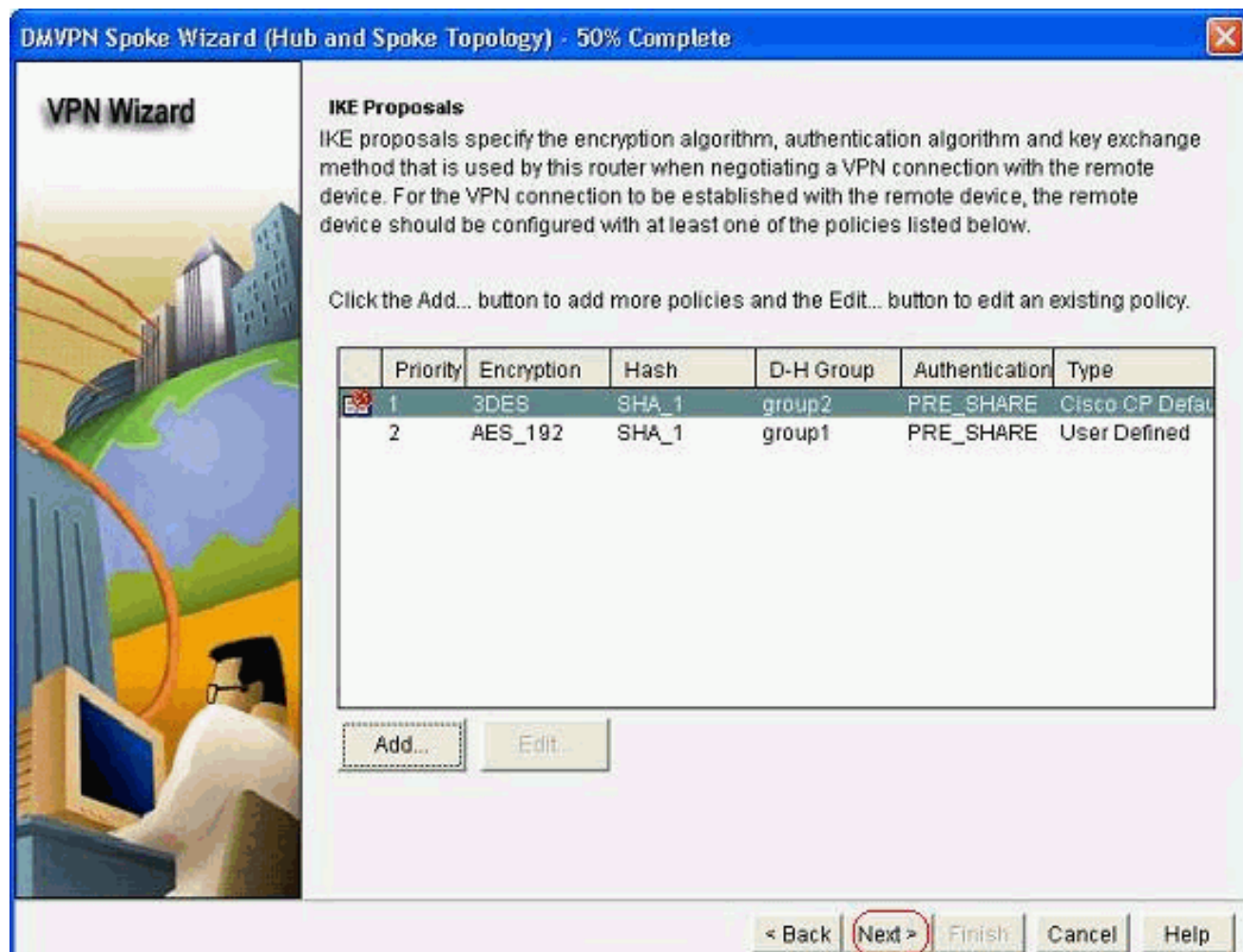


9. Especifique os parâmetros de criptografia, autenticação e hash. Em seguida, clique em

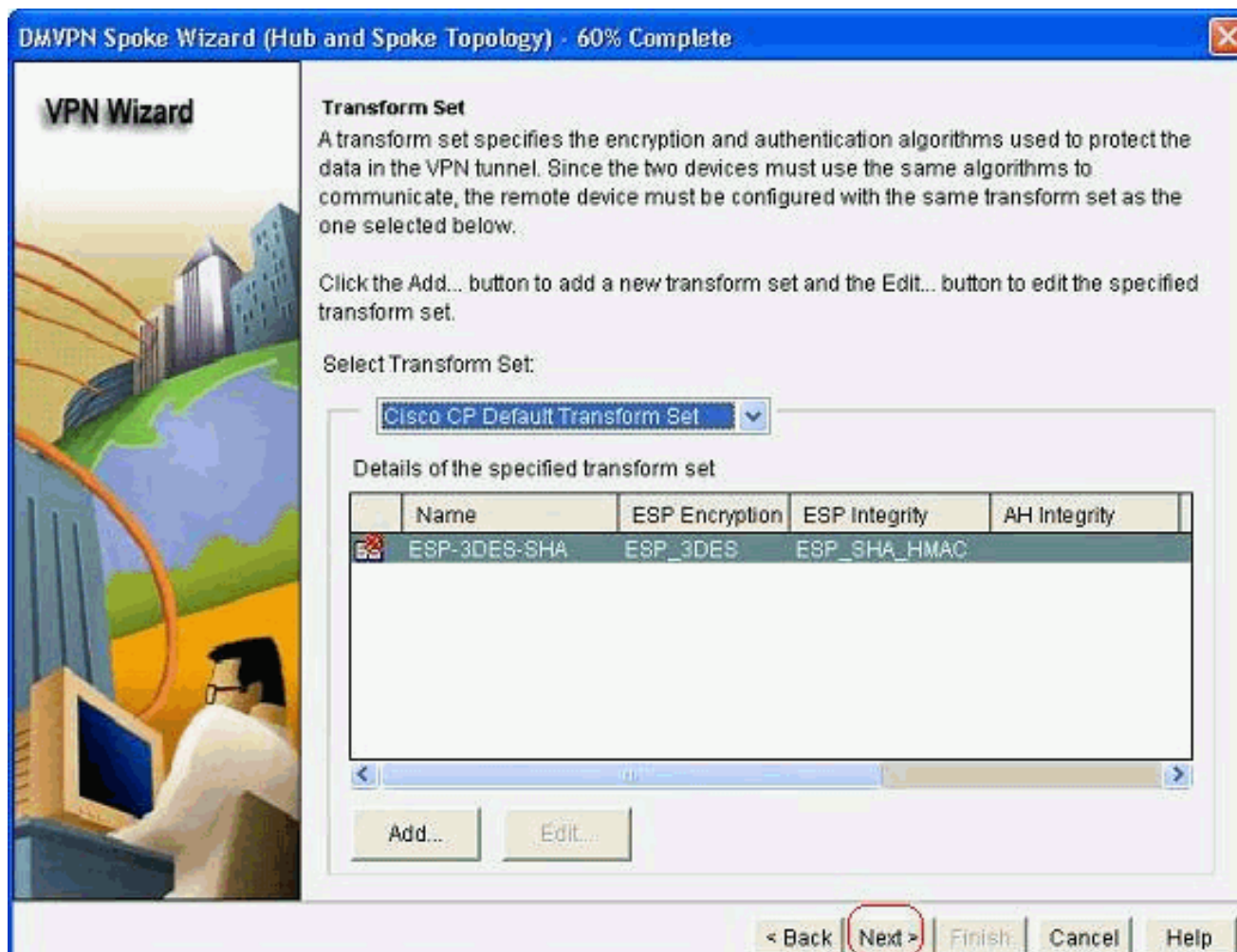


OK.

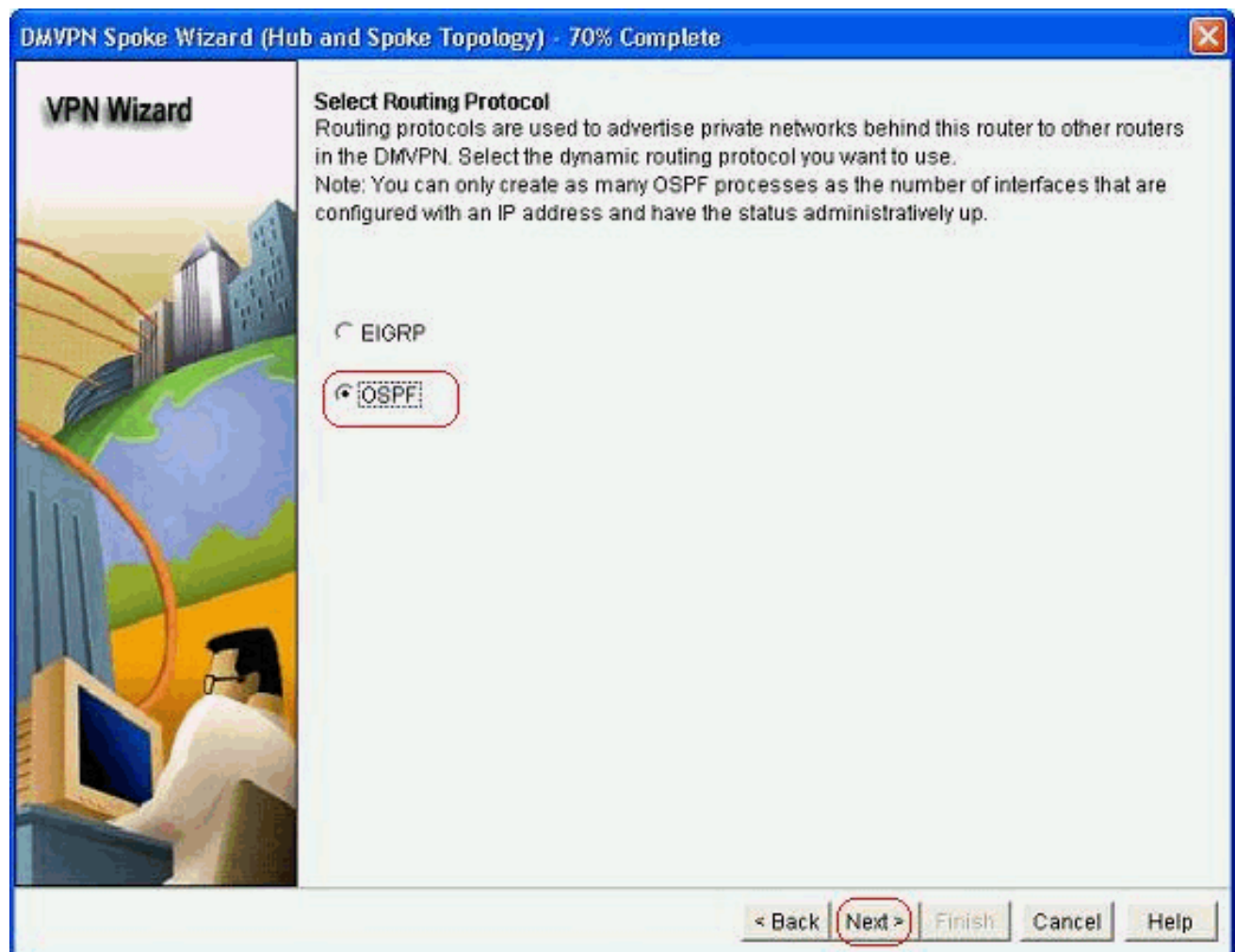
10. A política de IKE recém-criada pode ser vista aqui. Clique em Next.



