Hewlett Packard Enterprise

HPE IMC

Building IPsec VPNs with IVM and BIMS Configuration Examples

Part number: 5200-1350
Software version: IMC IVM 7.2 (E0402)

Contents

Introduction

This document provides an example for using IVM and BIMS to build an IPsec VPN.

IVM provides solutions to managing IPsec VPNs and DVPNs for enterprise headquarters and branches. BIMS uses TR-069 to manage CPEs.

IVM can import IPsec devices from BIMS and configure, deploy, and monitor the IPsec devices through BIMS.

Prerequisites

Before you use IVM and BIMS to build an IPsec VPN, perform the following configurations:

- Deploy the IMC Platform, IVM, and BIMS.
- Add the hub and spokes to the IMC Platform, and configure SNMP and Telnet on the hub so IMC can manage the hub.
- Use the following commands to configure CWMP on the spokes:

Step	Command	Remarks
1. Enter system view.	**system-view**	N/A
2. Enter CWMP view.	**cwmp**	N/A
3. Enable CWMP.	**cwmp enable**	Optional. By default, CWMP is enabled.
4. Specify the URL of the ACS.	**cwmp acs url** *url*	By default, no ACS URL is specified.
5. Configure the username for authentication with the ACS.	**cwmp acs username** *username*	By default, no username is configured.
6. Configure the password for authentication with the ACS.	**cwmp acs password** *password*	By default, no password is configured for authentication with the ACS. You can specify a username without a password for authentication, but must make sure the ACS has the same authentication setting as the CPE.

- (Optional.) Configure the CPEs (BIMS devices).

  To enable a CPE to authenticate the ACS, configure a username and password on the CPE. Upon receiving a session request from an ACS, the CPE compares the CPE username and password in the session request with the local settings. If they are the same, the ACS passes the authentication, and the connection establishment proceeds. Otherwise, the authentication fails, and the connection establishment is terminated.

- Enable the encryption engine and IPsec module backup function on the IPsec devices.

  The encryption engine performs IPsec processing. If the encryption engine is disabled or has failed but the IPsec module backup function is enabled, the IPsec module performs IPsec processing. If the IPsec module backup function is disabled, IPsec packets are discarded.

  To enable the encryption engine and IPsec module backup function:

Step	Command	Remarks
1. Enter system view.	**system-view**	N/A

Step	Command	Remarks
2. Enable the encryption engine.	**cryptoengine enable**	Optional. The default setting depends on the device model.
3. Enable the IPsec module backup function.	**ipsec cpu-backup enable**	Required. By default, the IPsec module backup function is enabled.

Configuration restrictions and guidelines

Only one administrator can perform deployment operations in a VPN domain at a time.

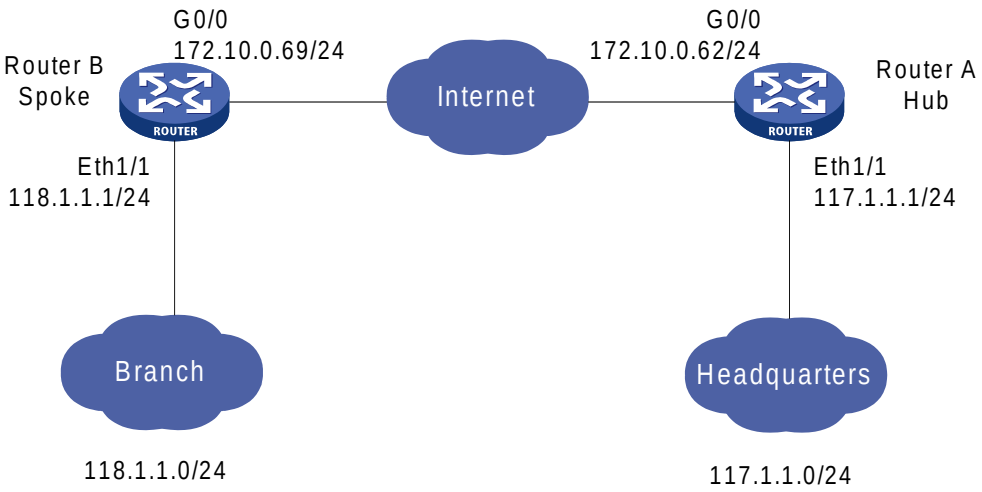
Example: Using IVM and BIMS to build an IPsec VPN

Network requirements

As shown in Figure 1, Router A and Router are added to the IMC Platform. Router B is configured with CWMP and managed by BIMS.

Establish an IPsec tunnel between Router A (the hub) and Router B (the spoke) to protect data flows between subnet 117.1.1.0/24 and subnet 118.1.1.0/24.

