

How to Scale out SharePoint Server 2007 from a single server farm to a 3 server farm with Microsoft Network Load Balancing on the Web servers.

Back to Basics Series

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This 'How to' guide will take you through configuring Microsoft Network Load Balancing on two Windows 2008 servers install SharePoint Server on the new Windows servers and then adding additional SharePoint servers to your farm and reassign Moss Server Services across the new SharePoint servers.

Scenario

The scenario that this whitepaper addresses is where an organization currently has a single SharePoint server with a separate SQL server and there may be several reasons why you would want to add additional servers to your farm. The first is that the current single server is not performing well enough due to high concurrent connections and IIS not being able to keep up with requests. The second could be that you wish to separate some of the services across multiple servers like Excel Services, document conversion service or search and another option could be multiple servers for resilience. There are many reasons why you may want to add additional servers into your farm and this paper will show you how. I will be adding two new servers into the farm and both will become web servers facing the users with the existing SharePoint Server becoming the middle tier Application server that may users do not connect to. because I have two web servers I will want to have resilience so that if one web server becomes unavailable the user connections will all be directed through the second web server and therefore I will configure the built in Network Load Balancing included with Windows Server although you can use any compatible load balancing solution be it software or hardware.

Server Configuration

The server topology that this guide uses as its starting point is as follows:

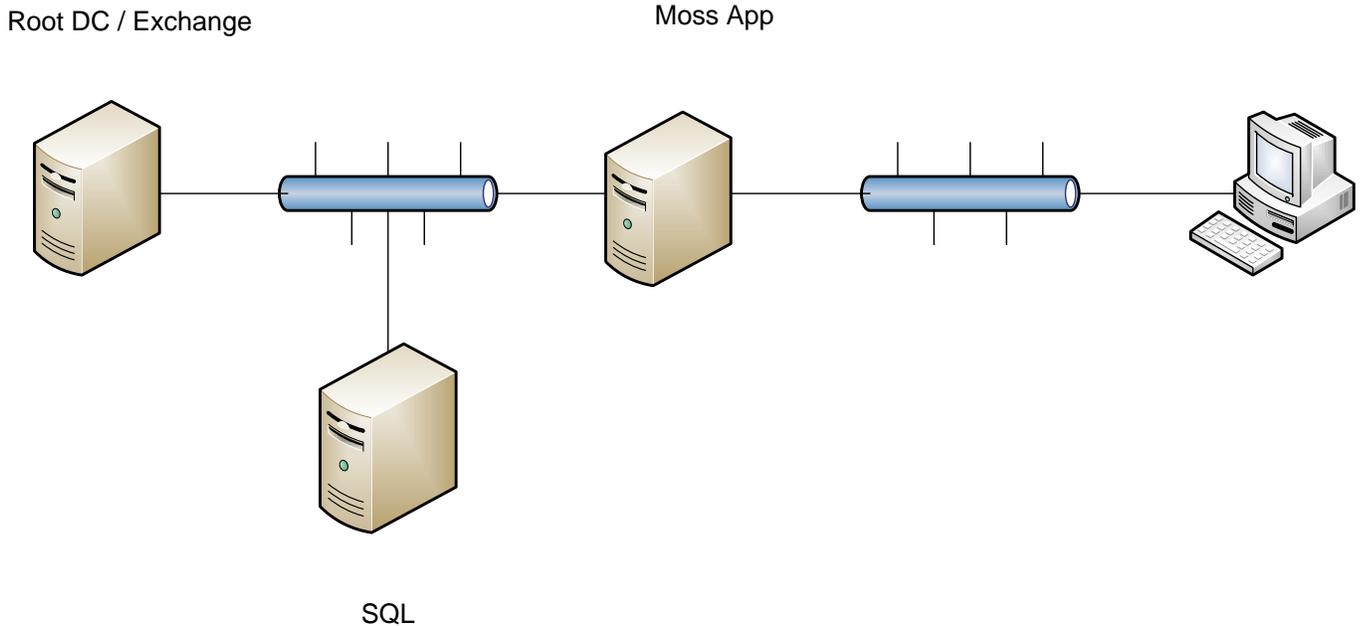
Server Name	Role	Products Installed
DC1Exch	Domain Controller DNS Server Exchange 2007 Server	Windows Server 2008 SP1 (64-bit)
SQL	Database server	Windows Server 2008 SP1 (64-bit) SQL 2005 SP2 (64 bit)
MOSSAPP	SharePoint Server (Application server currently configured with Index Search service and Excel services started).	Windows Server 2008 (64-bit) SharePoint Server Enterprise (64 bit)
MOSS2	SharePoint Server Web front End Server Note - SharePoint not yet installed Microsoft Network Load balancing server (not yet configured)	Windows Server 2008 (64-bit) SharePoint Server Enterprise (64bit)
MOSS3	SharePoint Server Web front End Server Note - SharePoint not yet installed Microsoft Network Load balancing server (not yet configured)	Windows Server 2008 (64-bit) SharePoint Server Enterprise (64bit)
XPCLIENT	Client	Windows XP Pro (32-bit) with Office 2007 Enterprise

**** Important Note ****

You should configure your servers with two network cards that will take part in the Network Load Balanced Cluster for the real world. One Network Card will connect to the private Lan that has the servers and the second network card will connect to the User Lan. The Network Load Balanced Cluster will be configured against the Network Card on the User Lan. In testing you can use a single network card however.

This paper uses the internal domain name configured for the Active Directory is trainsbydave.com. You will need to replace trainsbydave.com with your own testing domain name.

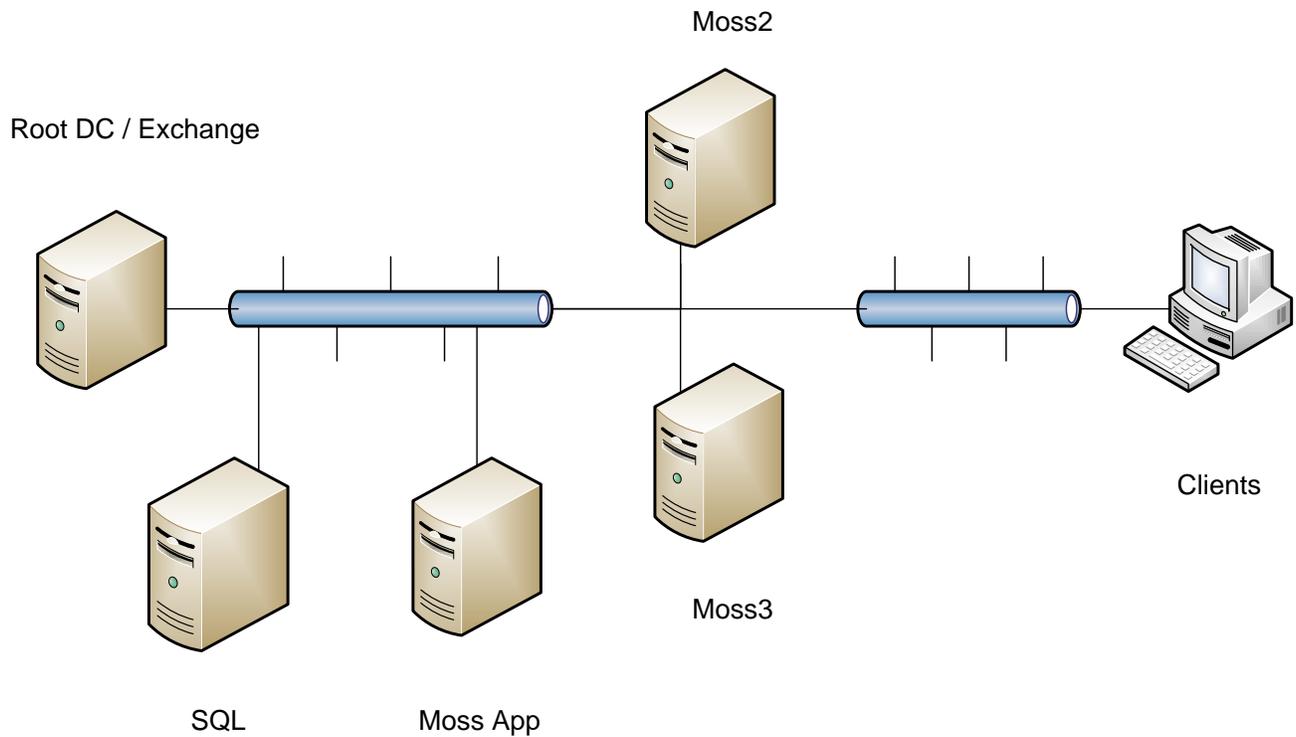
The diagram below shows the environment at the start of the process:



I currently have the following Web Applications created and which server they are being accessed on by the users. Also shown is the planned location where the users will access the collaboration resources after bringing in the new Web Servers.

Web Application	Initial Location	Planned Location	Description
My Site	MOSSAPP	MOSS 2 MOSS 3 MOSSAPP	Hosting the My Site collections for this environment. DNS currently shows mysite.trainsbydave.com pointing to MossApp. After the configuration changes this web application will only be accessed via the two web servers.
Corp	MOSSAPP	MOSS 2 MOSS 3 MOSSAPP	Top-level site created from the Collaboration portal site template that can be accessed using corp.trainsbydave.com. DNS currently has this URL pointing to MossApp. After the configuration changes this web application will only be accessed via the two web servers.
SharePoint Central Administration v3	MOSSAPP	MOSSAPP	Site Collection created when SharePoint Server first installed. Currently accessed from MossApp.
SSP1	MOSSAPP	MOSS2 MOSS3	Web application used to host the SSP Administration site collection. All Web front ends will host the SSP Web App.

