

Description: Guide for setting up WebHMI Server Redundancy via Network Load Balancing

OS Requirement: Windows Server 2003 or 2008

General Requirement: GENESIS32 V9 installed, Network Load Balancing installed on Windows

Introduction

ICONICS provides Redundancy for Genesis32 server modules via DataWorX32 Professional edition. You may configure a set of servers as a node pair to act as a Primary and a Secondary Server. The Genesis32 Clients like GraphWorX32, AlarmWorX32 and TrendWorX32 will automatically switch from Primary to Secondary server in case of Primary failure. Users also wanted to have similar functionality for WebHMI Server application. WebHMI Server uses IIS (Internet Information Services) from Microsoft Windows to provide Web Services. Users can install WebHMI Server on both; Primary and Secondary server, but need to manually switch the Web address from Primary to Secondary, in case of failure.

This app note provides a method to automatically switch from Primary WebHMI Server to Secondary WebHMI Server via Network Load Balancing.

Microsoft Windows Server 2003/2008 comes with an additional networking feature called Network Load Balancing (NLB). Using this NLB, you can automatically switch the Web server from Primary to Secondary. NLB is not available on Windows 7, XP or Vista.

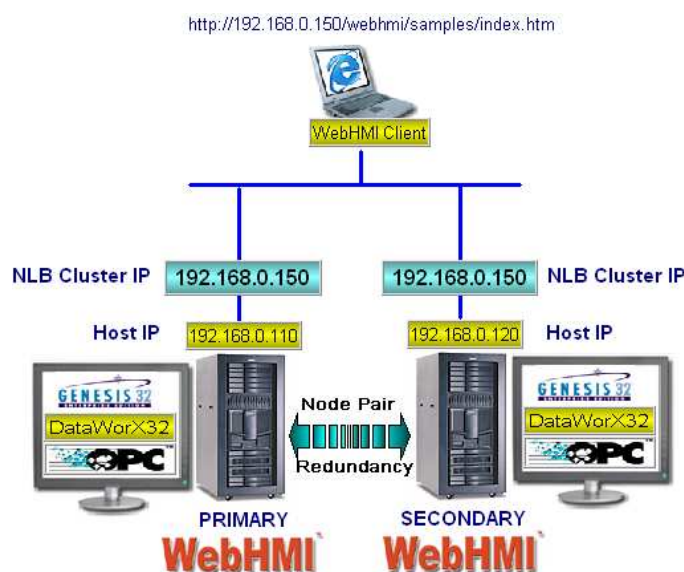


Figure 1 - Network Load Balancing

NLB on Windows 2003/2008 server creates a unique shared IP for multiple computers. The group of computers in NLB is

called a cluster and each computer is called a host. In the above diagram there are two hosts with IP 192.168.0.110 and 192.168.0.120. The NLB cluster has an IP 192.168.0.150. WebHMI client computers will access the server using the cluster IP address (192.168.0.150). Both hosts should have identical copies of the WebHMI installation; however the published displays may have different html references.

Configuring Network Load Management

In this example we will use Windows 2003 server to demonstrate the NLB configuration. Server 2008 requires similar configuration but the configuration steps for the NLB wizard are slightly different.

1. Open the NLB manager by going to Start → Control Panel → Administrative Tools → Network Load Balancing Manager.
2. From the NLB Manager right click in the tree view on Network Load Balancing Clusters and select "New Cluster". Enter the IP address you would like to use for your cluster.

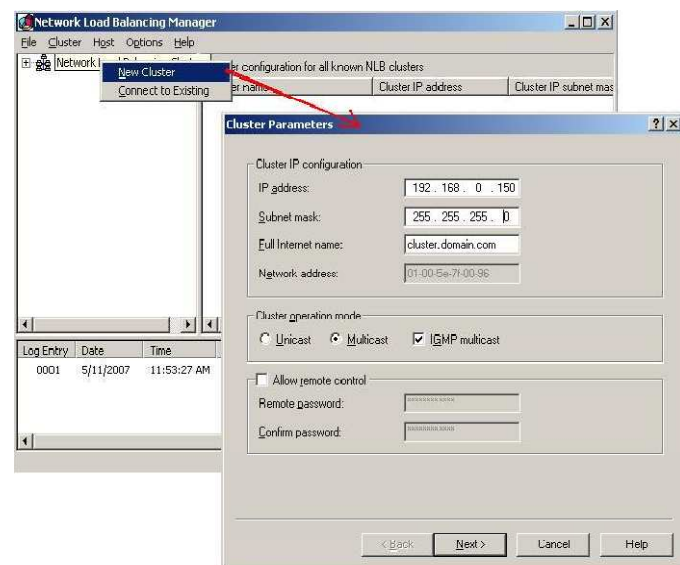


Figure 2 - Specifying the Cluster Properties

3. Press the Next button until you reach the Host screen (skipping Additional cluster IP addresses and Port Filters). Enter the primary Host IP address.