Figure 1 Network diagram



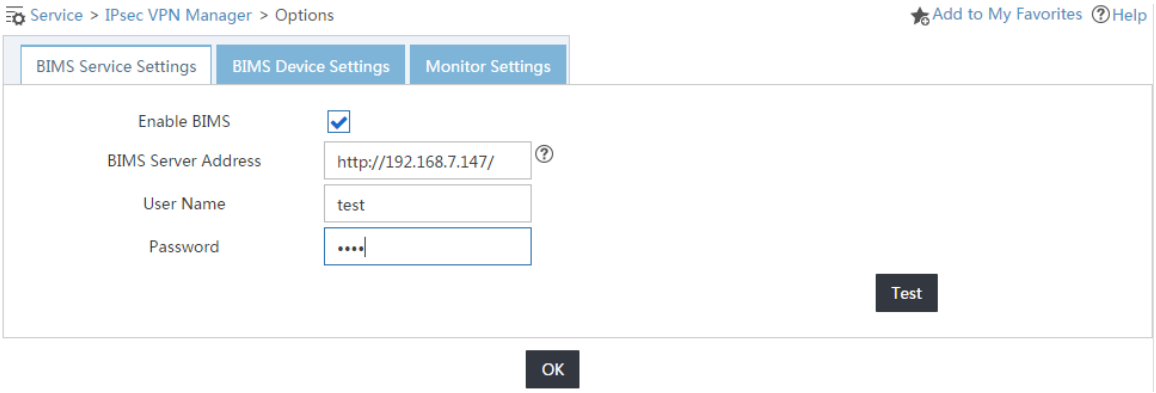
Configuring BIMS service parameters

1. Click the **Service** tab.
2. From the navigation tree, select **IPsec VPN Manager** > **Options**.
   The **BIMS Service Settings** tab page appears, as shown in Figure 2.
3. Select the **Enable BIMS** option.
4. Configure the BIMS server address, username and password.

The BIMS server address must be the same as the ACS URL configured on Router B.

5. Click **Test** to test connectivity to the BIMS server.
6. Click **OK**.

Figure 2 Configuring BIMS service parameters

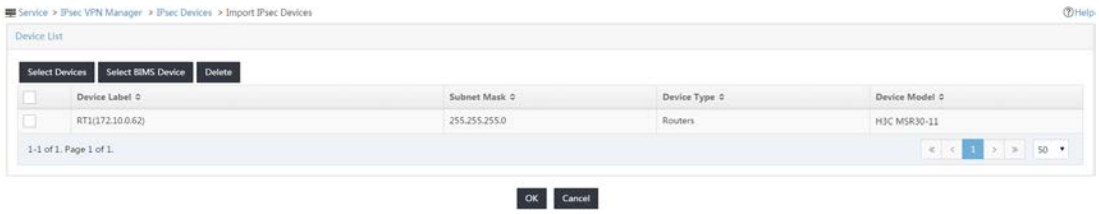


7. Use the default settings on the **BIMS Device Settings** tab and **Monitor Settings** tab.

Importing Router A and Router B to IVM

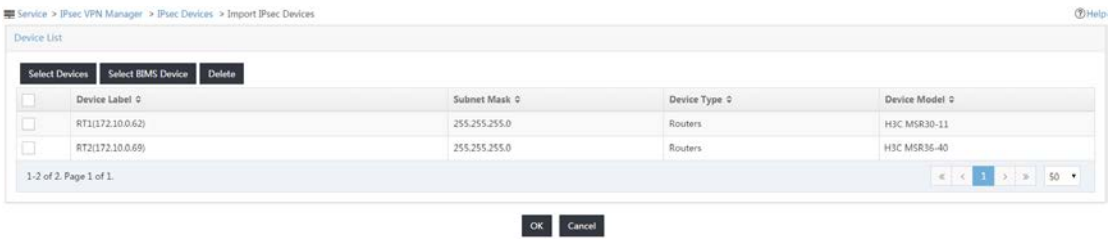
1. Click the **Service** tab.
2. From the navigation tree, select **IPsec VPN Manager** > **IPsec Resources** > **IPsec Devices**.
   The **IPsec Devices** page appears.
3. Click **Import**.
   The **Import IPsec Devices** page appears.
4. Import Router A to IVM:
   a. Click **Select Devices**.
      The **Select Device** window appears.
   b. Select Router A (identified by IP address 172.10.0.62) and click **OK**.
      Router A appears in the **Device List**, as shown in Figure 3.

Figure 3 Importing Router A to IVM



5. Import Router B to IVM:
   a. Click **Select BIMS Device**.
      The **Select BIMS Device** window appears.
   b. Select Router B (identified by IP address 172.10.0.69) and click **OK**.
      Router B appears in the **Device List**, as shown in Figure 4.

Figure 4 Importing Router B to IVM

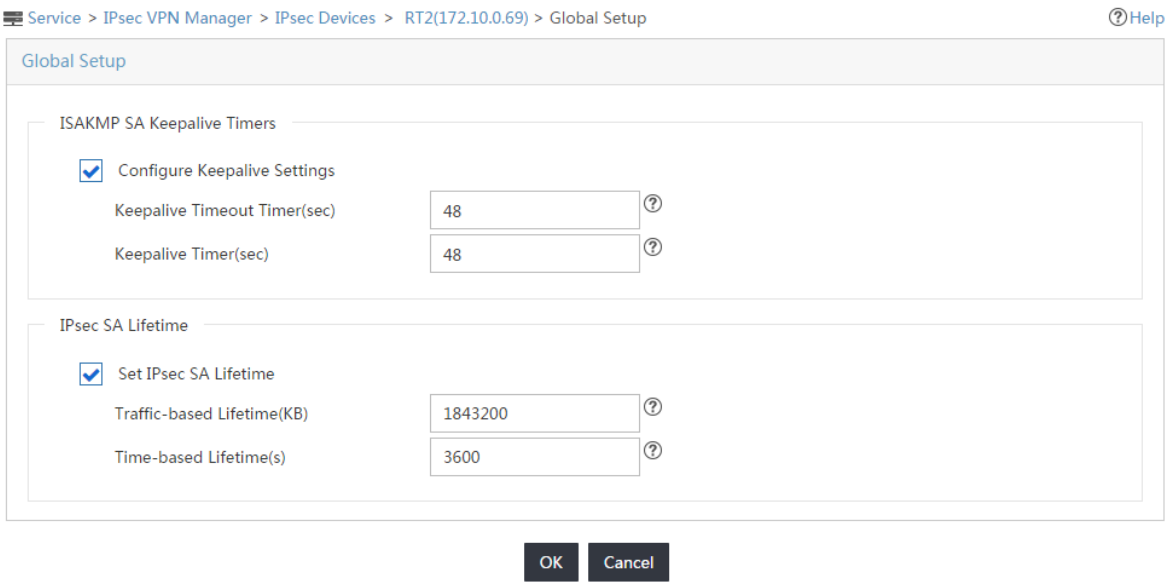


6. Click **OK** to start importing Router A and Router B to IVM.
   IVM displays the import result after the operation is complete.

