

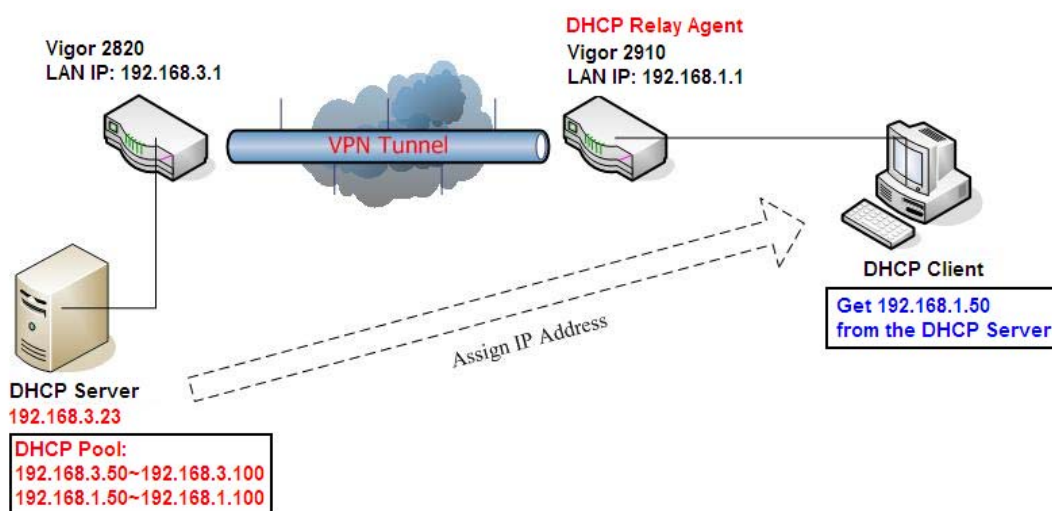
How to Setup DHCP Relay via VPN Tunnel

Overview

Some companies may use a central DHCP server for IP addresses allocation. The DHCP server is generally deployed in the Headquarter. The branch offices communicate with the HQ via VPN tunnels. For computers in branch offices to get IP addresses from the central DHCP server, the routers in branch offices must support DHCP relay via VPN tunnels. This topic takes an example to introduce this kind of application.

Network Topology

Suppose we have the following scenario. An IPSec LAN to LAN VPN is connected between Vigor 2820 and Vigor 2910. DHCP server on Vigor 2820 is disabled. DHCP Relay Agent on Vigor 2910 is enabled and towards the DHCP server at 192.168.3.23. The DHCP server(192.168.3.23) is connected behind Vigor 2820, providing two scopes in its DHCP pool. One is 192.168.3.50 ~ 192.168.3.100, which are for local network. The other is 192.168.1.50 ~ 192.168.1.100, which are for remote network via DHCP relay. DHCP Client is connected behind Vigor 2910. It will be assigned an IP address 192.168.1.x from the DHCP server.



Configuring Vigor Router

As we know that, "DHCP discover" sent from a DHCP Client are broadcast packets which cannot pass through VPN tunnels directly. So we need to configure the gateway Vigor 2910 as the DHCP relay agent. The DHCP relay receives the broadcast DHCP discover message and forward it directly to the DHCP server as unicast message. DHCP relay help transferring DHCP packets between the DHCP server and the DHCP client.

Here's the setup for DHCP relay on Vigor 2910:

LAN >> General Setup

Ethernet TCP / IP and DHCP Setup

LAN IP Network Configuration	DHCP Server Configuration
For NAT Usage	<input type="radio"/> Enable Server <input type="radio"/> Disable Server
1st IP Address: 192.168.1.1	Relay Agent: <input checked="" type="radio"/> 1st Subnet <input type="radio"/> 2nd Subnet
1st Subnet Mask: 255.255.255.0	Start IP Address: 192.168.1.10
For IP Routing Usage: <input type="radio"/> Enable <input checked="" type="radio"/> Disable	IP Pool Counts: 50
2nd IP Address: 192.168.2.1	Gateway IP Address: 192.168.1.1
2nd Subnet Mask: 255.255.255.0	DHCP Server IP Address for Relay Agent: 192.168.3.23
<input type="button" value="2nd Subnet DHCP Server"/>	DNS Server IP Address
RIP Protocol Control: Disable	<input type="checkbox"/> Force DNS manual setting
	Primary IP Address:
	Secondary IP Address:

