



Exchange Server 2003 RPC over HTTP Deployment Scenarios

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Introduction

Microsoft® Exchange Server 2003 and Microsoft Office Outlook® 2003, combined with Windows Server™ 2003, support the use of RPC over HTTP to access Exchange servers. Using the Microsoft Windows RPC over HTTP feature to enable your users to connect to their Exchange mailbox eliminates the requirement for remote office users to use a virtual private network (VPN) to connect to their Exchange servers. Users who are running Outlook 2003 on client computers can connect directly to an Exchange server in a corporate environment from the Internet.

The Windows RPC over HTTP feature enables an RPC client (such as Outlook 2003) to establish connections across the Internet by tunneling the remote procedure call (RPC) traffic over Hypertext Transfer Protocol (HTTP). Because RPC is not designed for use on the Internet and does not work well with perimeter firewalls, RPC over HTTP makes it possible to use RPC clients with perimeter networks and firewalls. If the RPC client can make an HTTP connection to a remote computer that is running Internet Information Services (IIS), the client can connect to any available server on the remote network and can execute remote procedure calls. Moreover, the RPC client and server programs can connect across the Internet—even if both are behind firewalls on different networks.

New for Exchange Server 2003 Service Pack 1 (SP1)

Exchange Server 2003 Service Pack 1 (SP1) includes a new user interface in Exchange System Manager that enables you to configure your Exchange messaging system to use RPC over HTTP without manually modifying the registry settings. With this new interface, enabling RPC over HTTP for your organization involves doing the following steps:

Install Windows Server 2003

To use RPC over HTTP, you must install Windows Server 2003 on the computers that are running Exchange Server 2003, and on the global catalog servers that your Exchange servers will access. For information about how to install Windows Server 2003, see the Windows Server 2003 documentation.

Configure your Exchange Server 2003 back-end server as a target for the RPC proxy servers

The Exchange front-end servers must know which back-end servers are to be published. For this to occur, you will need to configure your Exchange back-end servers as accessible using RPC over HTTP.

- If you are upgrading to SP1 and have previously configured RPC over HTTP, see "Step 1: Configuring Exchange 2003 Back-End Servers as Targets for RPC Proxy Servers" in the section "Upgrading Your Exchange Server 2003 RPC over HTTP Messaging Environment."

- If you have upgraded to SP1 and are configuring RPC over HTTP for the first time, see "Step 2: Configuring Exchange 2003 Back-End Servers to Act as Targets for RPC Proxy Servers" in the section "Deploying RPC over HTTP for Exchange Server 2003 SP1."

Configure your Exchange Server 2003 front-end servers as RPC proxy servers

Your Exchange front-end servers will become your RPC proxy servers. These RPC proxy servers specify the servers and ports that RPC clients are allowed to connect to. For Exchange Server 2003 SP1, you will do this using the new user interface for RPC over HTTP in Exchange System Manager.

- If you are upgrading to SP1 and have previously configured RPC over HTTP, see "Step 2: Configuring Exchange 2003 Front-End Servers to Act as RPC Proxy Servers" in the section "Upgrading Your Exchange Server 2003 RPC over HTTP Messaging Environment."
- If you have upgraded to SP1 and are configuring RPC over HTTP for the first time, see "Step 3: Configuring the Exchange 2003 Front-End Server to Act as the RPC Proxy Server" in the section "Deploying RPC over HTTP for Exchange Server 2003 SP1."

To use this new functionality to deploy RPC over HTTP, you will need to install Exchange Server 2003 SP1 on all Exchange front-end servers that will be used as RPC proxy servers. It is also recommended that you install Service Pack 1 on all your Exchange back-end servers. However, you can enable RPC over HTTP on Exchange Server 2003 back-end servers using Exchange System Manager from another Exchange server that has Service Pack 1 installed.

RPC over HTTP Deployment Scenarios

When you deploy RPC over HTTP in your corporate environment, you have several deployment scenarios available. The recommended deployment strategy for your messaging environment is to deploy an advanced firewall server such as Internet Security and Acceleration (ISA) Server 2000 with Service Pack 1 and Feature Pack 1 or later, in the perimeter network. Then, position your RPC proxy server in the corporate network and use the Exchange front-end and back-end server architecture.

Note When you use ISA Server as your advanced firewall server, you have several deployment options. For information about how to install ISA Server as an advanced firewall server, see the Exchange online book, *Using ISA Server 2000 with Exchange Server 2003* (<http://go.microsoft.com/fwlink/?Linkid=23232>).

These options are explained in the following sections.

Scenario 1: Front-End and Back-End Server Architecture with ISA Server in the Perimeter Network

By using ISA Server in the perimeter network to route RPC over HTTP requests and positioning the Exchange front-end server in the corporate network, you need to open only port 443 on the internal firewall for Outlook 2003 clients to communicate with Exchange. Figure 1 illustrates this deployment scenario.

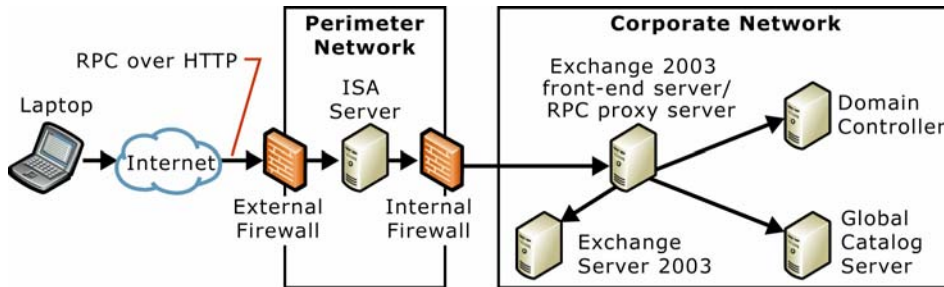


Figure 1 Deploying RPC over HTTP using ISA Server as a reverse proxy server in the perimeter network

When located in the perimeter network, ISA Server routes RPC over HTTP requests to the Exchange front-end server that is acting as an RPC proxy server. The RPC proxy server then communicates over specific ports to other servers that use RPC over HTTP.

Note If your firewalls are configured to allow access only to specific virtual directories, you must specifically allow access to the /rpc virtual directory that is created when you install the Windows RPC networking component.