11. Clique em *Avançar* para continuar com o conjunto de transformações padrão.



12. Selecione o protocolo de roteamento necessário. Aqui, *OSPF* está selecionado.



13. Especifique a ID do processo OSPF e a ID da área. Clique em *Add* para adicionar as redes a serem anunciadas pelo OSPF.

DMVPN Spoke Wizard (Hub and Spoke Topology) - 80% Complete

VPN Wizard

Routing Information

☐ Select an existing OSPF process ID: []

☒ Create a new OSPF process ID: [10]

OSPF Area ID for tunnel network: [2]

Add the private networks that you want to advertise to the other routers in this DMVPN. OSPF must be enabled on the other routers to send and receive these advertisements.

Private networks advertised using OSPF

Network	Wildcard Mask	Area

[Add...]
[Edit...]
[Delete]

Private Network that will be advertised to the DMVPN cloud.

Internet
DMVPN Cloud

< Back Next > Finish Cancel Help

Add a Network

Network: [192.168.10.0]

Wildcard Mask: [0.0.0.255]

Area: [2]

[OK] [Cancel]

14. Adicione a rede do túnel e clique em **OK**.

15. Adicione a rede privada atrás do roteador spoke. Em seguida, clique em **Avançar**.

DMVPN Spoke Wizard (Hub and Spoke Topology) - 80% Complete

VPN Wizard

Routing Information

☐ Select an existing OSPF process ID:

☒ Create a new OSPF process ID:

OSPF Area ID for tunnel network:

Add the private networks that you want to advertise to the other routers in this DMVPN. OSPF must be enabled on the other routers to send and receive these advertisements.

Private networks advertised using OSPF

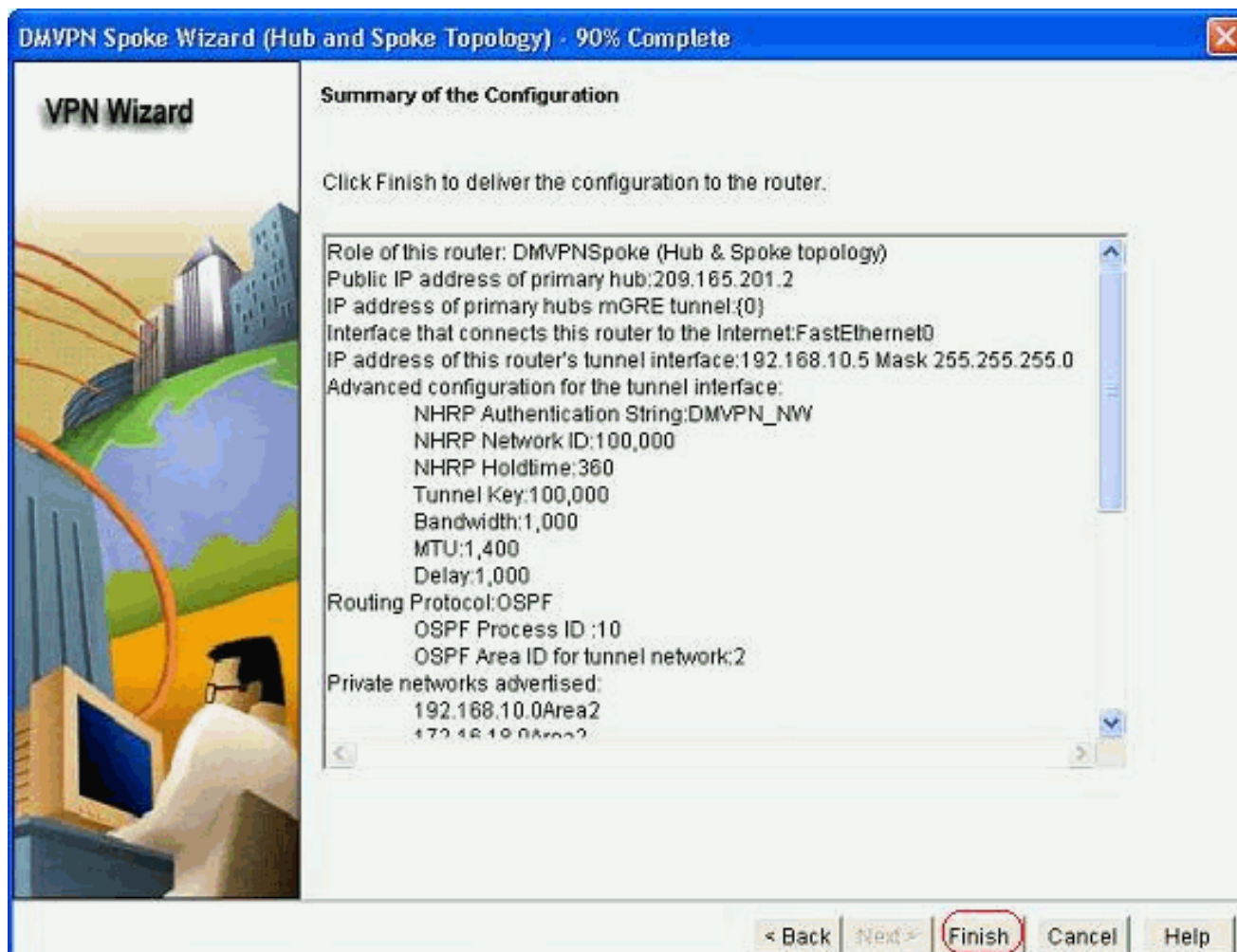
Network	Wildcard Mask	Area
192.168.10.0	0.0.0.255	2
172.16.18.0	0.0.0.255	2

Private Network that will be advertised to the DMVPN cloud.

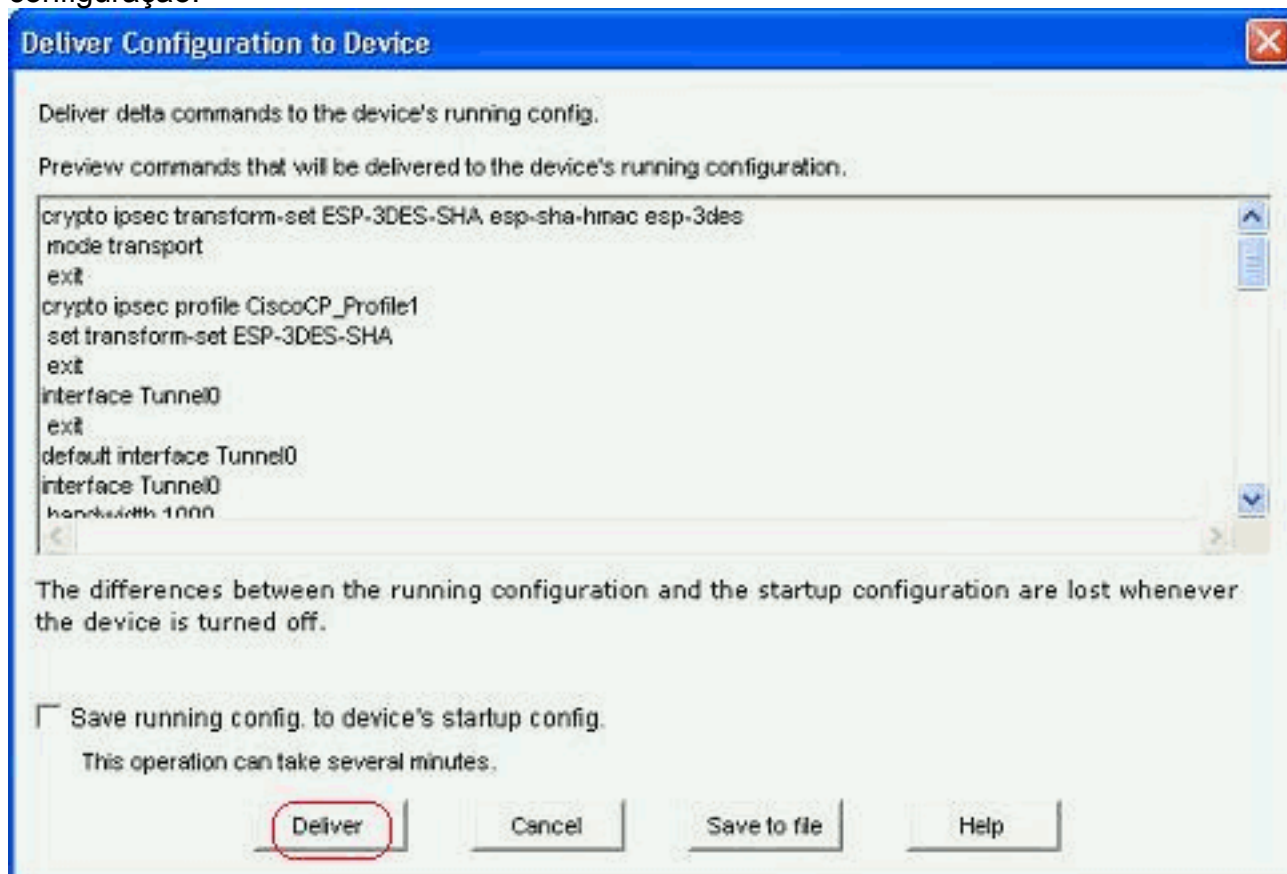
The diagram illustrates a network setup. A blue router is shown at the top, connected to a blue globe representing the Internet. Below the router, a blue globe represents the DMVPN Cloud. A yellow lightning bolt symbol connects the router to the DMVPN Cloud, indicating a connection or advertisement.

< Back **Next >** Finish Cancel Help

16. Clique em *Concluir* para concluir a configuração do assistente.



17. Clique em *Deliver* para executar os comandos. Marque a caixa de seleção *Save running config to device's startup config* se desejar salvar a configuração.