Configuring global IPsec settings for Router A and Router B

1. Click the **Service** tab.
2. Select **IPsec VPN Manager** > **IPsec Resources** > **IPsec Devices** from the left navigation tree.
   The **IPsec Device List** displays all IPsec devices.
3. Click the **Operation** icon for Router B, which is identified by a device label of **MSR3040(172.10.0.69)**.
4. Select **Global Setup** from the shortcut menu.
   The **Global Setup** page appears.
5. Configure the global settings, as shown in Figure 5, and click **OK**.

Figure 5 IPsec global settings



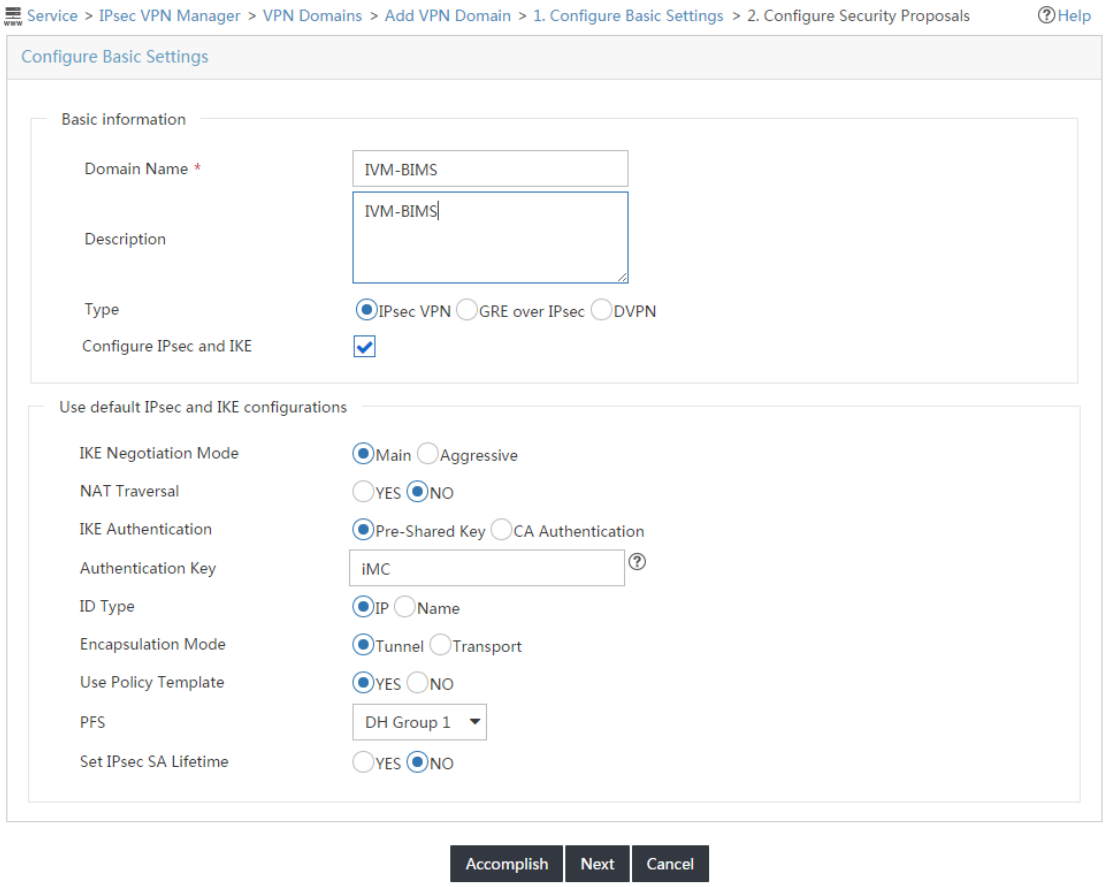
6. Repeat steps 3 to 5 to configure IPsec global settings for Router A.
7. Select Router A and Router B, and click **Synchronize** to deploy the configurations to the devices.

