Lab - Network Load Balancing for Windows Servers

Overview

In this short video and lab, you will learn how to configure network load balancing between two Microsoft Windows servers. This lab applies to Server 2012 r2, Server 2016, and Server 2019.

Network Load Balancing is not to be confused with failover clustering or NIC teaming

Network Load Balancing

The Network Load Balancing (NLB) feature distributes traffic across two more servers by using the TCP/IP networking protocol. By combining two or more servers that are running applications into a single virtual cluster, NLB provides reliability and performance for web servers and other mission-critical applications.

Network load balancing effects network performance by allowing two or more servers in the cluster to balance the workload between them. An example would be having two identical web servers on the network. By using network load balancing between the two, they both have an equal share in the workload.

Failover Clustering

A failover cluster is a group of servers that work together to maintain high availability of applications and services. If one of the servers, or nodes, fails, another node in the cluster can take over its workload without any downtime (this process is known as failover).

NIC teaming

NIC teaming provides redundancy locally on a server by having two or more network cards available for redundancy should one of the network cards fails.

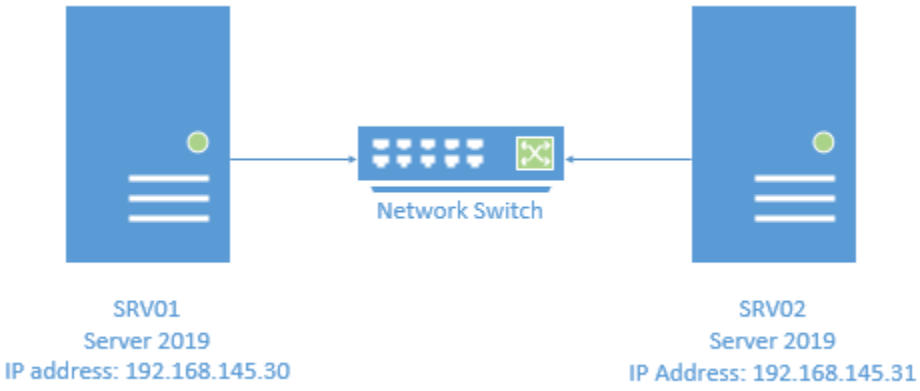
Lab Requirements

- Two member servers running Server 2012 r2, Server 2016 or Server 2019 joined to the same domain.
- Ensure both servers have two host-only adapters for their VirtualBox networking.
- Ensure both machines are member servers in the same domain.
- Ensure both servers have Adapter 1configured with a static IP address from the same network range as their domain. Adapter 2 on both machines can use DHCP.

For this lab demonstration, I will be using two members server running Server 2019 as their host operating systems. Both machines are members servers joined to the same domain and configured with two network adapters. Adapter 1 is configured with a static IP address, and adapter 2 is using the VirtualBox DHCP server. The steps shown apply to both physical and virtual machines.

For best results, it is recommended that students use Server 2019 and that their two servers not being running Active Directory but joined to a Server 2019 domain as member servers only.

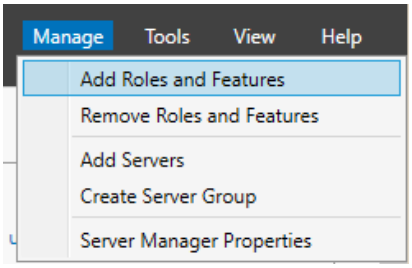
Lab Diagram



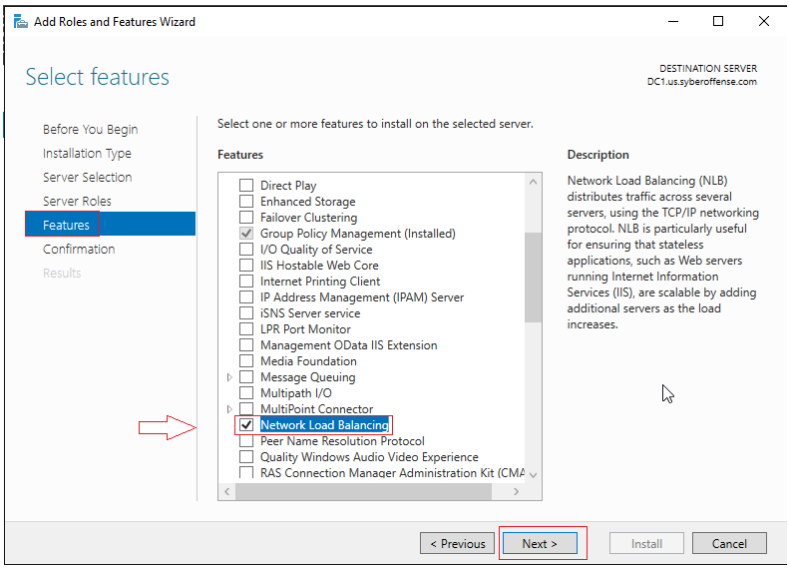
Begin the lab!