Here's the setup for DHCP relay on Vigor 2820:

LAN >> General Setup

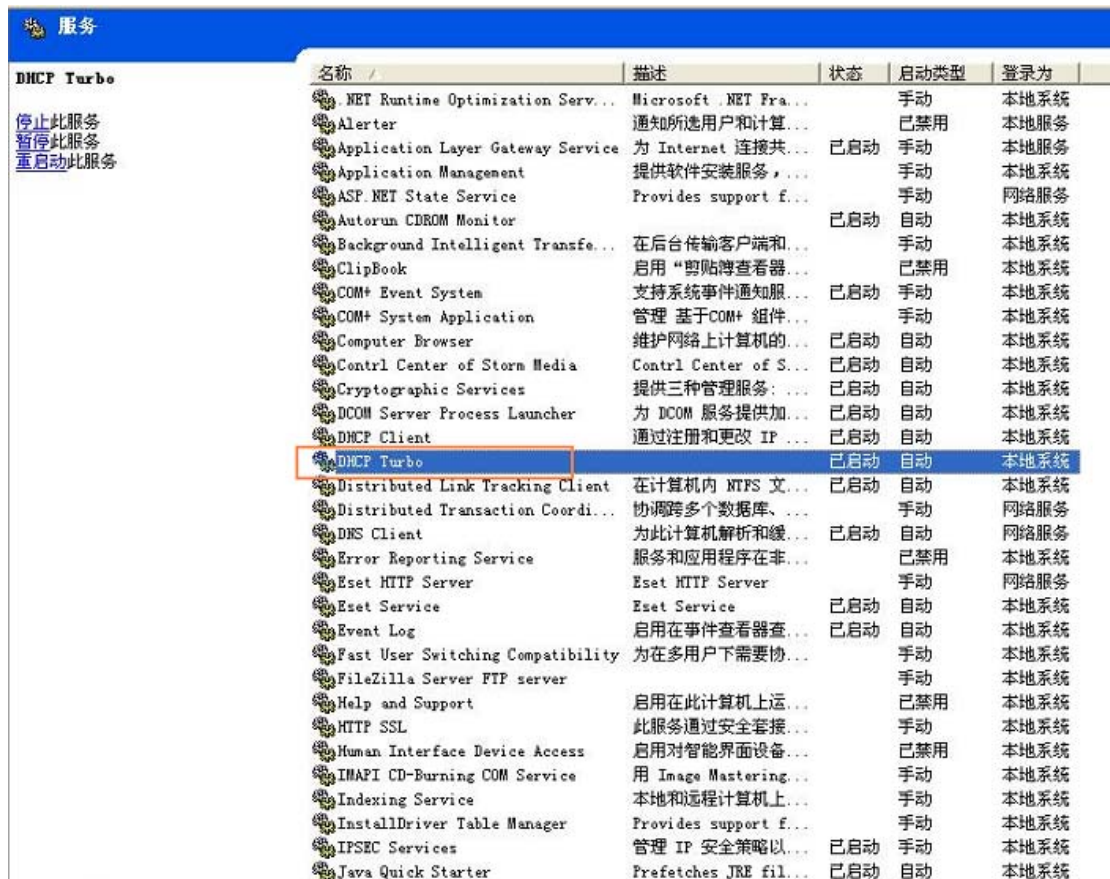
Ethernet TCP / IP and DHCP Setup

LAN IP Network Configuration	DHCP Server Configuration
For NAT Usage	<input type="radio"/> Enable Server <input checked="" type="radio"/> Disable Server
1st IP Address: 192.168.3.1	Relay Agent: <input type="radio"/> 1st Subnet <input type="radio"/> 2nd Subnet
1st Subnet Mask: 255.255.255.0	Start IP Address: 172.17.1.10
For IP Routing Usage: <input type="radio"/> Enable <input checked="" type="radio"/> Disable	IP Pool Counts: 20
2nd IP Address: 192.168.2.1	Gateway IP Address: 172.17.1.3
2nd Subnet Mask: 255.255.255.0	DHCP Server IP Address for Relay Agent:
<input type="button" value="2nd Subnet DHCP Server"/>	DNS Server IP Address
RIP Protocol Control: 1st Subnet	<input type="checkbox"/> Force DNS manual setting
	Primary IP Address:
	Secondary IP Address:

Configuring the DHCP Server

We use DHCP Turbo running on Windows XP as the DHCP server in our demo.