Configuring an IPsec VPN domain

Adding an IPsec VPN domain

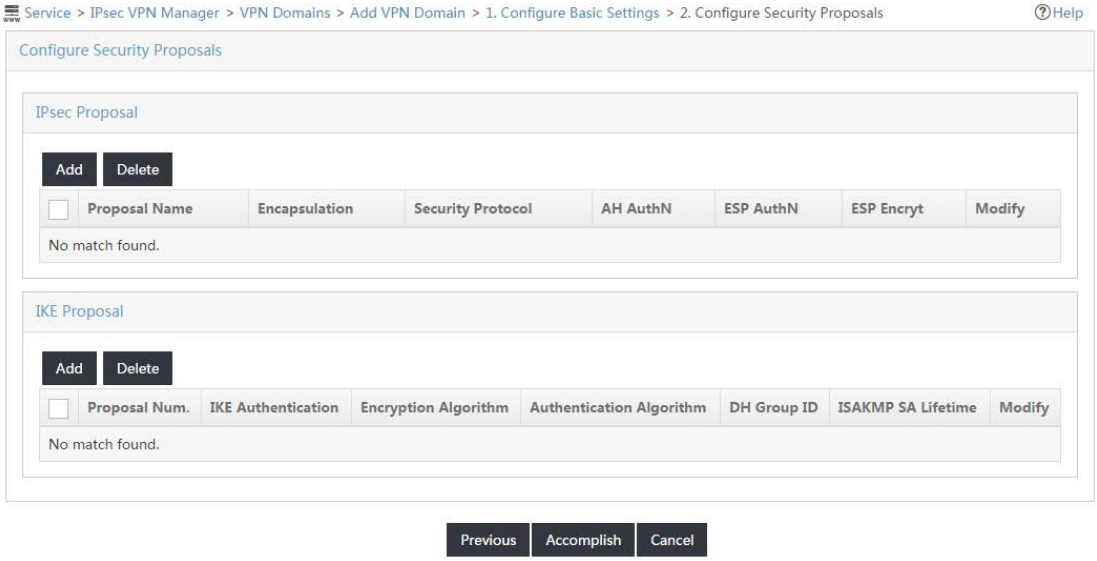
1. Click the **Service** tab.
2. From the navigation tree, select **IPsec VPN Manager** > **IPsec Resources** > **VPN Domains**.
   The **VPN Domains** page appears.
3. Click **Add** to display the add VPN domain wizard.
4. Add a VPN domain named **IVM-BIMS**.
   Configure the basic settings and default IPsec and IKE settings for the domain, as shown in Figure 6.

Figure 6 Adding an IPsec VPN domain



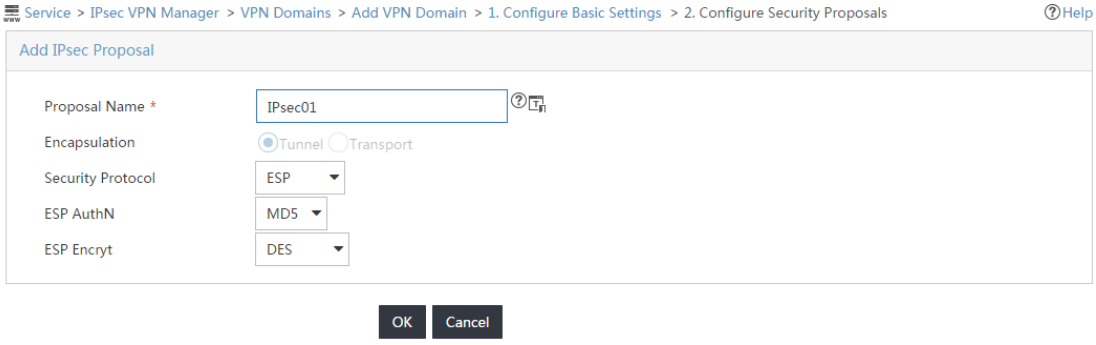
5. Click **Next** to display the **Configure Security Proposals** page, as shown in Figure 7.

Figure 7 Configuring security proposals



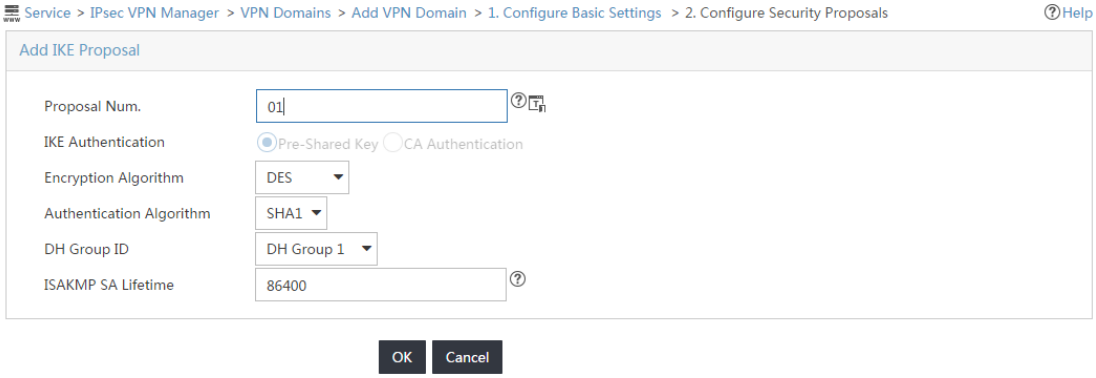
6. Add an IPsec proposal:
   a. Click **Add** in the **IPsec Proposal** area.
      The **Add IPsec Proposal** window appears, as shown in Figure 8.
   b. Configure the IPsec proposal parameters and click **OK**.

Figure 8 Adding an IPsec proposal



7. Add an IKE proposal:
   a. Click **Add** in the **IKE Proposal** area.
      The **Add IKE Proposal** window appears, as shown in Figure 9.
   b. Configure the IKE proposal parameters and click **OK**.

