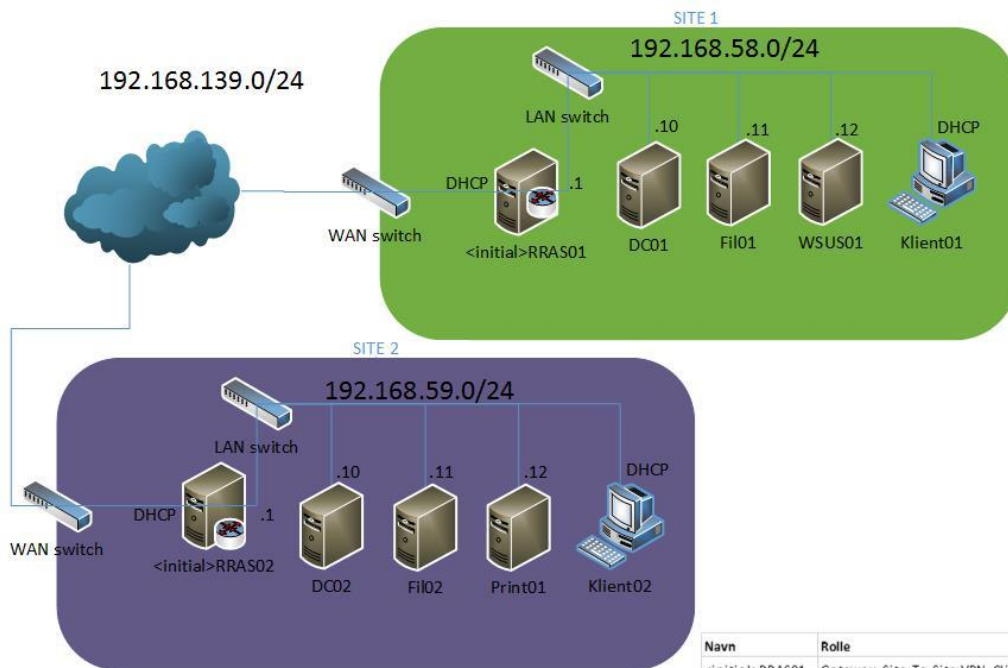


Configuring DHCP 80/20 rule and DHCP relay agent

In this guide we will make DHCP redundancy with DC01 and DC02 by splitting the DHCP scopes using the 80/20 rule.

We will configure a DHCP relay agent on each RRAS server, which will capture the DHCP broadcast packets and unicast them towards the DHCP server in the opposite site.



Navn	Rolle	Operativsystem
<initial>RRAS01	Gateway, Site-To-Site VPN, Client/server VPN	Server 2012 Standard
DC01	Domain Controller, DNS, DHCP, PKI	Server 2012 Standard
Fil01	Fileserver	Server 2012 Standard
WSUS01	Windows Server Update Services Server	Server 2012 Standard
<initial>RRAS02	Gateway, Site-To-Site VPN, Client/server VPN	Server 2012 Standard
DC02	Domain Controller, DNS, DHCP	Server 2012 Standard
Fil02	Fileserver	Server 2012 Standard
Print01	Printserver	Server 2012 Standard
Klient01	Workstation	Windows 8 Enterprise
Klient02	Workstation	Windows 8 Enterprise

Configuring the DHCP services

The screenshot shows the Windows Server Manager interface for a virtual machine named 'DC01 on JOHNH'. The main dashboard displays a 'WELCOME TO SERVER MANAGER' section with a 'QUICK START' guide. The guide includes the following steps:

1. Configure this local server
2. Add roles and features
3. Add other servers to manage
4. Create a server group

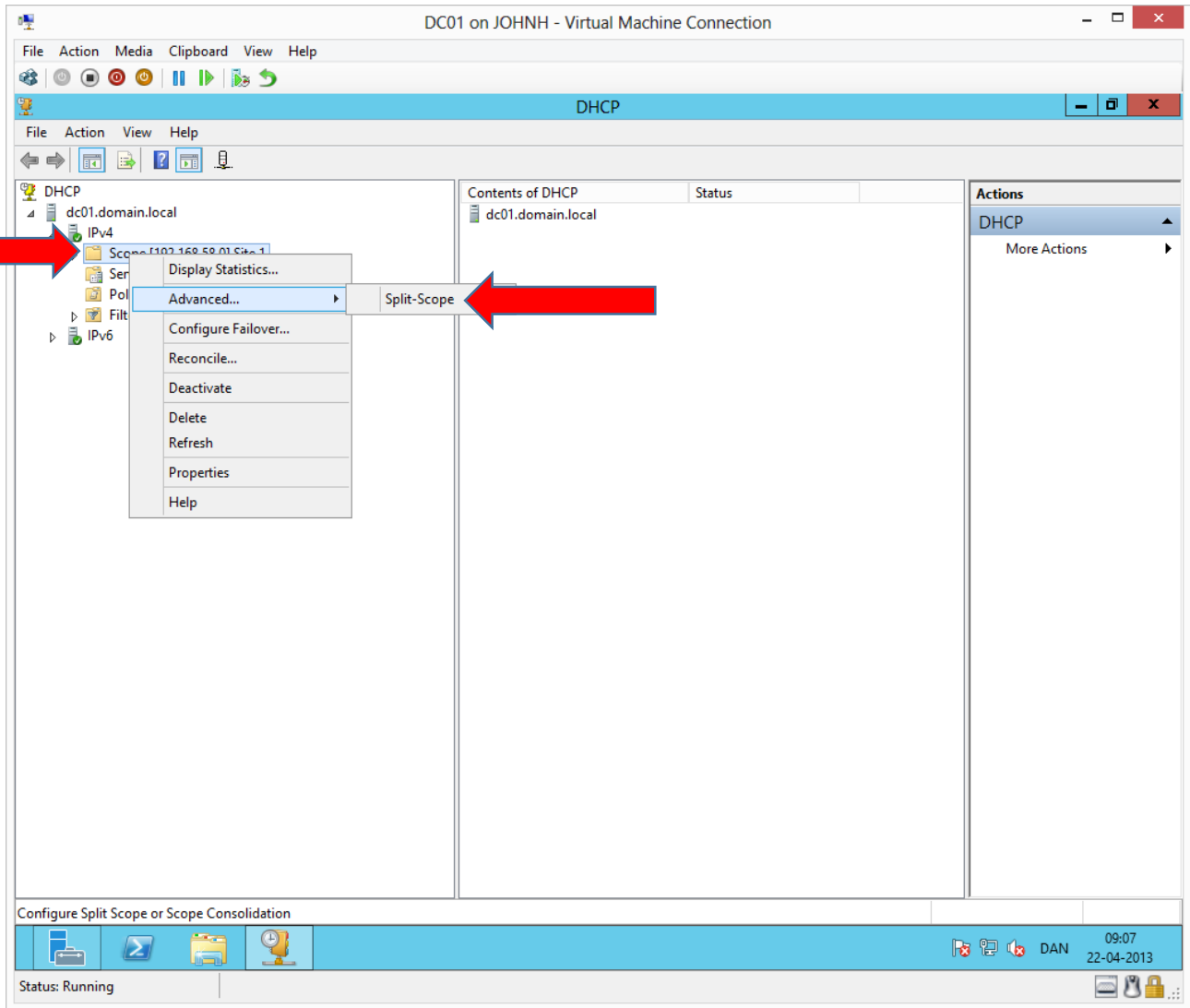
Below the quick start guide, there is a 'ROLES AND SERVER GROUPS' section. It shows two columns of roles:

AD DS	DHCP
1	
Manageability	Manageability
Events	Events
Services	Services
Performance	Performance
BPA results	BPA results

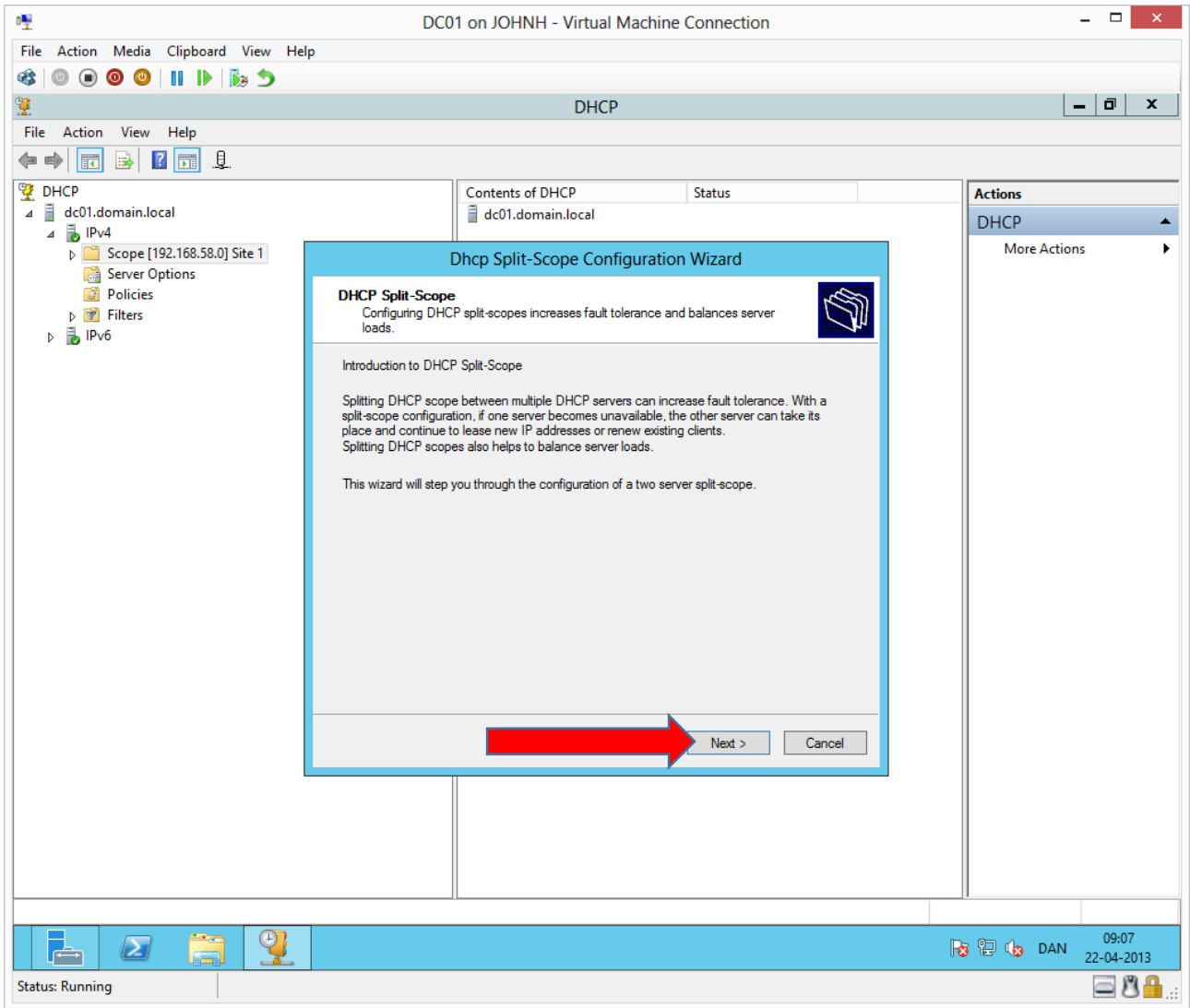
The 'Tools' menu is open, showing a list of management tools. A red arrow points to the 'DHCP' option in the list.