The diagram below shows the environment we aim to get to by the end of this white paper.



As I have explained the purpose of this whitepaper is to demo how to scale out so I am assuming you have already installed and configured your first SharePoint Server. In my case the SharePoint server already setup and configured is called MossApp

Additional resources – See the section at the end of this document

Troubleshooting – See the section at the end of the document

Let's get started.

Task 1 – The current environment in central Administration

1. Go to Central Administration - Operations and click Servers in farm. Note that you current servers used are listed and we only have one SharePoint Server using version 12.0.0.6219. This indicates I am running on Service Pack 1 of SharePoint.

Note - Penny Coventry (MVP) has written a blog post that lists all the version numbers used by SharePoint as you apply service packs and hot fixes. you can find it here - <http://mindsharpblogs.com/penny/articles/481.aspx>

Central Administration > Operations > Servers in Farm

Servers in Farm

Farm Information

Version: 12.0.0.6219
 Configuration database server: SQL
 Configuration database name: SharePoint_Config

Server	Services Running	Version	Remove Server
dc1exch	Windows SharePoint Services Outgoing E-Mail		Remove Server
MOSSAPP	Central Administration Excel Calculation Services Office SharePoint Server Search Windows SharePoint Services Help Search Windows SharePoint Services Incoming E-Mail Windows SharePoint Services Web Application	12.0.0.6219	Remove Server
SQL	Windows SharePoint Services Database		Remove Server

2. Staying in central Administration - Operations click on Services on server. Notice that we can now see each service that is currently active on the MossApp server. Currently the following services are showing as running :
 - a. Central Administration - started by default
 - b. Excel calculation Services
 - c. Office SharePoint server search - configured as both Index and Query role
 - d. Windows SharePoint Services help Search
 - e. Windows SharePoint Services incoming E-Mail - started by default
 - f. Windows SharePoint Services Web Application - started by default

Central Administration > Operations > Services on Server

Services on Server: MOSSAPP

Complete all steps below

Server: **MOSSAPP**

Select server role to display services you will need to start in the table below.

- Single Server or Web Server for small server farms All services run on this server
- Web Server for medium server farms Web application and Search Query services run on this server
- Search Indexing Search Indexing service runs on this server
- Excel Calculation Excel Calculation service runs on this server
- Custom Services you choose run on this server

Start services in the table below:

Service	Comment	Status	Action
Document Conversions Launcher Service		Stopped	Start
Document Conversions Load Balancer Service		Stopped	Start
Excel Calculation Services		Started	Stop
Office SharePoint Server Search		Started	Stop
Windows SharePoint Services Help Search		Started	Stop
Windows SharePoint Services Web Application		Started	Stop

When finished, return to the Central Administration home page

3. Now let's confirm the DNS configuration. On your DNS server (in my case this is DC1Exch) . We need to confirm the current IP addresses that are configured for our SharePoint Web Applications.
 - a. Go to Programs - Administrative Tools - DNS.
 - b. Expand Server Name
 - c. Forward Lookup Zones
 - d. trainsbyDave.com (replace with your domain name)
 - e. Note the IP addresses that are being used for our SharePoint hosted, Web Applications are all pointing to the same IP as MossApp
 - i. MossApp is 10.0.0.3
 - ii. MySite is using 10.0.0.3
 - iii. Corp is using 10.0.0.3

The screenshot shows the DNS Manager console for the server DC1EXCH. Under the Forward Lookup Zones for trainsbydave.com, several Host (A) records are listed with their corresponding IP addresses:

Name	Type	Data
dc1exch	Host (A)	10.0.0.1
Moss2	Host (A)	10.0.0.4
moss3	Host (A)	10.0.0.5
Mossapp	Host (A)	10.0.0.3
SQL	Host (A)	10.0.0.2
xpclient	Host (A)	10.0.0.6
ssp1	Host (A)	10.0.0.3
mysite	Host (A)	10.0.0.3
corp	Host (A)	10.0.0.3

Task 2 – Configuring Microsoft Network Load balancing

Ok so now we have checked our current environment let's get started with our scaling out part. There are two ways that we could approach this. Either one will work it is more dependent on what method you are using in adding your new Moss servers. i.e. together or separate over time.

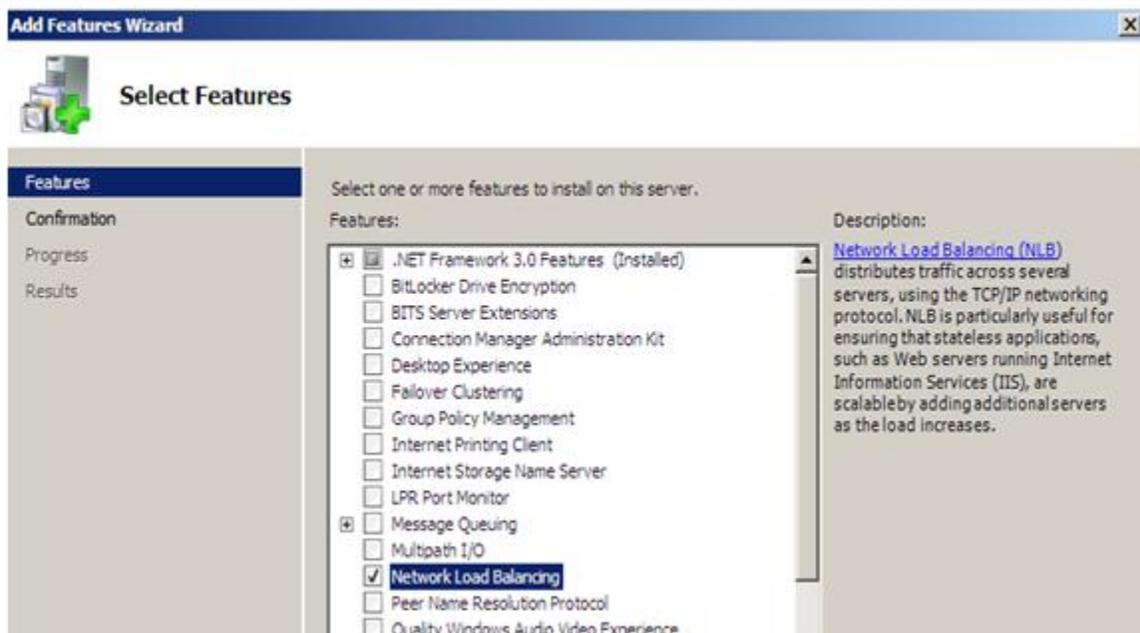
Two method choices:

1. As I have built my two Servers Moss2 and Moss3 I could now enable Network load balancing and test before installing SharePoint Server on the boxes. This is my preferred method.
2. Maybe you are only going to install one additional SharePoint Server test the user access to the Web Applications first , i.e. Corp and MySite and once you are happy then add the second the Web front End server and finally configure Network Load Balancing. Due to budget constraints you may not be able to add your second web server for several months.

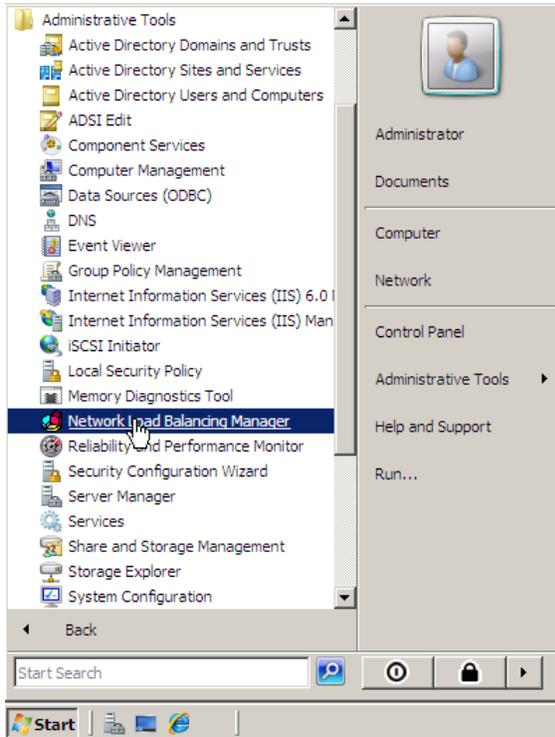
I am going to use option 1 for this whitepaper as I have already built my two Windows Server 2008 boxes that will host the two moss Web Servers. My two new servers are called Moss2 and Moss3. One big advantage of configuring and testing Network Load Balancing first is that I can make sure that the Load Balancing is working correctly before installing SharePoint. This way I know that if something is wrong after installing SharePoint it is not a Load Balancing issue.

1. The first thing we need to do is install the Network Load Balancing Manager tool. This is done by adding a new feature on a server that is NOT one of the web servers. It is recommended that you manage your Load Balanced Clusters from a server that is not a part of the Load Balanced servers.
 - a. On your chosen server **open Server Manager** from Administration tools
 - b. Left **click on Features** and the Left click on **Add Feature**
 - c. Select **Network Load Balancing** and click **next** and then **Install** to finish the wizard
 - d. Repeat these steps on all Web Front End Servers. Moss2 & Moss3 in my case.