Scenario 2: Positioning the RPC Proxy Server in the Perimeter Network

Although not recommended, you can position the Exchange Server 2003 front-end server acting as the RPC proxy server inside the perimeter network. For details about placing an Exchange front-end server in a perimeter network, see the Preview of *Using Exchange 2000 Server and Exchange Server 2003 Front-End Servers* at (<http://go.microsoft.com/fwlink/?linkid=21277>).

In this scenario, you configure your Exchange servers as in Scenario 1. However, you will need to make sure to open the ports required by RPC over HTTP on your internal firewall, in addition to those already required for an Exchange front-end server. The ports for RPC over HTTP are TCP 6001, 6002, and 6004. For a complete list of the other ports required in the Exchange front-end and back-end server, see the Preview of *Using Exchange 2000 Server and Exchange Server 2003 Front-End Servers* at (<http://go.microsoft.com/fwlink/?linkid=21277>).

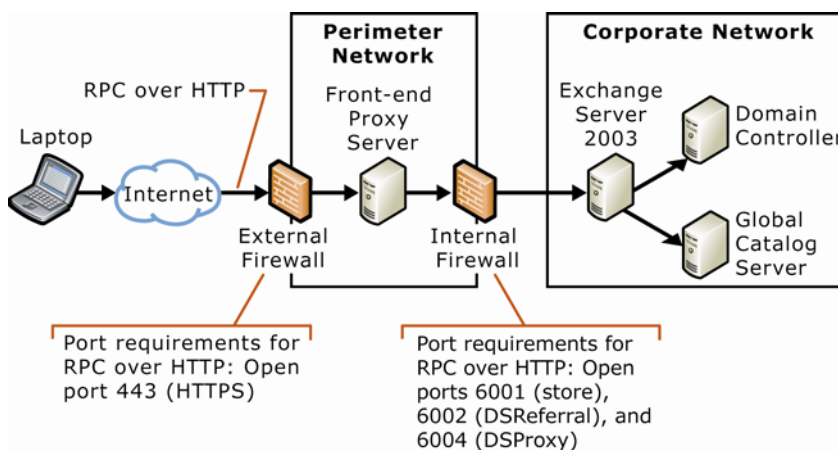


Figure 2 Deploying RPC over HTTP on the Exchange front-end server in the perimeter network

Scenario 3: Using Exchange Single-Server Installations

If you plan to use a single server as your Exchange mailbox server, global catalog server, and RPC proxy server and you do not have a separate Exchange front-end server, you will need to follow "Configuring an Exchange Server 2003 SP1 Single-Server Installation to Use RPC over HTTP" later in this guide.

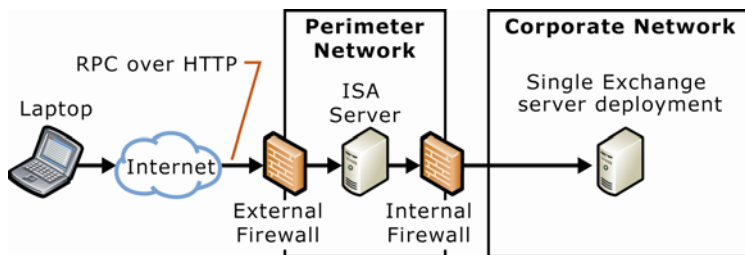


Figure 3 Single Exchange server deployment

Scenario 4: Secure Sockets Layer Offloading

You can use another server besides your Exchange front-end server to handle the SSL decryption for your client connections. In this scenario, you will need to set a special registry setting to allow for Secure Sockets Layer (SSL) decryption to occur on another computer besides your front-end server. For information about how to do this, see "Step 4: (Optional) Configuring RPC over HTTP for SSL Offloading."

RPC over HTTP System Requirements

To use RPC over HTTP, you must run Windows Server 2003 on the following computers:

- All Exchange Server 2003 servers that will be accessed with RPC over HTTP.
- All Exchange Server 2003 front-end servers acting as RPC proxy servers.
- All global catalog servers used by Outlook 2003 clients and Exchange Server 2003 servers configured to use RPC over HTTP.

Exchange Server 2003 must be installed on all Exchange servers that are used by the RPC proxy server.

All client computers that are running Outlook 2003 must be running either Windows Server 2003 or Microsoft Windows XP Service Pack 1 (SP1) or later with the following update: 331320, "Windows XP Patch: RPC Updates Needed for Exchange Server 2003"

(<http://go.microsoft.com/fwlink/?LinkId=16687>).

Also, the following is recommended when you use RPC over HTTP communication:

- Use Secure Sockets Layer (SSL) encryption. SSL is required by the RPC proxy server for all client-to-server communication and the server's SSL certificate must be valid and trusted by the client. Outlook will not connect if the certificate is invalid or not trusted.
- Choose the correct client authentication method. Basic authentication over SSL is firewall-independent and can be used regardless of firewall configuration. NTLM authentication can be used but is dependent on how the firewall handles SSL traffic.

Note If the firewall does not add a **via:** header to the HTTP header information, NTLM can be used. If the firewall does add a **via:** header (as many reverse proxies do), IIS will not allow NTLM authentication.

- Use an advanced firewall server in front of your Exchange front-end server in the perimeter network. It is recommended that you use a dedicated firewall server such as ISA Server 2000 with Service Pack 1 and Feature Pack 1 or later to secure your messaging environment. For information about using ISA Server 2000 SP1 with Exchange, see the Exchange online book, *Using ISA Server 2000 with Exchange Server 2003* (<http://go.microsoft.com/fwlink/?linkid=23232>).

Upgrading Your Exchange Server 2003 RPC over HTTP Messaging Environment

This section describes how to reconfigure your Exchange messaging environment to use RPC over HTTP when you upgrade to Exchange Server 2003 SP1. Follow these instructions when upgrading to preserve your previous settings for RPC over HTTP.

1. Configure the Exchange back-end servers to act as targets for the RPC proxy servers.
2. Configure the Exchange front-end servers to act as RPC proxy servers.

After you have reconfigured your Exchange Server 2003 SP1 servers to use RPC over HTTP, you can use the instructions in "Deploying RPC over HTTP for Exchange Server 2003 SP1" to add additional servers.