Configuração de CLI para Spoke

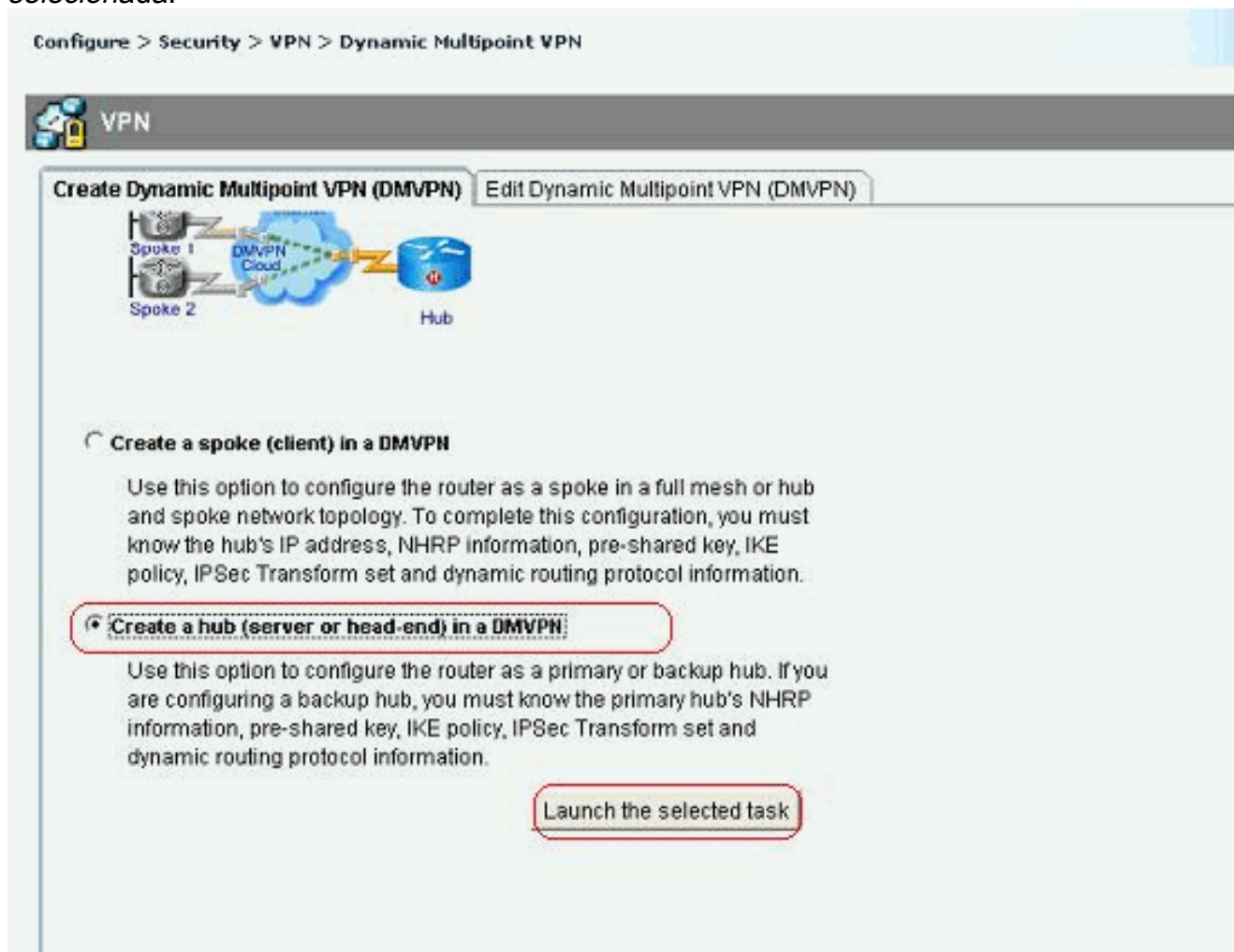
A configuração da CLI relacionada é mostrada aqui:

Spoke Router
<pre>crypto ipsec transform-set ESP-3DES-SHA esp-sha-hmac esp-3des mode transport exit crypto ipsec profile CiscoCP_Profile1 set transform-set ESP-3DES-SHA exit interface Tunnel0 exit default interface Tunnel0 interface Tunnel0 bandwidth 1000 delay 1000 ip nhrp holdtime 360 ip nhrp network-id 100000 ip nhrp authentication DMVPN_NW ip ospf network point-to-multipoint ip mtu 1400 no shutdown ip address 192.168.10.5 255.255.255.0 ip tcp adjust-mss 1360 ip nhrp nhs 192.168.10.2 ip nhrp map 192.168.10.2 209.165.201.2 tunnel source FastEthernet0 tunnel destination 209.165.201.2 tunnel protection ipsec profile CiscoCP_Profile1 tunnel key 100000 exit router ospf 10 network 192.168.10.0 0.0.0.255 area 2 network 172.16.18.0 0.0.0.255 area 2 exit crypto isakmp key ***** address 209.165.201.2 crypto isakmp policy 2 authentication pre-share encr aes 192 hash sha group 1 lifetime 86400 exit crypto isakmp policy 1 authentication pre-share encr 3des hash sha group 2 lifetime 86400 exit</pre>

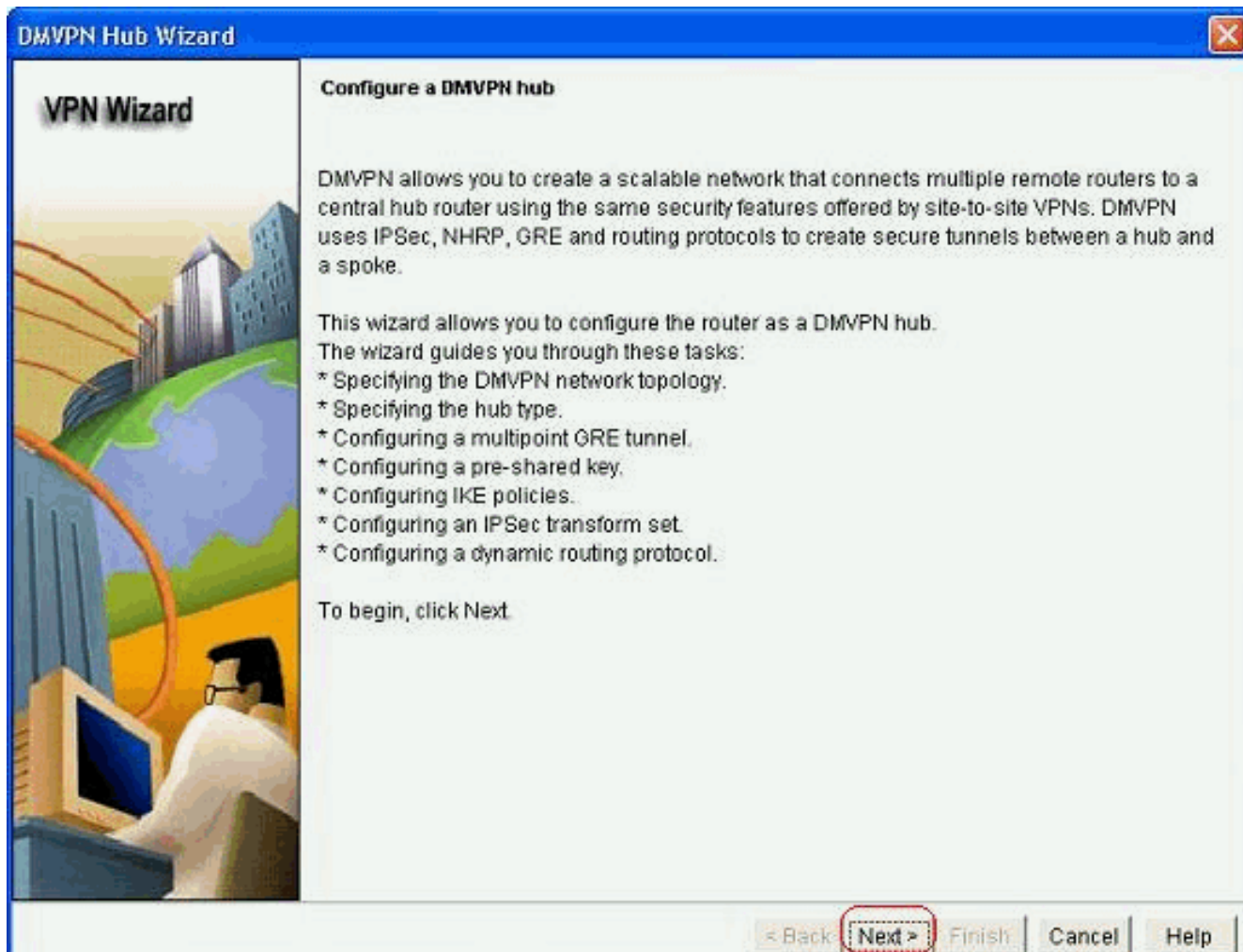
Configuração de hub usando o Cisco CP

Uma abordagem passo a passo sobre como configurar o roteador de hub para o DMVPN é mostrada nesta seção.

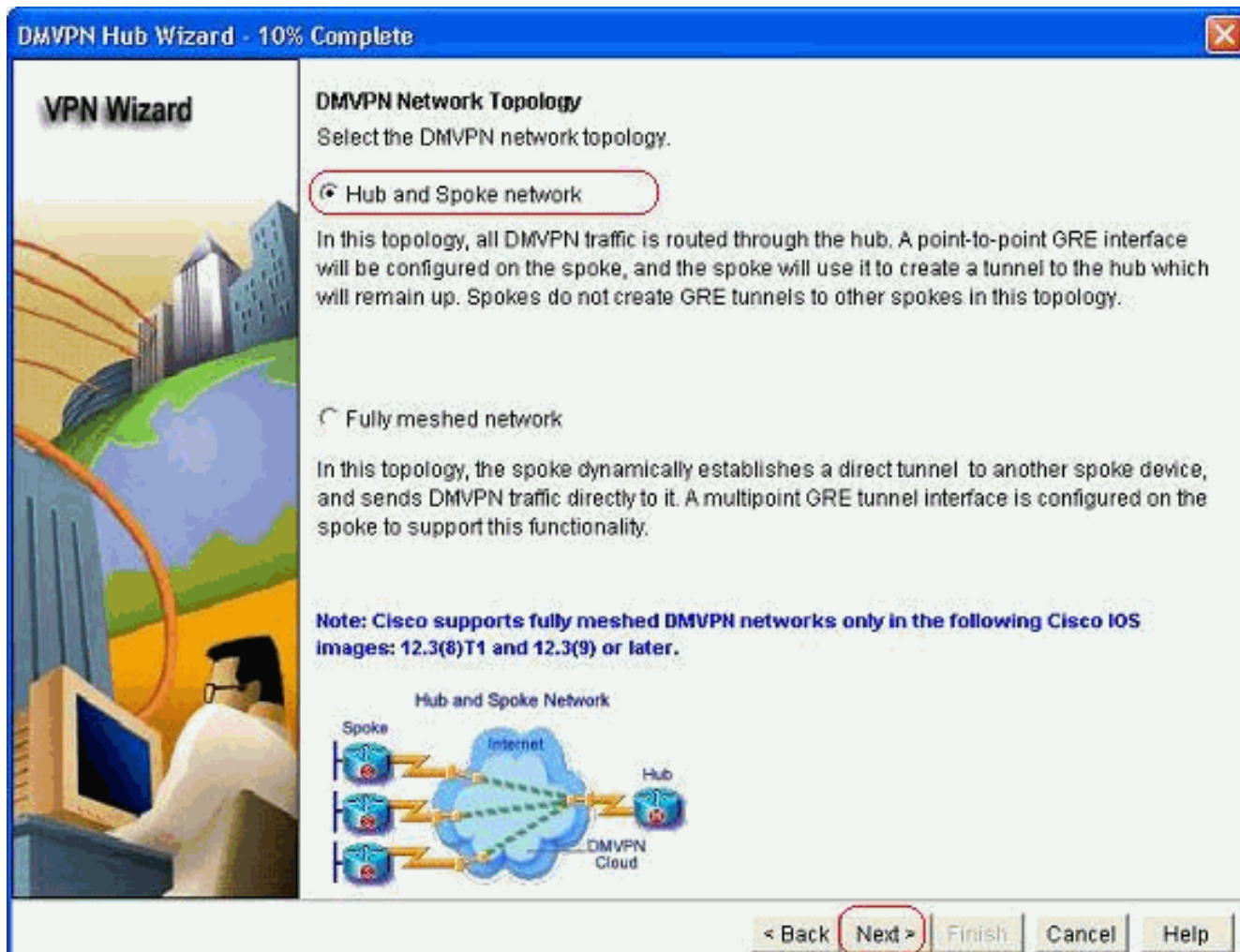
1. Vá para *Configure > Security > VPN > Dynamic Multipoint VPN* e selecione a opção *Create a hub in a DMVPN*. A, clique em *Iniciar a tarefa selecionada*.