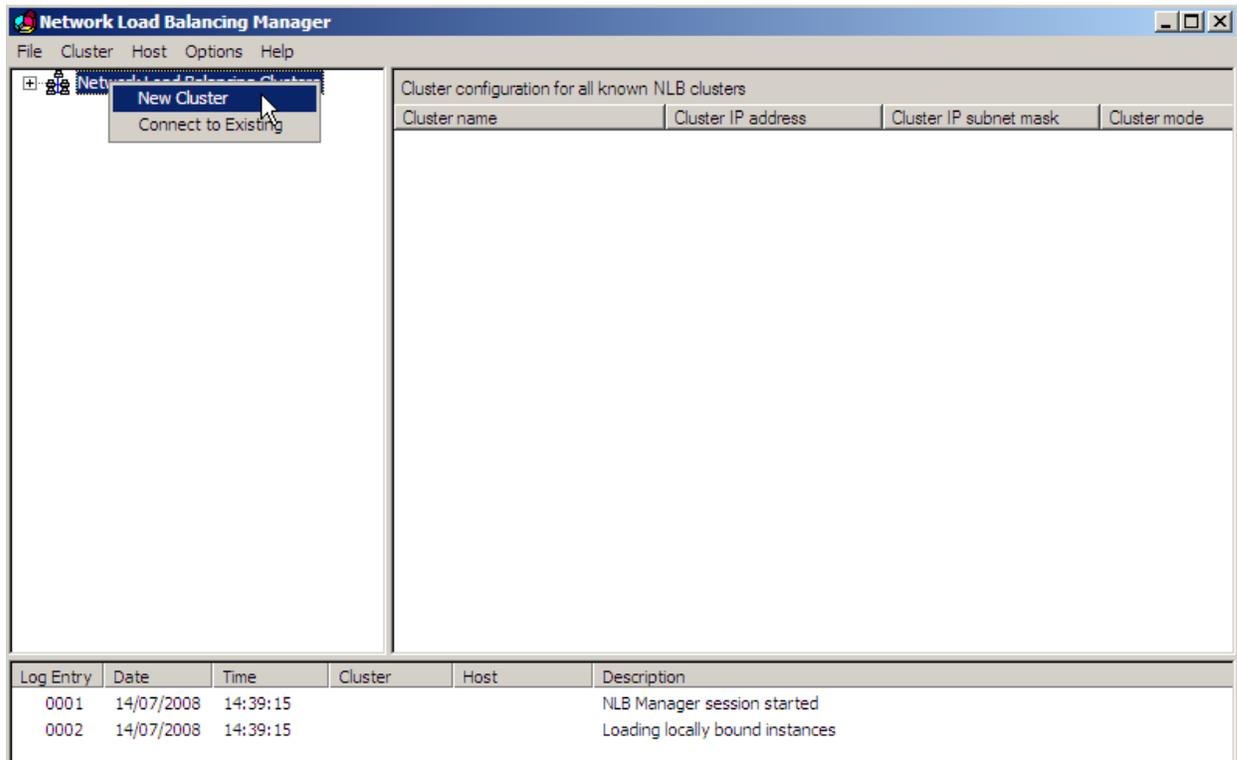
Note – In Windows Server 2008 you have to configure NLB via the Network Load Balancing Manager Tool, you cannot manually configure it as with previous OS versions.



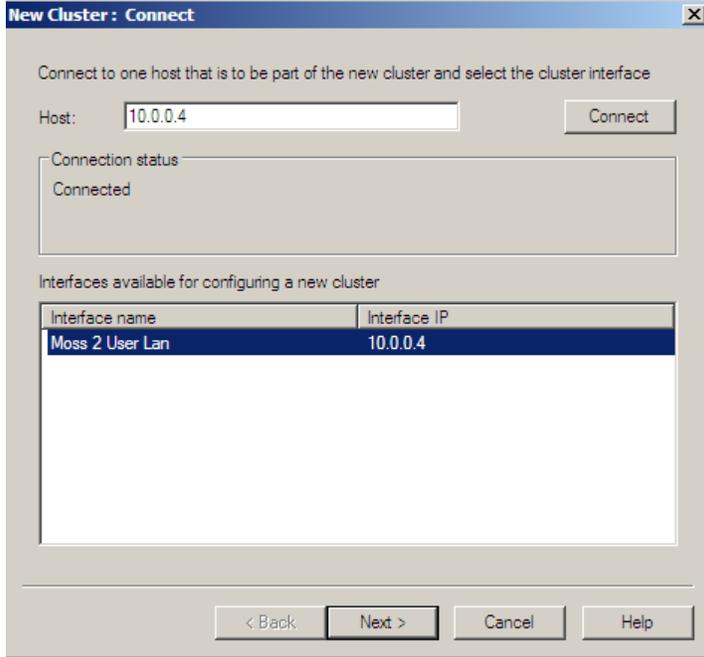
2. Launch the Network Load Balancing Manager from Programs – Administrative Tools



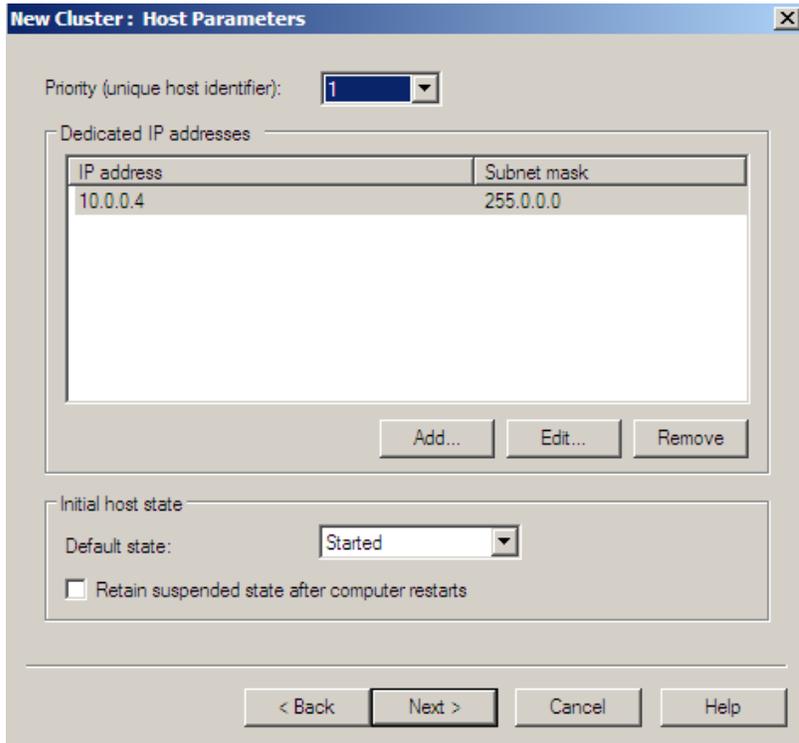
3. In the manager Right Click on Network Load Balancer Cluster and Click New Cluster



- 4. In the host field **enter the IP address** of the **first server** to be in the Cluster. In my case this was for Moss 2 and its IP address is 10.0.0.4. Then **click Connect**. After a short time the Network cards available for that server will be displayed. Ensure you choose (**highlight**) the **network card** that is on the **users lan**. Click **Next**



- 5. On the host parameters page **leave the defaults** and **click next**.



6. On the cluster IP address page we now need to add the new IP address that will be used for the cluster. This IP address will also be configured in DNS as the pointer for all our SharePoint Web Applications.
 - a. Click **Add**
 - b. Type the **IP address** and **subnet mask** for your chosen Cluster IP plus your IP 6 address if enabled.
 - c. Click **OK**
 - d. If you wish to add additional IP addresses for use by the cluster then you can add them now.
 - e. Click **Next**

Additional Information – The new cluster IP address will actually be configured as a second IP address on the Network card that was selected on the previous screen. IE the User Lan.