Ensure both machines are up and running, and you have logged on to the desktop.

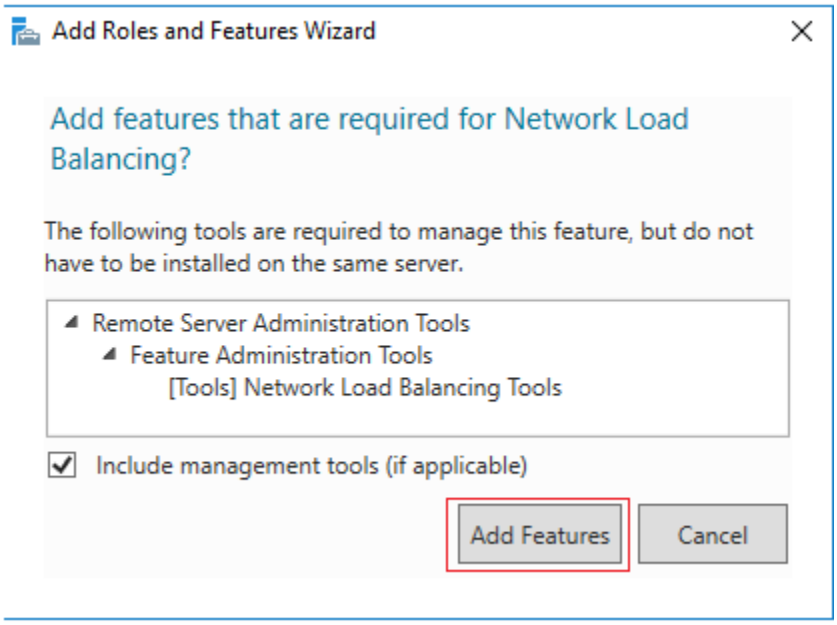
1. On both servers, you will install the feature for Network Load Balancing.
2. From Server Manager, click on tools, and from the context menu, select Add Roles and Features.



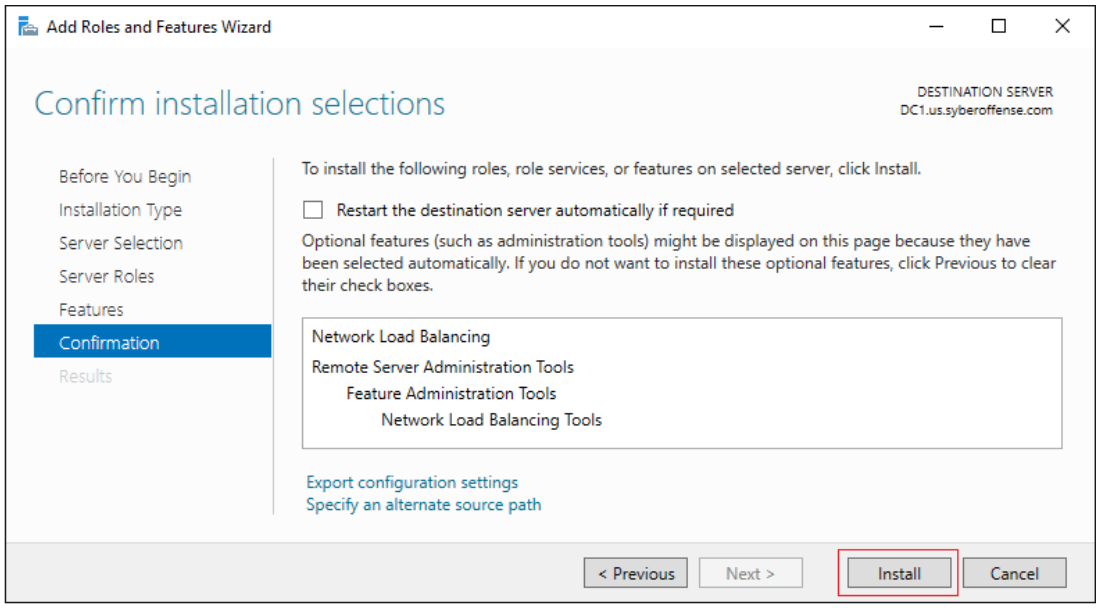
In the Add and Roles and Features Wizard, keep clicking next until you get to Features. In the Features, scroll down until you come to Network Load Balancing. Check the box and click next.



