

# RPC Over HTTP

Exchange 2003 and Outlook 2003, combined with Windows Server 2003, supports the use of RPC over HTTP to access Exchange. Using the Microsoft Windows<sup>®</sup> RPC over HTTP feature eliminates the need for remote office users to use a virtual private network (VPN) to connect to their Exchange servers. Users running Outlook 2003 can connect directly to an Exchange server within a corporate environment over the Internet.

The Windows RPC over HTTP feature provides an RPC client (such as Outlook 2003) with the ability to establish connections across the Internet by tunneling the RPC traffic over 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 in conjunction with perimeter firewalls. If the RPC client can make an HTTP connection to a remote computer running Internet Information Services (IIS), the client can connect to any available server on the remote network and 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.

To enable RPC over HTTP for your organization, perform the following steps:

## **Install Windows Server 2003**

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

## **Configure your Exchange 2003 front-end server as an RPC Proxy server**

Your Exchange front-end server will become your RPC Proxy server. This RPC Proxy server specifies the ports that RPC clients use to communicate with the domain controllers, global catalog servers and all Exchange servers. For information about how to configure your Exchange 2003 front-end server as an RPC Proxy server, see “Step 1: Configuring Your Exchange Front-End Server to use RPC Over HTTP” later in this chapter.

## **Configure your internal network to use RPC over HTTP**

You must configure your Exchange 2003 servers, as well as the corresponding domain controllers and global catalog servers, to allow users to connect using RPC over HTTP. Additionally, you must configure your perimeter network to allow RPC over HTTP communication. For information about how to configure your internal network to use RPC over HTTP, see “Deploying RPC over HTTP” later in this chapter.

## RPC Over HTTP Deployment Options

When you deploy RPC over HTTP in your corporate environment, there are two main deployment options based on where you locate your RPC proxy server:

- **Option 1 (recommended)** Deploy an advanced firewall server such as Internet Security and Acceleration [ISA] Server in the perimeter network and position your RPC Proxy server within the corporate network.

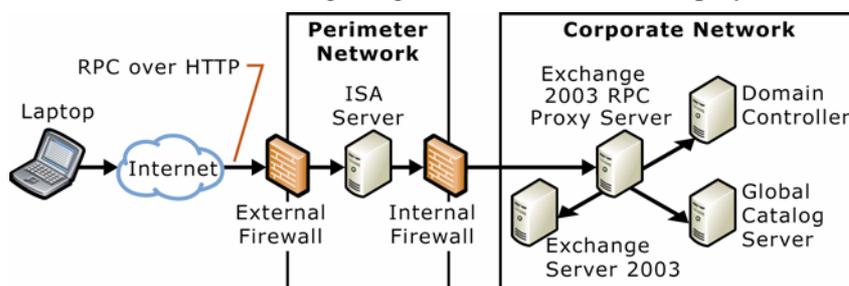
**Note** When you use ISA Server as your advanced firewall server, you have several deployment options. For information about how to install ISA Server as an advanced firewall server, see the Exchange online book, *Using Microsoft Exchange 2000 Front-End Servers* (<http://go.microsoft.com/fwlink/?linkid=14575&clcid=0x409>).

- **Option 2** Position the Exchange 2003 front-end server acting as an RPC Proxy server in the perimeter network.

Each of these options is detailed in the following sections.

### Option 1: Using ISA Server in the Perimeter Network and Positioning the RPC Proxy Server in the Corporate Network

This is the recommended option. 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 only need to open port 80 or port 443 on the internal firewall for Outlook 2003 clients to communicate with Exchange. Figure 2.2 illustrates this deployment scenario.