Figure 9 Adding an IKE proposal

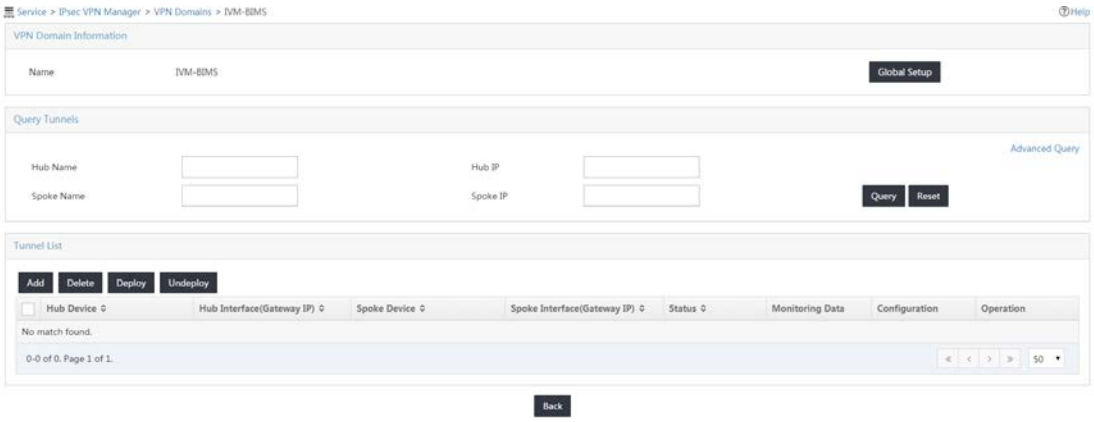


8. Click **Accomplish**.

Adding an IPsec tunnel in the VPN domain

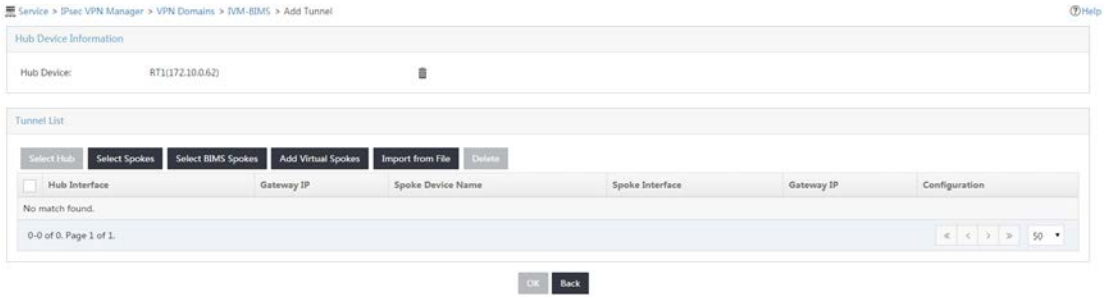
1. On the **VPN Domain List**, click the name of the VPN domain **IVM-BIMS**.
   The **Tunnel List** page of the VPN domain appears, as shown in Figure 10.

   Figure 10 Tunnel list



2. Click **Add** in the **Tunnel List** area.
3. Click **Select Hub**. The **Select Hub** window appears. Select Router A and click **OK**.
   The **Hub Device Information** area appears on top of the tunnel list, as shown in Figure 11.

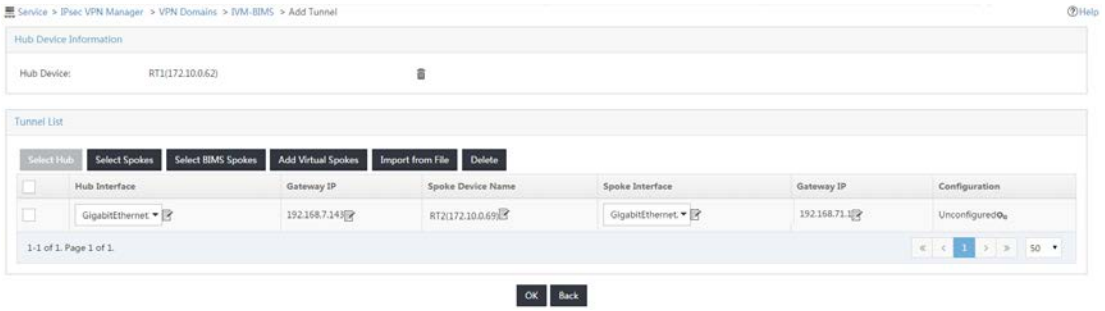
   Figure 11 Selecting the hub



4. Click **Select BIMS Spokes**. The **Select BIMS Spokes** window appears. Select Router B and click **OK**.

IVM automatically generates an unconfigured hub-spoke tunnel between Router A and Router B, as shown in Figure 12.