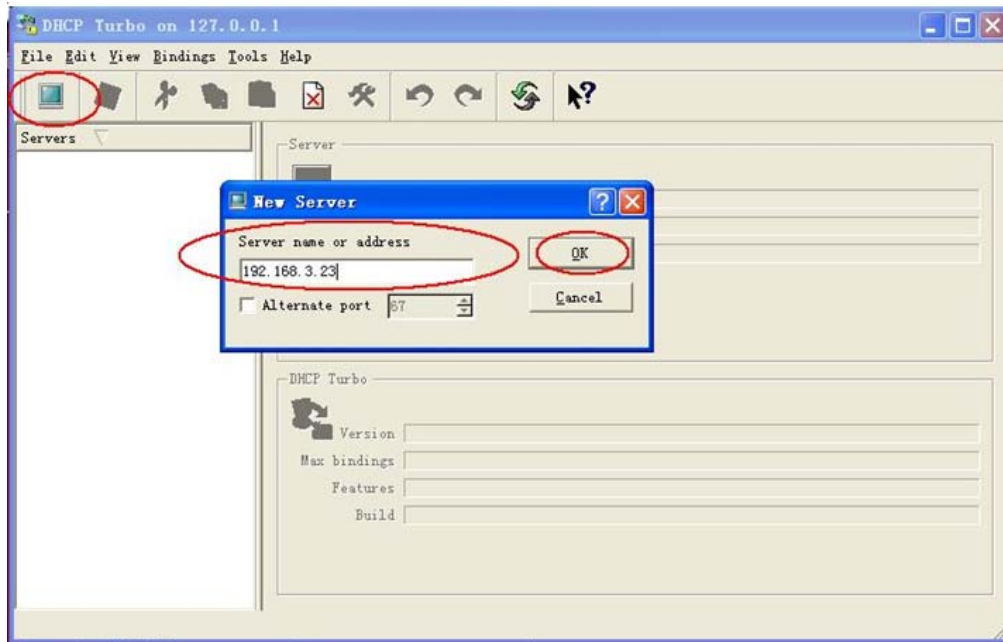
1. Start DHCP Turbo and make sure the DHCP service is started (check in 'Computer Management >> Service Manager').



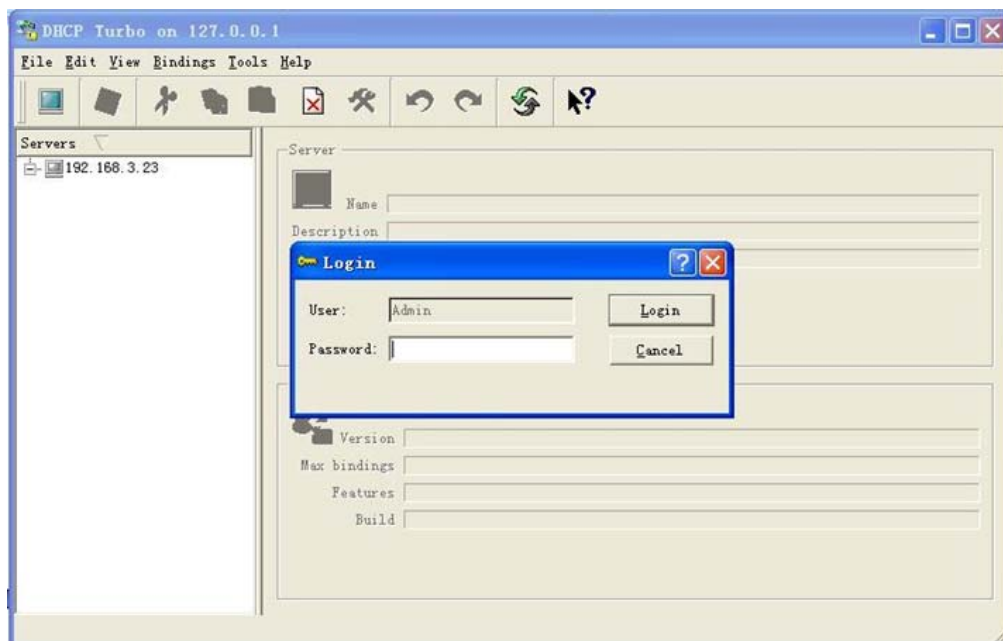
The screenshot shows the Windows XP Service Manager window. The 'DHCP Turbo' service is highlighted with a red box. The service is currently '已启动' (Running) and '自动' (Automatic). The left sidebar shows the 'DHCP Turbo' service icon and its name. The main table lists various services with their names, descriptions, status, start type, and logon account.