Note When you reconfigure your Exchange servers to use RPC over HTTP, you will receive several warning messages. For example, if you have already configured your Exchange front-end servers to use RPC over HTTP, you will receive the following message:

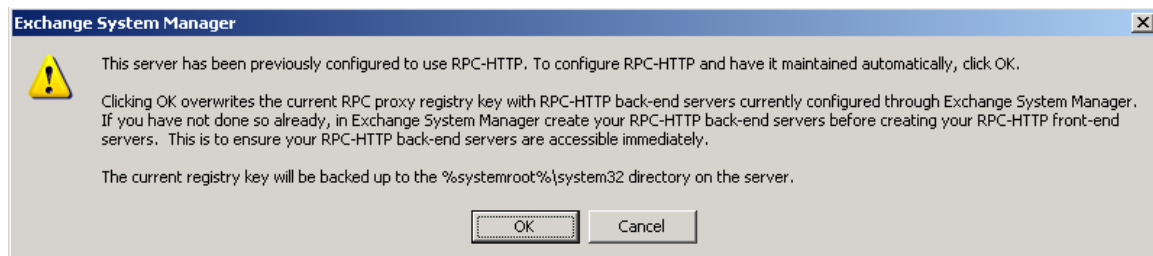


Figure 4 Warning message—RPC over HTTP already configured

When you receive this message, click **OK** to allow Exchange to automatically manage the RPC over HTTP registry keys. Your old configuration will be backed up to the file that is referenced in the dialog box.

Step 1: Configuring Exchange 2003 Back-End Servers as Targets for RPC Proxy Servers

Your Exchange back-end servers must be configured to be targets for the RPC proxy servers. You can do this even if your Exchange 2003 back-end servers have not been upgraded to SP1. You will need to use an Exchange System Management console that has Exchange Server 2003 SP1 installed to complete the following steps.

To configure Exchange 2003 back-end servers to act as targets for the RPC proxy servers

1. In Exchange System Manager, expand **Administrative Groups**, and then expand the Administrative Group that contains your Exchange back-end servers.
2. Expand the **Servers** object, right-click the Exchange back-end server you want to configure, and then select **Properties**.
3. On the **Exchange Server Properties** page, click the **RPC-HTTP** tab, and then select the option next to **RPC-HTTP back-end server**.

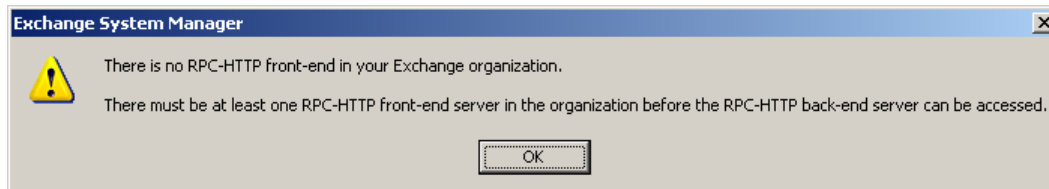


Figure 5 Warning message—no front-end server configured

The dialog box in Figure 5 may appear stating you do not have any RPC over HTTP front-end servers configured. Click **OK**. In Step 2, you will configure your RPC over HTTP front-end servers after you have configured all the Exchange Server 2003 back-end servers.

1. Click **OK**.

Do this procedure on all Exchange Server 2003 back-end servers you want RPC proxy servers to be able to access.

Note Doing this task sets an Active Directory® directory service property that will indicate to a front-end server that these back-end servers should be published for RPC over HTTP access. If your topology has multiple global catalog servers, you might want to wait for Active Directory replication to propagate these properties before proceeding to the next step.

Step 2: Configuring Exchange 2003 Front-End Servers to Act as RPC Proxy Servers

The RPC over HTTP Windows networking component for IIS should be installed already if you are upgrading an existing RPC over HTTP proxy. You will configure the Exchange Server 2003 SP1 front-end server to act as the RPC proxy server. Your front-end servers must be running Exchange Server 2003 SP1.

To configure the Exchange 2003 front-end servers to act as RPC proxy servers

1. In Exchange System Manager, expand the **Administrative Groups**, and then expand the Administrative Group that contains your Exchange front-end servers.
2. Expand the **Servers** object, right-click the Exchange front-end server you want to set as an RPC proxy server, and then select **Properties**.
3. On the **Exchange Server Properties** page, click the **RPC-HTTP** tab, and then select the option next to **RPC-HTTP front-end server**.

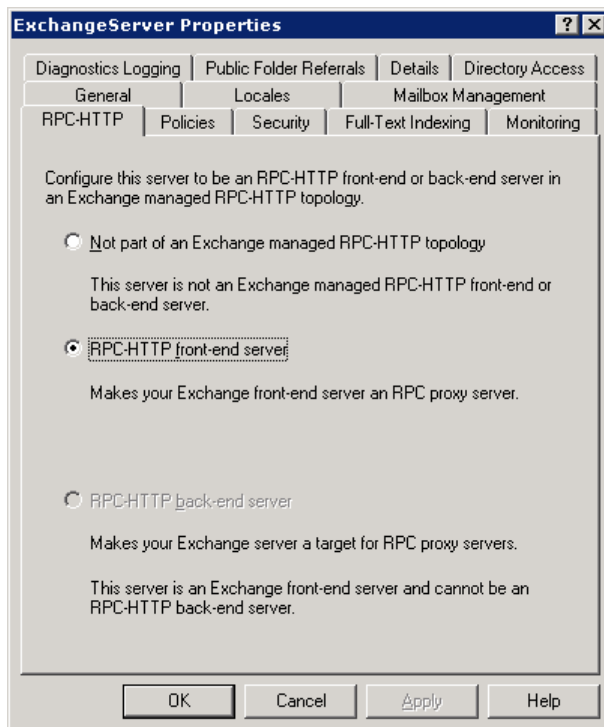


Figure 6 The RPC-HTTP tab in Exchange System Manager

4. Click **OK**.
5. Because you had previously configured RPC over HTTP on this front end, you will receive the warning shown in Figure 4. Click **OK** to continue.
6. You will also receive another dialog box stating that SSL is required for RPC over HTTP to work. Click **OK**.

Do this procedure on all Exchange Server 2003 SP1 front-end servers that are to be used as RPC proxy servers.