- Active Directory Administrative Center
- Active Directory Domains and Trusts
- Active Directory Module for Windows PowerShell
- Active Directory Sites and Services
- Active Directory Users and Computers
- ADSI Edit
- Component Services
- Computer Management
- Defragment and Optimize Drives
- DHCP**
- DNS
- Event Viewer
- Group Policy Management
- iSCSI Initiator
- Local Security Policy
- ODBC Data Sources (32-bit)
- ODBC Data Sources (64-bit)
- Performance Monitor
- Resource Monitor
- Security Configuration Wizard
- Services
- System Configuration
- System Information
- Task Scheduler
- Windows Firewall with Advanced Security
- Windows Memory Diagnostic
- Windows PowerShell
- Windows PowerShell (x86)
- Windows PowerShell ISE

The taskbar at the bottom shows the system tray with the date '22-04-2013' and time '09:01'. The status bar indicates 'Status: Running'.



Right click the scope and choose **advanced** → **Split-Scope**



The screenshot shows a Windows DHCP console window titled "DC01 on JOHNH - Virtual Machine Connection". The console displays a tree view on the left with "dc01.domain.local" expanded to "IPv4" and "Scope [192.168.58.0] Site 1". The main pane shows the "Contents of DHCP" for "dc01.domain.local". A "Dhcp Split-Scope Configuration Wizard" dialog box is open, titled "Additional DHCP Server". The dialog contains the following fields and buttons:

- Additional DHCP Server:** A text box containing "dc02". A red arrow points to this field.
- Host DHCP Server:** A section with three fields:
 - Host Name of Server:** "dc01.domain.local"
 - IPv4 Address of Server:** "192.168.58.10"
- Buttons:** "Add Server", "Retry", "Next >", and "Cancel". A red arrow points to the "Next >" button.

The taskbar at the bottom shows the system tray with the time "09:08" and date "22-04-2013". The status bar at the bottom left indicates "Status: Running".

The screenshot shows a virtual machine window titled "DC01 on JOHNNH - Virtual Machine Connection". Inside, the DHCP console is open, displaying a tree view on the left with "dc01.domain.local" expanded to "IPv4" and "Scope [192.168.58.0] Site 1". A "Dhcp Split-Scope Configuration Wizard" dialog box is centered on the screen. The wizard's title is "Dhcp Split-Scope Configuration Wizard" and the current step is "Percentage of Split". The instructions read: "Select the percentage of IP addresses that will be allocated to each of the split-scope servers." Below this, a slider is shown for the IP range "192.168.58.1" to "192.168.58.254", with a marker at 80%. Below the slider, a table shows the distribution:

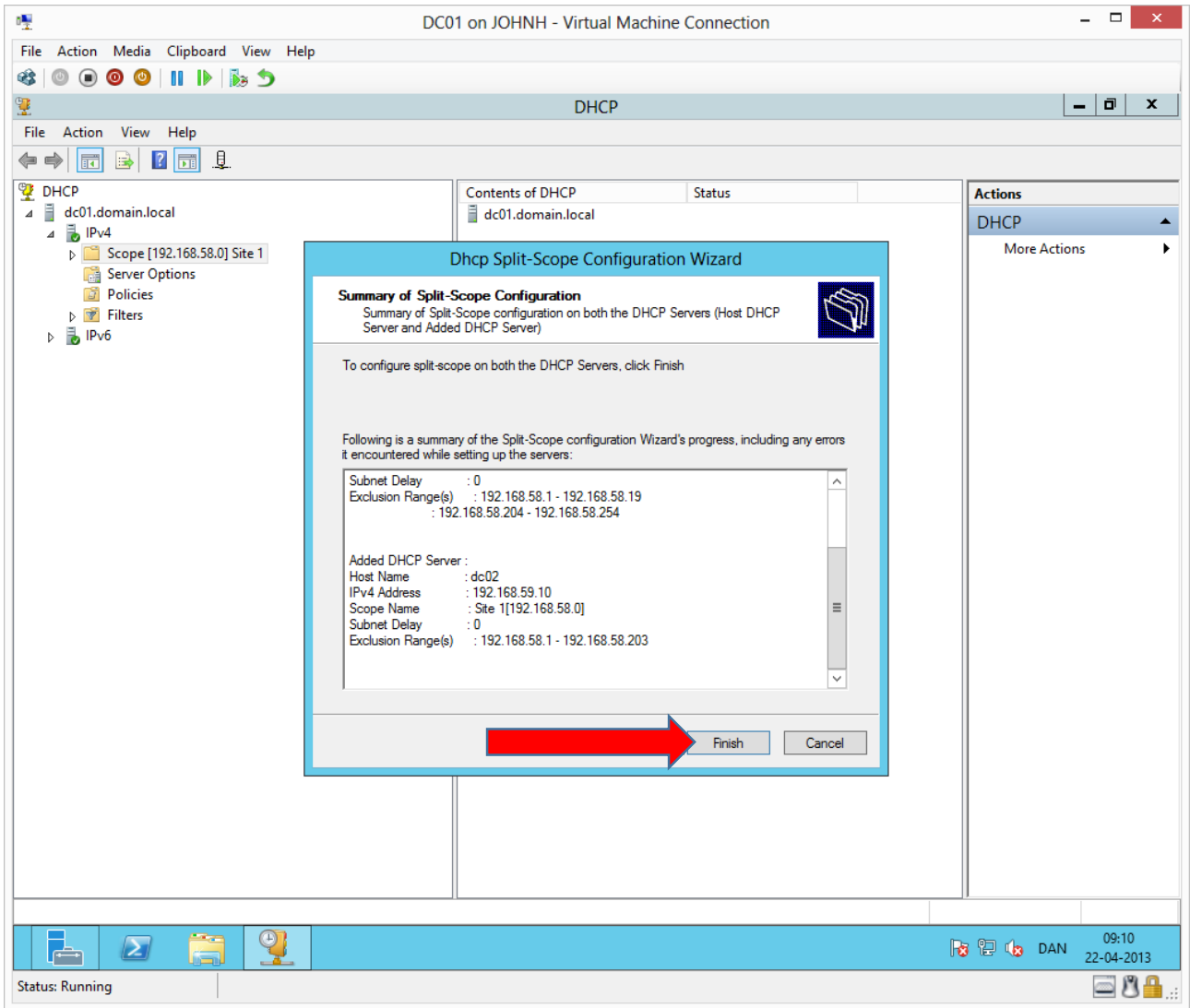
Host DHCP Server	Added DHCP Server
Percentage of IPv4 Addresses Served: 80	Percentage of IPv4 Addresses Served: 20

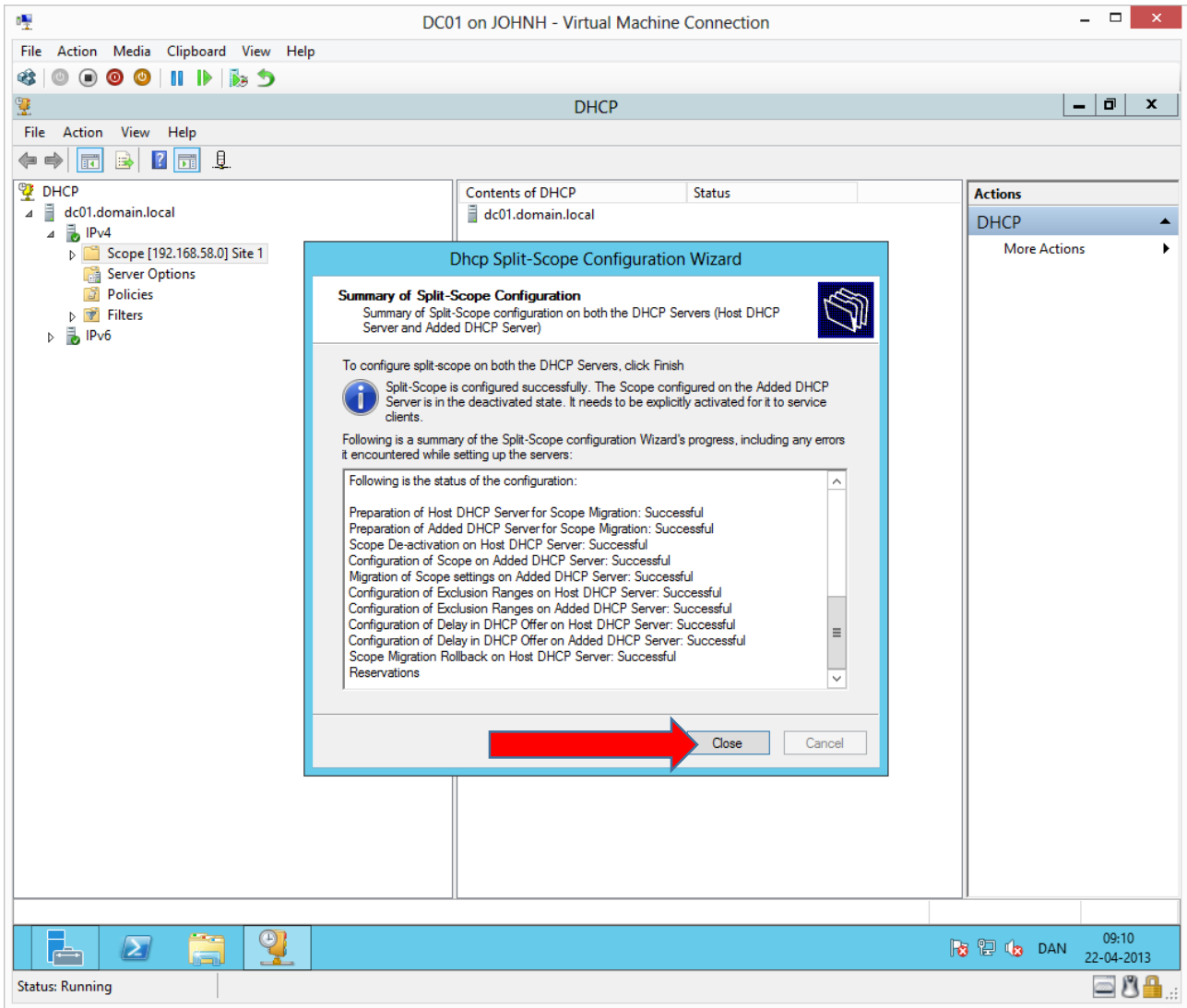
Below the table, the "Exclusion IPv4 Address Range" is defined with the following values:

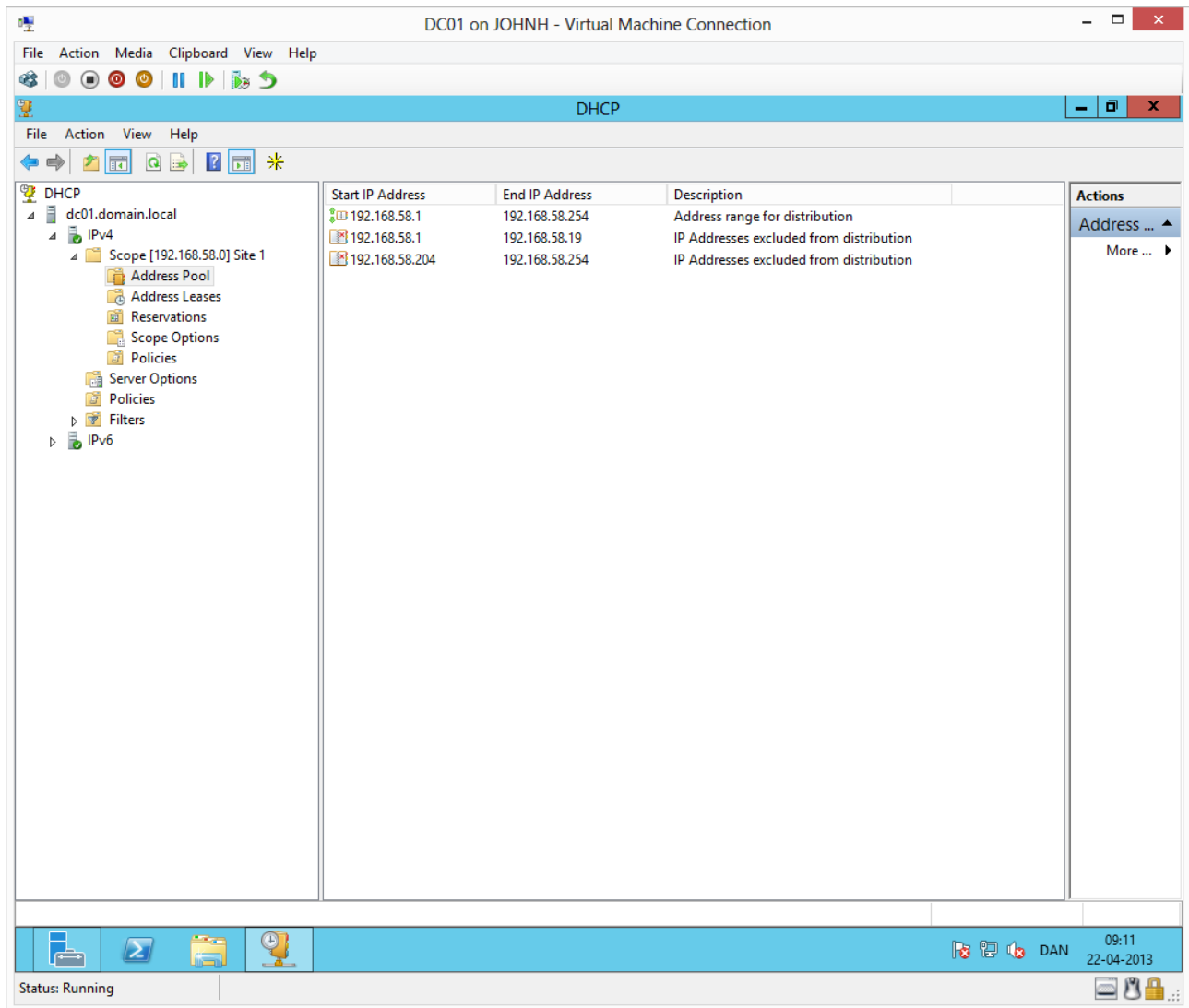
Start IPv4 Address	End IPv4 Address
192 . 168 . 58 . 204	192 . 168 . 58 . 1
192 . 168 . 58 . 254	192 . 168 . 58 . 203

A note at the bottom of the wizard states: "Note: The existing exclusions will also be configured appropriately on the DHCP Servers." At the bottom of the wizard, a red arrow points to the "Next >" button. The background DHCP console shows "Contents of DHCP" and "Status" tabs, and an "Actions" pane on the right. The system tray at the bottom shows the status "Running", the user "DAN", and the date "22-04-2013".

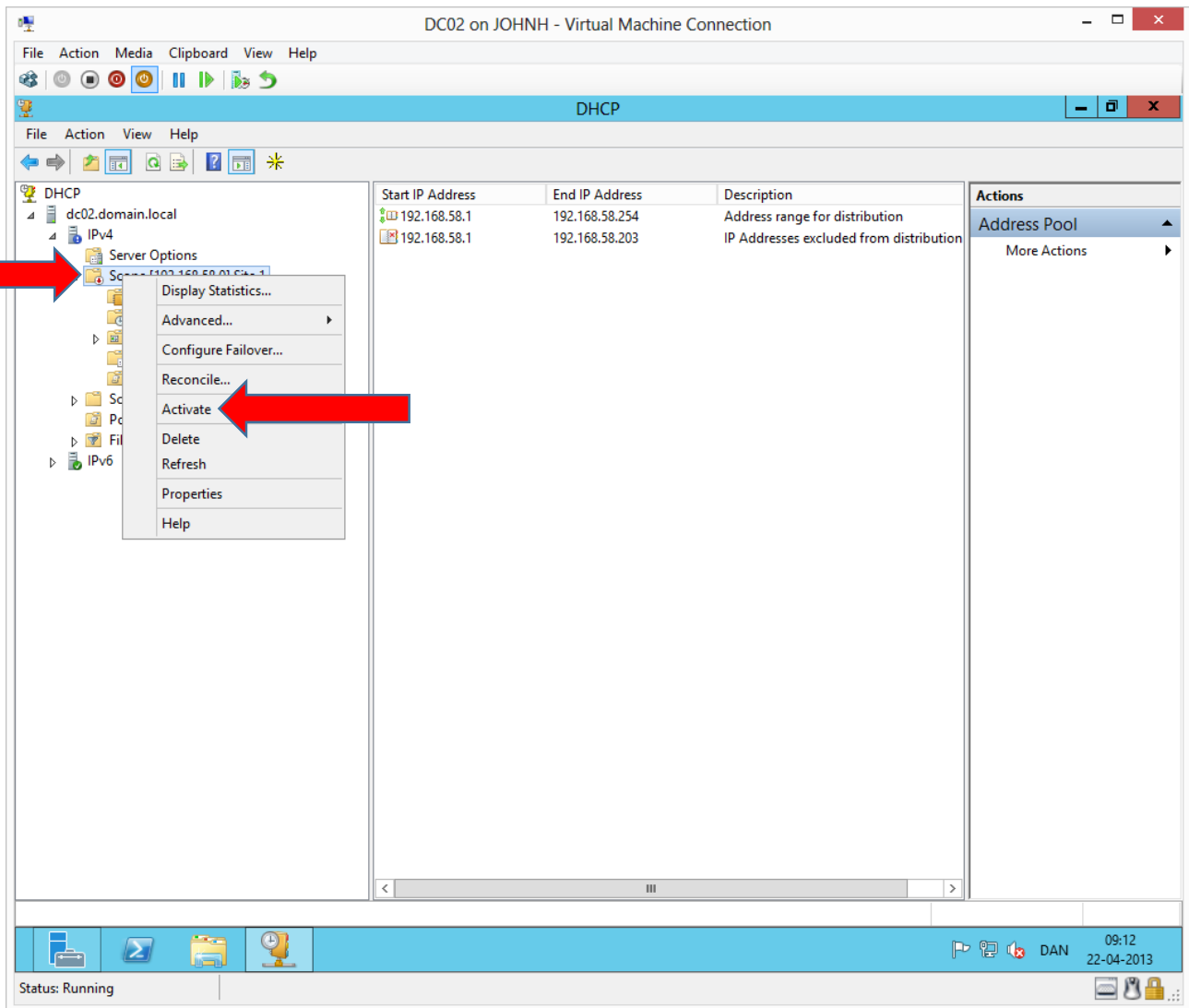
The image shows a screenshot of a virtual machine window titled "DC01 on JOHNH - Virtual Machine Connection". Inside the VM, the DHCP console is open, displaying a "Dhcp Split-Scope Configuration Wizard" dialog box. The wizard is at the "Delay in DHCP Offer" step, which asks the user to "Specify the delay (in milli seconds) with which the added DHCP server distributes addresses." The dialog features two spinners: "Host DHCP Server" and "Added DHCP Server". The "Added DHCP Server" spinner is currently set to 0. A red arrow points to the "Next >" button at the bottom right of the dialog. The background shows the DHCP console interface with a tree view on the left containing "dc01.domain.local", "IPv4", "Scope [192.168.58.0] Site 1", "Server Options", "Policies", "Filters", and "IPv6". The "Actions" pane on the right shows "DHCP" and "More Actions". The taskbar at the bottom indicates the system is running, with the time 09:09 and date 22-04-2013.