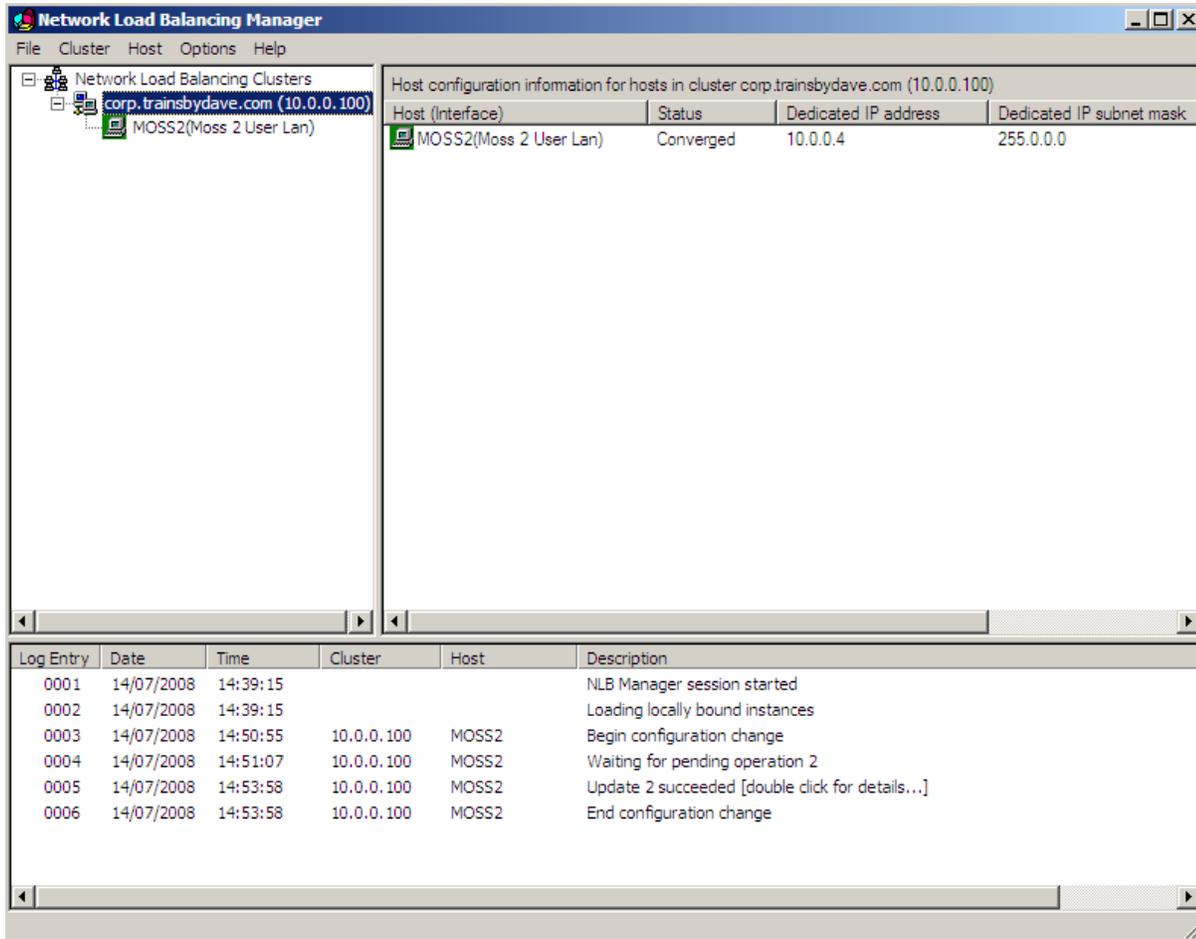
The screenshot shows two overlapping dialog boxes. The background dialog is titled "New Cluster : Cluster IP Addresses" and contains the following text: "The cluster IP addresses are shared by every member of the cluster for load balancing. The first IP address listed is considered the primary cluster IP address and used for cluster heartbeats." Below this text is a table with two columns: "IP address" and "Subnet mask". The table is currently empty. At the bottom of this dialog are buttons for "Add...", "Edit...", "Remove", and "Help".

The foreground dialog is titled "Add IP Address" and has three radio button options: "Add IPv4 address:" (which is selected), "Add IPv6 address:", and "Generate IPv6 addresses:". Under "Add IPv4 address:", the "IPv4 address:" field contains "10 . 0 . 0 . 100" and the "Subnet mask:" field contains "255 . 0 . 0 . 0". Under "Generate IPv6 addresses:", there are three checkboxes: "Link-local", "Site-local", and "Global", all of which are unchecked. At the bottom of the "Add IP Address" dialog are "OK" and "Cancel" buttons.

7. We now need to configure the Cluster parameters.
 - a. Ensure you have selected the Cluster IP address from the drop down list.
 - b. Type your fully qualified domain name for the cluster. In my setup I am using corp.trainsbydave.com which is my URL for the Corp Web Application.
 - c. Now choose the Cluster Operation mode. You will choose based on the following criteria.
 - i. Select Unicast if you have more than one Network Card on your web servers. This is telling the Network Load Balancer to listen only on the network card configured.
 - ii. Select Multicast if you have only a single network card on your web server or if you have multiple network cards that are listening on the user lan. In my setup I am choosing Multicast as I only have one network card in my test servers.
 - d. Click Next

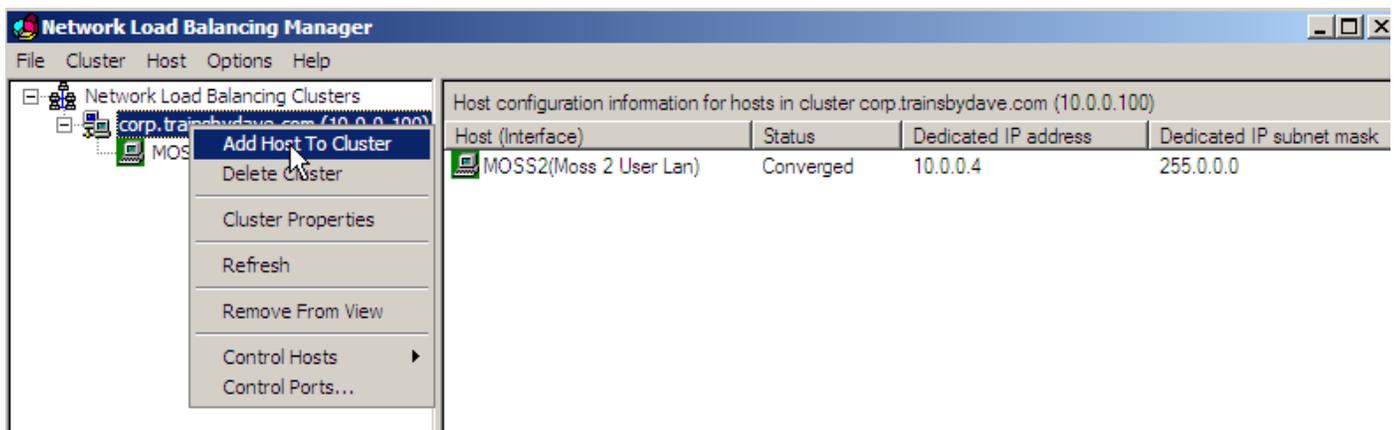
8. On the Port Rules page we need to add the port rules only for the ports we wish to accept on the Front End Servers.
 - a. Click Remove to delete the default rule
 - b. Click Add
 - c. Change the port range to only 80
 - d. Set the Affinity to Single – For a Moss Farm Single Affinity is needed for the sticky sessions instead of using no affinity which is used for standard Load Balancing
 - e. Click OK
 - f. Click Finish

You will now return to the Network Load Balancer Manager whilst it configures the Web Server. Once complete you will notice that a green box appears next to the server name.

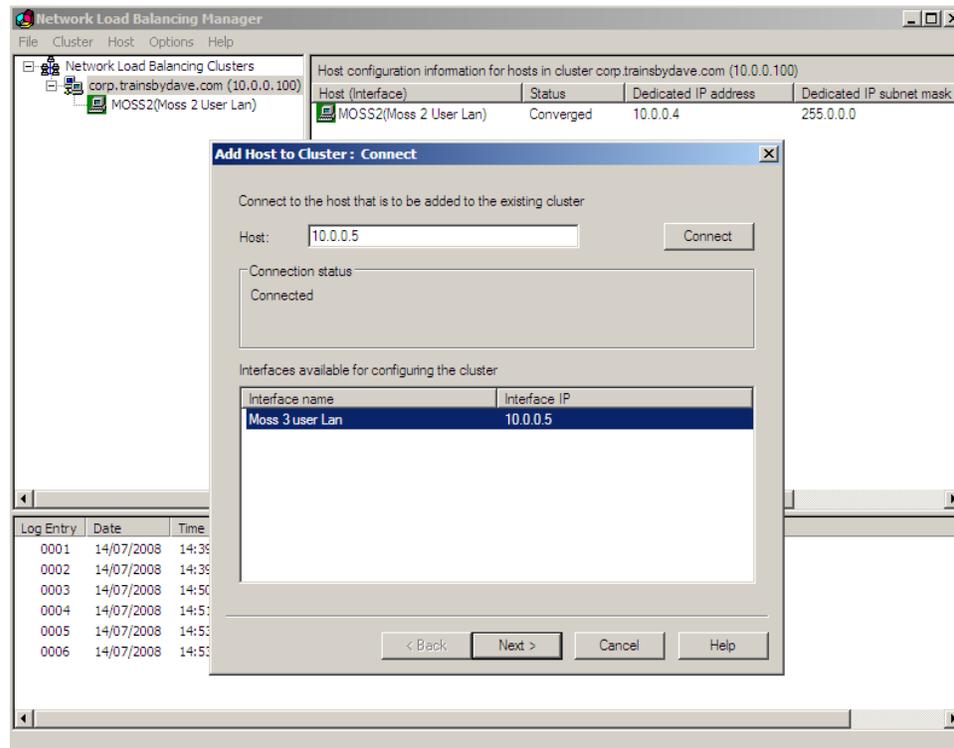


Now we need to add the second web server to the cluster.

9. Right click on the domain name and then left click on **'Add host to cluster'**

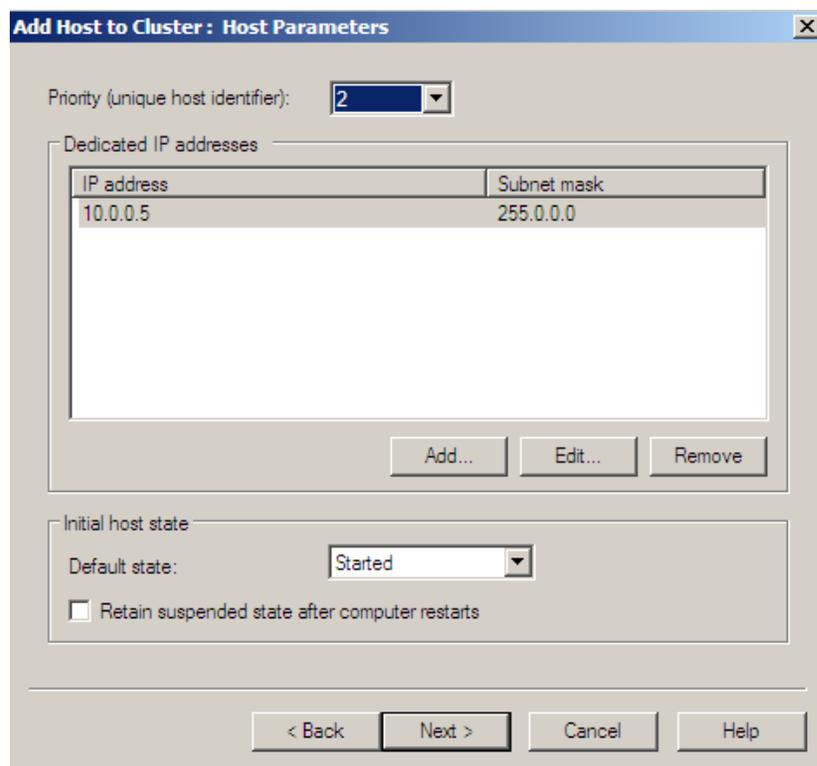


10. In the host field box **add the IP address** of the second web server. In my case this is 10.0.0.5 . Click **Connect** and **select the Network Interface card** of the **User Lan**. Click **Next**.