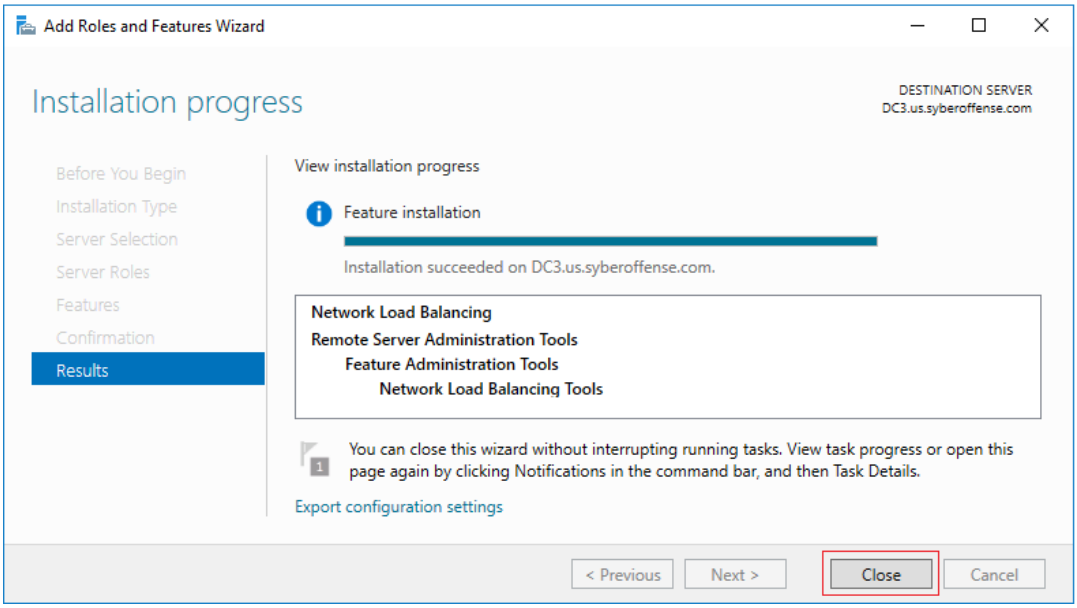
Click the Add Features button.



On the Confirmation page, confirm your selection and then click the install button.

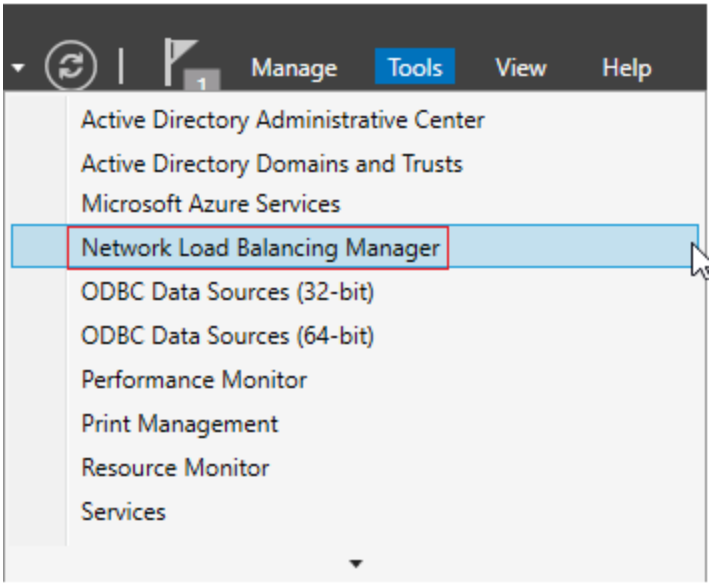


Closeout the Add Roles and Features wizard when the install has been completed.

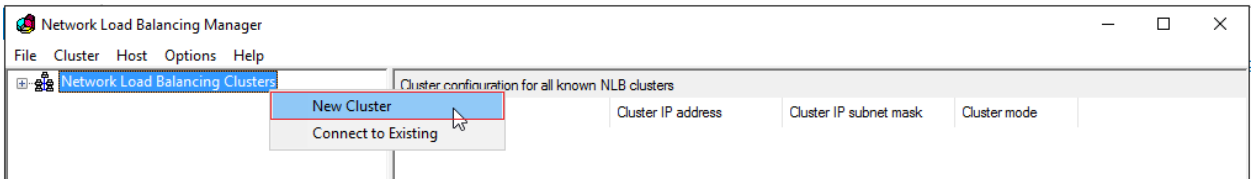


Repeat the same steps on your second server.

