IBM

Installation Guide

Load Balancer for WebSphere Voice Server V6.1.1

Version 1.0

Notices

First edition (December 2008)

This edition applies to the IBM WebSphere Voice Server version 6.1.1. It applies to all subsequent releases and modifications until otherwise indicated in new editions.

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Table of Revisions

Issue	Date	Description and reason for the modification	Affected sections
1.0	Dec. 2008	Creation	

Abstract

This document explains how to install the IBM® WebSphere® Application Server (WAS) V6.1 Load Balancer (LB) for use with the IBM WebSphere Voice Server (WVS) V6.1.1.

Intended Audience

Read this guide if you

- Want to install the IBM WAS V6.1 LB on WVS V6.1.1.
- Want to learn about the implications of installing the IBM WAS V6.1 LB on WVS V6.1.1.

Contents

Chapter 1 Introduction

This document explains how to install the appropriate IBM® WebSphere® Application Server (WAS) V6.1 Load Balancer (LB) on Linux® or Windows® operating systems, for use with the IBM WebSphere Voice Server (WVS) V6.1.1.

Load Balancer

Load Balancer is a software solution for distributing incoming client requests across servers. It boosts the performance of servers by directing TCP/IP session requests to different servers within a group of servers; in this way, it balances the requests among all the servers. This load balancing is transparent to users and other applications.

Dispatcher

You can use the Dispatcher component by itself to balance the load on servers within a local area network or wide area network using a number of weights and measurements that are dynamically set by Dispatcher. This component provides load balancing at a level of specific services, such as HTTP, FTP, SSL, NNTP, IMAP, POP3, SMTP, SIP, and Telnet. It does not use a domain name server to map domain names to IP addresses.

Load Balancer Code Bases

WebSphere Application Server (WAS) V6.1 ships two code bases of Load Balancer (LB); one for IPv4 and the other for IPv4 and IPv6.

- For Linux, use the IPv4 and IPv6 LB code base.
- For Windows, use the IPv4 LB code base.

Table 1: Comparison of LB code bases

LB code bases	IPv4	IPv4 and IPv6
Description	Separate installation image containing five components: Dispatcher, Content Based Routing, Site Selector, Cisco CSS Controller, and Nortel Alteon Controller	Separate installation image, contains only the Dispatcher component, supports MAC-based packet forwarding only
Linux	Kernel intrusive version does not support RHEL5	User space LB can support RHEL5 (WVS6.1.1 supports RHEL4 and RHEL5)
Windows	Kernel intrusive, supports Windows 2003, offers more options and components	Kernel intrusive, supports Windows 2003
Recommendation	**Use for Windows**	**Use for Linux**

Related Publications

Reference, design, and programming information for creating voice applications is available from a variety of sources.

For more information on the WAS Load Balancer and Dispatcher, see the online IBM WAS information center.

NOTE: Guidelines and publications cited in this guide are for your information only and do not in any manner serve as an endorsement of those materials. You alone are responsible for determining the suitability and applicability of this information to your needs.

Document Conventions and Terminology

The following conventions are used to present information in this document:

Italic Used for emphasis, to indicate variable text, and for references to other documents.

Bold Used for configuration parameters, file names, URLs, and user-interface controls such as command buttons and menus.

`Monospace` Used for sample code.

Chapter 2 Install and Configure LB for IPV4 and IPv6 on Linux

This chapter applies when the Load Balancer and all WVS6.1.1 servers to be load balanced are installed on Linux computers. They all have the same OS level (RHEL4 or RHEL5) and use IPv4 addresses.

The section describes the procedures for installing LB for IPv4 and IPv6, setting up the dispatcher computer, aliasing the loopback device on WVS6.1.1 servers, and verifying the installation and configuration.

Install LB for IPv4 and IPv6

Before You Install

Before beginning the installation procedure, ensure that you have root authorization on the Linux computer for installing the LB.

Installation

1 Log in as root on the Linux computer.

2 If you have an earlier version of LB for IPv4 and IPv6 installed, uninstall it.

3 Insert the product media and copy **lb/ibmlb-lic-6.1.0-0.i386.rpm** to a temporary directory.

4 Download fix level **6.1.np0.14** or later for IPv6 LB:

1. Go to the Edge Components FTP server.

2. Click the name of the LB version (for example, for fix level 6.1.0.14: **eLBLXIP6-6.1.0.14-i386.tar.gz**) for the corrective service release to which you are upgrading.

3. Follow the link to the download site and download the fix.

5 Untar the downloaded fix level file into the same temporary directory by typing `tar -xzf eLBLXIP6-6.1.0.14-i386.tar.gz`.
The result is a set of install package files with the **.rpm** extension.

6 The order in which the packages are installed is important. Use the **rpm –i** command to install the RPM packages for LB for IPv4 and IPv6 in the order listed in Table 2. Note that the license package should be installed from the product media and not the fix level.