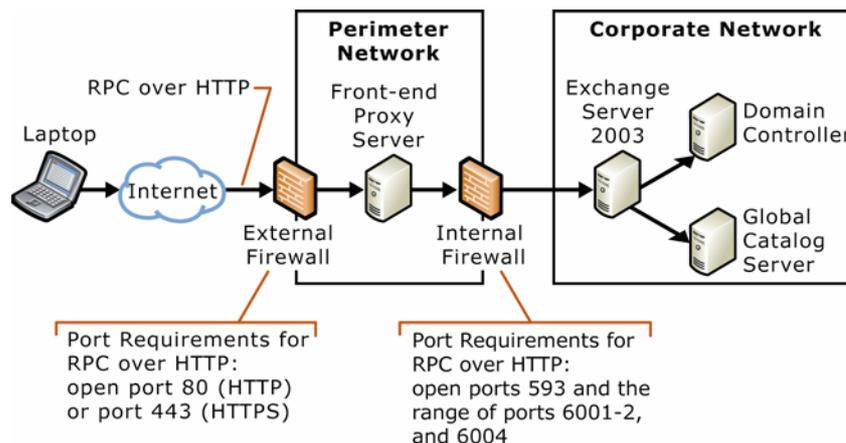


**Figure 2.2** Deploying RPC over HTTP using ISA Server as a reverse proxy server in the perimeter network

When located in the perimeter network, the ISA server is responsible for routing RPC over HTTP requests to the Exchange front-end server acting as an RPC Proxy server. In this scenario, the RPC Proxy server uses specified ports to communicate with other servers that use RPC over HTTP.

## Option 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. In this scenario, you specify a limited number of ports that the RPC Proxy server needs. Figure 2.3 illustrates this deployment scenario. Note that in the following example, your Exchange front-end server will still need all of the standard ports to communicate with the internal corporate network in addition to the ports for RPC over HTTP.



**Figure 2.3** Deploying RPC over HTTP on the Exchange front-end server in the perimeter network

For information about how to configure RPC over HTTP deployment options 1 and 2, see “Deploying RPC Over HTTP” later in this chapter. Again, in this scenario, the RPC Proxy server uses specified ports to communicate with other servers that use RPC over HTTP.

## RPC Over HTTP System Requirements

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

- All Exchange 2003 servers that will be accessed with RPC over HTTP.
- The Exchange 2003 front-end server acting as the RPC Proxy server.
- All domain controllers that communicate with the Outlook 2003 clients and the Exchange 2003 servers configured to use RPC over HTTP.
- The global catalog server used by Outlook 2003 clients and the Exchange 2003 servers configured to use RPC over HTTP.

Exchange 2003 must be installed on all Exchange servers that are used by the RPC Proxy server. Additionally, all client computers running Outlook 2003 must also be running Microsoft Windows XP Service Pack 1 (SP1) or later with the following hot fix: 331320, "Windows XP Patch: RPC Updates Needed for Exchange Server 2003 Beta" (<http://go.microsoft.com/fwlink/?LinkId=16687>).

## Deploying RPC Over HTTP

This section provides detailed steps about how to deploy RPC over HTTP in your Exchange 2003 organization. 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 2003 computer that communicates with the RPC proxy server to use ports specified by Exchange 2003 for RPC over HTTP communication.
4. Open the specified ports on the internal firewall for RPC over HTTP, as well as the standard ports for Exchange front-end communication.
5. Create a 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 begin using RPC over HTTP to access the Exchange front-end server.

### Step 1: Configuring Your Exchange Front-End Server to Use RPC Over HTTP

The RPC Proxy server processes the Outlook 2003 RPC requests that come in over the Internet. In order 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, highlight **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.

### ► 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.

4. Under **Authenticated access**, select the checkbox next to **Basic authentication (password is sent in clear text)**, and then click **OK**.
5. To save your settings, click **Apply**, and then click **OK**.

Your RPC virtual directory is now set to use Basic authentication.

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

If your RPC Proxy server is positioned inside the perimeter network, 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 2003 Setup, Exchange is automatically configured to use the ports listed in Table 2.1.

Step 3 involves the following two procedures:

1. Configure the RPC Proxy server to use specified ports for RPC over HTTP requests to communicate with servers inside the corporate network.
2. Configure the domain controllers and global catalog servers to use specified ports for RPC over HTTP requests to communicate with the RPC Proxy server inside the perimeter network.