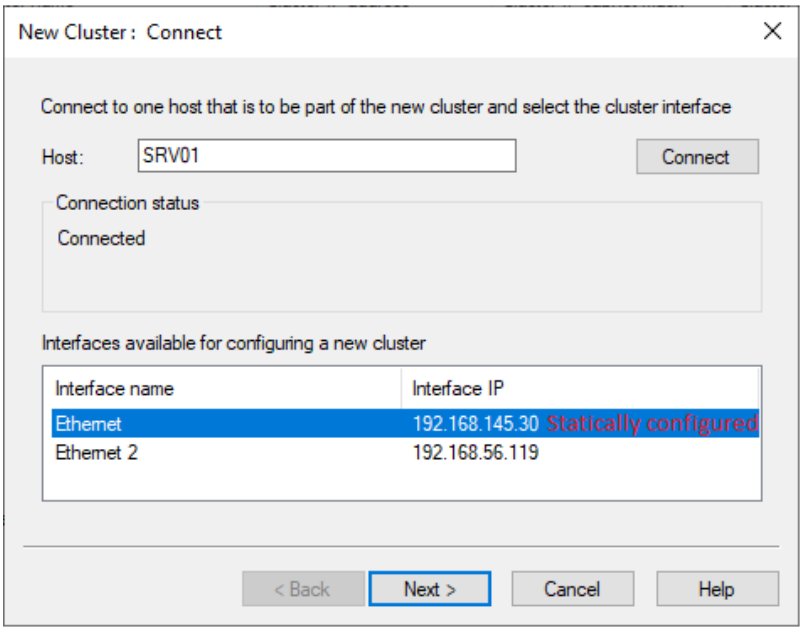
With both servers configured with the Network Load Balancing feature, From your SRV01 open Server Manager and from the Tool menu, click and launch the Network Load Balancing snap-in tool.



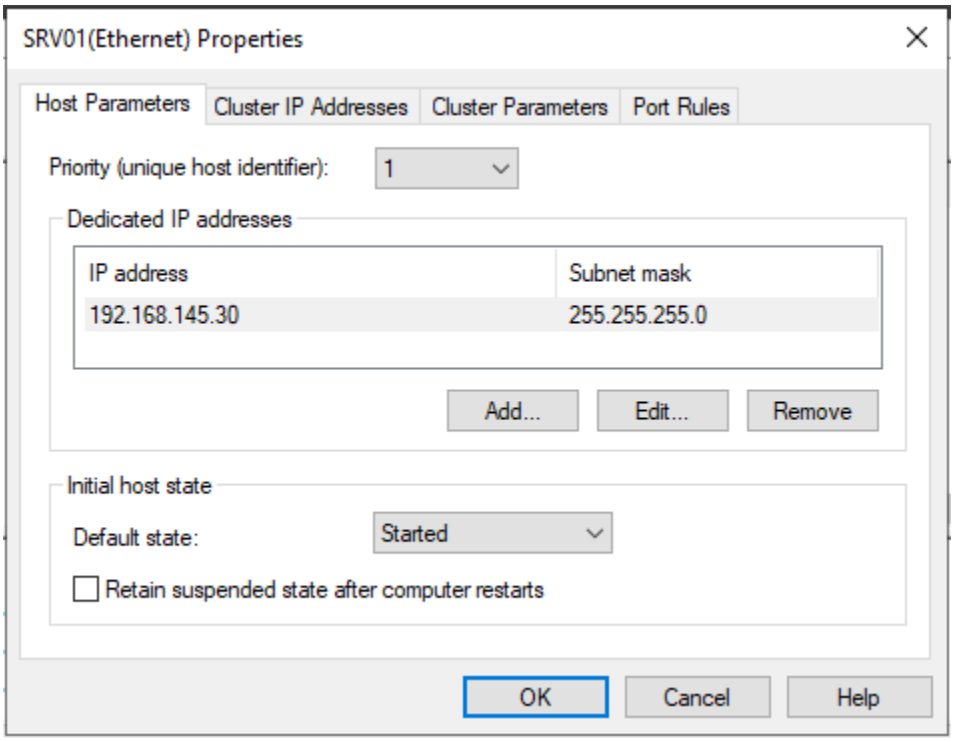
Once the snap-in has loaded, in the left windowpane, right-click on Network Load Balancing clusters and from the context menu. Select New Cluster.