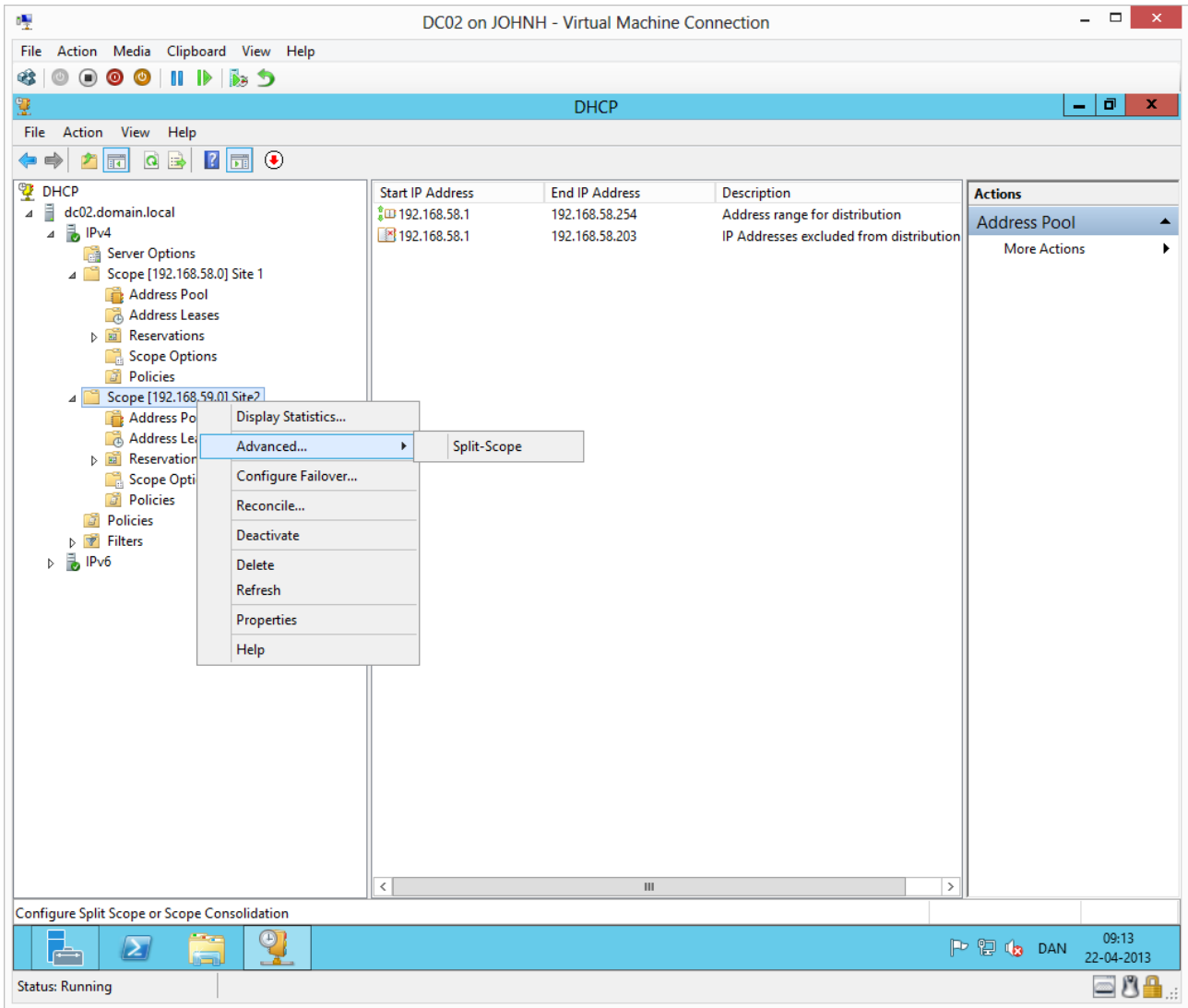




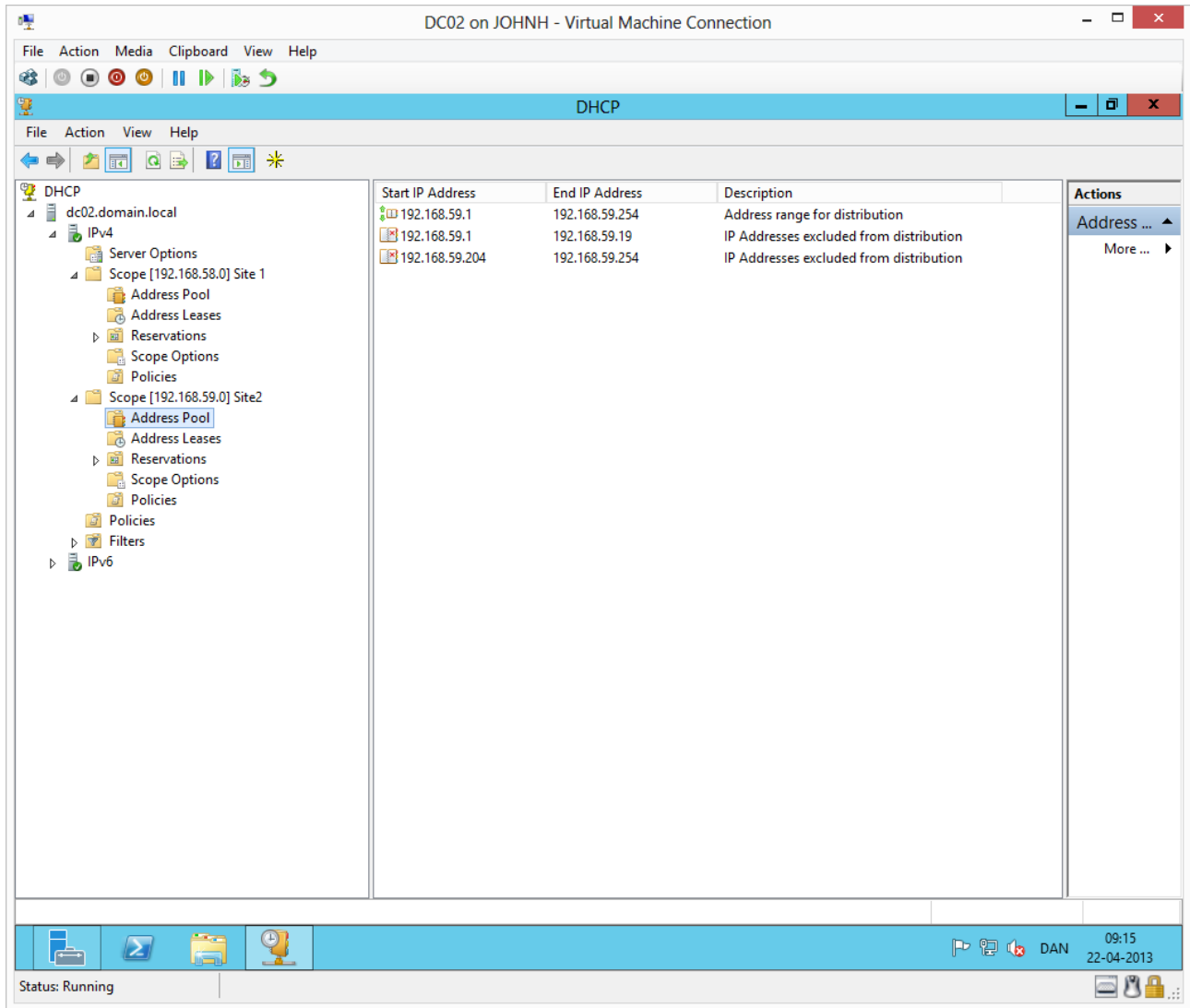
We can verify the configuration by looking at the scope exclusions. We should see our premade exclusion: Host IP 1-19 and 20% of our local subnet: Host IP 204-254.



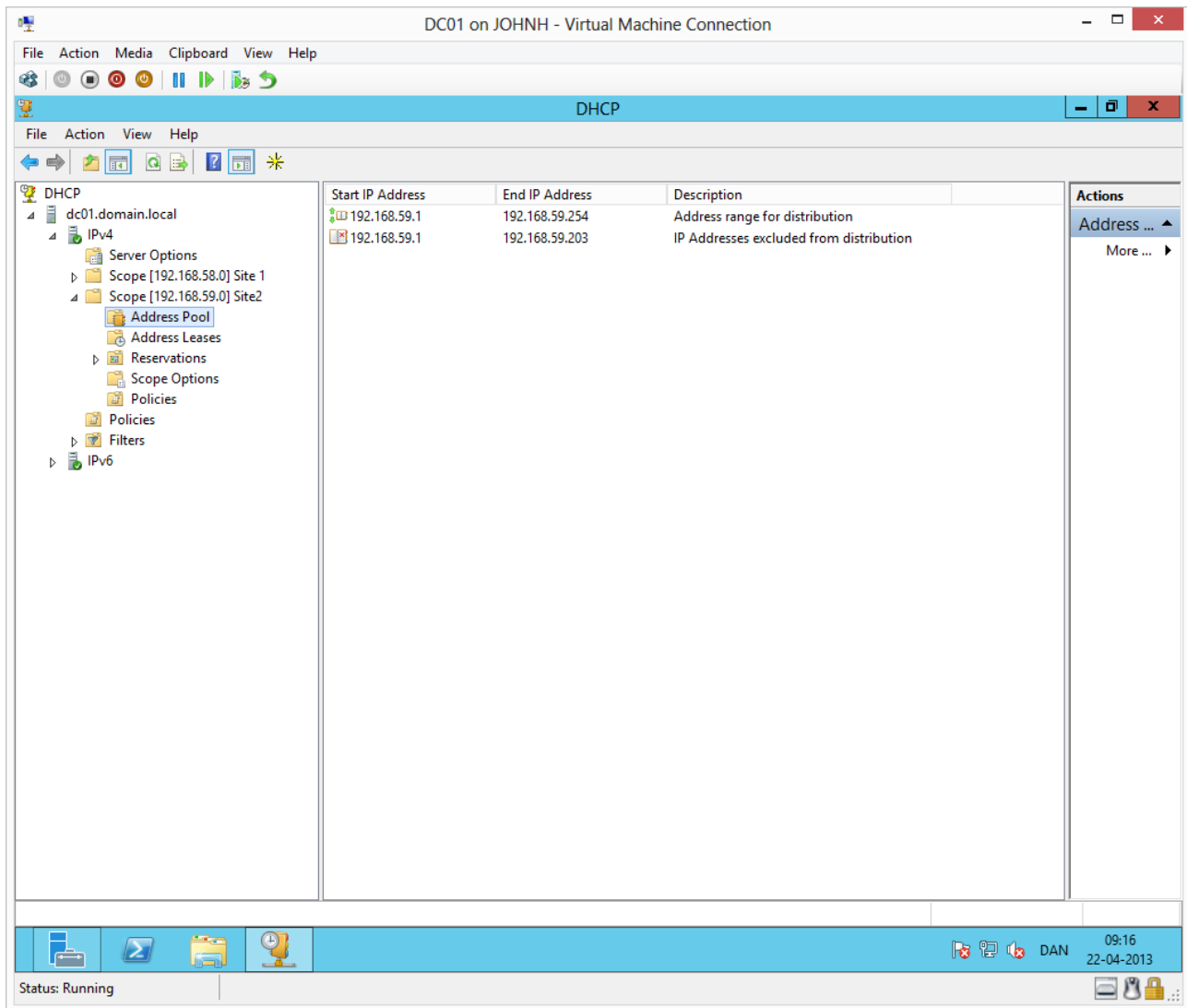
On the opposite DHCP server DC02, we verify and activate the new scope. We can see that 80% of the scope has been excluded, so that DC02 can offer IP's from the last 20%. (Right click on dc02.domain.local and refresh if 2. scope is not shown.)



To make DHCP redundancy in site 2, we must complete the same steps on DC02 for the local scope.
(Complete these steps on your own hand.)



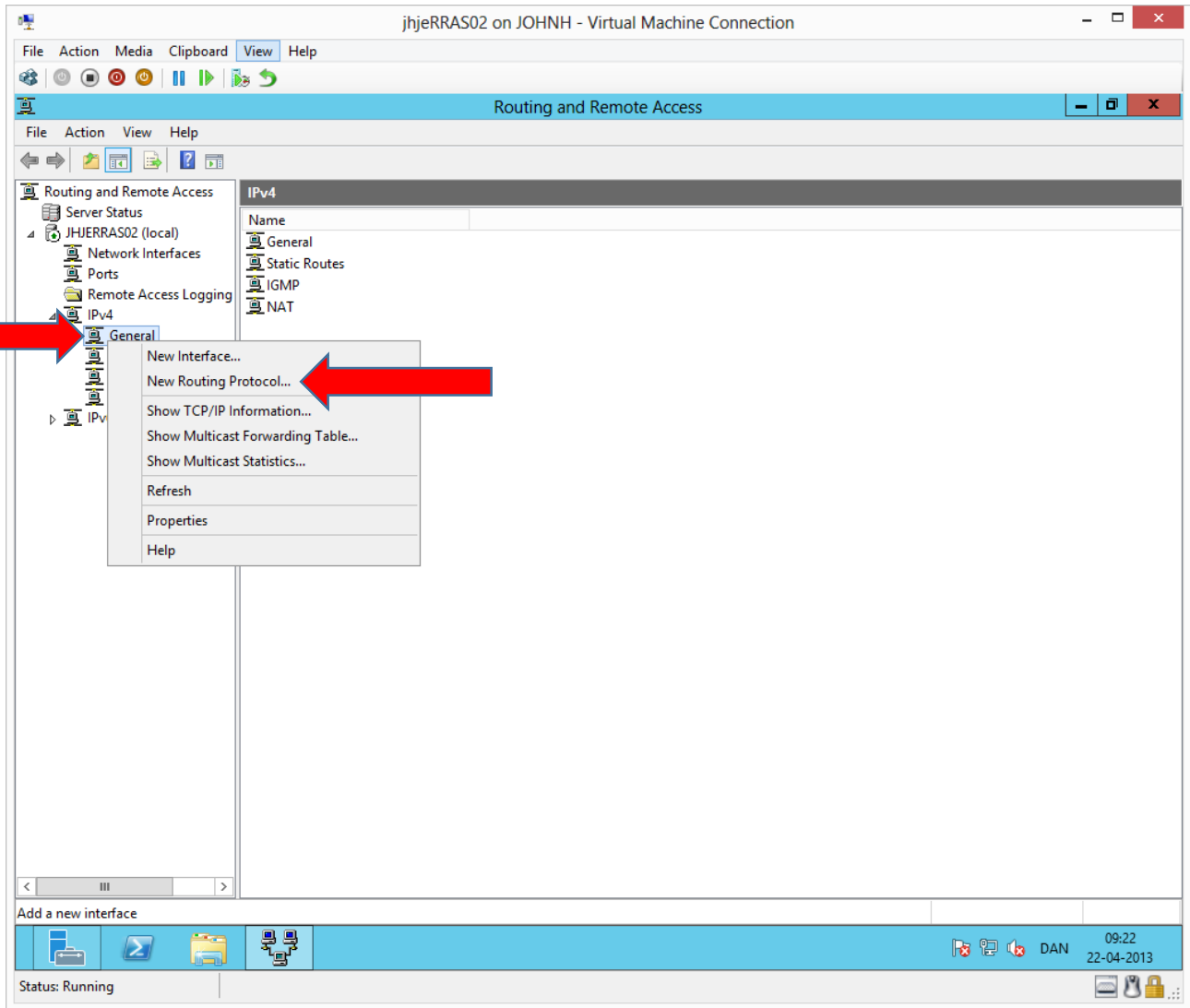
Verify the completed configuration on DC02.