**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.

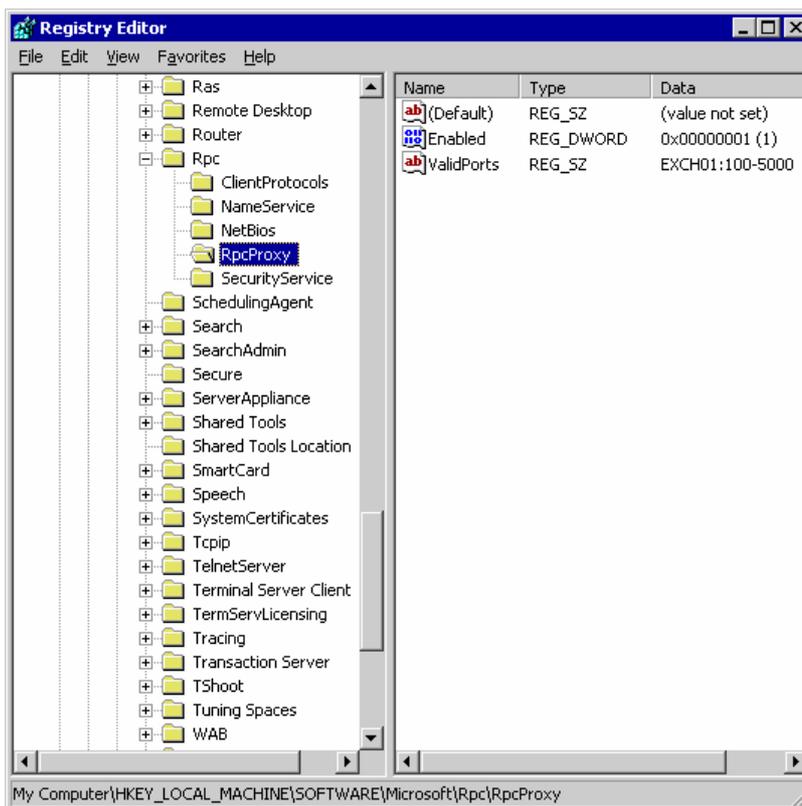
### ► To configure the RPC Proxy server to use a specified number of ports for RPC over HTTP

The following ports are the required ports for RPC over HTTP.

**Table 2.1 Required ports for RPC over HTTP**

Server	Ports (Services)
Exchange back-end servers	593 (end point mapper) 6001 (Store) 6002 (DS referral) 6004 (DS proxy)
Domain controllers	593 and 6004
Global catalog server	593 and 6004

1. On the RPC Proxy server, start Registry Editor: Click **Start**, click **Run**, and then type **regedit**.
2. In the console tree, navigate to 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 2.4).



**Figure 2.4 The RPCProxy registry settings**

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

```
ExchangeServer:593;ExchangeServerFQDN:593;ExchangeServer:6001-6002;ExchangeServerFQDN:6001-6002;ExchangeServer:6004;ExchangeServerFQDN:6004;DomainController:593;DomainControllerFQDN:593;DomainController:6004;DomainControllerFQDN:6004;GlobalCatalogServer:593;GlobalCatalogServerFQDN:593;GlobalCatalogServer:6004;GlobalCatalogServerFQDN:6004
```

- *ExchangeServer*, *DomainController*, and *GlobalCatalogServer* are the NetBIOS names of your Exchange server, domain controller, and global catalog server.
- *ExchangeFQDN*, *DomainControllerFQDN*, and *GlobalCatalogServer* are the fully qualified domain names (FQDNs) of your Exchange server, domain controller, and global catalog server.

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

**Important** To communicate with the RPC Proxy server, all servers accessed by the Outlook client must have set ports. If a server, such as an Exchange public folder server, has not been configured to use the specified ports for RPC over HTTP communication, the client will not be able to access the server.

► **To configure the domain controllers and global catalog servers to use a specified number of ports for RPC over HTTP**

1. On the domain controller and global catalog server, start Registry Editor: Click **Start**, click **Run**, and then type **regedit**.
2. Navigate to the following registry key:  
**HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\NTDS\Parameters**
3. From the **Edit** menu, point to **New**, and then click **Multi-String value**.
4. In the details pane, 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 click **Modify**.
6. In **Edit String**, in the **Value data** box, type **ncacn\_http:6004**
7. Restart both the domain controller and global catalog server.

## Step 4: Create an Outlook Profile to Use With RPC Over HTTP

In order for your users to use RPC over HTTP from their client computer, they must create an Outlook profile that uses the necessary RPC over HTTP settings. These settings enable Secure Sockets Layer (SSL) communication with Basic authentication, which is necessary 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**, perform 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, perform the following steps:
9. In the **Microsoft Exchange Server** box, type the name of your back-end Exchange server where your mailbox resides.
10. Check the checkbox next to **Use Cached Exchange Mode**.
11. In the **User Name** box, type the user name.
12. Click **More Settings**.
13. On the Connection tab, in the **Exchange over the Internet** pane, select the **Connect to my Exchange mailbox using HTTP** check box.
14. Click Exchange Proxy **Settings**.
15. On the **Exchange Proxy Settings** page, under **Connections Settings**, perform 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. Select the **Mutually authenticate the session when connecting with SSL** check box next.
  - 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 checking the checkbox next to **On fast networks, connect to Exchange using HTTP first, then connect using TCP/IP**.
16. 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**.
17. Click **OK**

Your users are now configured to use RPC over HTTP.