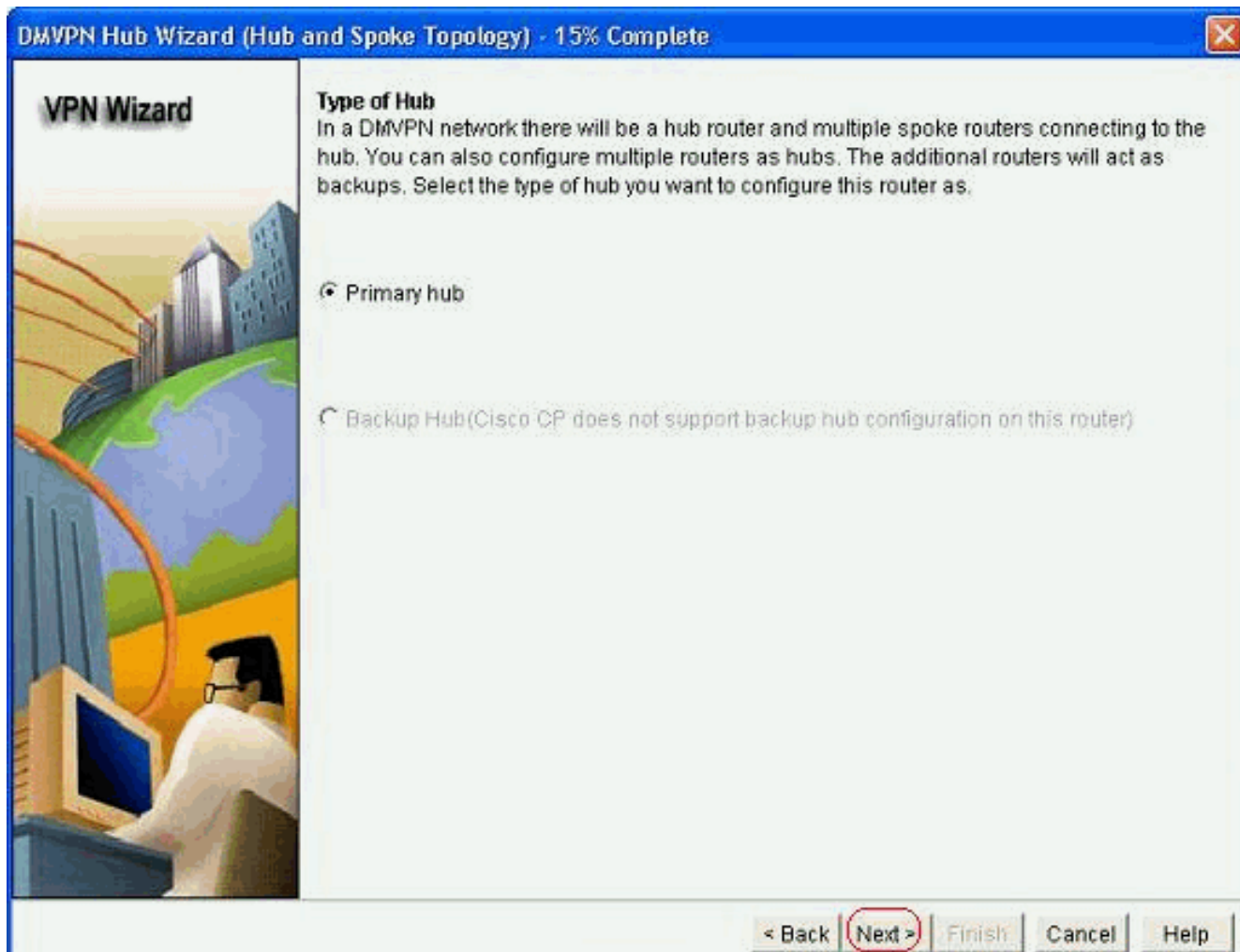
2. Clique em Next.



3. Selecione a opção *Hub and Spoke network* e clique em *Next*.



4. Selecione *Primary Hub (Hub principal)*. Em seguida, clique em *Avançar*.



5. Especifique os parâmetros da interface de túnel e clique em *Avançado*.

DMVPN Hub Wizard (Hub and Spoke Topology) - 30% Complete

VPN Wizard

Multipoint GRE Tunnel Interface Configuration

Select the interface that connects to the Internet: GigabitEthernet0/0

⚠ Selecting an interface configured for a dialup connection may cause the connection to be always up.

Multi point GRE (mGRE) Tunnel Interface

A GRE tunnel interface will be created for this DMVPN connection. Please enter the address information for this interface.

IP address of the tunnel interface

IP Address: 192.168.10.2

Subnet Mask: 255.255.255.0 24

Advanced settings

Click Advanced to verify that values match peer settings.

Advanced...

Interface connected to Internet. This is the interface from which GRE/mGRE Tunnel originates.

Logical GRE/mGRE Tunnel interface. IP address of GRE/mGRE tunnel interface on all hubs and spoke routers are private IP addresses and must be in the same subnet.

For more information please click the help button.

6. Especifique os parâmetros do túnel e os parâmetros NHRP. Em seguida, clique em

Advanced configuration for the tunnel inter...

Some of the following parameters should be identical in all devices in this DMVPN. Obtain the correct values from your network administrator before changing the Cisco CP defaults.

NHRP

NHRP Authentication String: DMVPN_NW

NHRP Network ID: 100000

NHRP Hold Time: 360

GRE Tunnel Interface Information

Tunnel Key: 100000

Bandwidth: 1000

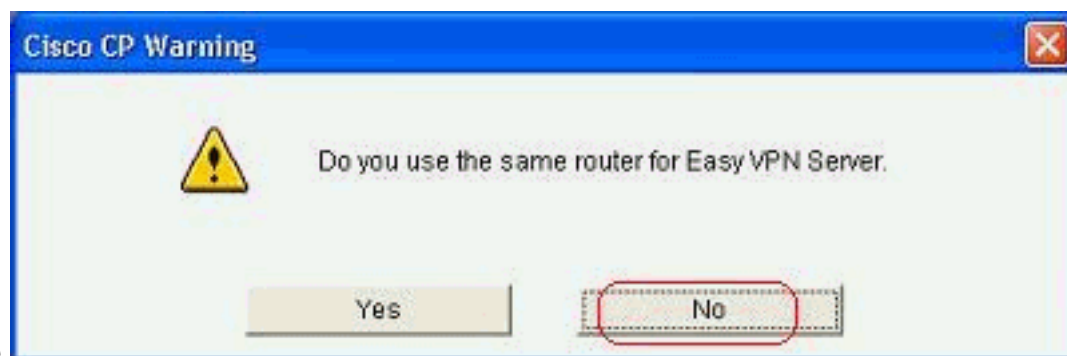
MTU: 1400

Tunnel Throughput Delay: 1000

OK
Cancel
Help

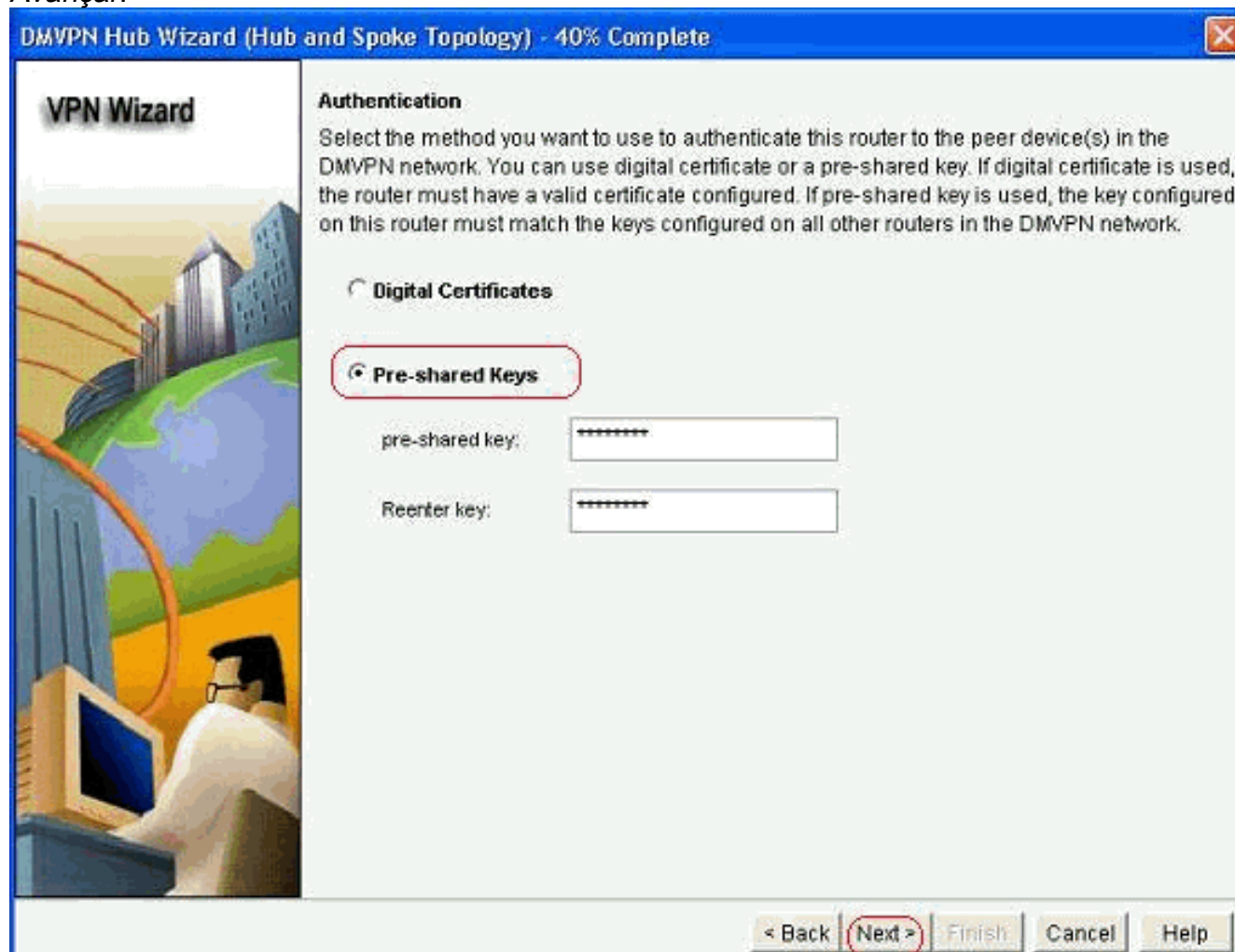
OK.