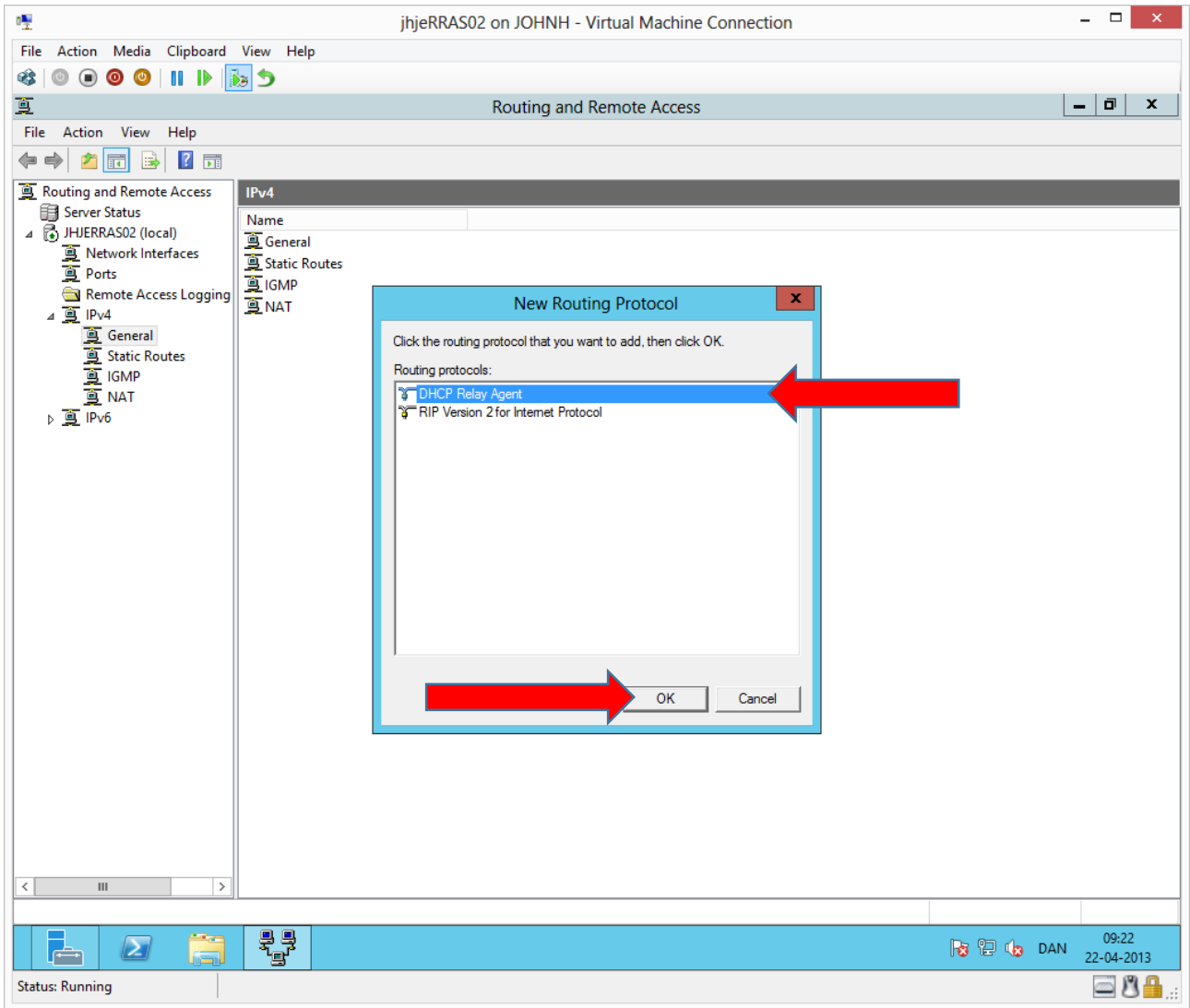
Verify and activate the new scope on DC01.

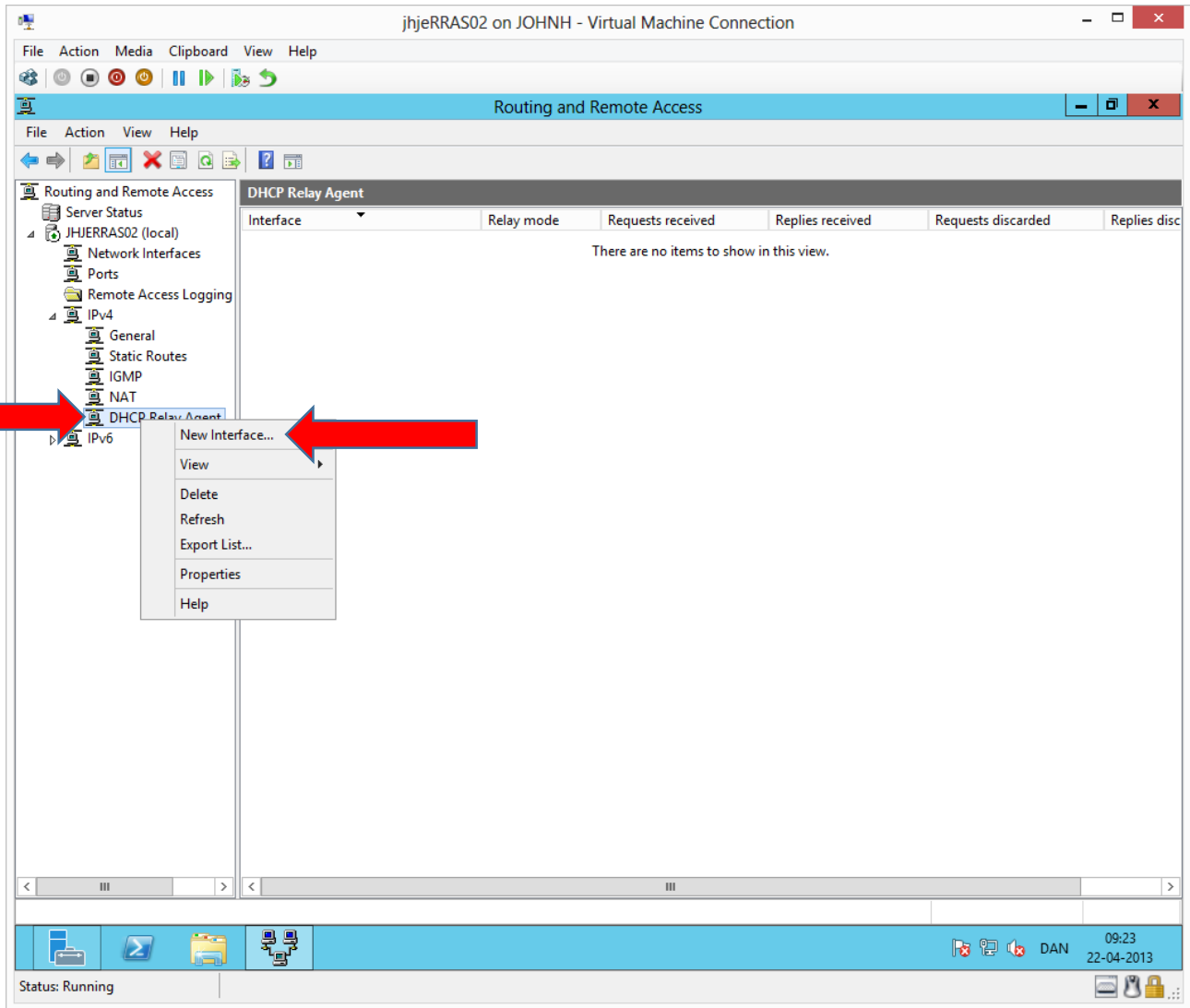
Configuring the RRAS services

We will create our DHCP relay agents on RRAS02 first and on RRAS01 afterwards.