Deploying RPC over HTTP for Exchange Server 2003 SP1

This section provides detailed information about how to deploy RPC over HTTP in your Exchange Server 2003 organization for the scenarios listed earlier. Complete these steps in the following order:

Note The following information is for Exchange Server 2003 SP1 only. For detailed information about how to deploy RPC over HTTP for Exchange Server 2003, see the section "Deploying RPC over HTTP for Exchange Server 2003" later in this guide.

Important If you are upgrading from Exchange Server 2003 to Exchange Server 2003 SP1 and you have already configured your messaging environment to use RPC over HTTP, use the instructions in "Upgrading Your Exchange Server 2003 RPC over HTTP Messaging Environment."

1. Install the Windows RPC over HTTP networking component on the Exchange front-end servers.
2. Configure the Exchange back-end server to act as a target for the Exchange front-end server configured as an RPC proxy server.
3. Configure the Exchange front-end server to act as the RPC proxy server in Exchange System Manager.
4. (Optional) Configure RPC over HTTP for SSL offloading.
5. Create an Outlook profile for your users to use with RPC over HTTP.
6. Instructions for installing RPC over HTTP in a single-server configuration are included in the section "Configuring an Exchange Server 2003 SP1 Single-Server Installation to Use RPC over HTTP."

Each of these steps is detailed in the following sections. After you have completed these steps, your users can start using RPC over HTTP to access the Exchange front-end server.

Note If you are situating your RPC proxy server inside your perimeter network, you also need to open the specified ports on the internal firewall for RPC over HTTP in addition to the standard ports for Exchange front-end communication. See "Scenario 2: Positioning the RPC Proxy Server in the Perimeter Network." This step is not included in the following procedures.

Step 1: Installing the Windows RPC over HTTP Networking Component

The RPC proxy server processes the Outlook 2003 RPC requests that come in over the Internet. For the RPC proxy server to successfully process the RPC over HTTP requests, you must install the Windows Server 2003 RPC over HTTP Proxy networking component on your Exchange front-end server.

To install the Windows RPC over HTTP networking component on Exchange front-end servers

1. On the Exchange front-end server that is running Windows Server 2003, click **Start**, click **Control Panel**, and then click **Add or Remove Programs**.
2. In **Add or Remove Programs**, click **Add/Remove Windows Components** in the left pane.
3. In the Windows Components Wizard, on the **Windows Components** page, select **Networking Services**, and then click **Details**.

4. In **Networking Services**, select the **RPC over HTTP Proxy** check box, and then click **OK**.
5. On the **Windows Components** page, click **Next** to install the **RPC over HTTP Proxy** Windows component.

Step 2: Configuring Exchange 2003 Back-End Servers to Act as Targets for RPC Proxy Servers

After you have installed the RPC over HTTP component on your Exchange Server 2003 SP1 front-end servers that you will use as RPC proxy servers, you can specify the Exchange back-end servers that you will allow to be accessed by the RPC proxy servers.

To configure Exchange 2003 back-end servers to act as targets for the RPC proxy servers

1. In Exchange System Manager, expand **Administrative Groups**, and then expand the Administrative Group that contains your Exchange back-end server.
2. Expand the **Servers** object, right-click the Exchange back-end server you want to configure, and then select **Properties**.
3. On the **Exchange Server Properties** page, click the **RPC-HTTP** tab, and then select the option next to **RPC-HTTP back-end server**.
4. You could receive a warning message as shown in Figure 7. Click **OK** and proceed to the next step to configure the Exchange back-end servers.

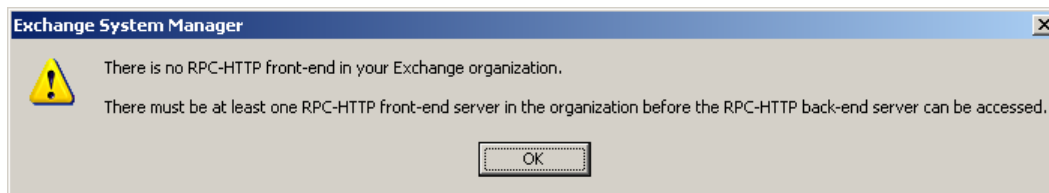


Figure 7 Warning message—no front-end server configured

5. Click **OK**.
6. If your back-end server is also a domain controller, you could receive an additional warning as shown in Figure 8. You will need to restart the server if this warning message appears.

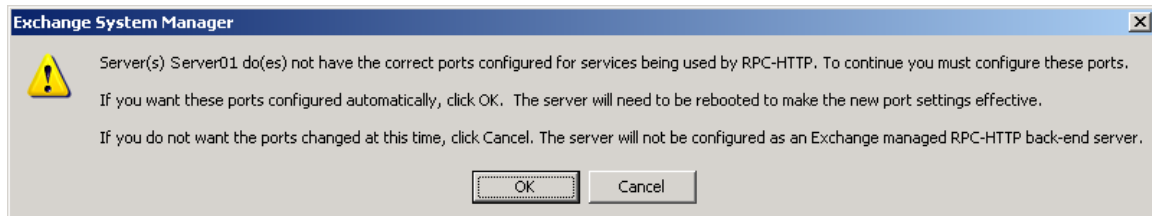


Figure 8 Warning message—incorrect ports configured

7. Do this procedure on all Exchange Server 2003 SP1 back-end servers that RPC proxy servers need to be able to access.

Step 3: Configuring the Exchange 2003 Front-End Server to Act as the RPC Proxy Server

After you enable the RPC over HTTP Windows networking component for IIS, you can configure the Exchange Server 2003 SP1 front-end server to act as the RPC proxy server in Exchange System Manager.

To configure the Exchange 2003 SP1 front-end servers to use RPC over HTTP

1. In Exchange System Manager, expand **Administrative Groups**, and then expand the Administrative Group that contains your Exchange front-end server.
2. Expand the **Servers** object, right-click the Exchange front-end server you want to set as the RPC proxy server, and then select **Properties**.
3. On the **Exchange Server Properties** page, click the **RPC-HTTP** tab, and then select the option next to **RPC-HTTP front-end server**.