名称	描述	状态	启动类型	登录为
NET Runtime Optimization Serv...	Microsoft .NET Fra...	手动	本地系统	
Alerter	通知所选用户和计算...	已禁用	本地服务	
Application Layer Gateway Service	为 Internet 连接共...	已启动	手动	本地服务
Application Management	提供软件安装服务，...	手动	本地系统	
ASP.NET State Service	Provides support f...	手动	网络服务	
Autorun CDROM Monitor		已启动	自动	本地系统
Background Intelligent Transfe...	在后台传输客户端和...	手动	本地系统	
ClipBook	启用“剪贴簿查看器...	已禁用	本地系统	
COM+ Event System	支持系统事件通知服...	已启动	手动	本地系统
COM+ System Application	管理 基于COM+ 组件...	手动	本地系统	
Computer Browser	维护网络上计算机的...	已启动	自动	本地系统
Contrl Center of Storm Media	Contrl Center of S...	已启动	自动	本地系统
Cryptographic Services	提供三种管理服务: ...	已启动	自动	本地系统
DCOM Server Process Launcher	为 DCOM 服务提供加...	已启动	自动	本地系统
DHCP Client	通过注册和更改 IP ...	已启动	自动	本地系统
DHCP Turbo		已启动	自动	本地系统
Distributed Link Tracking Client	在计算机内 NTFS 文...	已启动	自动	本地系统
Distributed Transaction Coordi...	协调跨多个数据库、...	手动	网络服务	
DNS Client	为此计算机解析和缓...	已启动	自动	网络服务
Error Reporting Service	服务和应用程序在非...	已禁用	本地系统	
Eset HTTP Server	Eset HTTP Server	手动	网络服务	
Eset Service	Eset Service	已启动	自动	本地系统
Event Log	启用在事件查看器查...	已启动	自动	本地系统
Fast User Switching Compatibility	为在多用户下需要协...	手动	本地系统	
FileZilla Server FTP server		手动	本地系统	
Help and Support	启用在此计算机上运...	已禁用	本地系统	
HTTP SSL	此服务通过安全套接...	手动	本地系统	
Human Interface Device Access	启用对智能界面设备...	已禁用	本地系统	
IMAPI CD-Burning COM Service	用 Image Mastering...	手动	本地系统	
Indexing Service	本地和远程计算机上...	手动	本地系统	
InstallDriver Table Manager	Provides support f...	手动	本地系统	
IPSEC Services	管理 IP 安全策略以...	已启动	手动	本地系统
Java Quick Starter	Prefetches JRE fil...	已启动	自动	本地系统