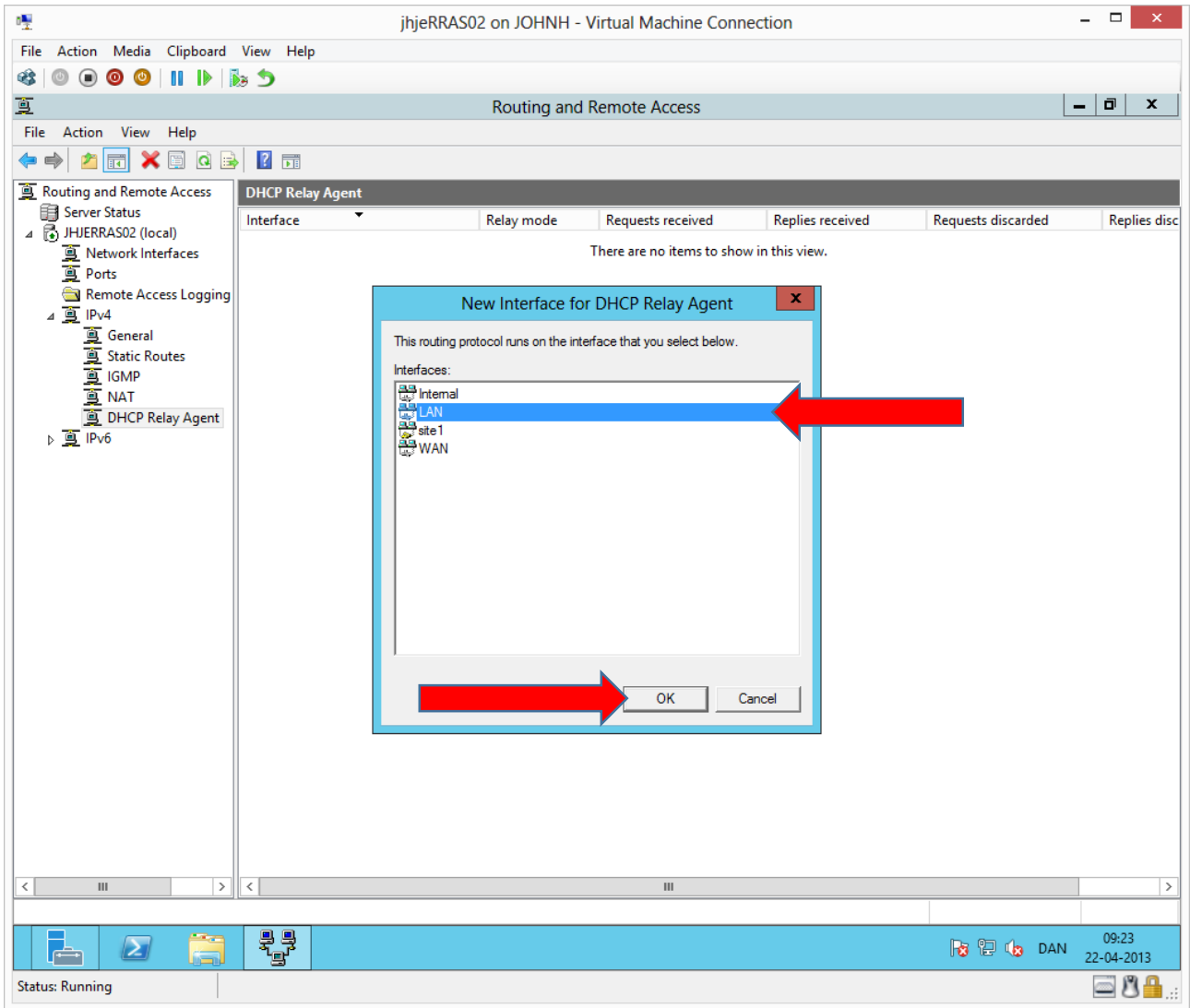


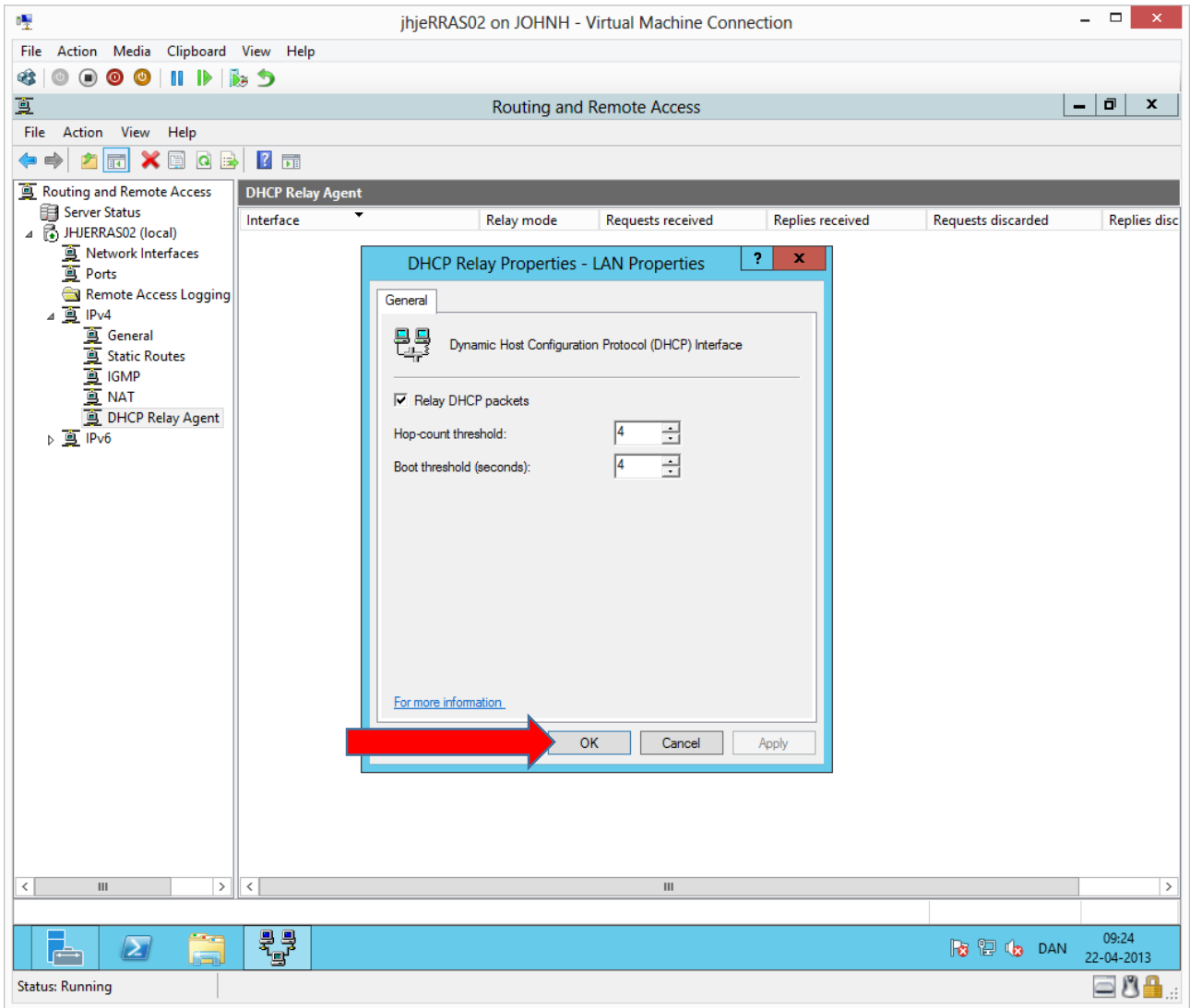
If **DHCP Relay Agent** is not found under IPv4, it must be added first. Right click on **General** and choose **New Routing Protocol...**

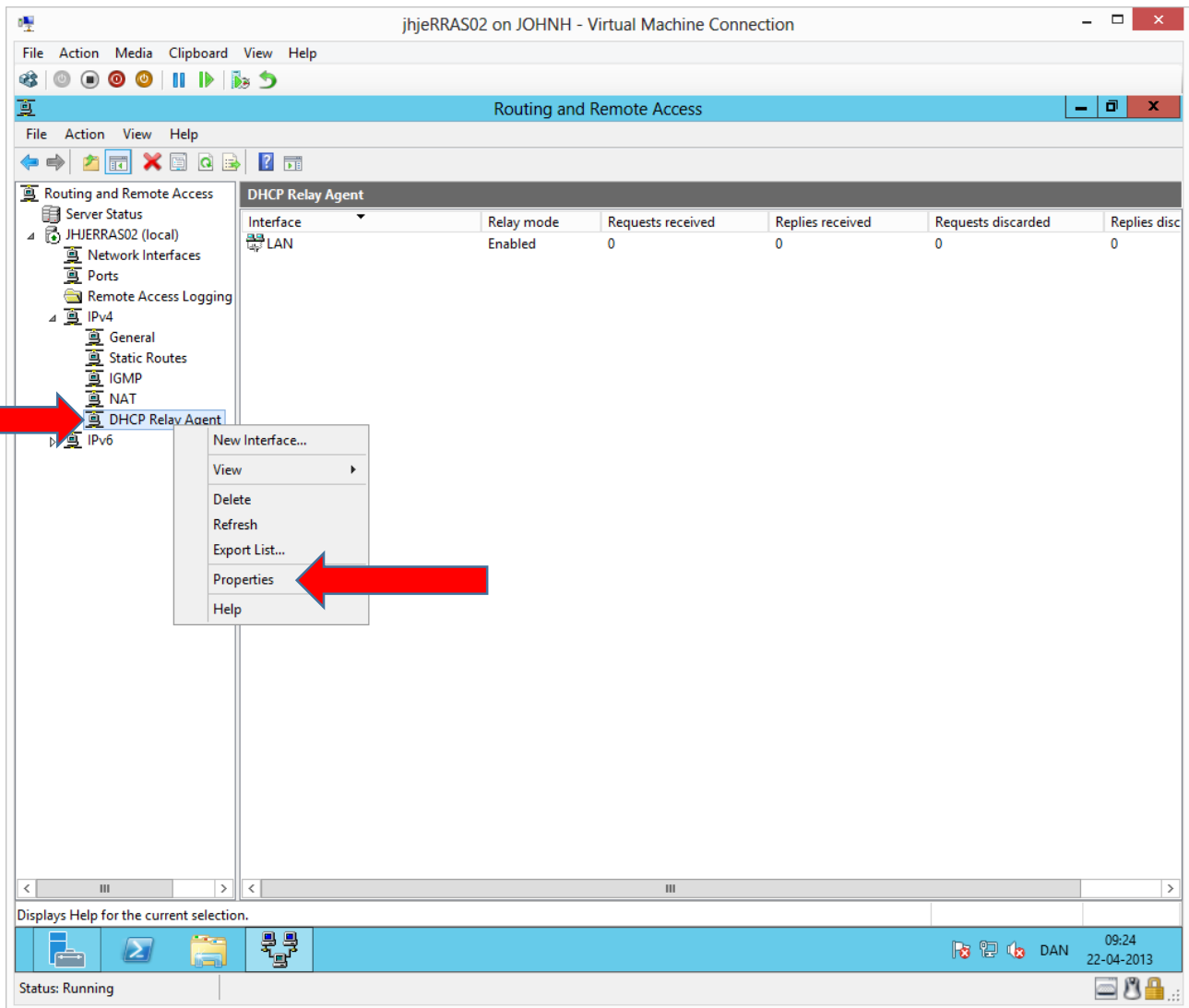




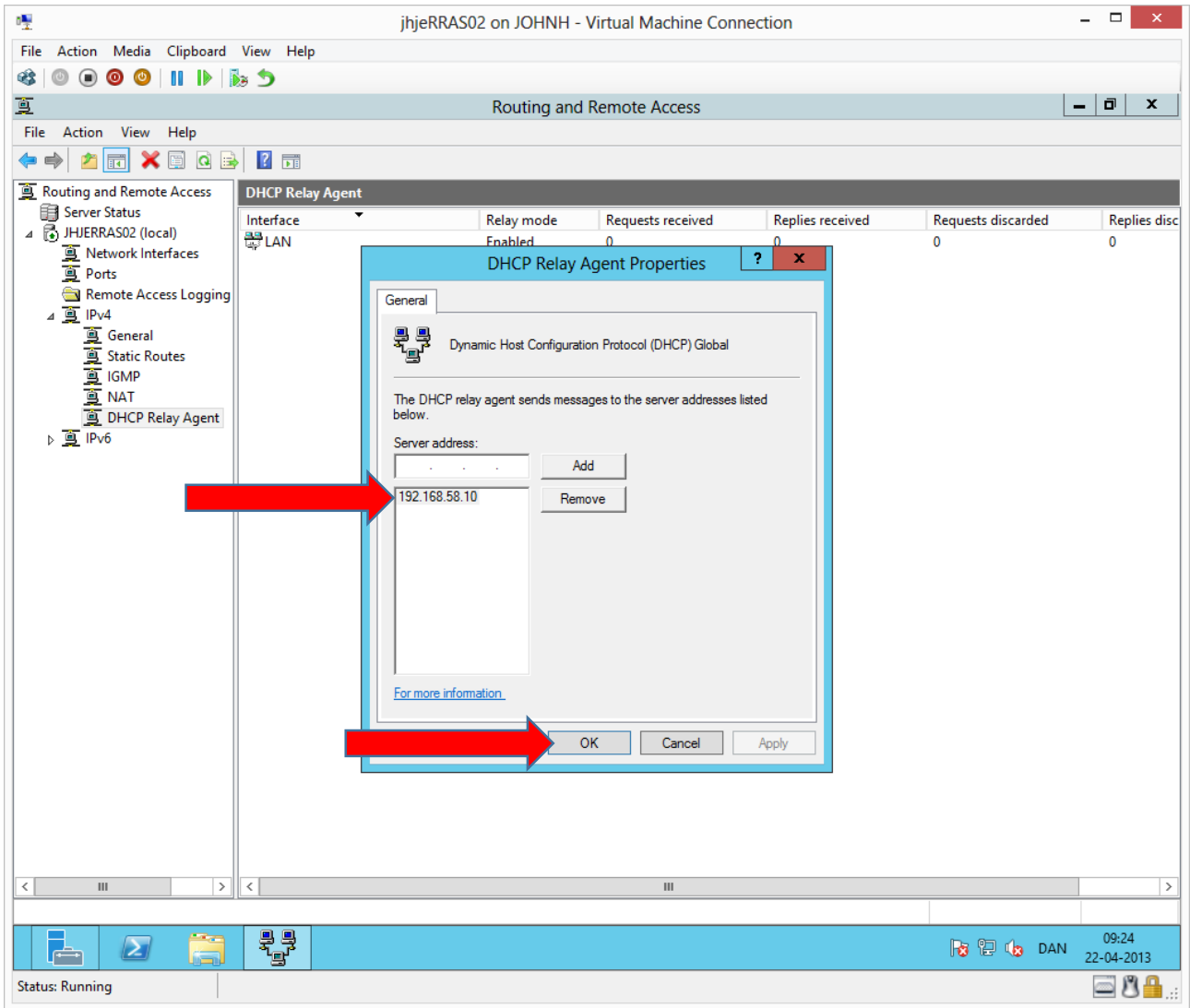
We define on which interface the RRAS server must listen for DHCP broadcast packets by right clicking **DHCP Relay Agent** and choose **New Interface...**