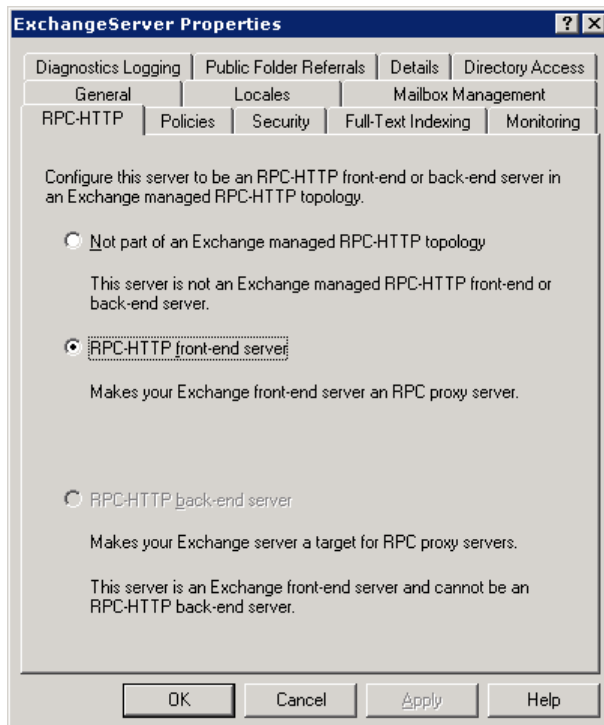


Figure 9 The RPC-HTTP tab in Exchange System Manager

4. Click **OK**.
5. A warning message will appear stating that SSL is required for RPC over HTTP to work. Click **OK**. You must configure SSL on your Exchange front-end server for RPC over HTTP to work. As an option, you can select to offload SSL on another server. For information about how to do this, see "Step 4: (Optional) Configuring RPC over HTTP for SSL Offloading" later in this guide.

Do this procedure on all Exchange Server 2003 SP1 front-end servers that will be used as RPC proxy servers.

Step 4: (Optional) Configuring RPC over HTTP for SSL Offloading

If you are using a server other than the RPC proxy server to handle your SSL encryption and decryption, you will need to set a special registry setting on the RPC proxy server. In this scenario, it is critical that you have configured your authentication correctly. In Exchange 2003 Server SP1, this is done automatically for you. To verify this, see "Step 2: Configuring the RPC Virtual Directory in Internet Information Services" under "Deploying RPC over HTTP for Exchange Server 2003 SP1."

Warning Incorrectly editing the registry can cause serious problems that may require you to reinstall your operating system. Problems resulting from editing the registry incorrectly may not be able to be resolved. Before editing the registry, back up any valuable data.

To configure the RPC proxy server to allow for SSL offloading on a separate server

1. On the RPC proxy server, start Registry Editor (regedit).
2. In the console tree, locate the following registry key:
HKEY_LOCAL_MACHINE\Software\Microsoft\Rpc\RpcProxy
3. Click **Edit**, click **New**, and then select **DWORD**.
4. Create a DWORD value with the name **AllowAnonymous**.
5. Right-click the **AllowAnonymous** DWORD and select **Modify**.
6. In the **Value data** field, enter **1**.
Important On the RPC virtual directory security settings in IIS, under **Authentication methods**, verify that the check box next to **Enable anonymous access** is cleared.
7. Restart the World Wide Web Publishing Service (W3SVC) in the services snap-in to the Microsoft Management Console (MMC).

Step 5: Creating an Outlook Profile to Use with RPC over HTTP

For your users to use RPC over HTTP from their client computer, they must create an Outlook profile that uses the required RPC over HTTP settings. These settings enable Secure Sockets Layer (SSL) communication with Basic authentication, which is required when using RPC over HTTP.

Although optional, it is highly recommended that you use the "Use Cached Exchange Mode" option for all profiles that will connect to Exchange using RPC over HTTP.

To create an Outlook profile to use with RPC over HTTP

1. Click **Start** and then click **Control Panel**.
2. In **Control Panel**, do one of the following tasks:
 - If you are using **Category View**, in the left pane, under **See Also**, click **Other Control Panel Options**, and then click **Mail**.
 - If you are using **Classic View**, double-click **Mail**.
3. In **Mail Setup**, under Profiles, click **Show Profiles**.
4. In **Mail**, click **Add**.
5. In **New Profile**, in the **Profile Name** box, type a name for this profile, and then click **OK**.
6. In the **E-mail Accounts** wizard, click **Add a new e-mail account**, and then click **Next**.

7. On the **Server Type** page, click **Microsoft Exchange Server**, and then click **Next**.
8. On the **Exchange Server Settings** page, do the following steps:
 - a. In the **Microsoft Exchange Server** box, type the name of your back-end Exchange server where your mailbox resides.
 - b. Select the check box next to **Use Cached Exchange Mode** (optional, recommended).
 - c. In the **User Name** box, type the user name.
 - d. Click **More Settings**.

Note At this stage, the client application attempts to resolve the username on the Exchange server. If you cannot access your Exchange back-end server directly using TCP/IP, this operation will time out and present a dialog box to confirm your username and mailbox. Click **Cancel** on this dialog box.

- a. On the **Connection** tab, in the **Exchange over the Internet** pane, select the **Connect to my Exchange mailbox using HTTP** check box.
 - b. Click **Exchange Proxy Settings**.
9. On the **Exchange Proxy Settings** page, under **Connections Settings**, do the following steps:
 - a. Enter the fully qualified domain name (FQDN) of the RPC proxy server in the **Use this URL to connect to my proxy server for Exchange** box.
 - b. Select the **Connect using SSL only** check box.
 - c. Next, select the **Mutually authenticate the session when connecting with SSL** check box.
 - d. Enter the FQDN of the RPC proxy server in the **Principle name for proxy server** box. Use the format: **msstd:FQDN of RPC Proxy Server**.
 - e. As an optional step, you can configure Outlook 2003 to connect to your Exchange server using RPC over HTTP by default by selecting the check box next to **On fast networks, connect to Exchange using HTTP first, then connect using TCP/IP**.
10. On the **Exchange Proxy Settings** page, in the **Proxy authentication settings** window, in the **Use this authentication when connecting to my proxy server for Exchange** list, select **Basic Authentication**.
11. Click **OK**.

Step 6: Publishing Additional Back-End Exchange 2003 Servers

Once your front-end servers are configured to act as RPC-HTTP enabled front-end servers, they will automatically detect and publish any additional back-end servers that get configured as RPC-HTTP enabled back-end servers. For example, if you upgrade an Exchange 2000 server to an Exchange 2003 server and need to allow RPC over HTTP access to that server, configure it as an RPC-HTTP enabled back-end server and it will be published automatically.