11. On the host parameters screen accept the defaults and click Next.

* ** Notice that the Priority (Unique host identifier) is now set to 2 whereas the first ip added was set to 1. The great thing about the Network Load Balancer Manager is that it auto configures these parameters. ***



12. You will now be returned to the Network Load Balancing Manager page whilst it configures the second web server. After a short time you will get the two green boxes signifying that the cluster is now ready with two servers. **** Note **** you may have to refresh the page to get the final status.

The screenshot shows the Network Load Balancing Manager interface. The left pane displays a tree view of clusters, with 'corp.trainsbydave.com (10.0.0.100)' selected. The right pane shows the host configuration information for this cluster, which includes two hosts: MOSS2 (Moss 2 User Lan) and MOSS3 (Moss 3 user Lan). Both hosts are in a 'Converged' state. Below the main configuration area is a log entry table.

Host (Interface)	Status	Dedicated IP address	Dedicated IP subnet mask
MOSS2(Moss 2 User Lan)	Converged	10.0.0.4	255.0.0.0
MOSS3(Moss 3 user Lan)	Converged	10.0.0.5	255.0.0.0

Log Entry	Date	Time	Cluster	Host	Description
0003	14/07/2008	14:50:55	10.0.0.100	MOSS2	Begin configuration change
0004	14/07/2008	14:51:07	10.0.0.100	MOSS2	Waiting for pending operation 2
0005	14/07/2008	14:53:58	10.0.0.100	MOSS2	Update 2 succeeded [double click for details...]
0006	14/07/2008	14:53:58	10.0.0.100	MOSS2	End configuration change
0007	14/07/2008	14:59:52	10.0.0.100	MOSS3	Begin configuration change
0008	14/07/2008	15:00:04	10.0.0.100	MOSS3	Waiting for pending operation 2
0009	14/07/2008	15:02:55	10.0.0.100	MOSS3	Update 2 succeeded [double click for details...]
0010	14/07/2008	15:02:55	10.0.0.100	MOSS3	End configuration change

This concludes the configuration of the Network Load Balanced cluster, you can however return to this manager tool to add, change or manage this cluster and other clusters.

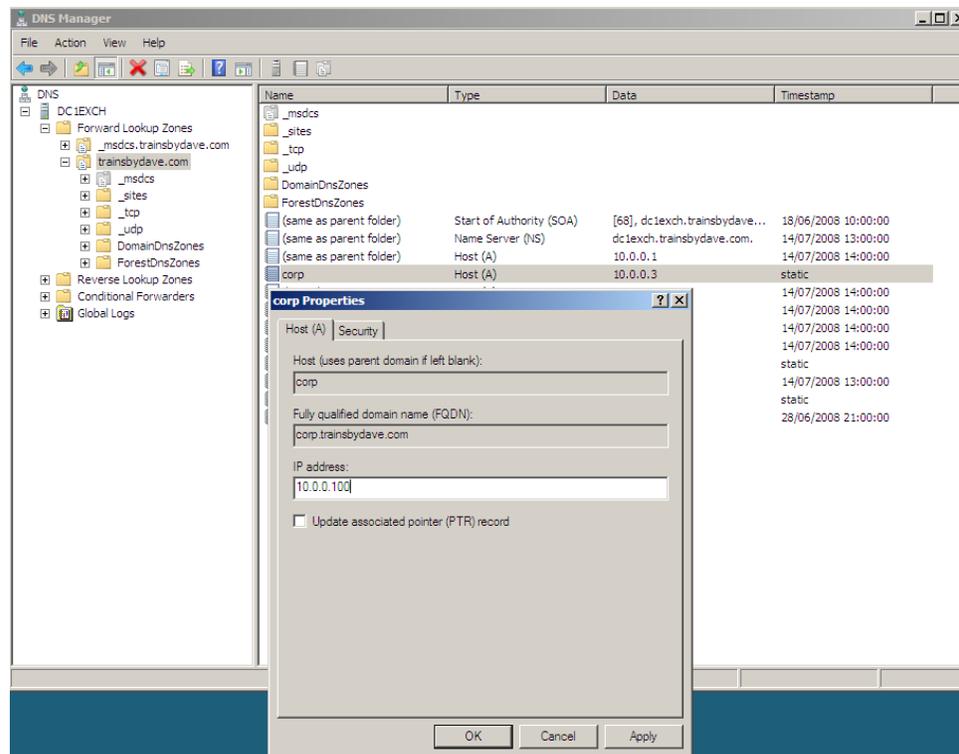
The next task is to test the Clustered Load Balance and also go into DNS and update the entries for our host names so that both corp.trainsbydave.com and mysites.trainsbydave.com point to the new clustered IP of 10.0.0.100.

Task 3 – Configuring DNS and Testing the Network Load Balanced Web Servers

Now that we have the two web servers configured as a load balance I now want to test that they work for both the clustered IP address of 10.0.0.100 and also that the SharePoint Web Applications can resolve corp.trainsbydave.com and mysite.trainsbydave.com to 10.0.0.100 instead of the existing MossApp server. The final test is to make sure if one of the web servers fail then all new connections will be directed to the web server still working.

First let's configure DNS.

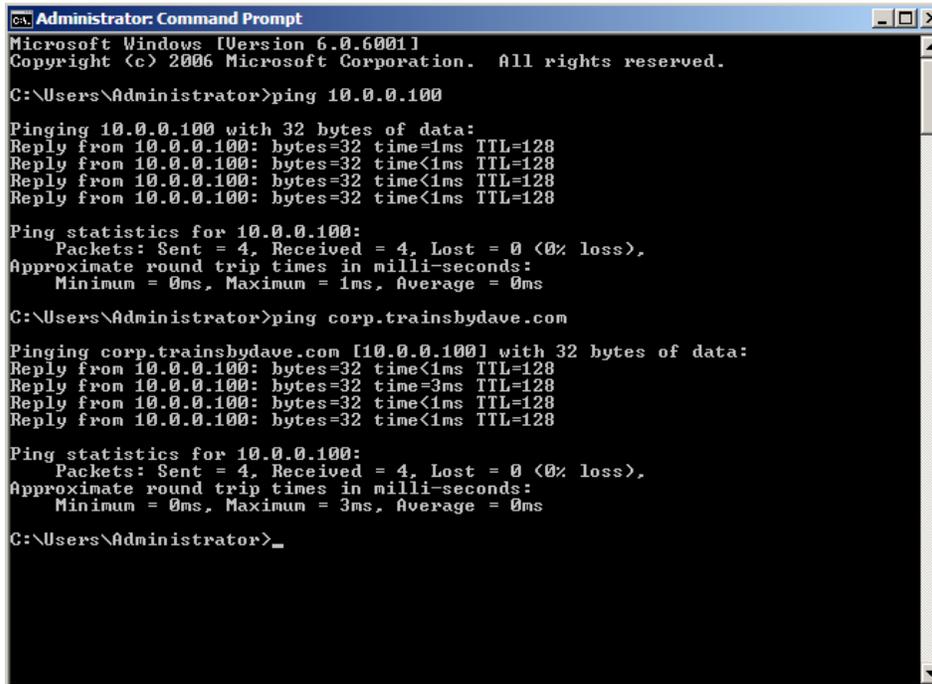
1. Go to you DNS server and open the DNS manager from Administrator Tools – DNS
2. Expand Server Name – Forward Lookup Zones – your domain name (in my case trainsbydave.com)
3. Double click the entry for your corp web app and change the IP address to 10.0.0.100. In my case I am using static A records however if your company uses Aliases you will need to edit the alias record for corp. My recommendation is to use A records for SharePoint Web Applications.
4. Click OK
5. Now do the same for the MySite DNS entry.
6. Close the DNS manager.



7. Open a Command Prompt
8. Type ping 10.0.0.100 and press enter; you should get 4 replies from the clustered IP address.