7. Especifique a opção com base na configuração da

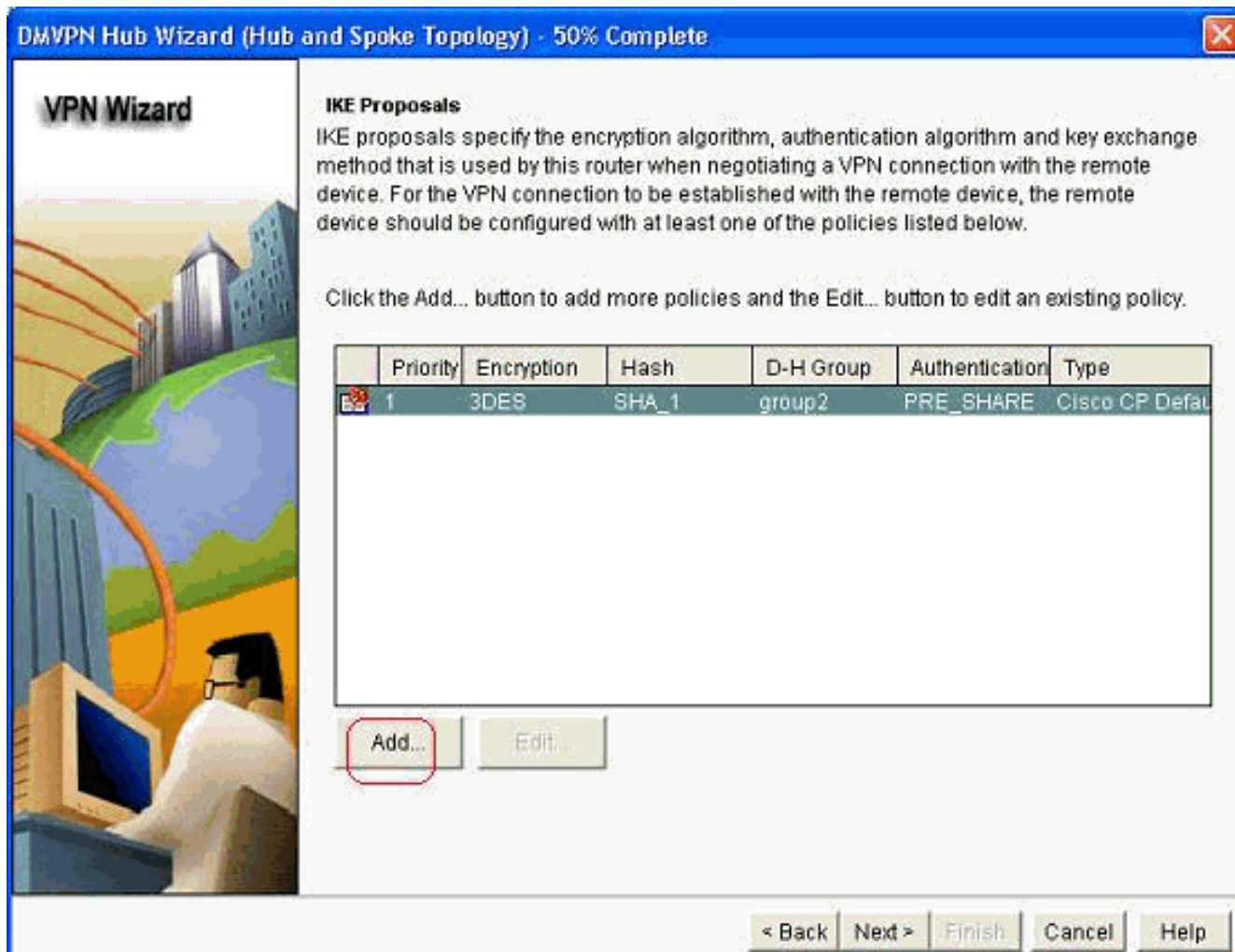


rede.

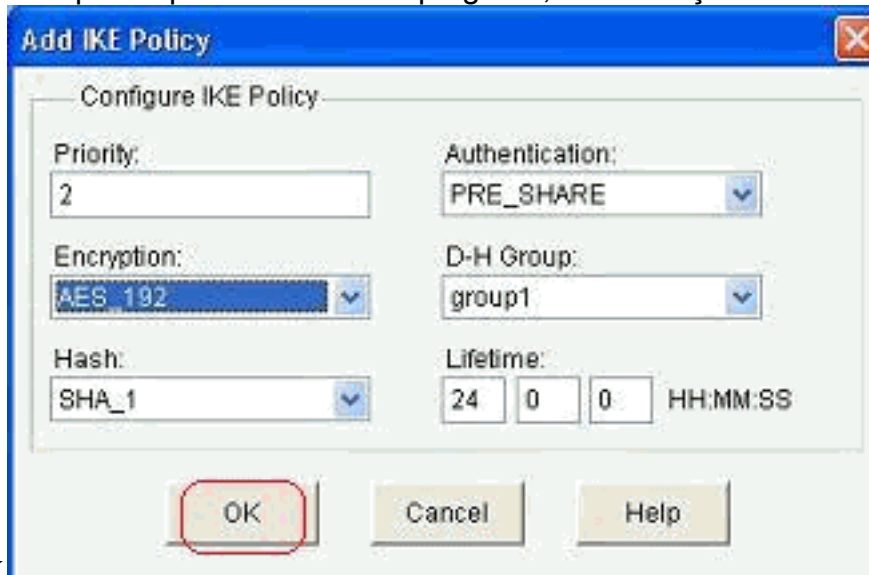
8. Selecione *Chaves pré-compartilhadas* e especifique as chaves pré-compartilhadas. Em seguida, clique em *Avançar*.