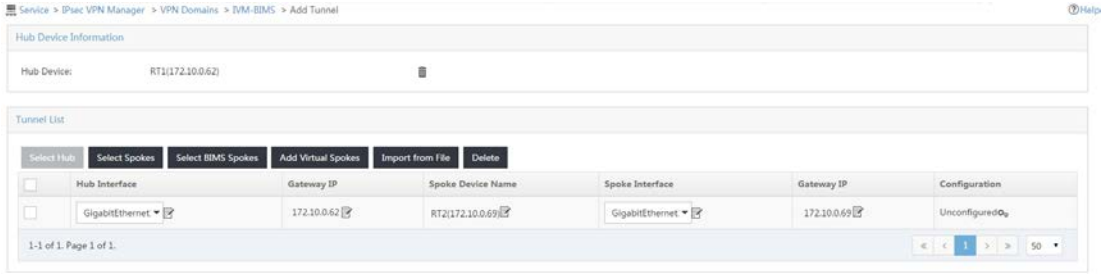
Figure 12 Selecting the spoke



5. Modify the names and IP addresses of the hub interface and spoke interface, as shown in Figure 13.

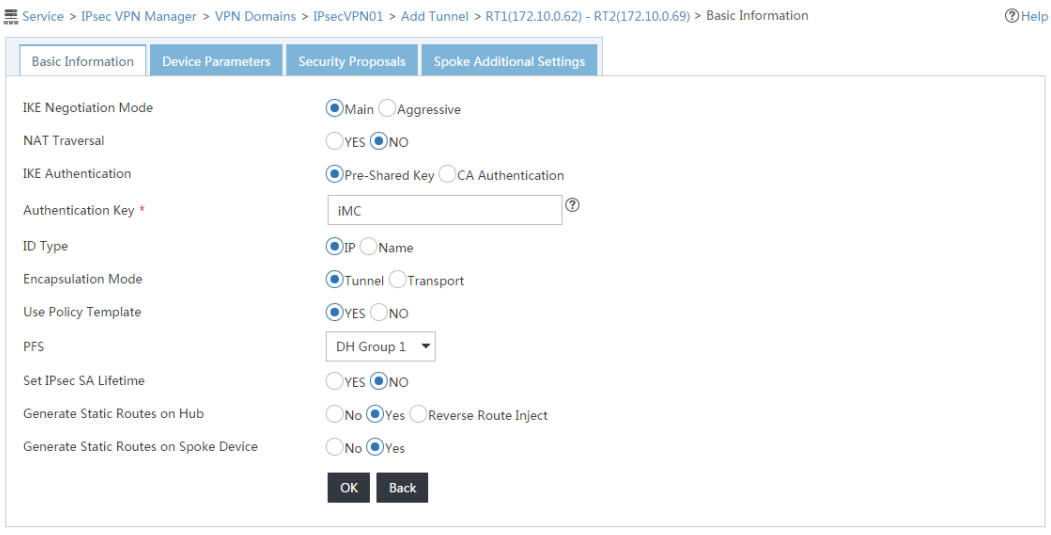
   For example, to modify the hub interface name, click the **Modify** icon, select **GigabitEthernet0/0** in the text box and click **OK**.

   Figure 13 Configuring interfaces and IP addresses for the IPsec tunnel



6. Configure the IPsec tunnel:
   a. In the **Operation** column, click the **Device Parameters** icon to display the tunnel configuration page, as shown in Figure 14.
   b. Configure the basic information, as shown in Figure 14 and click **OK**.

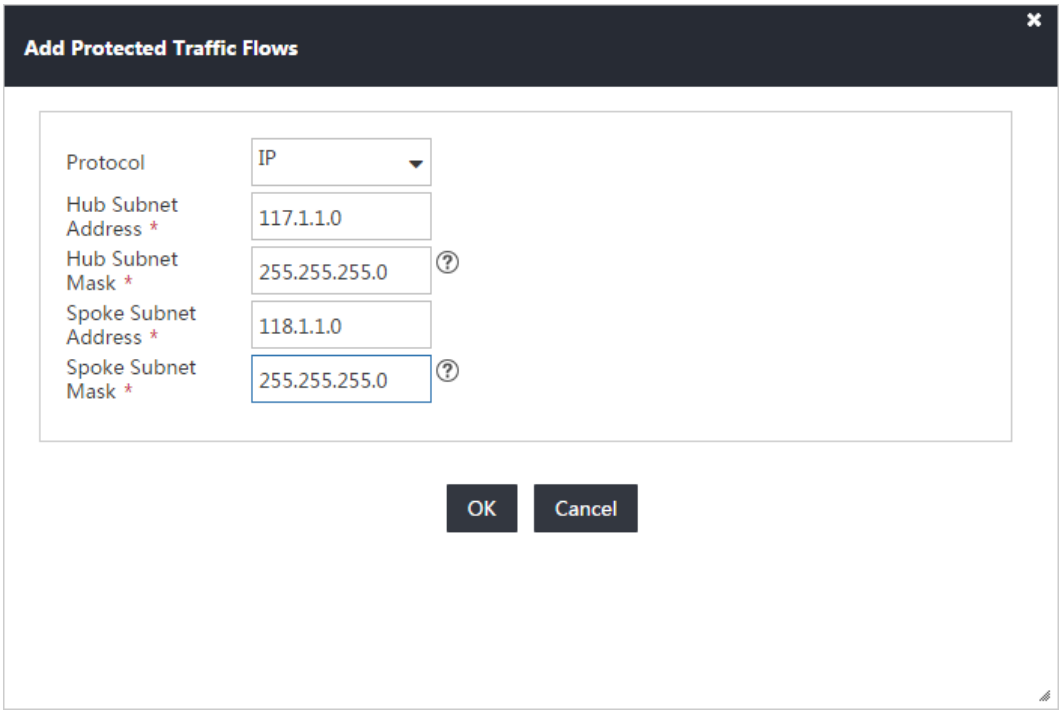
      Figure 14 Configuring basic information



a. Click the **Device Parameters** tab, and click **Add** to display the **Add Protected Traffic Flows** window.

b. Add a protected traffic flow, as shown in Figure 15, and click **OK**.

Figure 15 Adding protected traffic flows



c. Use the default settings on the **Security Proposals** tab and **Spoke Additional Settings** tab, as shown in Figure 16 and Figure 17.