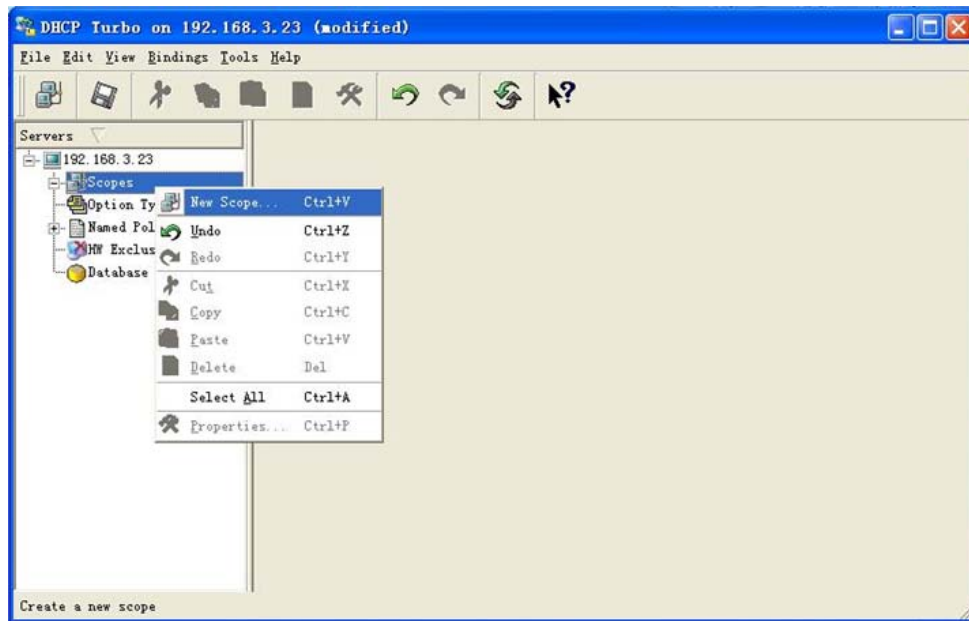
2. In the window of DHCP Turbo, click the icon to create a new server. Enter the correct IP address of the DHCP server.



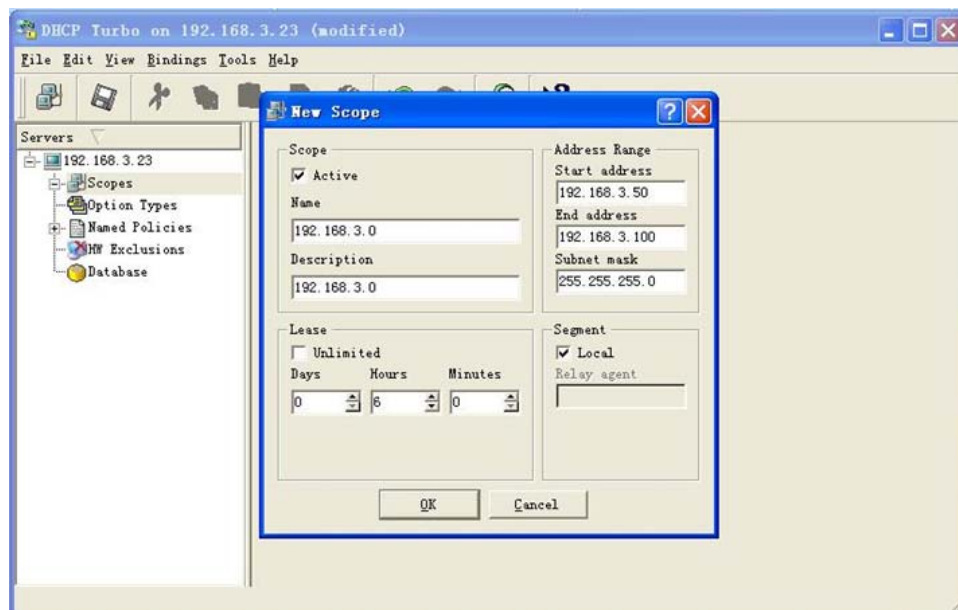
3. Login on the server to configure it's properties. By default the password is empty.