**** Note **** At this stage we don't know which of the web servers actually responded to this ping , all we know is that one of the servers is responding or we would not have got a successful reply. If we were getting a request failed then we know at this stage that the Network Load Balanced Cluster is not configured correctly

9. Now let's test the DNS setting. First let's clear the cache of any potential entries for the corp and mysite domain names. We do this using the command prompt
 - a. Open a Command Prompt and type IPCONFIG /FLUSHDNS
10. In the command prompt type ping corp.trainsbydave.com and press enter; you should now get 4 replies from the clustered IP address.
11. Do the same for the mysite.trainsbydave.com domain name.



```

Administrator: Command Prompt
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ping 10.0.0.100

Pinging 10.0.0.100 with 32 bytes of data:
Reply from 10.0.0.100: bytes=32 time=1ms TTL=128
Reply from 10.0.0.100: bytes=32 time<1ms TTL=128
Reply from 10.0.0.100: bytes=32 time<1ms TTL=128
Reply from 10.0.0.100: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\Users\Administrator>ping corp.trainsbydave.com

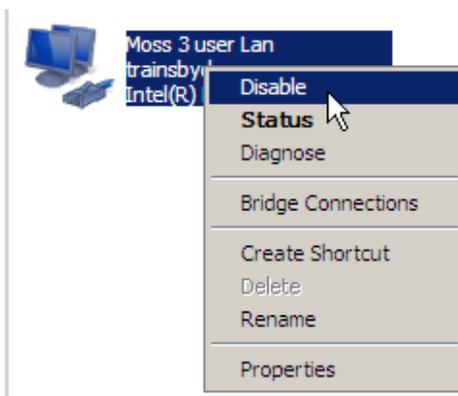
Pinging corp.trainsbydave.com [10.0.0.100] with 32 bytes of data:
Reply from 10.0.0.100: bytes=32 time<1ms TTL=128
Reply from 10.0.0.100: bytes=32 time=3ms TTL=128
Reply from 10.0.0.100: bytes=32 time<1ms TTL=128
Reply from 10.0.0.100: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 0ms

C:\Users\Administrator>_
  
```

We now know that the clustered web servers are responding to the IP address of 10.0.0.100 and also that the DNS server is correctly resolving our Web Applications to 10.0.0.100. The final test is to make sure that they continue to work even if one server is not working.

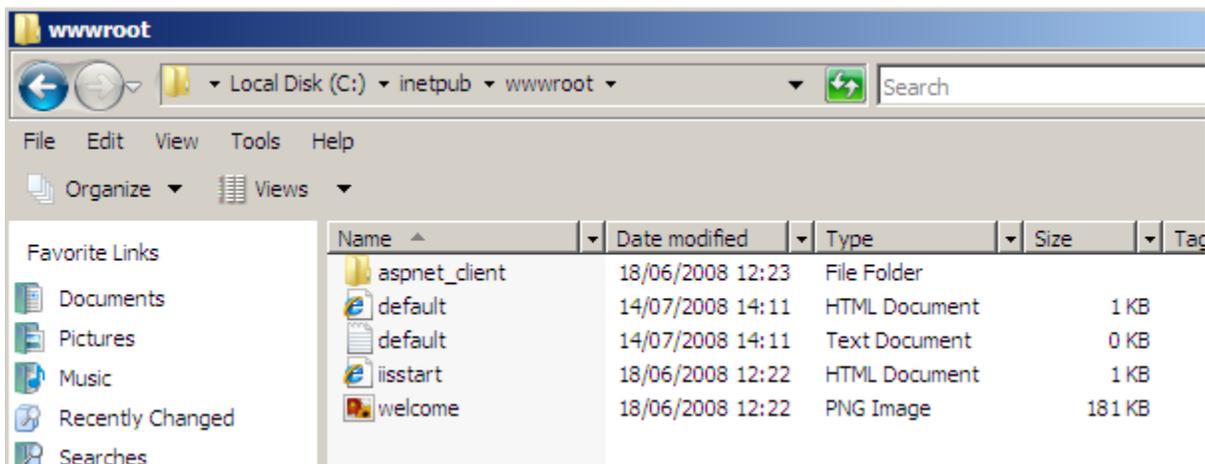
12. In the command prompt type ping 10.0.0.100 -t and press enter. The -t keeps pinging the IP address now until we decide to stop it.
13. Now stop one of the network cards on the web servers that is hosting the Load Balanced IP Address.
 - a. For example on MOSS2 go to the network settings and disable the network card for user Lan.
14. After disabling the User Lan network card on MOSS2 you should see that the command prompt is still getting a reply from 10.0.0.100. This is because MOSS3 is replying to the ping requests now
15. Now disable the network card for the user Lan on MOSS3 as well.



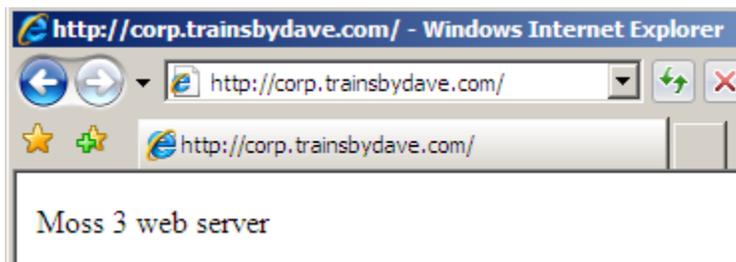
16. You should now see failed requests for 10.0.0.100.
17. Return to MOSS2 and enable the network card. You should now see the ping requests returned again. We have now proved that both MOSS2 and MOSS3 can answer requests when the other is not working.

So we have now proved that the web servers are working at the IP level but before I install SharePoint I want to test the load balance is working at the Application level. Remember a SharePoint Server runs on top of IIS so what I can do now is to run a test of accessing a Web page hosted on the default web sites. Let's see how we can test this.

1. On MOSS2 Open Notepad and type 'MOSS2 Home Page'
2. Save the file as "default.htm" (important make sure you include the quote marks)
3. Copy the new .htm file to your default web server folder. Which is located at C:\InetPub\wwwroot



4. Do the same thing on MOSS3 but this type 'MOSS3 Home page' in the text.
5. Open internet explorer from a machine that is not one of the web servers.
6. In the browser type <http://corp.trainsbydave.com> (replace corp.trainsbydave.com with you web app URL)
7. If all is right you should get a web page showing you which server you have connected to.

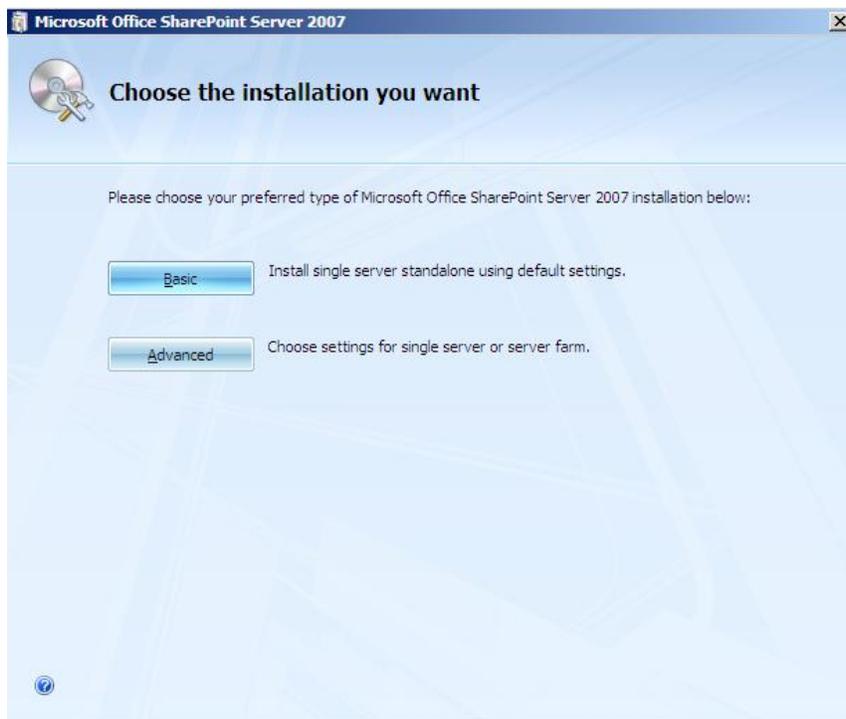


8. You can now repeat the process of disabling your network cards to show which server you are connecting to and also proving the Network Load Balancing is behaving as expected. Now I am happy with the Load Balance to the Application layer let's install SharePoint.

Task 3 – Installing SharePoint on the new servers and joining the farm

There are many documented papers out there on installing SharePoint including which service accounts to use etc. I suggest if you want more reading on this subject the best place to start is the deployment and best practices guides on TechNet followed by the MS Press SharePoint Administrators Companion and also the Best Practices Book. For the purpose of this whitepaper I will assume you have read these and decided your service accounts etc. (See the Resources section at the end of this document for links)