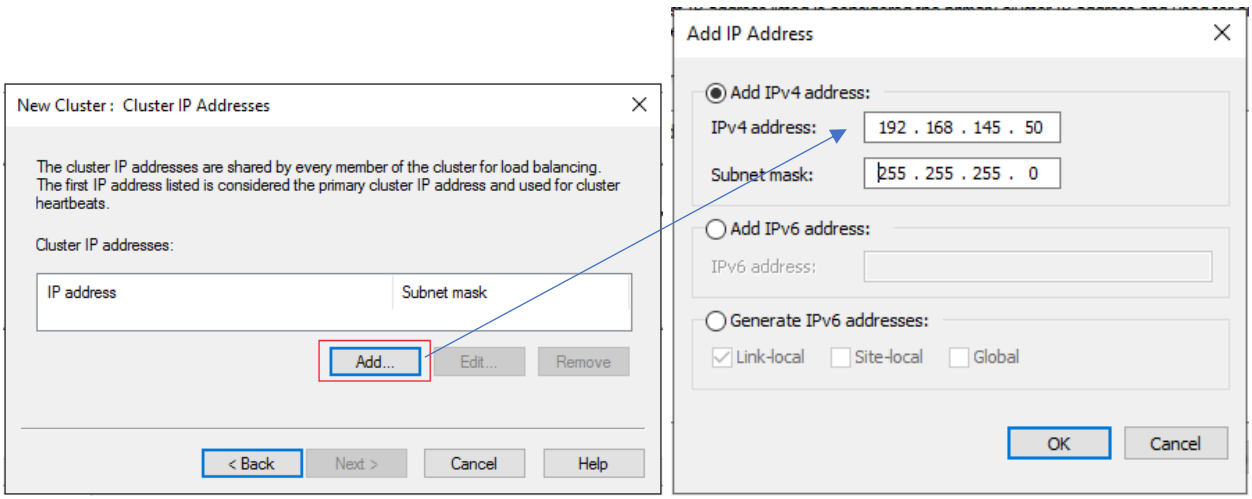
On the next screen, type in the name of your DC1. Press connect and choose your adapter to be used in the cluster. Make sure whatever adopter you use, has an IP address that is statically configured. Click Next.

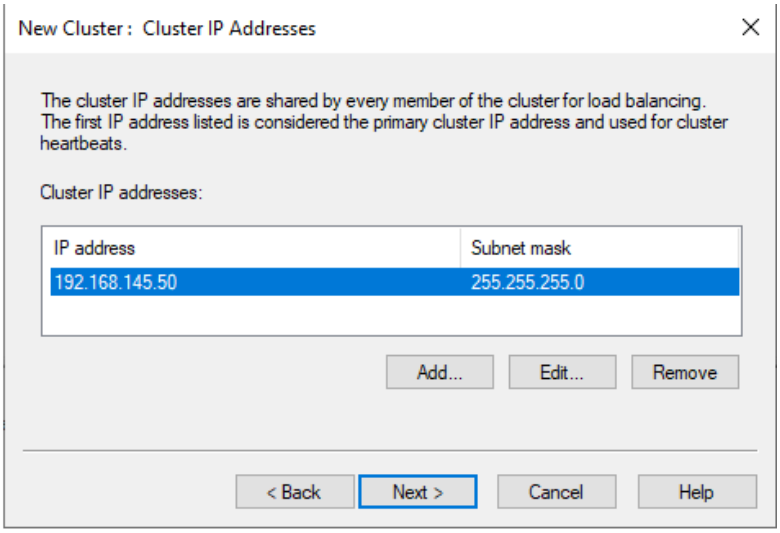


On the New Cluster: Host Parameters dialog box, set the priority value is 1. This NLB node will reply to the clients' queries first. Before clicking Next, ensure that the default status has been set to **Started**. Click next.