To publish additional back-end Exchange 2003 servers for RPC over HTTP access

1. In Exchange System Manager, expand **Administrative Groups**, and then expand the Administrative Group that contains your Exchange back-end server.
2. Expand the **Servers** object, right-click the Exchange back-end server you want to configure, and then select **Properties**.
3. On the **Exchange server Properties** page, click the **RPC-HTTP** tab, and then select the option next to **RPC-HTTP back-end server**.
4. Click **OK**.

5. The RPC-HTTP front-end servers will detect this new RPC-HTTP back-end server and automatically configure themselves to allow RPC over HTTP access. You do not need to restart any services. However, because these are Active Directory properties, you may need to allow for replication latency before the front-end server detects the changes. Additionally, the front-end server updates its RPC-HTTP target details every 15 to 20 minutes.

Configuring an Exchange Server 2003 SP1 Single-Server Installation to Use RPC over HTTP

To configure an Exchange single-server installation to use RPC over HTTP, you will need to complete the following procedures:

- Configure an Exchange Server 2003 SP1 single-server installation to use RPC over HTTP
- Configure the RPC over HTTP virtual directory
- Configure the RPC proxy server to use specified ports for RPC over HTTP

Important After you have completed this procedure, you will need to restart this computer for the changes to take effect.

To configure an Exchange Server 2003 SP1 single-server installation to use RPC over HTTP

1. In Exchange System Manager, expand **Administrative Groups**, and then expand the Administrative Group that contains your Exchange server.
2. Expand the **Servers** object, right-click the Exchange server you want to set as the RPC proxy server, and then select **Properties**.
3. On the **Exchange Server Properties** page, click the **RPC-HTTP** tab, and then select the option next to **RPC-HTTP back-end server**.
4. Click **OK**.
5. The following dialog box appears informing you that you do not have an Exchange front-end server in your organization. Click **OK** to close this dialog box.

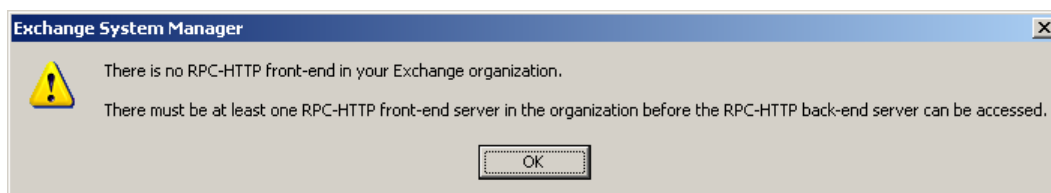


Figure 10 Warning message—no front-end server configured

After you click **OK** on this dialog box, you will receive another message indicating that you can allow Exchange to configure your ports automatically to use RPC over HTTP. Click **OK** to allow Exchange to do this automatically.

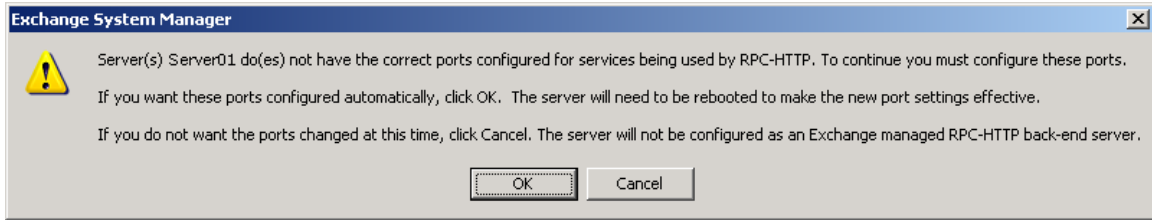


Figure 11 Warning message—incorrect port configured

- Restart this computer.

To configure the RPC over HTTP virtual directory

- Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **Internet Information Services (IIS) Manager**.
- In **Internet Information Services (IIS) Manager**, in the console tree, expand the server you want, expand **Web Sites**, expand **Default Web Site**, right-click the **RPC** virtual directory, and then click **Properties**.
- In **RPC Virtual Directory Properties** page, on the **Directory Security** tab, in the **Authentication and access control** pane, click **Edit**.
- On the **Authentication Methods** window, verify that the check box next to **Enable anonymous access** is cleared.
 - Note** RPC over HTTP does not allow anonymous access by default despite what the user interface shows.
- On the **Authentication Methods** window, under **Authenticated access**, select the check box next to **Basic authentication (password is sent in clear text)**, and ensure the check box next to **Integrated Windows authentication (NTLM)** is checked, and then click **OK**.
- To save your settings, click **Apply**, and then click **OK**.
- Ensure that you have a valid SSL certificate installed on the virtual server

Your RPC virtual directory is now ready to use Basic and NTLM authentication.

To configure the RPC proxy server to use specified ports for RPC over HTTP

The following ports are required for RPC over HTTP.

Table 1 Required ports for RPC over HTTP

Server	Ports (Services)
Exchange back-end server	6001 (store) 6002 (DSReferral) 6004 (DSProxy)

- On the Exchange proxy server, start Registry Editor (regedit).
- In the console tree, locate the following registry key:
HKEY_LOCAL_MACHINE\Software\Microsoft\Rpc\RpcProxy
- In the details pane, right-click the **ValidPorts** subkey, and then click **Modify**.
- In **Edit String**, in the **Value data** box, type the following information:

```
ExchangeServer:6001-6002;ExchangeServerFQDN:6001-6002;ExchangeServer:6004;ExchangeServerFQDN:6004;
```

- ExchangeServer* is the NetBIOS name of your Exchange server.

- *ExchangeServerFQDN* is the fully qualified domain name (FQDN) of your Exchange server.

Your Exchange server is now set up to act as both a back-end mailbox and an RPC over HTTP proxy server.