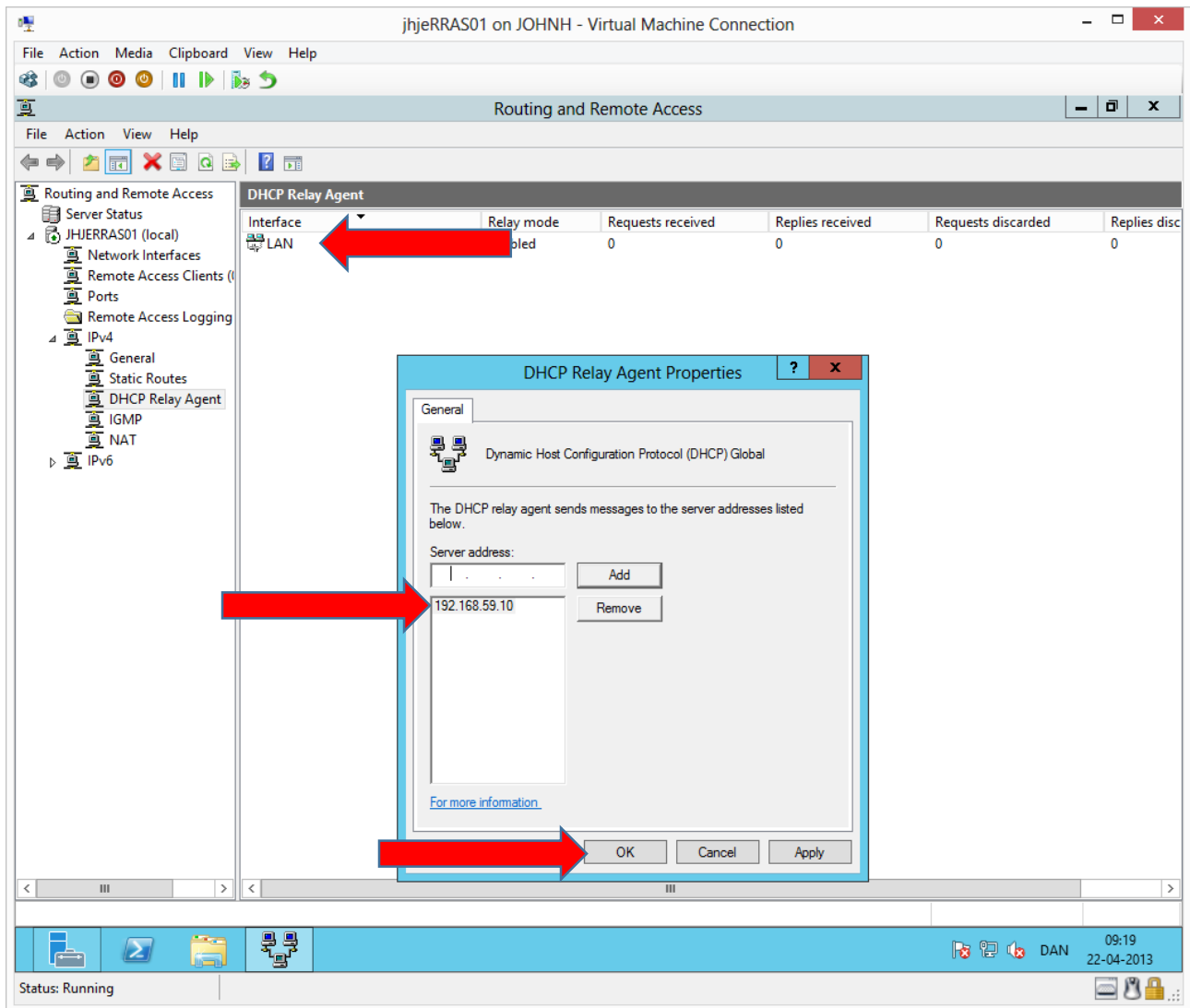




We will define the IP address of the DHCP server that should receive the DHCP packets by right clicking **DHCP Relay Agent** and choosing **Properties**



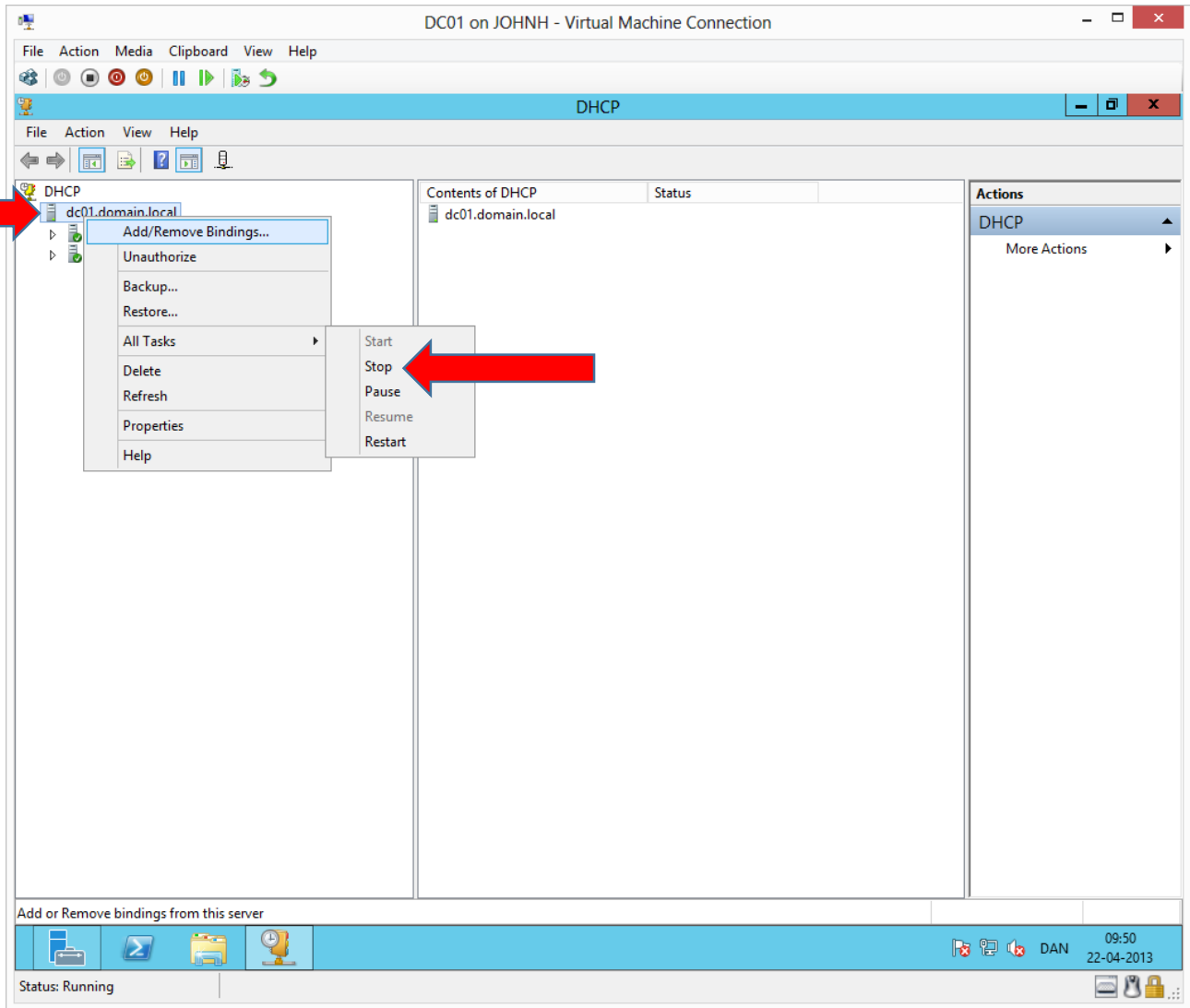
The IP address of the DHCP server in the opposite site.



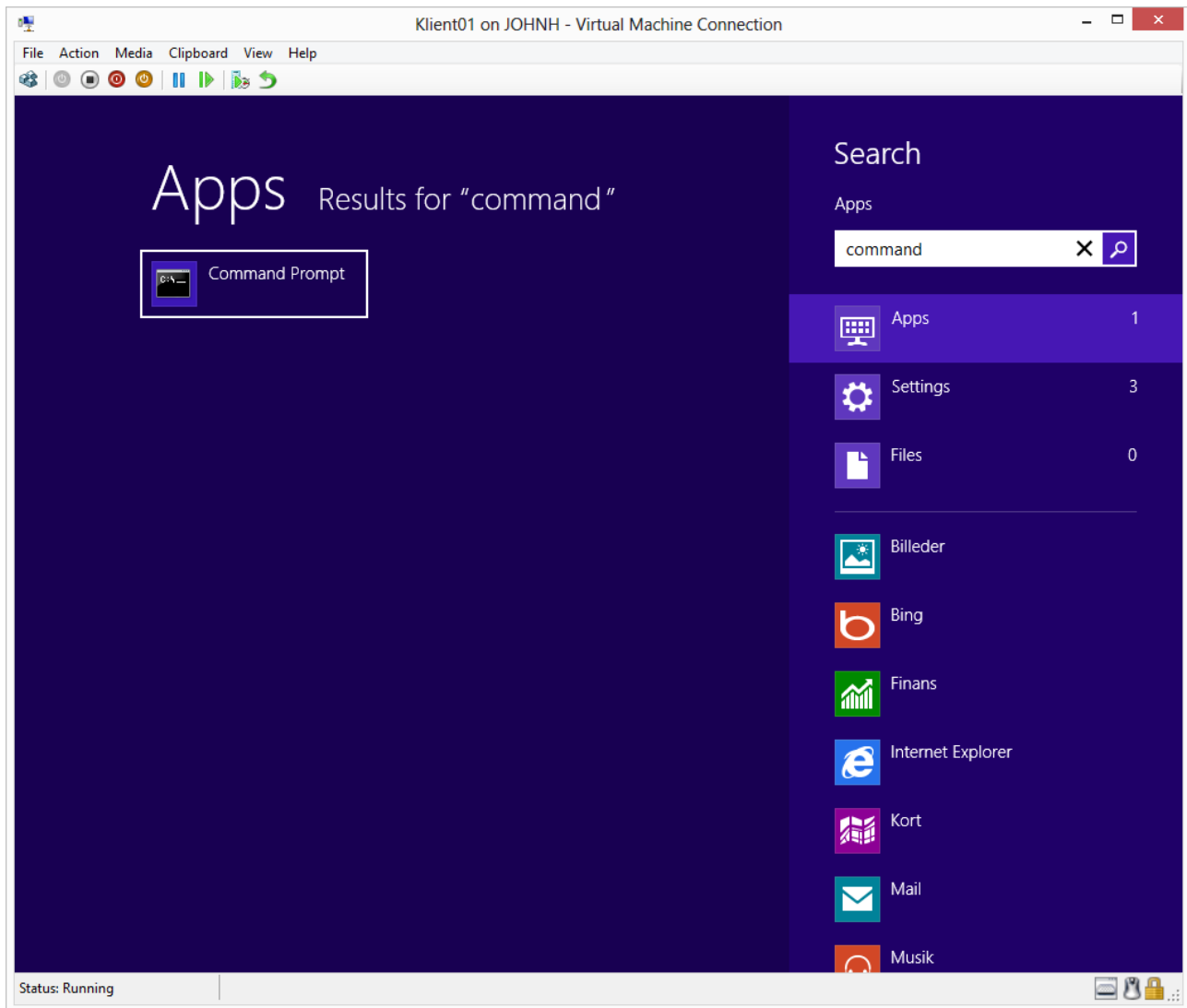
The DHCP relay agent must be configured in the same way on RRAS01, here we will just point at the DHCP server in site 2.