1. On MOSS2 insert the SharePoint CD
2. Insert your SharePoint Key and click Next
3. Click Advanced

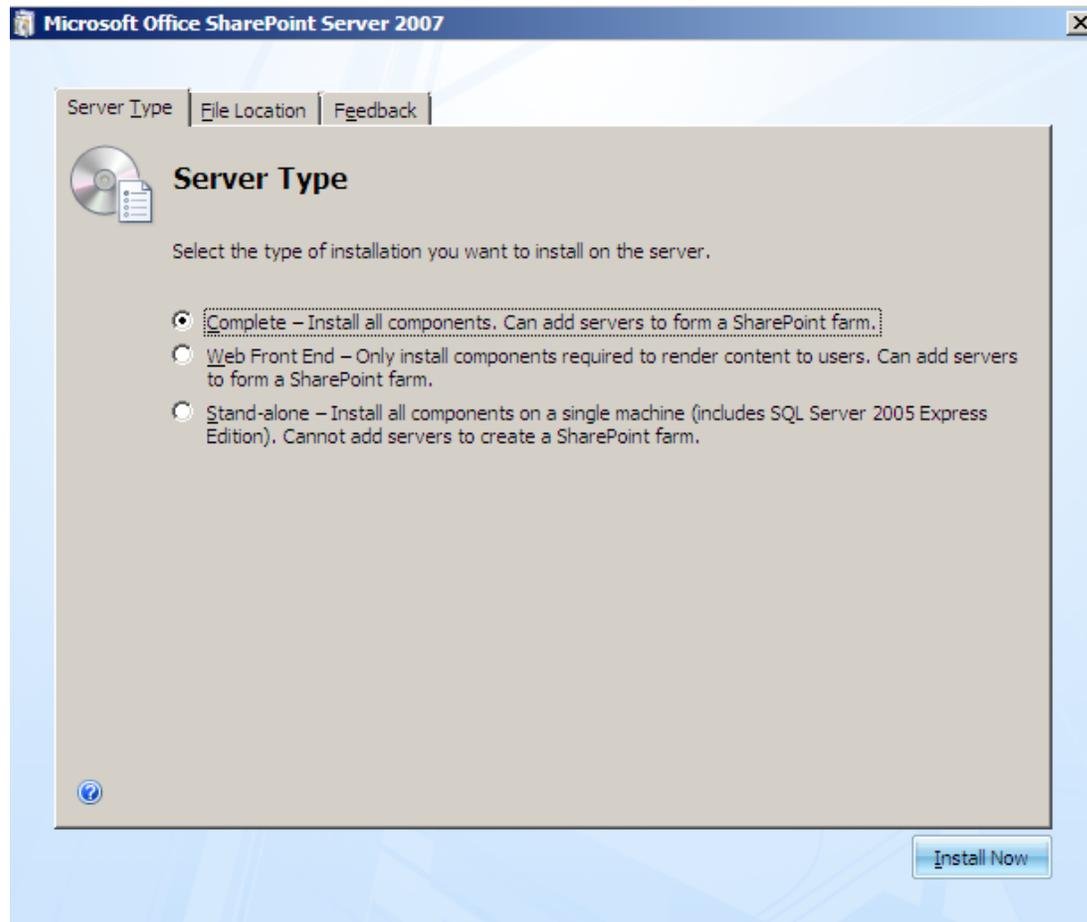


4. Choose complete for the installation type.
5. Click on the File Location Tab and choose the location you want the SharePoint program files to be installed

**** Note **** Don't forget that the SharePoint Data folder is where by default the Index flat file will be stored so make sure your location has enough space for this. Approx. 10% of your indexed content.

6. Click Install

The binaries will now install.



7. Now repeat the procedure on MOSS3, you should mirror the same setup on MOSS3 as you have done with MOSS2. So if you have put your data files on E: drive then you should do the same here.
8. Go back to MOSS2 and click close on the Final page which will launch the configuration wizard

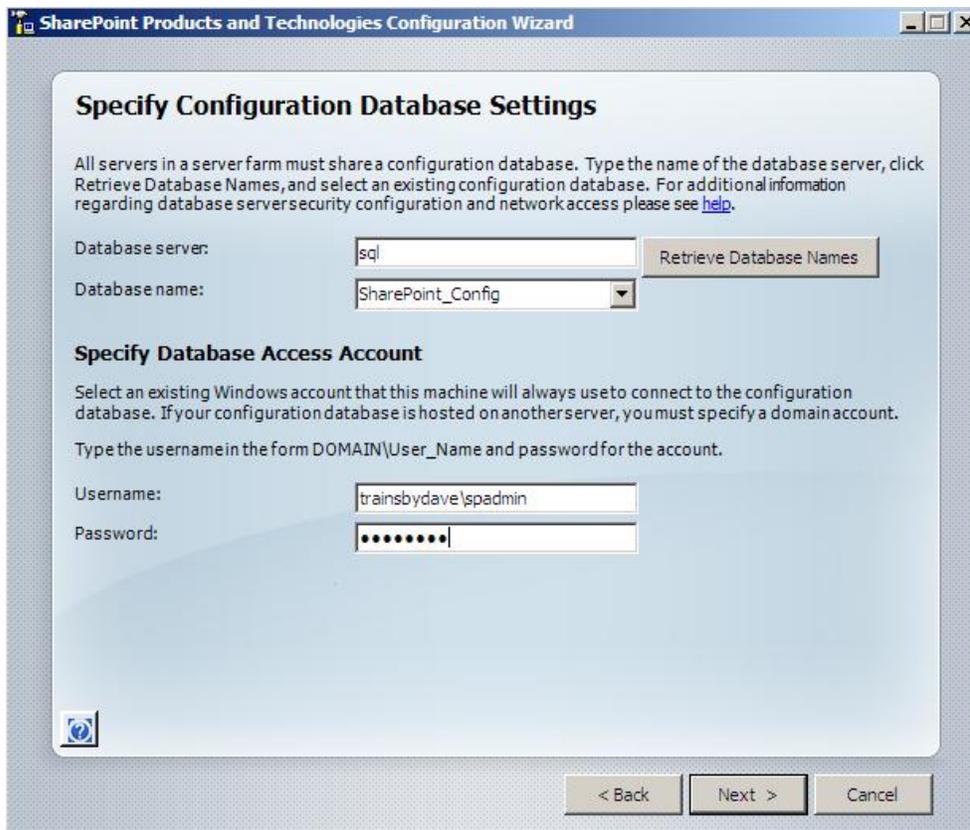


9. On the Welcome page click Next

10. Click **yes** to stop the necessary services
11. On the '**connect to a server farm**' page ensure that '**yes I want to connect to an existing server farm is selected.**



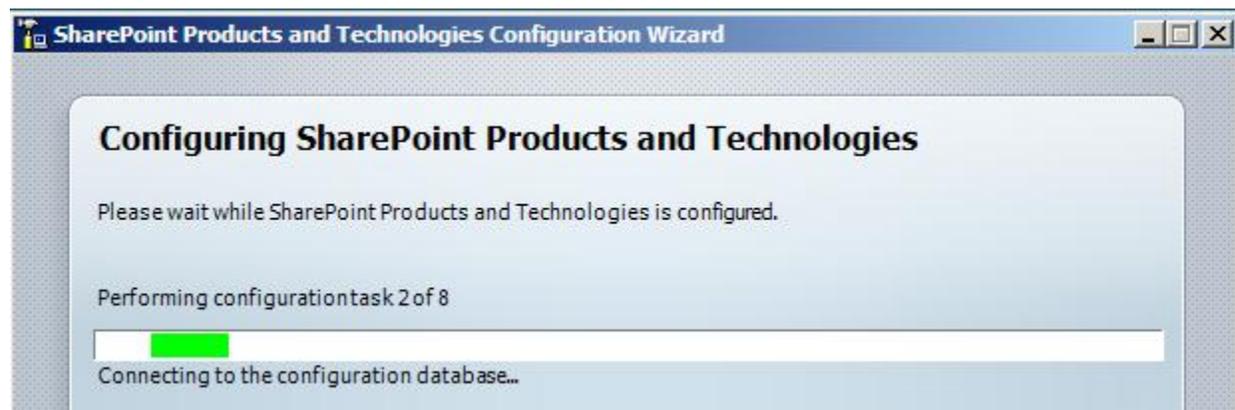
12. Click **Next**
13. On the '**Specify Configuration Database**' page enter your **SQL server** that has the **Configuration database** and click **Retrieve Database Names**. This is the configuration database that was created when you installed your first SharePoint Server and created the farm.
14. Enter your **credentials** for accessing the SQL server. By default it will present you with the account used to first create the configuration database on the first server and you only need to enter the correct password.



15. Click Next
16. On the completing page click next again.



17. The Configuration Wizard will now go through the stages for configuring the server and joining the existing farm. **You should see 8 tasks in total.**



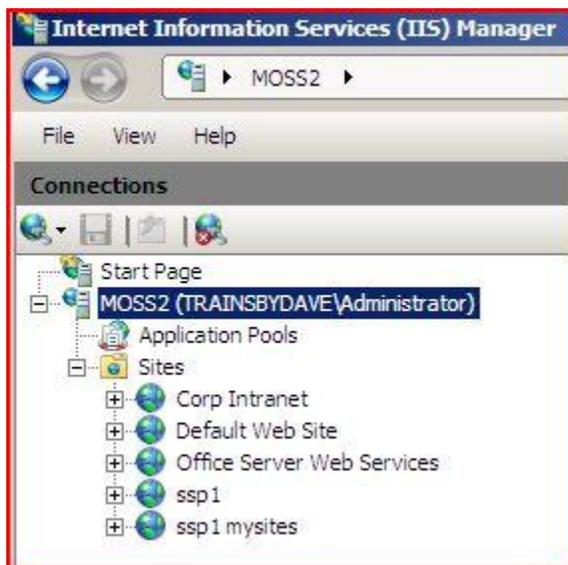
18. When complete you should get a **configuration success** screen
19. Click **Finish**



Let's now see what has changed in IIS on the two web servers. Because MOSSAPP was hosting all the web applications we need to make sure that the new Front end servers have all the Web Applications and are configured correctly.

1. On Moss 2 open IIS manager
2. Expand Application Pools and Web Sites
3. Compare the Application Pools and Web Sites with those on MossApp. Ensure that your web applications hosting the corp and mysites are there.
4. You should also check to make sure all the host header values are correct on each web app and if you were using static IP mappings to a web application then you need to make sure that you are now using the clustered IP address for your static mapping.
5. Install / deploy and 3rd party web parts / custom code / Web.Config changes that we configured on your MossApp server to both web servers.

Notice that the central administration App Pool and Web App is not shown. This is because we chose not to include the central administration as part of the SharePoint installation and configuration.



Notice that the SSP web app is also available now on the web front end servers. In order to access the SSP Admin site via the web front ends you will need to add the SSP URL in DNS to point to the clustered IP.