Deploying RPC over HTTP for Exchange Server 2003

The following section provides detailed steps about how to deploy RPC over HTTP in your Exchange Server 2003 organization for the scenarios previously listed. Complete the steps in the following order:

1. Configure your Exchange front-end server as an RPC proxy server.
2. Configure the RPC virtual directory in Internet Information Services (IIS) on the Exchange front-end server.
3. Configure the registry on the Exchange Server 2003 computer that communicates with the RPC proxy server to use ports specified by Exchange Server 2003 for RPC over HTTP communication.
4. (Optional) Set the NTDS port for global catalog servers acting as Exchange back-end servers.
5. (Optional) Configure RPC over HTTP for SSL offloading.
6. Create an Outlook profile for your users to use with RPC over HTTP.

Each of these steps is detailed in the following sections. After you have completed these steps, your users can start using RPC over HTTP to access the Exchange front-end server.

Note If you are situating your RPC proxy server inside your perimeter network, you also need to open the specified ports on the internal firewall for RPC over HTTP in addition to the standard ports for Exchange front-end communication. See "Scenario 2: Positioning the RPC Proxy Server in the Perimeter Network." This step is not detailed in the following procedures.

Instructions for installing RPC over HTTP in a single-server configuration are included in the section, "Configuring an Exchange Server 2003 Single-Server Installation to Use RPC over HTTP."

Step 1: Configuring the Exchange 2003 Front-End Server to Use RPC over HTTP

The RPC proxy server processes the Outlook 2003 RPC requests that come in over the Internet. For the RPC proxy server to successfully process the RPC over HTTP requests, you must install the Windows Server 2003 RPC over HTTP Proxy networking component on your Exchange front-end server.

To configure your Exchange front-end server to use RPC over HTTP

1. On the Exchange front-end server running Windows Server 2003, click **Start**, click **Control Panel**, and then click **Add or Remove Programs**.
2. In **Add or Remove Programs**, click **Add/Remove Windows Components** in the left pane.
3. In the Windows Components Wizard, on the **Windows Components** page, select **Networking Services**, and then click **Details**.

4. In **Networking Services**, select the **RPC over HTTP Proxy** check box, and then click **OK**.
5. On the **Windows Components** page, click **Next** to install the **RPC over HTTP Proxy** Windows component.

Step 2: Configuring the RPC Virtual Directory in Internet Information Services

Now that you have configured your Exchange front-end server to use RPC over HTTP, you must configure the RPC virtual directory in IIS.

Important RPC over HTTP requires SSL to be enabled on the RPC virtual directory.

To configure the RPC virtual directory

1. Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **Internet Information Services (IIS) Manager**.
2. In **Internet Information Services (IIS) Manager**, in the console tree, expand the server you want, expand **Web Sites**, expand **Default Web Site**, right-click the **RPC** virtual directory, and then click **Properties**.
3. In **RPC Properties**, on the **Directory Security** tab, in the **Authentication and access control** pane, click **Edit**.

Note RPC over HTTP does not allow anonymous access by default despite what the user interface shows.

4. On the **Authentication Methods** window, verify that the check box next to **Enable anonymous access** is cleared.
5. On the **Authentication Methods** window, under **Authenticated access**, select the check box next to **Basic authentication (password is sent in clear text)** and ensure the check box next to **Integrated Windows authentication (NTLM)** is checked, and then click **OK**.
6. To save your settings, click **Apply**, and then click **OK**.

Your RPC virtual directory is now ready to use Basic and NTLM authentication.

Step 3: Configuring the RPC Proxy Server to Use Specified Ports

After you enable the RPC over HTTP Windows networking component for IIS, you can configure the RPC proxy server to use a specific number of ports to communicate with the servers in the corporate network. In this scenario, the RPC proxy server will be configured to use specified ports, and the individual computers that the RPC proxy server communicates with will also be configured to use specified ports when receiving requests from the RPC proxy server. When you run Exchange Server 2003 Setup, Exchange is automatically configured to use the ports listed in Table 2.

Warning Incorrectly editing the registry can cause serious problems that may require you to reinstall your operating system. Problems resulting from editing the registry incorrectly may not be able to be resolved. Before editing the registry, back up any valuable data.

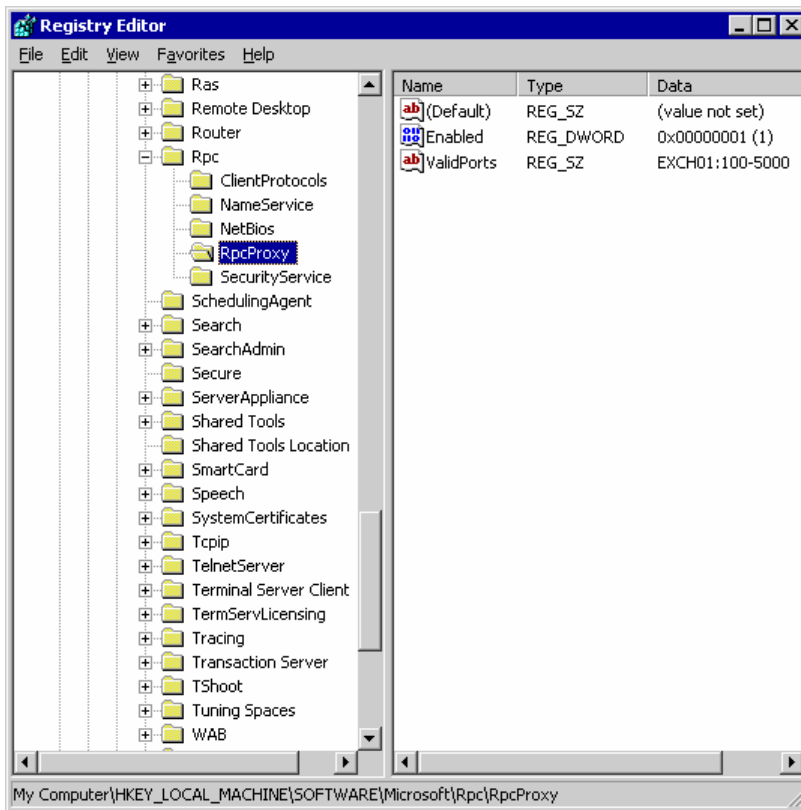
To configure the RPC proxy server to use specified ports for RPC over HTTP

The following ports are required for RPC over HTTP.

Table 2 Required ports for RPC over HTTP

Server	Ports (Services)
Exchange back-end servers	6001 (store) 6004 (DSProxy)

1. On the RPC proxy server, start Registry Editor (regedit).
2. In the console tree, locate the following registry key:
HKEY_LOCAL_MACHINE\Software\Microsoft\Rpc\RpcProxy
3. In the details pane, right-click the **ValidPorts** subkey, and then click **Modify** (Figure 11).