Figure 16 Security proposals tab

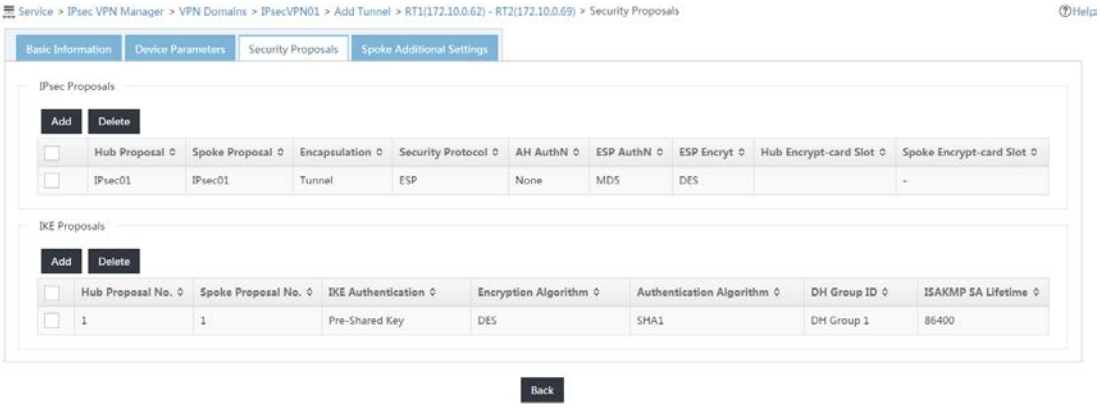
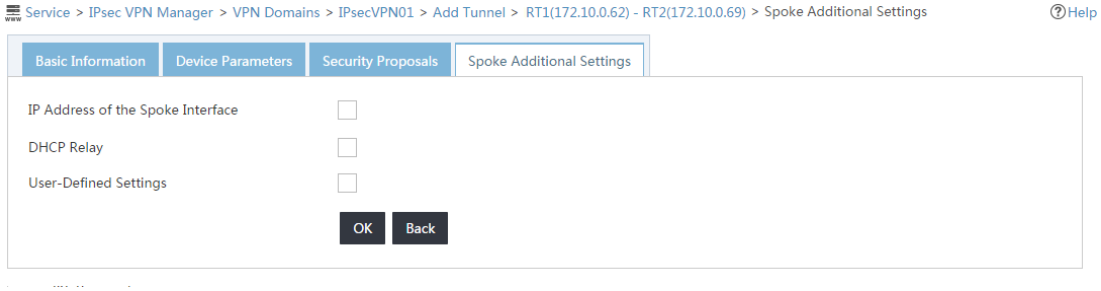


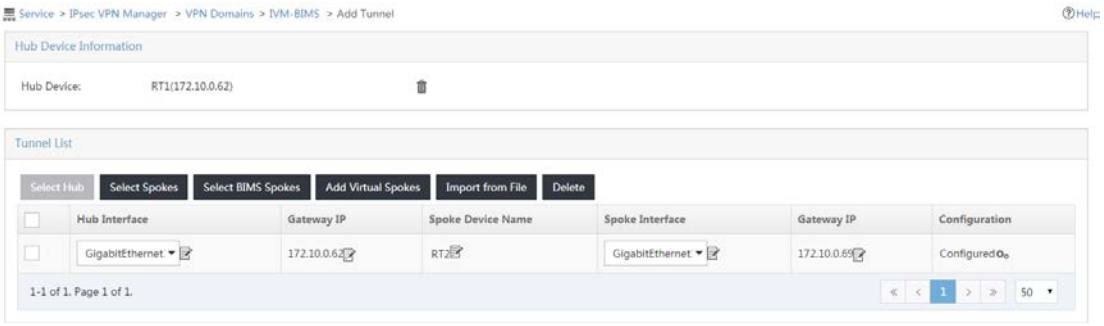
Figure 17 Spoke additional settings tab



7. Click **Back** to return to the tunnel list page.

   The **Configuration** column of the tunnel changes to **Configured**, as shown in Figure 18.