9. Clique em *Adicionar* para adicionar uma proposta IKE separada.

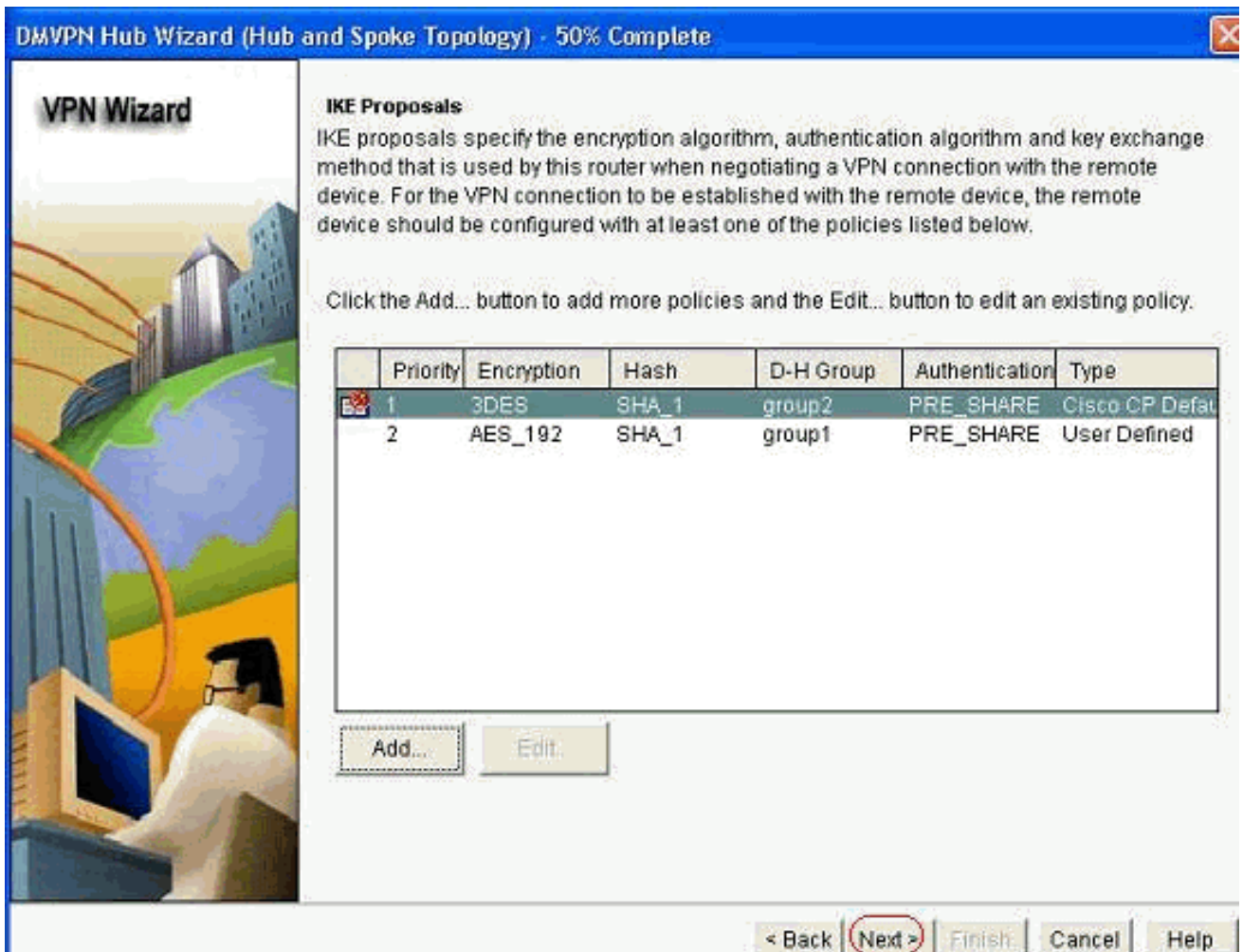


10. Especifique os parâmetros de criptografia, autenticação e hash. Em seguida, clique em

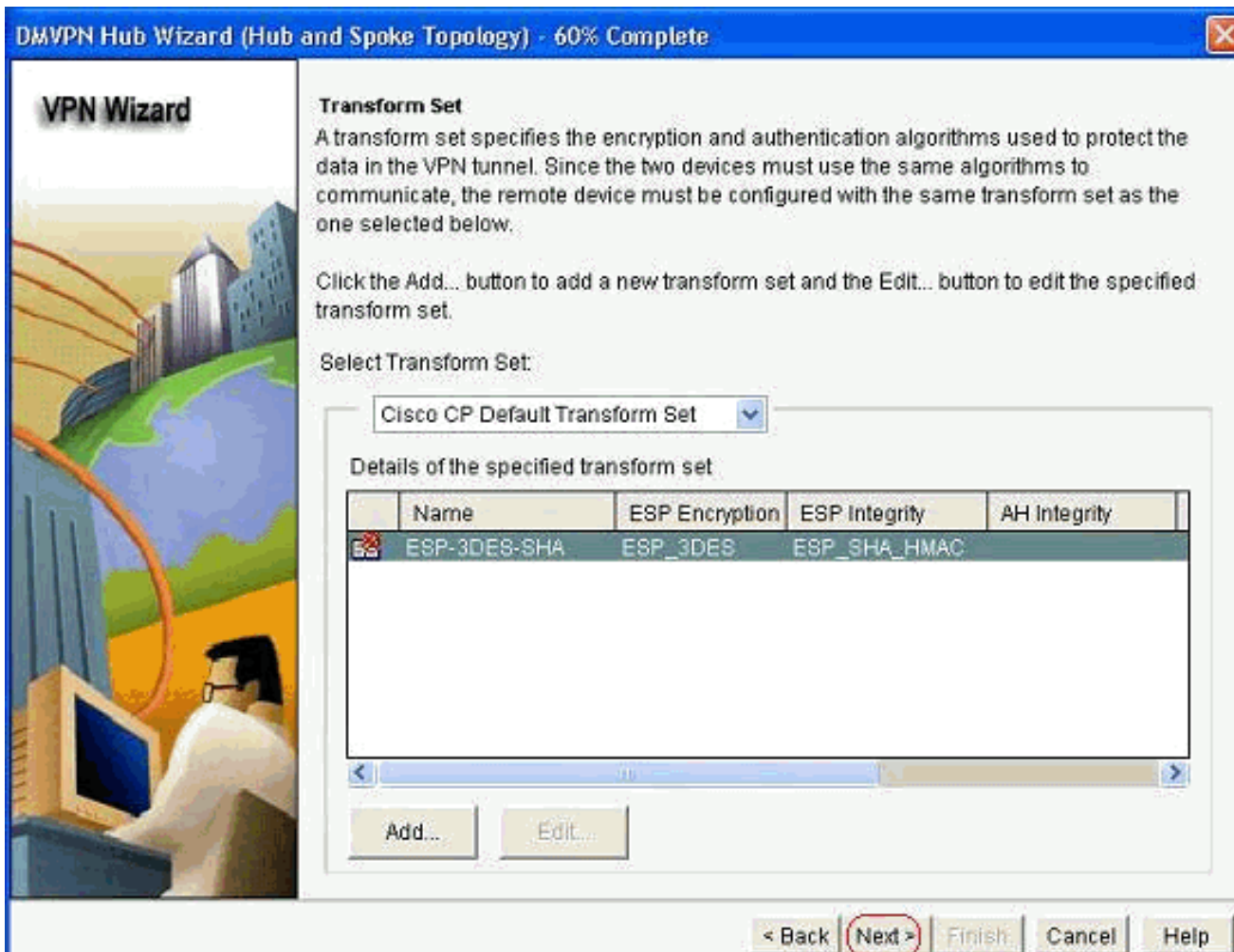


OK.

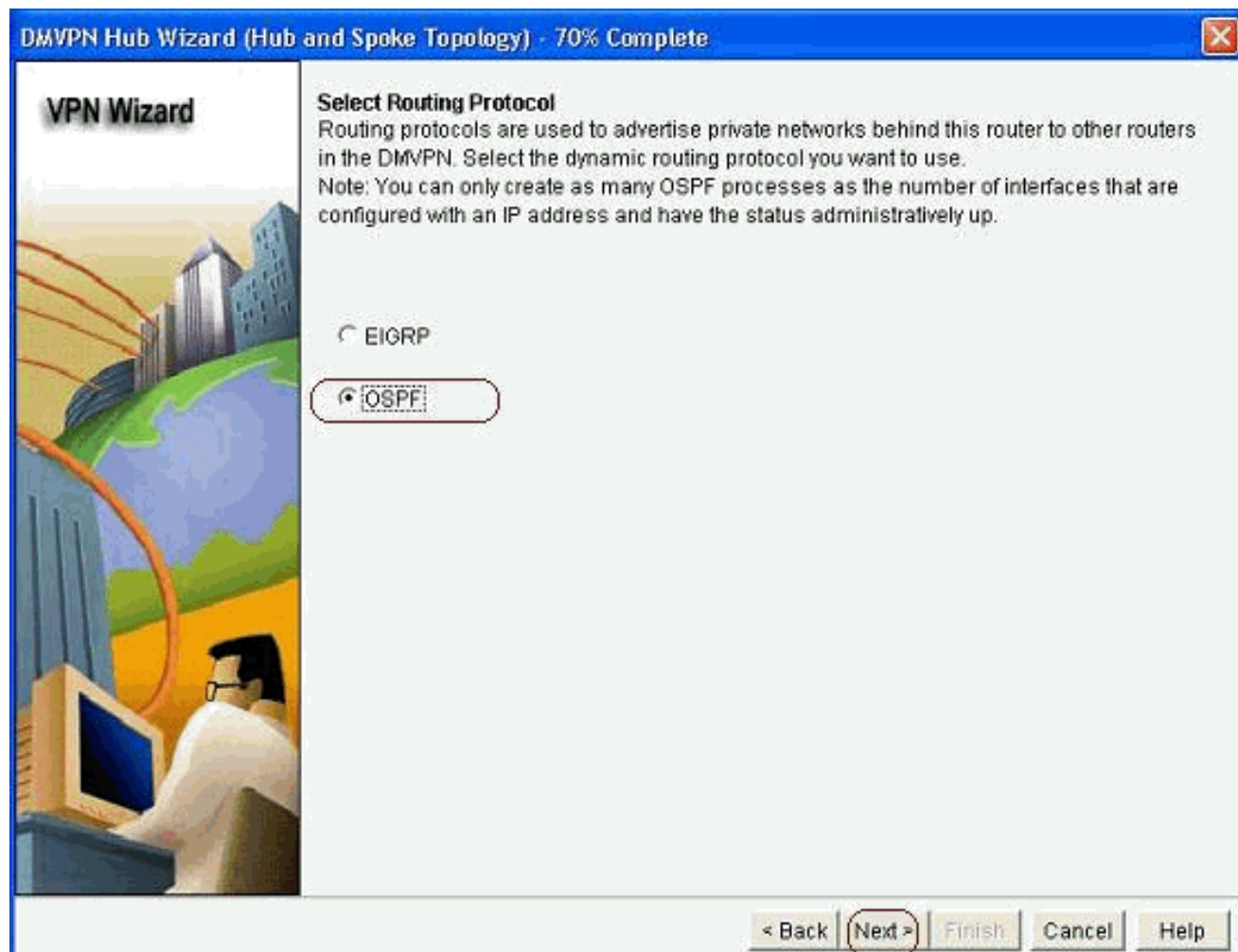
11. A política de IKE recém-criada pode ser vista aqui. Clique em Next.



12. Clique em *Avançar* para continuar com o conjunto de transformações padrão.



13. Seleccione o protocolo de roteamento necessário. Aqui, *OSPF* está selecionado.



14. Especifique a ID do processo OSPF e a ID da área. Clique em *Add* para adicionar as redes a serem anunciadas pelo OSPF.

DMVPN Hub Wizard (Hub and Spoke Topology) - 80% Complete

VPN Wizard

Routing Information

☐ Select an existing OSPF process ID:

☒ Create a new OSPF process ID:

OSPF Area ID for tunnel network:

Add the private networks that you want to advertise to the other routers in this DMVPN. OSPF must be enabled on the other routers to send and receive these advertisements.

Private networks advertised using OSPF

Network	Wildcard Mask	Area

Private Network that will be advertised to the DMVPN cloud.