**Figure 11 The RpcProxy registry settings**

4. In **Edit String**, in the **Value data** box, type the following information:

```
ExchangeServer:6001;ExchangeServerFQDN:6001;ExchangeServer:6004;ExchangeServerFQDN:6004;
```

- *ExchangeServer* is the NetBIOS name of your Exchange server.
- *ExchangeServerFQDN* is the fully qualified domain name (FQDN) of your Exchange server.

In the registry key, continue to list all servers in the corporate network with which the RPC proxy server will need to communicate.

Step 4: (Optional) Setting the NTDS Port for Global Catalog Servers Acting as Exchange 2003 Back-End Servers

If you are using your global catalog servers as Exchange back-end mailbox servers that are contacted by clients using RPC over HTTP, you will need to modify the registry setting on these servers. This step is also required if you are using a single Exchange server installation.

Warning Incorrectly editing the registry can cause serious problems that may require you to reinstall your operating system. Problems resulting from editing the registry incorrectly may not be able to be resolved. Before editing the registry, back up any valuable data.

To configure the global catalog server acting as an Exchange back-end server to use a specified port for RPC over HTTP

1. On the RPC proxy server, start Registry Editor (regedit).
2. In the console tree, locate the following registry key:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\NTDS\Parameters
3. Click **Edit**, click **New**, and then select **Multi String value**.
4. Create a multi-string value with the name **NSPI interface protocol sequences**.
5. Right-click the **NSPI interface protocol sequences** multi-string value and then select **Modify**.
6. In the **Value data** field, enter **ncacn_http:6004**.
7. In Registry Editor, click **File**, and then select **Exit** to save your settings.
8. You must now restart your server for the settings to be applied.

Step 5: (Optional) Configuring RPC over HTTP for SSL Offloading

If you are using a server other than the RPC proxy server to handle your SSL encryption and decryption, you will need to set a special registry setting on the RPC proxy server. In this scenario, it is critical that you have configured your authentication correctly. For information about how to set your authentication and access settings, see "Step 2: Configuring the RPC Virtual Directory in Internet Information Services."

Warning Incorrectly editing the registry can cause serious problems that may require you to reinstall your operating system. Problems resulting from editing the registry incorrectly may not be able to be resolved. Before editing the registry, back up any valuable data.

To configure the RPC proxy server to allow for SSL offloading on a separate server

1. On the RPC proxy server, start Registry Editor (regedit).
2. In the console tree, locate the following registry key:
HKEY_LOCAL_MACHINE\Software\Microsoft\Rpc\RpcProxy
3. Create a DWORD value with the name **AllowAnonymous**.
4. Right-click the **AllowAnonymous** DWORD value and select **Modify**.
5. In the **Value data** field, enter **1**.

Important On the RPC virtual directory security settings in IIS, under **Authentication methods**, verify that the check box next to **Enable anonymous access** is cleared.

- Restart the World Wide Web Publishing Service (W3SVC) in the services snap-in to the Microsoft Management Console (MMC).

Step 6: Creating an Outlook Profile to Use with RPC over HTTP

For your users to use RPC over HTTP from their client computer, they must create an Outlook profile that uses the required RPC over HTTP settings. These settings enable Secure Sockets Layer (SSL) communication with Basic authentication, which is required when using RPC over HTTP.

Although optional, it is highly recommended that you use the "Use Cached Exchange Mode" option for all profiles that will connect to Exchange using RPC over HTTP.

To create an Outlook profile to use with RPC over HTTP

- Click **Start** and then click **Control Panel**.
- In **Control Panel**, do one of the following tasks:
 - If you are using **Category View**, in the left pane, under **See Also**, click **Other Control Panel Options**, and then click **Mail**.
 - If you are using **Classic View**, double-click **Mail**.
- In **Mail Setup**, under **Profiles**, click **Show Profiles**.
- In **Mail**, click **Add**.
- In **New Profile**, in the **Profile Name** box, type a name for this profile, and then click **OK**.
- In the **E-mail Accounts** wizard, click **Add a new e-mail account**, and then click **Next**.
- On the **Server Type** page, click **Microsoft Exchange Server**, and then click **Next**.
- On the **Exchange Server Settings** page, do the following steps:
 - In the Microsoft Exchange Server box, type the name of your back-end Exchange server where your mailbox resides.
 - Select the check box next to **Use Cached Exchange Mode** (optional, recommended).
 - In the **User Name** box, type the user name.
 - Click **More Settings**.
 - On the **Connection** tab, in the **Exchange over the Internet** pane, select the **Connect to my Exchange mailbox using HTTP** check box.
 - Click **Exchange Proxy Settings**.
- On the **Exchange Proxy Settings** page, under **Connections Settings**, do the following steps:
 - Enter the fully qualified domain name (FQDN) of the RPC proxy server in the **Use this URL to connect to my proxy server for Exchange** box.
 - Select the **Connect using SSL only** check box.
 - Next, select the **Mutually authenticate the session when connecting with SSL** check box.
 - Enter the FQDN of the RPC proxy server in the **Principle name for proxy server** box. Use the format: **msstd:FQDN of RPC Proxy Server**.
 - As an optional step, you can configure Outlook 2003 to connect to your Exchange server using RPC over HTTP by default by selecting the check box next to **On fast networks, connect to Exchange using HTTP first, then connect using TCP/IP**.

10. On the **Exchange Proxy Settings** page, in the **Proxy authentication settings** window, in the **Use this authentication when connecting to my proxy server for Exchange** list, select **Basic Authentication**.
11. Click **OK**.

Configuring an Exchange Server 2003 Single-Server Installation to Use RPC over HTTP

To configure a single Exchange 2003 server to act as an RPC proxy server, a back-end mailbox server, and a global catalog server, you will need to do all of the steps listed above on a single server. In this case, "Step 4: (Optional) Setting the NTDS Port for Global Catalog Servers Acting as Exchange 2003 Back-End Servers" is not optional, it must be done. "Step 5: (Optional) Configuring RPC over HTTP for SSL Offloading" is still optional, depending on your configuration. If another server is doing the SSL decryption, you must do this step.