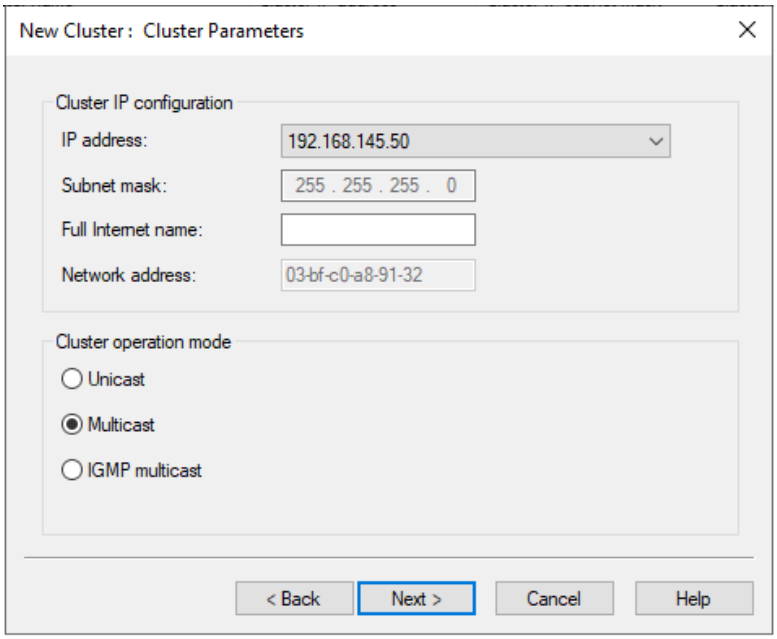


On the New Cluster: Cluster IP Addresses dialog box, click Add to add a new Cluster IP address. This is a unique IP address that will be used by the cluster. Choose an IP address that you know is not in use on your network. Click next.





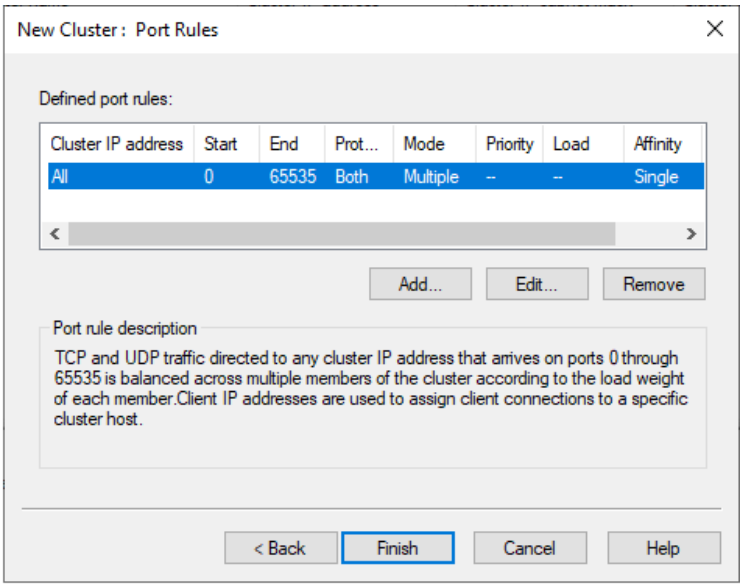
On the New Cluster: Cluster Parameters dialog box, select Multicast as the cluster operation mode. This is the preferred mode. Click next.



Unicast: the default mode, it will disable the MAC address of the network card and replace it with an identical virtual address on all nodes.

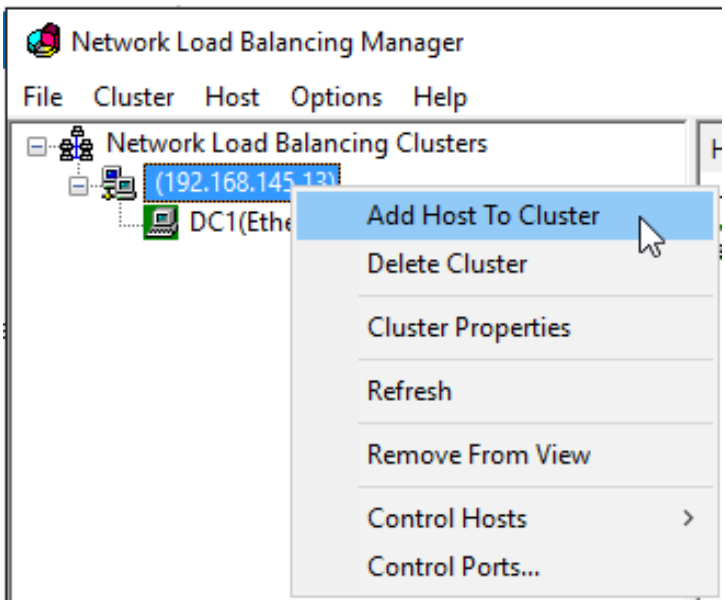
Multicast: recommended mode, it can be used with one or more network cards. With this mode, the network adapter will have two MAC addresses, the one on the network adapter and the virtual MAC address of the cluster.