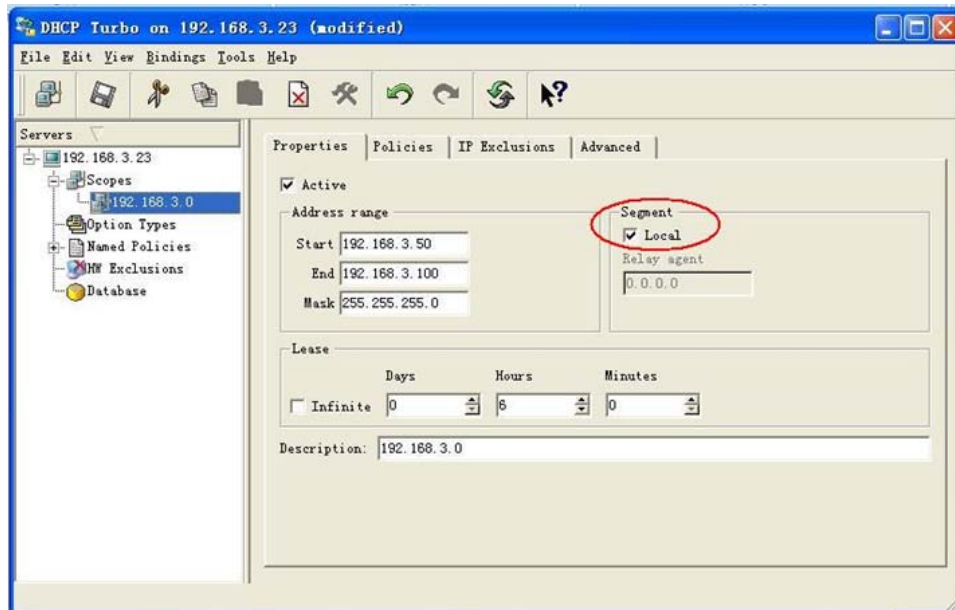
4. Right-click on 'Scopes' menu and select 'New Scope' to create the new one.



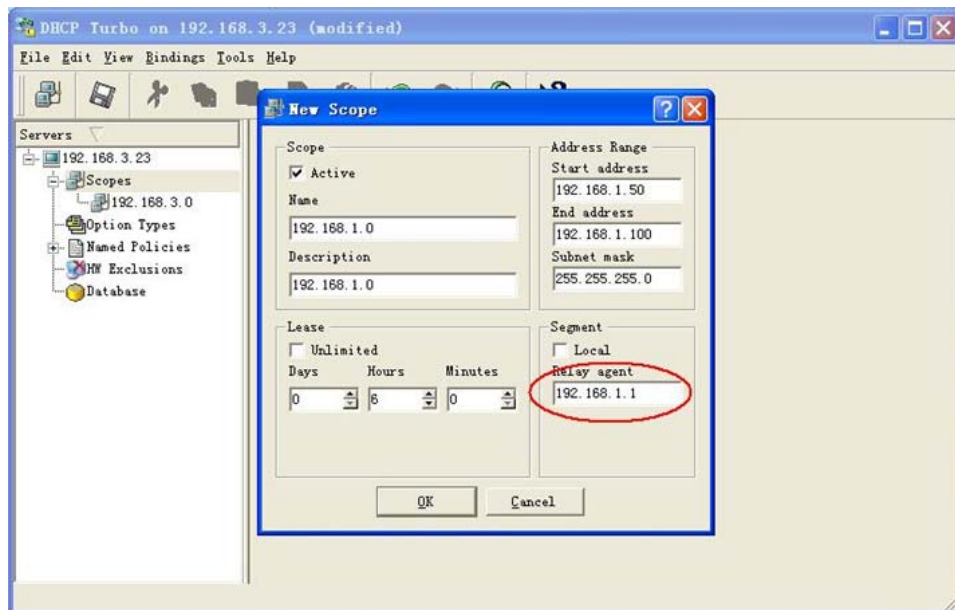
5. Setup the details for the new scope. In this area, you can define the DHCP pool (address range), and the lease time and other properties. We build the first new scope here for the local network (192.168.3.1/24), so the option 'Local' should be selected for 'Segment'.



The new scope for local network is saved:



6. Create the other scope for the branch office. Specify 'Address Range' as 192.168.1.50 ~ 192.168.1.100. 'Relay agent' must be specified as 192.168.1.1 which is the LAN IP address of Vigor 2910, so that the server will reply Vigor 2910 when it receives the *relayed* DHCP packets.



After the router's DHCP relay feature is properly configured, as well as that of the DHCP server, the client PC in branch office will be able to obtain an IP address from the DHCP server, through the VPN tunnel.