WebHMI - Server Redundancy via Network Load Balancing



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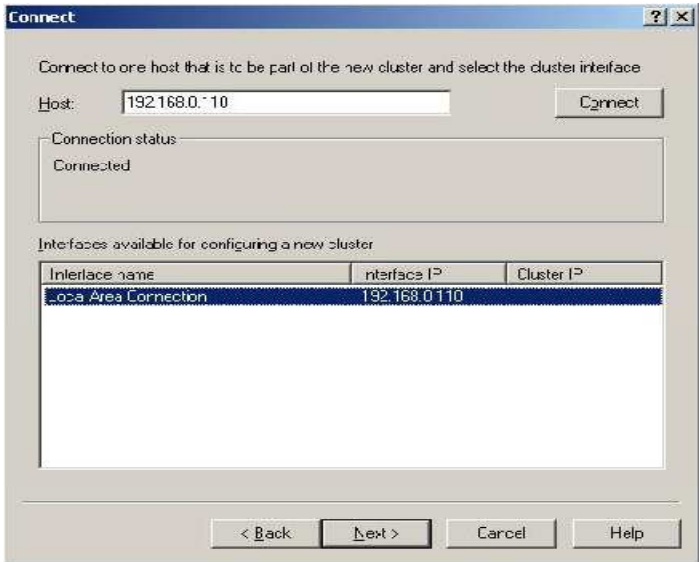


Figure 3 - Host Dialog

4. Press Next and enter the priority in the Host Parameter screen. Set priority to 1 for the primary server. Click finish to end. At this point you have created a cluster with a primary host.

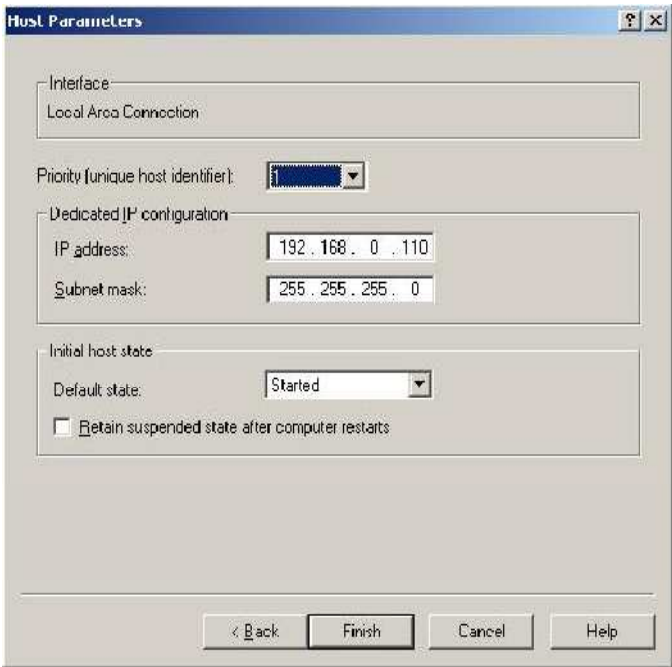


Figure 4 - Host Parameters

You will notice that the Host's IP address will change to the cluster IP (You may want to verify this using the `ipconfig -all` command on the host computer).

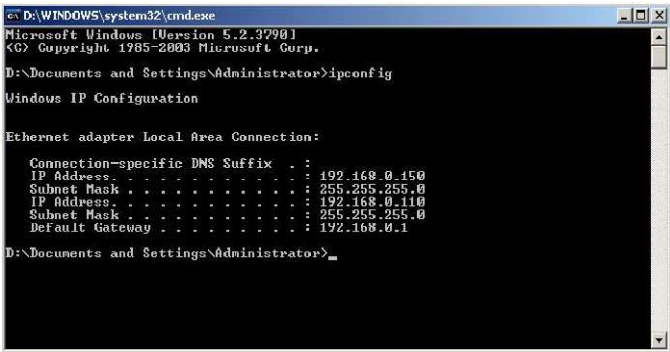


Figure 5 - Ipconfig of the Host

The Network Properties screen will now have an additional service for NLB as shown below.

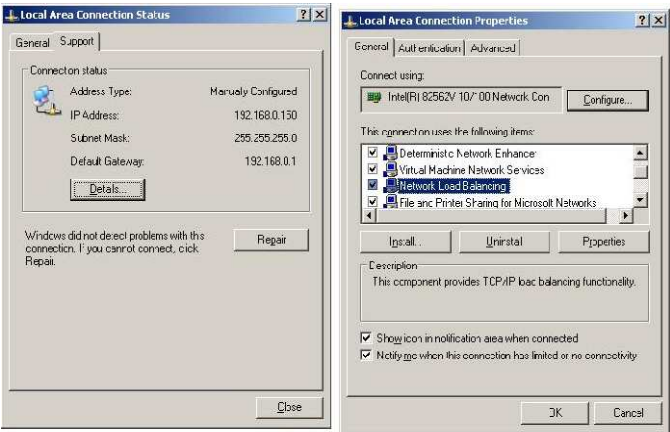


Figure 6 - Network Properties

5. Right click on the newly created cluster in the NLB Manager and select "Add Host to Cluster" to add the secondary server as additional host with priority 2.