This next screen behaves much the same way a mini firewall would. These are rules you can set up to open and close specific ports. Leave the defaults and click Finish.



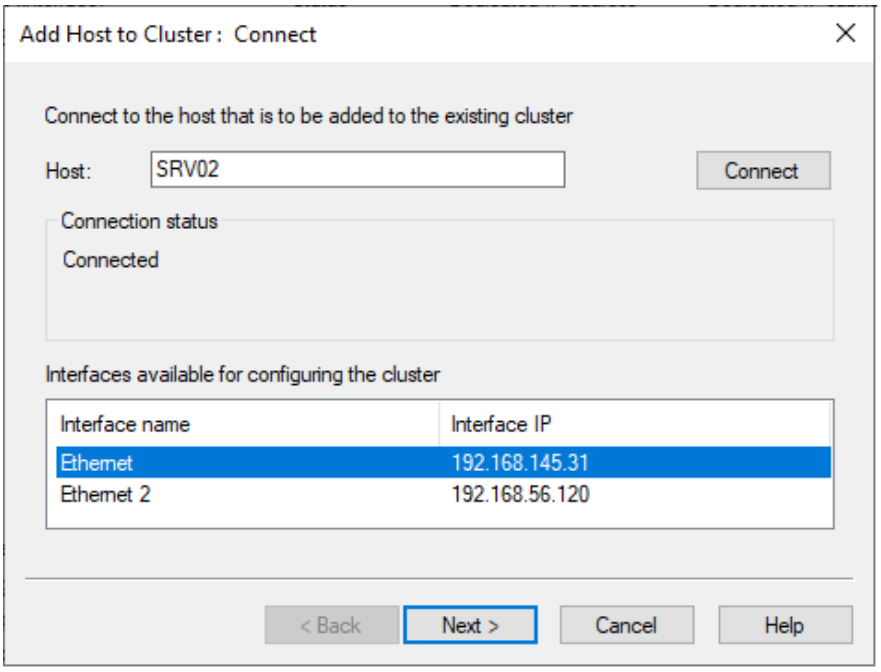
Add the Second Host to the Cluster

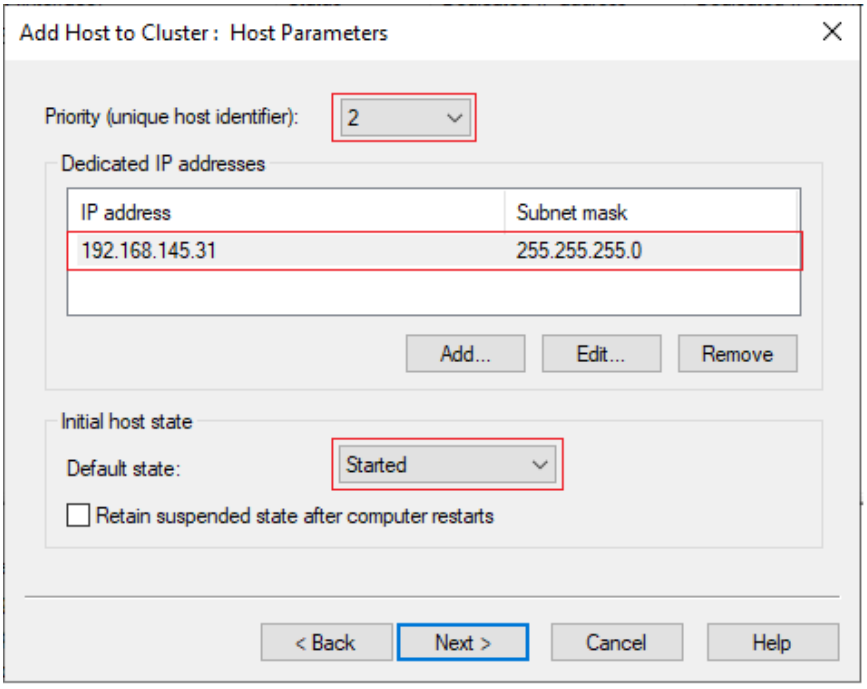
Back at the Network Load Balancing snap-in, inside the left windows pane, find your newly created cluster. Right add on the cluster, and from the context menu, select Add Host To Cluster.