   Figure 18 Tunnel list page

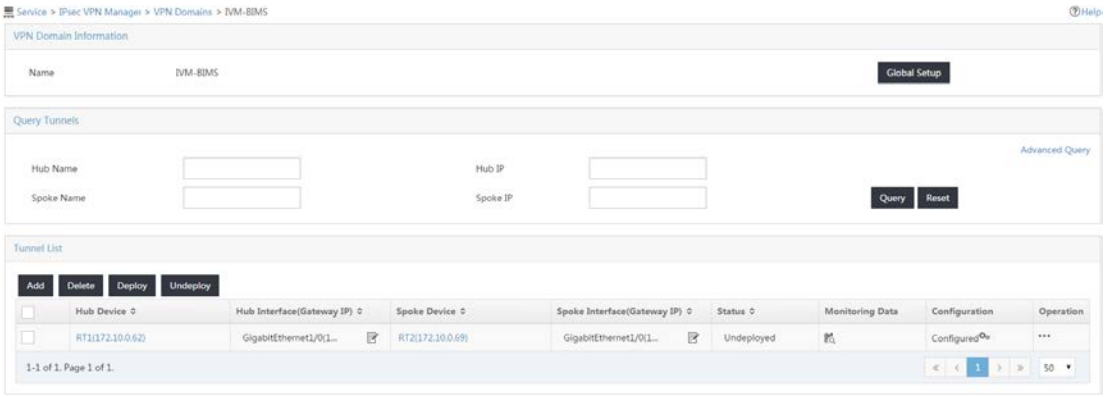


8. Click **OK**.

Deploying the IPsec tunnel

1. Select the hub-spoke IPsec tunnel between Router A and Router B and click **Deploy**, as shown in Figure 19.

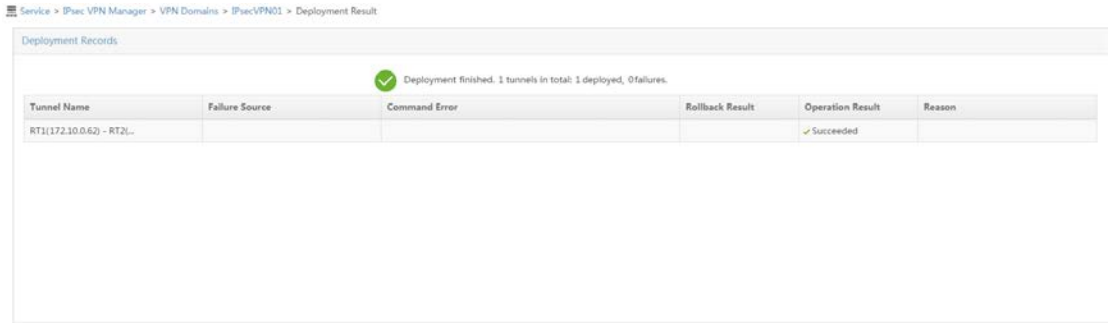
   Figure 19 Deploying the IPsec tunnel



   The page displays the operation result, as shown in Figure 20. If a failure occurs, the failure reason is displayed.

   After a tunnel is successfully deployed to the devices, the tunnel status in IVM changes to **Ready**.

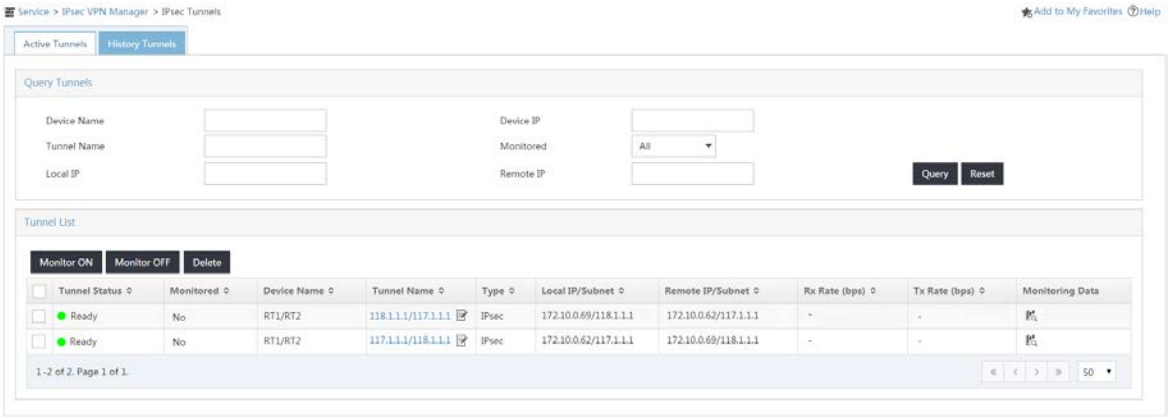
   Figure 20 Deployment result



Enabling monitoring for the IPsec tunnel

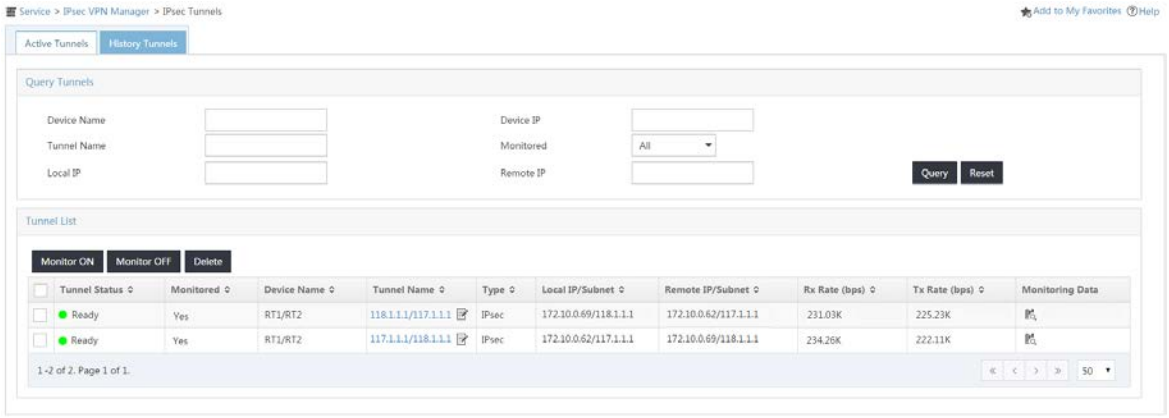
1. Click the **Service** tab.
2. From the navigation tree, select **IPsec VPN Manager** > **IPsec Resources** > **IPsec Tunnels**.
   The **Tunnel List** displays all IPsec tunnels, as shown in Figure 21.

Figure 21 IPsec tunnels



3. Select the IPsec tunnel and click **Monitor ON**.
   The **Monitored** column of the tunnel changes to **Yes**, as shown in Figure 22.

Figure 22 Enabling monitoring for the IPsec tunnel



After you enable monitoring for an IPsec tunnel, you can view the tunnel receive and transmit rates in a specified time period by clicking the **Monitoring Data** icon .

Related documentation

HPE IMC IPsec VPN Manager Administrator Guide

HPE Intelligent Management Center IVM Online Help