Once all your web apps are accessible via the front end servers you can choose to stop the web applications on MossApp if you wish as they will no longer be accessed via MossApp.

**** Important **** make sure any custom code / 3rd party web parts that may have been deployed manually to your SharePoint servers are installed / configured on all your front end web servers. Because custom code is stored in the file system on SharePoint servers you will need to ensure that the same code is deployed to your Web Front ends. If you have used solutions deployment in SharePoint then you can deploy code using the solutions deployment via STSADM or through the UI in central administration. Also you need to ensure that the Web.Config file for each Web Application has the correct safe control entries for running the custom code and any other additional entries that had been added to the MossApp server.

Task 4 – Configuring Services on the new server farm

Now that we have the new SharePoint servers in the farm we need to now configure the services between the servers and also perform any additional configuration tasks on the web servers. In my example I want to scale out the search and Query service. Currently MOSSAPP is both the Index and Query but with two new web servers I would like the web servers to host the Query service and leave the Index service on MOSSAPP.

1. On MOSSAPP open SharePoint Central Administrator from the administrator tools.
2. Click on the operations tab
3. Click on services on server
4. Click on the Office SharePoint Server Search. This will now open a page for configuring the search service.
5. Uncheck the box for 'use this server for serving search queries

Central Administration > Operations > Services on Server > Office SharePoint Server Search Service Settings

Configure Office SharePoint Server Search Service Settings on server MOSSAPP

Use this page to configure Office SharePoint Server Search Service Settings.

Warning: this page is not encrypted for secure communication. User names, passwords, and any other information will be sent in clear text. For more information, contact your administrator.

<p>Query and Indexing</p> <p>Use this option to specify if you want to use this server for search queries or indexing or both.</p>	<p><input checked="" type="checkbox"/> Use this server for indexing content</p> <p><input type="checkbox"/> Use this server for serving search queries</p>
<p>Contact E-mail Address</p> <p>Specify an e-mail address that external site administrators can contact if problems arise when their site is being crawled. This setting applies to all servers in the farm.</p>	<p>E-mail Address:</p> <p><input type="text" value="steve@trainsbydave.com"/></p> <p>Example: someone@example.com</p>
<p>Farm Search Service Account</p> <p>The search service will run using this account. Setting or changing this account affects all index and query servers in the server farm.</p> <p>The farm search service account must not be a built-in account for security reasons and for it to access the database and content index. Examples of built-in accounts are Local Service and Network Service.</p>	<p>User name</p> <p><input type="text" value="trainsbydave\spsearch"/></p> <p>Password</p> <p><input type="password" value="••••••••"/></p>

6. Fill in the password fields for the search service account and click OK
7. We now need to go to MOSS2 and MOSS3 to configure the search service but only as a Query Server.
8. Click on the drop down arrow next to server and change the server to MOSS2.

Central Administration > Operations > Services on Server

Services on Server: MOSSAPP

Complete all steps below

Server: **MOSSAPP**

Select server role to display services you will need to start in the table below.

- Single Server or Web Server for small server farms All services run on this server
- Web Server for medium server farms Web application and Search Query services
- Search Indexing Search Indexing service runs on this server
- Excel Calculation Excel Calculation service runs on this server
- Custom Services you choose run on this server

- Notice that on MOSS2 only the Web Application Service is started and the remaining services are configured on MOSSAPP

Central Administration > Operations > Services on Server

Services on Server: MOSS2

Complete all steps below

Server: **MOSS2**

Select server role to display services you will need to start in the table below.

- Single Server or Web Server for small server farms All services run on this server
- Web Server for medium server farms Web application and Search Query services run on this server
- Search Indexing Search Indexing service runs on this server
- Excel Calculation Excel Calculation service runs on this server
- Custom Services you choose run on this server

Start services in the table below:

			View: Configurable
Service	Comment	Status	Action
Document Conversions Launcher Service		Stopped	Start
Document Conversions Load Balancer Service		Stopped	Start
Excel Calculation Services	Service running on server: MOSSAPP	Stopped	Start
Office SharePoint Server Search	Service running on server: MOSSAPP	Stopped	Start
Windows SharePoint Services Search	Service running on server: MOSSAPP	Stopped	Start
Windows SharePoint Services Web Application		Started	Stop

- Click on Office SharePoint Server Search
- Tick the box for 'Use this server for serving search queries.'
- Complete the email address
- Add the farm search service account and password that was configured on MOSSAPP
- Choose a folder location on MOSS2 for the Index file and the credentials to be used if the Folder Share needs to be created. This folder needs to exist before continuing with this page. Alternatively you can create the folder and share it before starting with the service configuration. This folder needs to be available on both web servers.

**** Important **** the reason the folder share is needed is to allow the Index server to copy the current index file to the Query servers. So if your current index file is 200GB by completing this page you are initiating a large file copy process over the LAN. For this reason you should configure your Query servers at a quite time of the day such as during the evening to allow the file copy to complete.

Central Administration > Operations > Services on Server > Office SharePoint Server Search Service Settings

Configure Office SharePoint Server Search Service Settings on server MOSS2

Use this page to configure Office SharePoint Server Search Service Settings.

Warning: this page is not encrypted for secure communication. User names, passwords, and any other information will be sent in clear text. For more information, contact your administrator.

<p>Query and Indexing</p> <p>Use this option to specify if you want to use this server for search queries or indexing or both.</p>	<p><input type="checkbox"/> Use this server for indexing content</p> <p><input checked="" type="checkbox"/> Use this server for serving search queries</p>
<p>Contact E-mail Address</p> <p>Specify an e-mail address that external site administrators can contact if problems arise when their site is being crawled. This setting applies to all servers in the farm.</p>	<p>E-mail Address:</p> <input style="width: 100%;" type="text" value="steve@trainsbydave.com"/> <p>Example: someone@example.com</p>
<p>Farm Search Service Account</p> <p>The search service will run using this account. Setting or changing this account affects all index and query servers in the server farm.</p> <p>The farm search service account must not be a built-in account for security reasons and for it to access the database and content index. Examples of built-in accounts are Local Service and Network Service.</p>	<p>User name</p> <input style="width: 100%;" type="text" value="trainsbydave\spsearch"/> <p>Password</p> <input style="width: 100%;" type="password" value="••••••••"/>
<p>Query Server Index File Location</p> <p>This is the path where search indexes propagated to this server are stored.</p> <p>This location must be shared to allow for this server to receive propagation. The search service account will be given write access to the propagation share and the share will be called "searchindexpropagation".</p> <p>If the farm search service account is changed after the share is initially created, select "Configure share automatically" to update the permissions of the share.</p> <p>The account of a local administrator is used to create the share on the query server. These credentials are not stored.</p>	<p>Query server index file location:</p> <input style="width: 100%;" type="text" value="C:\Program Files\Microsoft Office Serve"/> <p>Example: C:\searchindexes</p> <p><input checked="" type="radio"/> Configure share automatically</p> <p>Credentials of a local administrator of MOSS2:</p> <p>User name</p> <input style="width: 100%;" type="text" value="trainsbydave\administrator"/> <p>Password</p> <input style="width: 100%;" type="password" value="••••••••"/> <p><input type="radio"/> I will configure the share with STSAdm</p> <p><input type="radio"/> Do nothing. The share is already configured</p>

15. Click OK to complete the Search Service configuration
16. Repeat these steps on MOSS3 to configure MOSS3 as a Query server too.

17. Now we can check the status of our scaled out Search Service.
18. Click on the Application Management Tab
19. In the Search section click 'Manage search Service'

Central Administration > Application Management

Application Management

This page contains links to pages that help you configure settings for applications and components that are installed on the server or server farm.

SharePoint Web Application Management

- Create or extend Web application
- Remove SharePoint from IIS Web site
- Delete Web application
- Define managed paths
- Web application outgoing e-mail settings
- Web application general settings
- Content databases
- Manage Web application features
- Web application list

Office SharePoint Server Shared Services

- Create or configure this farm's shared services
- Grant or configure shared services between farms
- Check services enabled in this farm
- Configure session state

SharePoint Site Management

- Create site collection
- Delete site collection
- Site use confirmation and deletion
- Quota templates

Application Security

- Security for Web Part pages
- Self-service site management
- User permissions for Web application
- Policy for Web application
- Authentication providers

Search

- Manage search service

Notice that you can see that status of all your farm servers from a search prospective including disk space and search service role.

Ok so now we have scaled out our SharePoint farm and also configured the query service on our two web servers. The final test is to access the site and test search.

Open internet explorer and browse to your corp web site which in my case was <http://corp.trainsbydave.com>. Once the home page is shown you are now accessing your corp web app via one of the new web servers.

Now try and disable each of the Network cards on each web server just to prove that your load balancing is working correctly.

Now that all is working correctly the last thing you need to do is ensure that you can connect to the SSP admin site via the Web Front ends. To do this add a new DNS entry pointing the SSP Admin site URL to the load balanced IP address.

References

- SharePoint Products and Technologies Service Pack 1 Resource Center
<http://technet.microsoft.com/en-us/office/sharepointserver/bb735839.aspx>.
- Installing SharePoint
- Least Privilege Service Account use for SharePoint Installation
- Deploying solutions in a SharePoint Farm
- IIS 7 Network Load Balancing
-

Troubleshooting

At this time we had no major issues for troubleshooting but you should obviously test this scenario on test servers several times before doing it on live servers.

I hope you found this article useful, please do feel free to send me comments and keep checking our web site for more downloads on configuring SharePoint Server 2007 and Windows Server 2008.

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Systems Administration
Systems Engineering