Internet
DMVPN Cloud

< Back Next > Finish Cancel Help

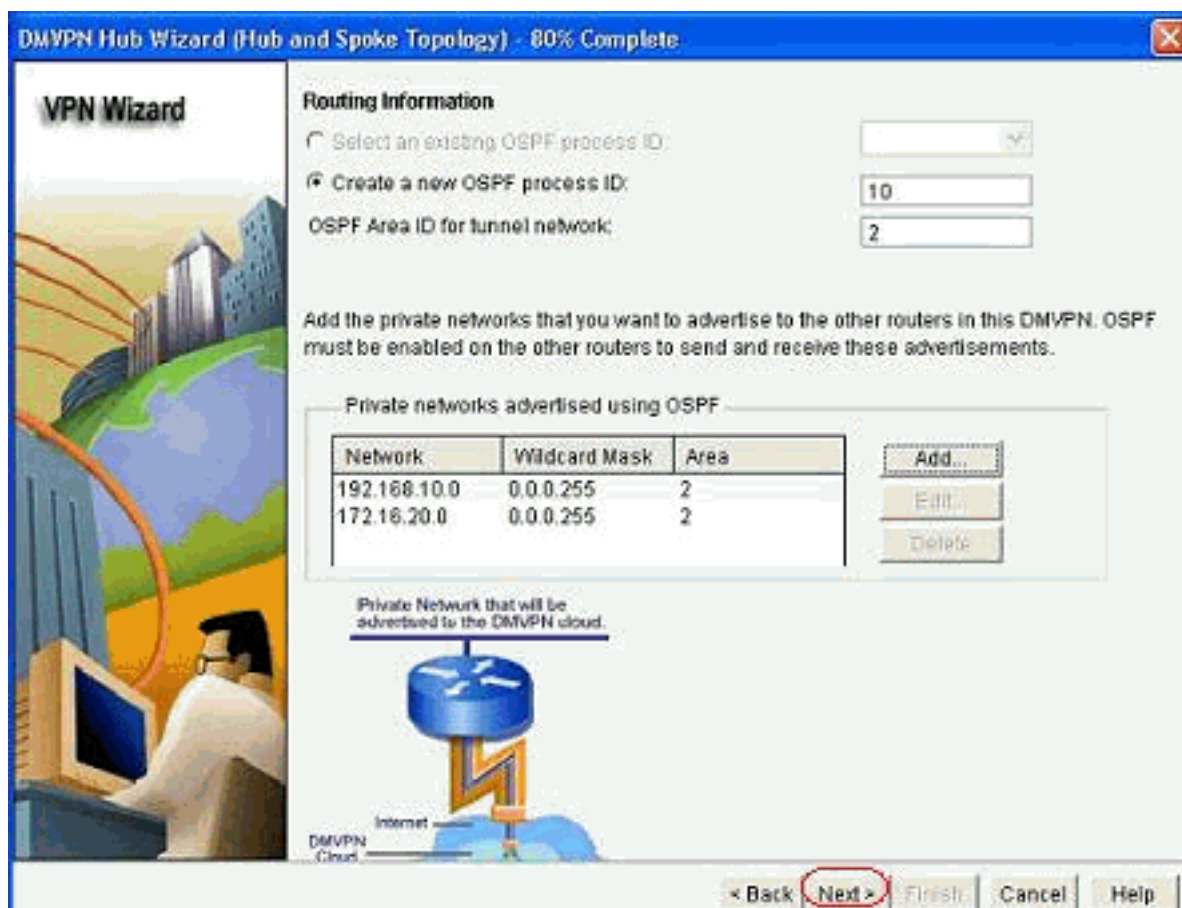
Add a Network

Network:

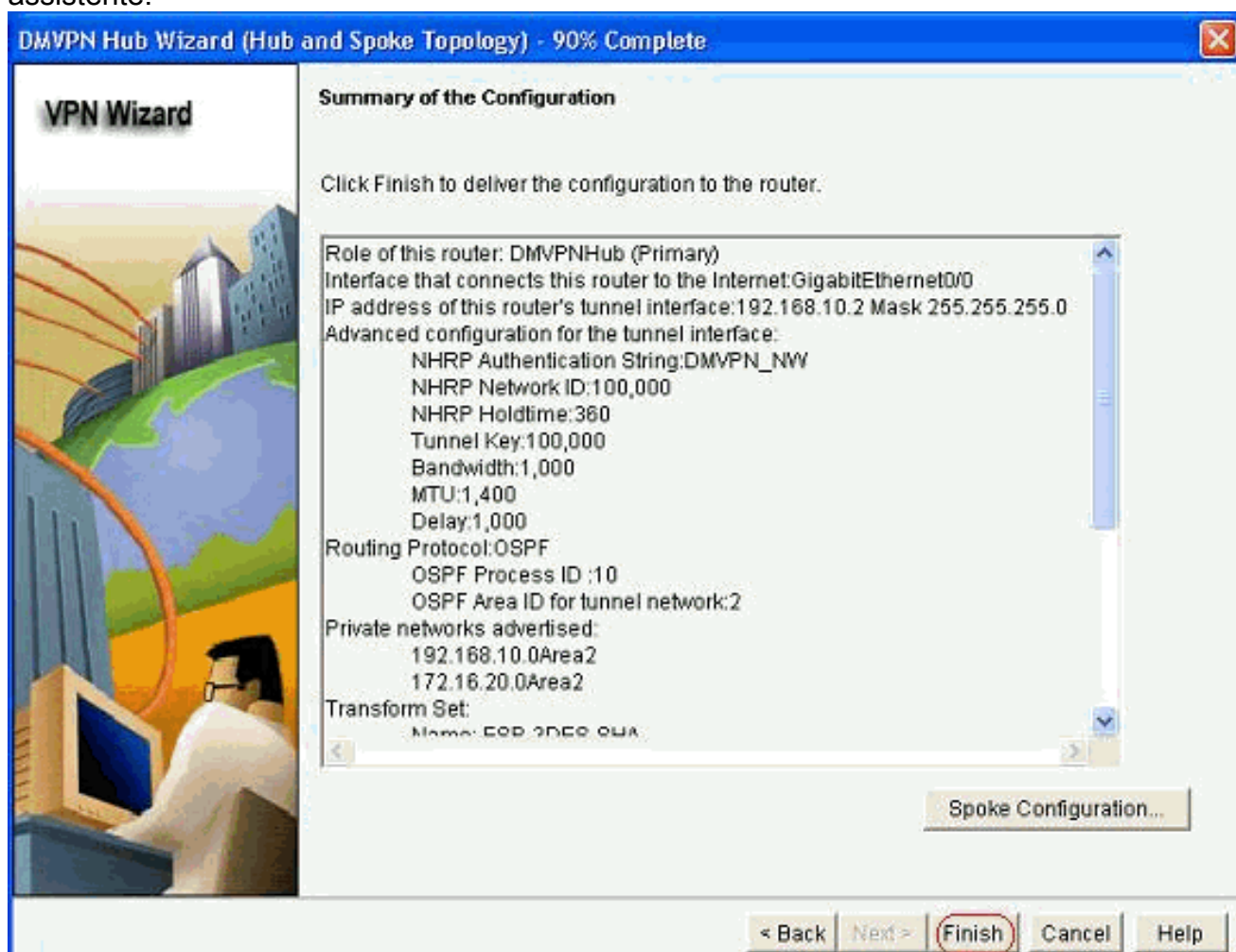
Wildcard Mask:

Area:

15. Adicione a rede do túnel e clique em **OK**.
16. Adicione a rede privada atrás do roteador Hub e clique em **Avançar**.

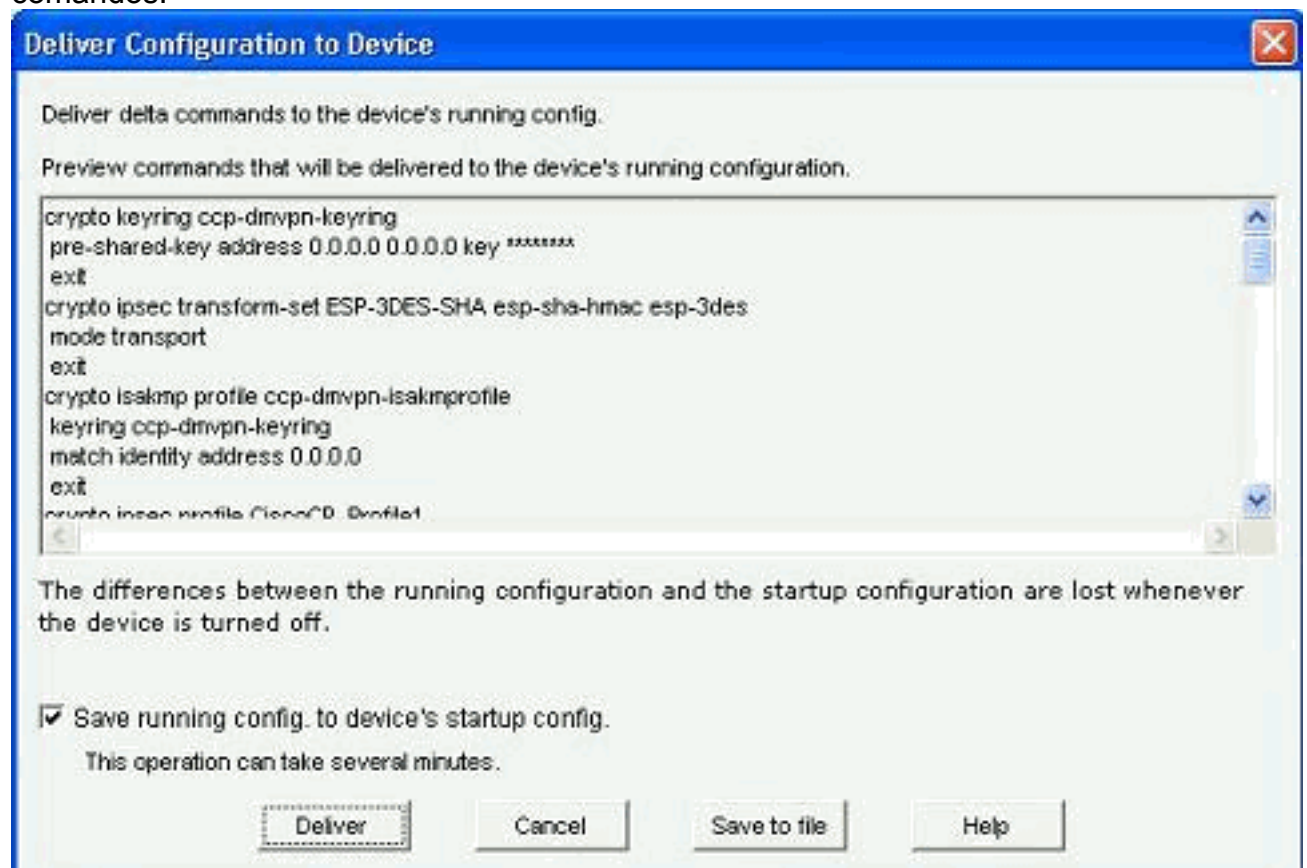


17. Clique em *Concluir* para concluir a configuração do assistente.



18. Clique em *Deliver* para executar os

comandos.



Configuração CLI para Hub

A configuração CLI relacionada é mostrada aqui:

Roteador de Hub
<pre>! crypto isakmp policy 1 encr 3des authentication pre-share group 2 ! crypto isakmp policy 2 encr aes 192 authentication pre-share crypto isakmp key abcd123 address 0.0.0.0 0.0.0.0 ! crypto ipsec transform-set ESP-3DES-SHA esp-3des esp- sha-hmac mode transport ! crypto ipsec profile CiscoCP_Profile1 set transform-set ESP-3DES-SHA ! interface Tunnel0 bandwidth 1000 ip address 192.168.10.2 255.255.255.0 no ip redirects ip mtu 1400 ip nhrp authentication DMVPN_NW ip nhrp map multicast dynamic ip nhrp network-id 100000</pre>

```

ip nhrp holdtime 360
ip tcp adjust-mss 1360
ip ospf network point-to-multipoint
delay 1000
tunnel source GigabitEthernet0/0
tunnel mode gre multipoint
tunnel key 100000
tunnel protection ipsec profile CiscoCP_Profile1
!
router ospf 10
 log-adjacency-changes
 network 172.16.20.0 0.0.0.255 area 2
 network 192.168.10.0 0.0.0.255 area 2
!