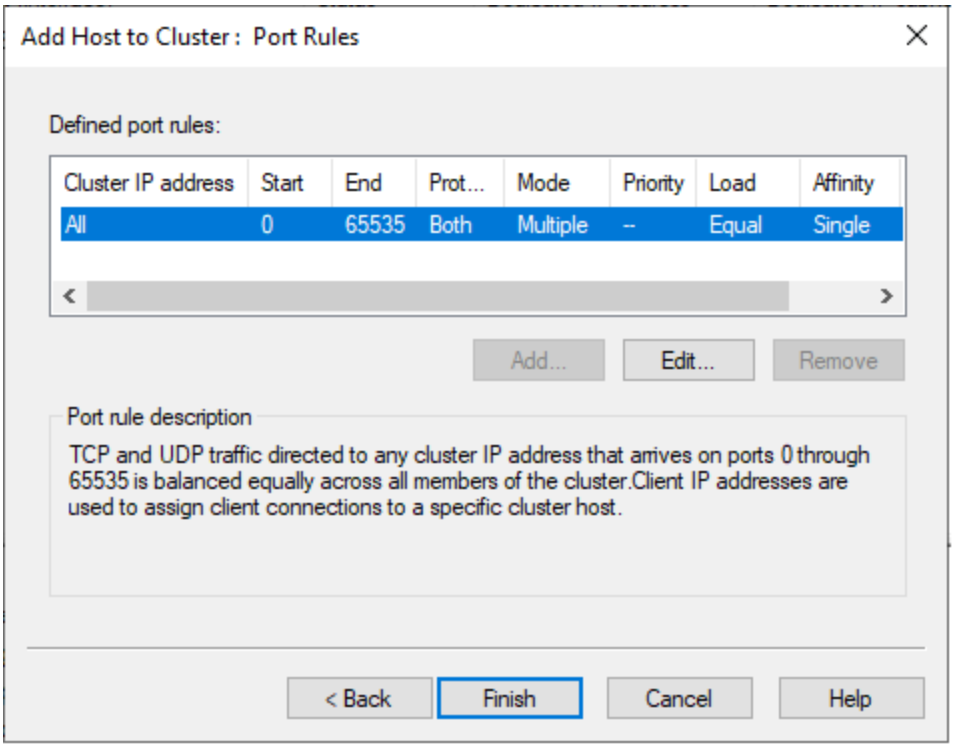
*Important: If you get the **RPC Server Unavailable** error while connecting SRV02 as the NLB node, move on to your second server and open the Network Load Balancing Manager console. Repeat the same steps as you used to add the SRV01 NLB node.*

On the Add Host to Cluster: Host Parameters dialog box, set the priority value as 2 and click next.



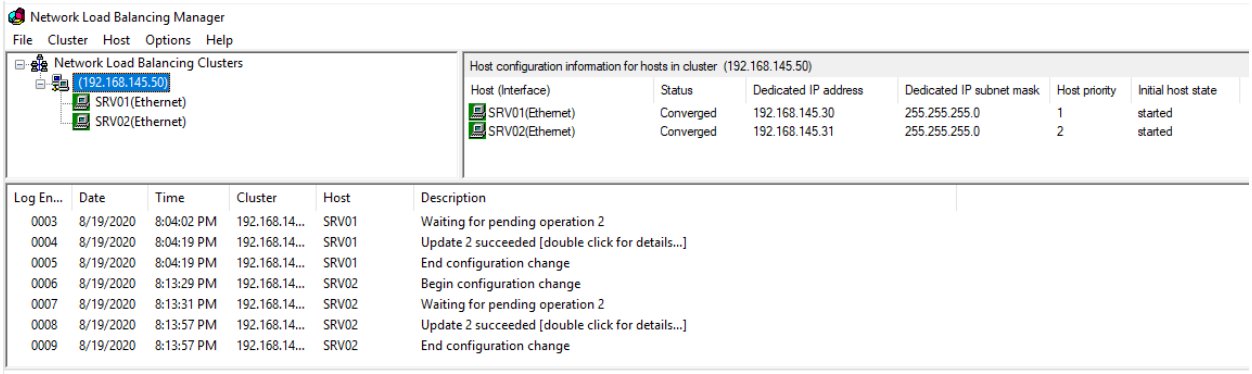


Accept the default selections on the rest of the pages and complete the wizard.



All configuration as shown on the second node for the cluster, DC3.

Back on DC1, refresh the NLB snap-in and verify that the second NLB node has been added successfully



Summary –

In this short lab, you learned how to easily setup a simple 2 node network load balancing cluster. For web servers, databases and any application that generate heavy traffic on the network, network load balancing is a great way to share the load work between two more servers.

End of the lab!