Test DHCP redundancy

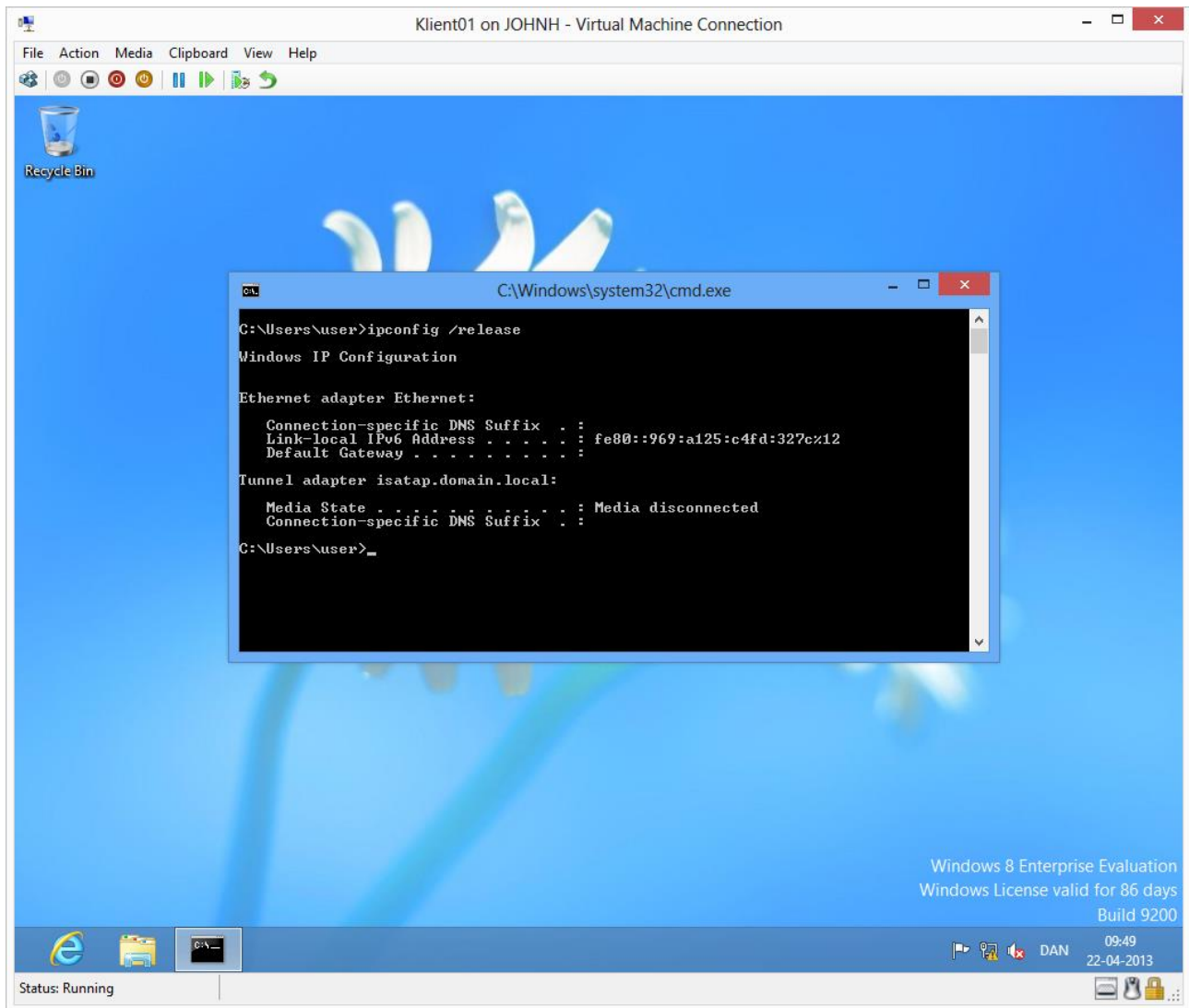
We will test DHCP redundancy in site 1 by turning off the DHCP service on DC01 and by renewing the IP address on Klient01. Klient01 should now get an IP address from DC02.



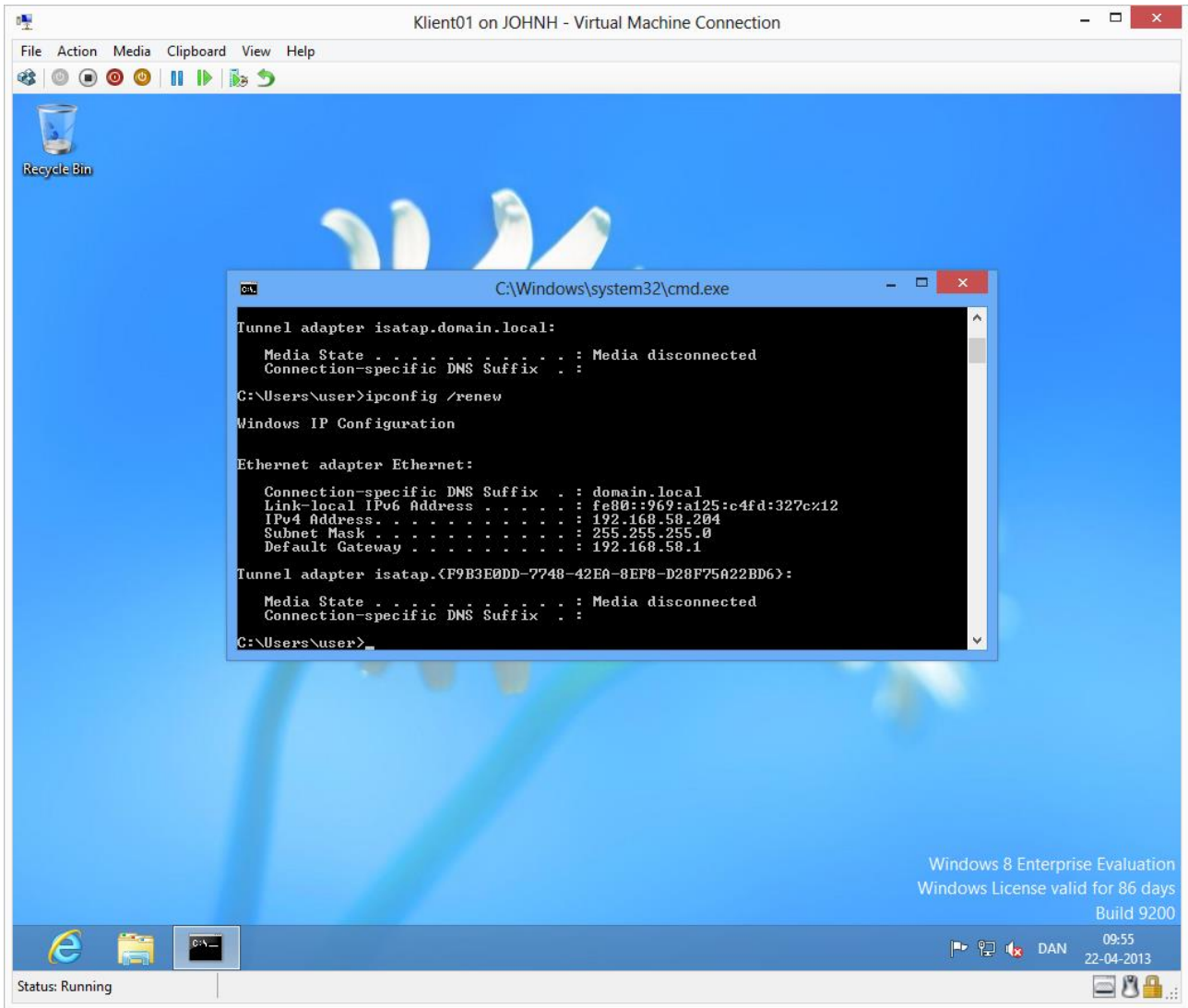
We can stop the DHCP service on DC01 from the DHCP snap in and by right clicking the server name and choosing **All Tasks** → **Stop**



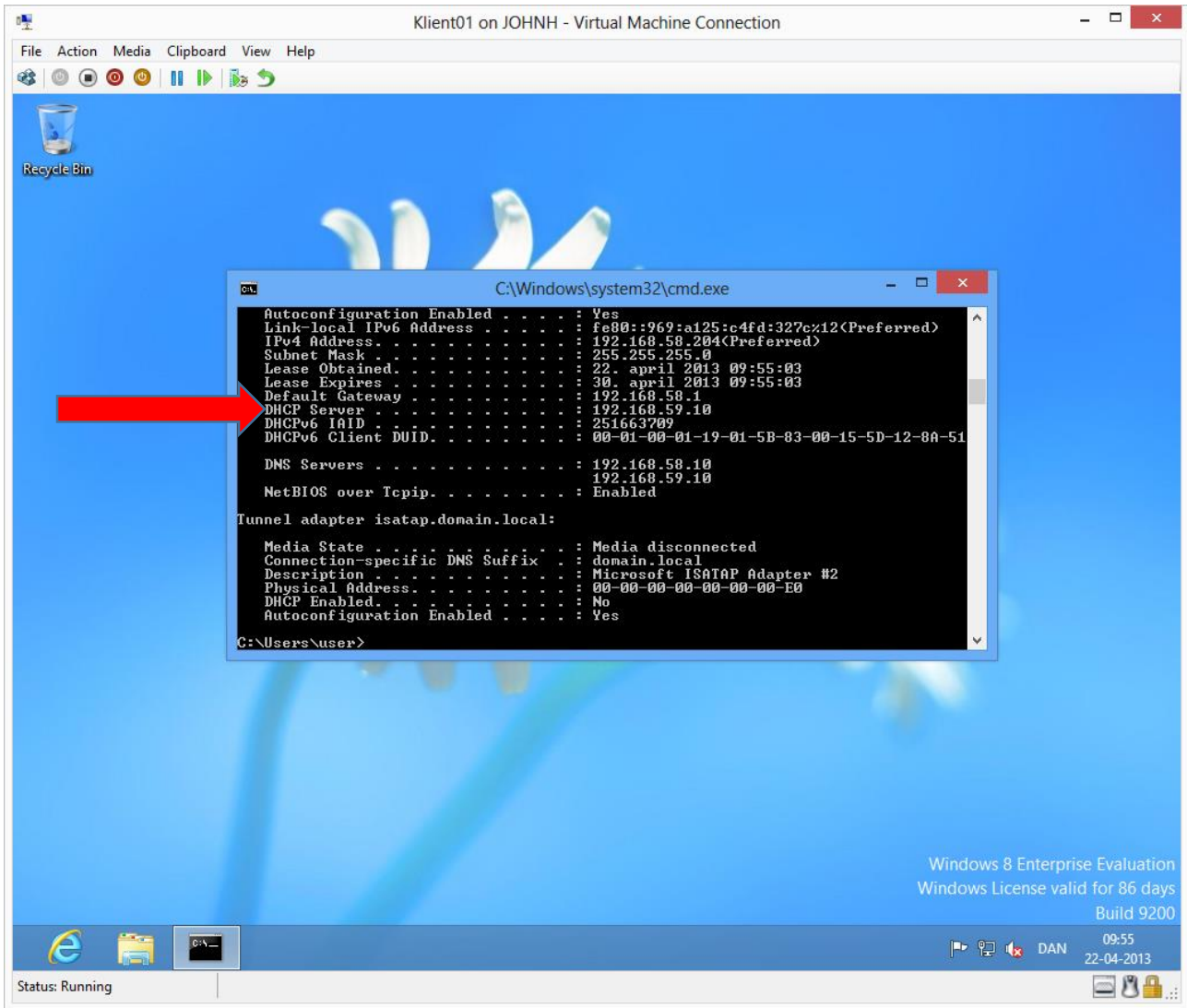
Start the command prompt on Klient01 by pressing the Windows key on the keyboard, typing **command** and pressing **enter**.



To release the IP address, which is still leased from DC01, type: **ipconfig /release**



Try to lease a new IP by typing: **ipconfig /renew**



Verify that you got an IP address from the DHCP server in the opposite site by typing: **ipconfig /all**

On your own hand, verify that the DHCP server in site 1 can also service DHCP clients in site 2.