```

Edite a configuração de DMVPN usando o CCP

Você pode editar os parâmetros de túnel DMVPN existentes manualmente ao selecionar a interface de túnel e clicar em *Editar*.

Configure > Security > VPN > Dynamic Multipoint VPN

VPN

Create Dynamic Multipoint VPN (DMVPN) **Edit Dynamic Multipoint VPN (DMVPN)**

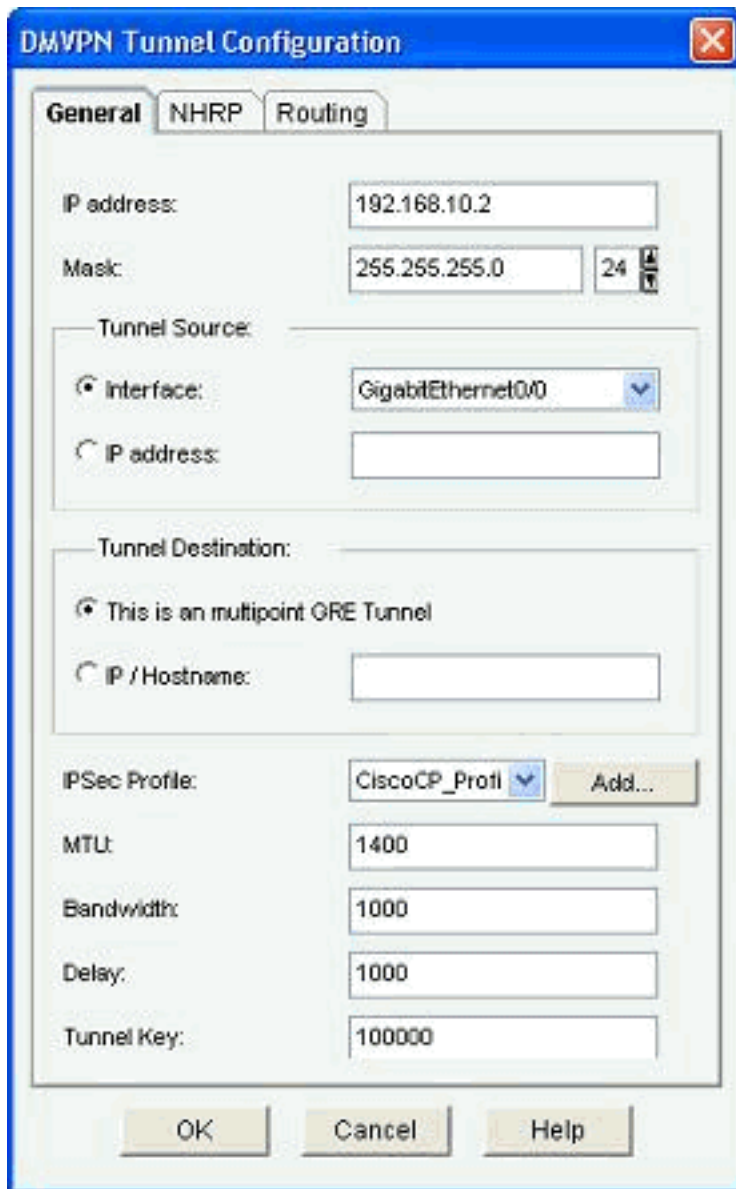
Add... **Edit...** Delete

Interface	IPSec Profile	IP Address	Description
Tunnel0	CiscoCP_Profile1	192.168.10.2	<None>

Details for interface Tunnel0:

Item Name	Item Value
Interface	Tunnel0
IPSec Profile	CiscoCP_Profile1
IP Address	192.168.10.2
Description	<None>
Tunnel Bandwidth	1000
MTU	1400
NHRP Authentication	DMVPN_NW
NHRP Network ID	100000
NHRP Hold Time	360
Delay{0}	1000

Os parâmetros de interface de túnel, como MTU e chave de túnel, são modificados na guia *Geral*.



The image shows a 'DMVPN Tunnel Configuration' dialog box with three tabs: 'General', 'NHRP', and 'Routing'. The 'General' tab is active. It contains the following fields and options:

- IP address:** 192.168.10.2
- Mask:** 255.255.255.0, with a dropdown set to 24.
- Tunnel Source:**
 - ☒ **Interface:** GigabitEthernet0/0
 - ☐ **IP address:** (empty field)
- Tunnel Destination:**
 - ☒ **This is an multipoint GRE Tunnel**
 - ☐ **IP / Hostname:** (empty field)
- IPSec Profile:** CiscoCP_Profi, with an 'Add...' button.
- MTU:** 1400
- Bandwidth:** 1000
- Delay:** 1000
- Tunnel Key:** 100000

At the bottom are 'OK', 'Cancel', and 'Help' buttons.

1. Os parâmetros relacionados ao NHRP são encontrados e modificados de acordo com o requisito na guia *NHRP*. Para um roteador spoke, você deve ser capaz de visualizar o NHS como o endereço IP do roteador Hub. Clique em *Add* na seção NHRP Map para adicionar o

DMVPN Tunnel Configuration

General **NHRP** Routing

Authentication String: DMVPN_NW

Hold Time: 360

Network ID: 100000

Next Hop Servers

Next Hop Servers

Add
Delete

NHRP Map

Destination	Mask
<None>	<None>

Add
Edit
Delete

< 10 >

OK Cancel Help

mapeamento NHRP.

2. Dependendo da configuração da rede, os parâmetros de mapeamento NHRP podem ser configurados conforme mostrado

NHRP Map Configuration

☐ Statically configure the IP-to-NBMA address mapping of IP destinations connected to a NBMA network.

Destination reachable through NBMA network

IP Address:

Mask (Optional):

NBMA address directly reachable

IP Address:

☒ **Configure NBMA addresses used as destinations for broadcast or multicast packets to be sent over a tunnel network.**

☒ Dynamically add spokes' IP addresses to hub's multicast cache

☐ IP address of NBMA address directly reachable

aqui:

Os parâmetros relacionados ao roteamento são exibidos e modificados na guia *Roteamento*.



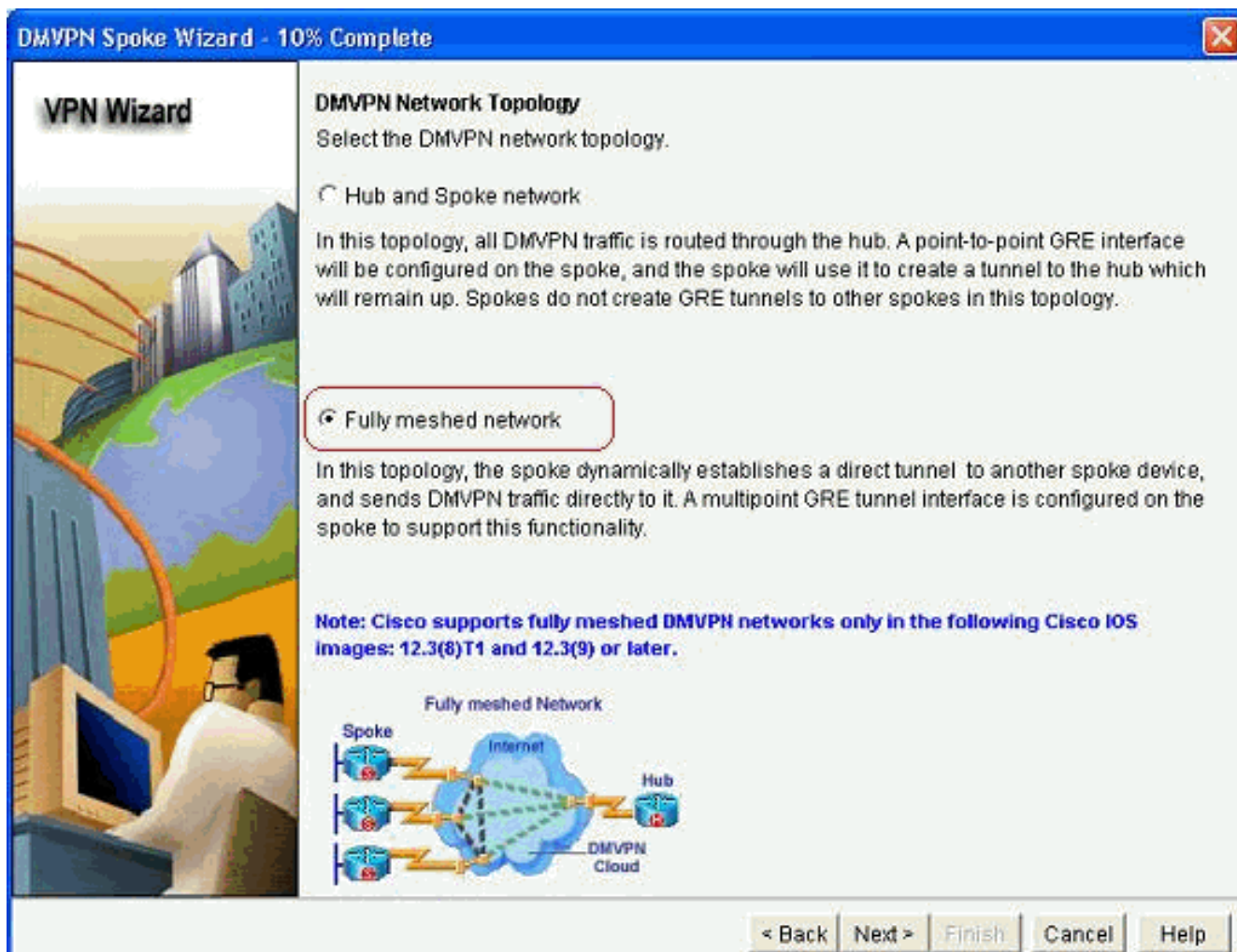
Mais informações

Os túneis DMVPN são configurados destas duas maneiras:

- Comunicação spoke-to-spoke através do hub
- Comunicação spoke-to-spoke sem hub

Neste documento, apenas o primeiro método é discutido. Para permitir o estabelecimento de túneis IPsec dinâmicos spoke-to-spoke, essa abordagem é usada para adicionar o spoke à nuvem DMVPN:

1. Inicie o assistente DMVPN e selecione a opção *de configuração Spoke*.
2. Na janela *DMVPN Network Topology*, selecione a opção *Full mesh network* em vez da opção *Hub and Spoke network*.



3. Conclua o resto da configuração usando as mesmas etapas das outras configurações neste documento.

Verificar

No momento, não há procedimento de verificação disponível para esta configuração.

Informações Relacionadas

- [VPN multiponto dinâmica da Cisco: Comunicações simples e seguras entre filiais](#)
- [VPN multiponto dinâmica \(DMVPN\) do IOS 12.2](#)
- [Suporte Técnico e Documentação - Cisco Systems](#)