The screen below shows the final configuration of NLB with two hosts working as a single cluster.

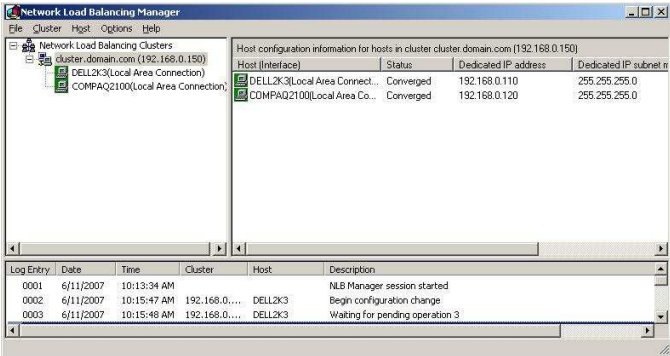


Figure 7 - Cluster with Two Hosts

Additional Settings for Redundant Servers

There is no additional configuration required on redundant GENESIS32 servers for WebHMI NLB. For detailed steps on how to configure GENESIS32 Node Pair Redundancy refer to Redundancy application notes and help documentation.

The GENESIS32 application can be combined with WebHMI Server as shown in Figure 1, OR may be separate from WebHMI NLB cluster as shown in Figure 9. Note that it is mandatory to install GENESIS32 prior to WebHMI Server installation.

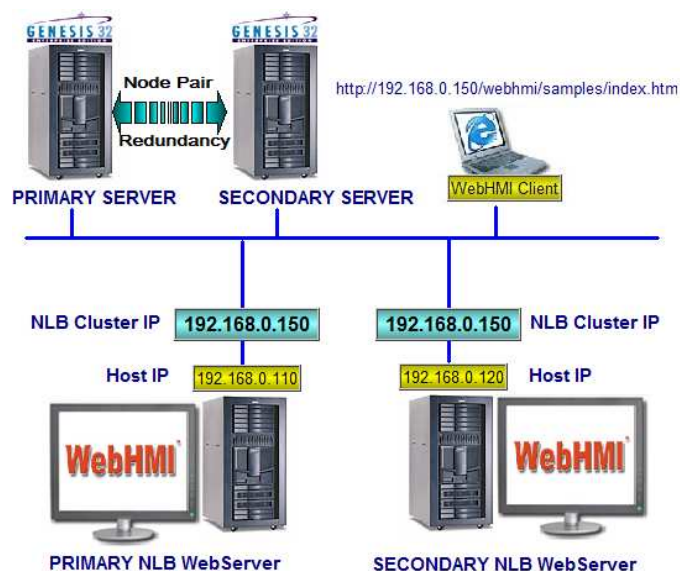


Figure 8 - Combining GENESIS32 and WebHMI with NLB

Configuring the WebHMI Server

If you are also using DataWorX32 Professional Redundancy with your NLB cluster follow the steps below.

1. On the WebHMI server all displays should be configured similar to the configuration of GENESIS32 Browser nodes using redundancy. This means the displays should refer to Primary Server Node for all OPC communication. DataWorX32 Professional Redundancy will switch the communication to Secondary server when required.
2. Follow standard publishing procedure for each local IIS server using URL reference of **Host IP address** of each server (not the cluster IP address).
3. Modify the WebHMI Client GenBroker file to include a Node Pair setting as you would do for DataWorX32 Professional Redundancy.
4. WebHMI clients should access the web pages using the cluster's IP address. In our example above, that address would be:

<http://192.168.0.150/webhmi/index.htm>

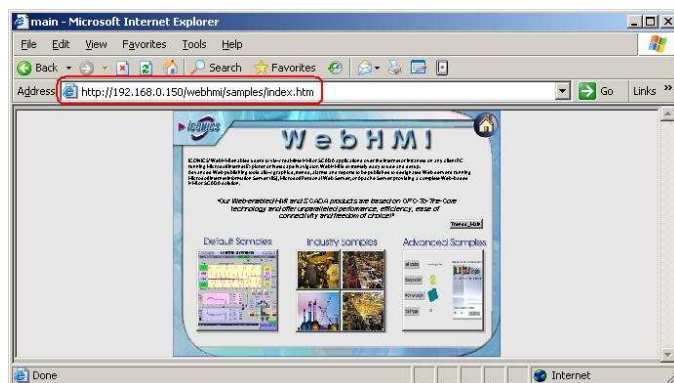


Figure 9 - Viewing a WebHMI Page Using the Cluster IP Address

If both servers are online, the WebHMI client will connect to the primary server with all OPC data coming from the active GENESIS32 Server. If the Primary server fails the WebHMI clients will switch the data reference to the secondary server.

NOTE: After implementing NLB on WebHMI servers you can still connect to the Host IP address or node name to access WebHMI pages, but you will not be taking advantage of the NLB functionality.