Table 2: Order for installing RPM packages

Order	Package type	Command
1	base	**rpm –i ibmlb-base-6.1.0-14.i386.rpm**
2	license	**rpm –i ibmlb-lic-6.1.0-0.i386.rpm ***
3	dispatcher component	**rpm –i ibmlb-disp-6.1.0-14.i386.rpm**
4	administration	**rpm –i ibmlb-admin-6.1.0-14.i386.rpm**
5	documentation	**rpm –i ibmlb-doc-6.1.0-14.i386.rpm**
6	Metric Server	**rpm –i ibmlb-ms-6.1.0-14.i386.rpm**

* Note that you should take the license package from the product media and not the fix level.

LB install paths are as follows:

– Administration - **/opt/ibm/edge/lb/admin**

– Load Balancer components - **/opt/ibm/edge/lb/servers**

– Metric Server- **/opt/ibm/edge/lb/ms**

– Documentation - **/opt/ibm/edge/lb/documentation**

Verification

To verify that the product is installed, type this command:

```
rpm -qa | grep ibmlb
```

An installation of the full product produces a listing like this:

```
ibmlb-lic-6.1.0-14.i386.rpm
ibmlb-admin-6.1.0-14
ibmlb-base-6.1.0-14
ibmlb-doc-6.1.0-14
```

```
ibmlb-ms-6.1.0-14
ibmlb-disp-6.1.0-14
```

Uninstall RPM Packages

To uninstall the packages, reverse the order of the instructions for package installation above, ensuring the administration package is the last package you uninstall. For example:

```
rpm -e ibmlb-ms-6.1.0-14.i386.rpm
```

Set up the Dispatcher Computer

Before You Start

Before configuring the LB, you must have root user authorization and at least two valid IP addresses:

- An IP address specifically for the Dispatcher computer.
  This IP address is the primary IP address of the Dispatcher computer and is called the non-forwarding address (NFA). By default, this is the same address as that returned by the hostname command. Use this address to connect to the computer for administrative purposes.

- One IP address for each cluster.
  A cluster address is an address that is associated with a host name (such as **www.yourcompany.com**). A client uses this IP address to connect to the servers in a cluster. This is the address that is load balanced by the Dispatcher.

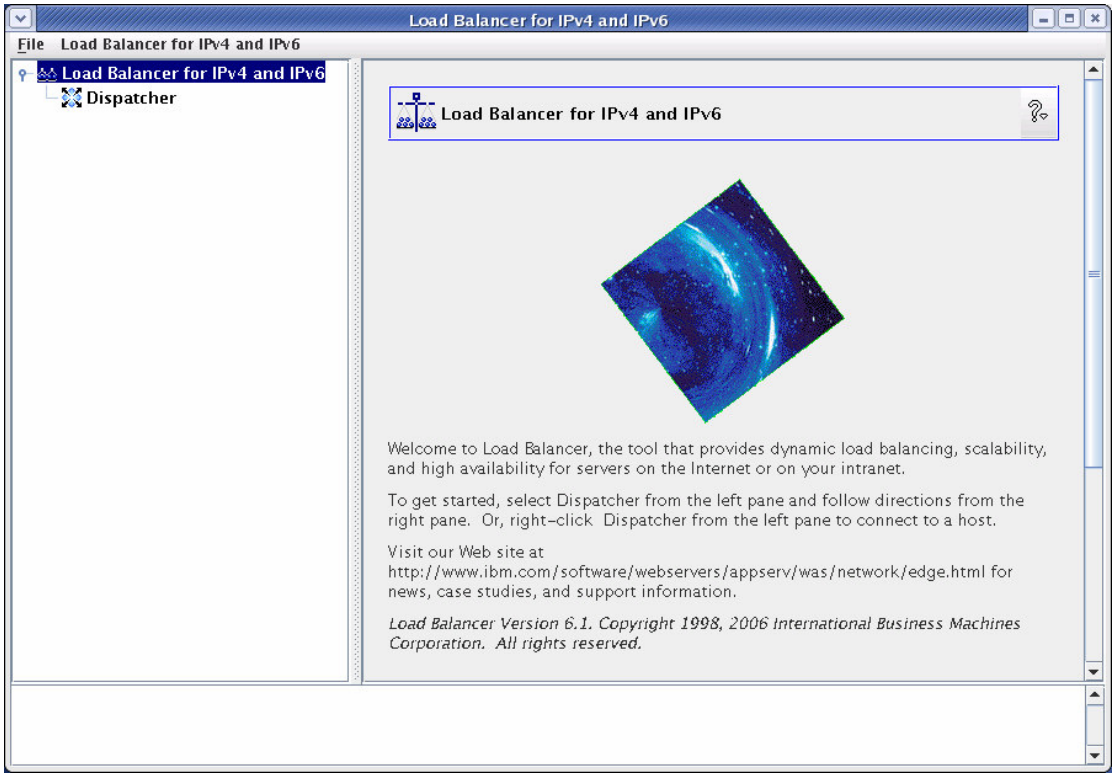
Configure the Dispatcher Computer

With Dispatcher, you can create a configuration using the command line, the configuration wizard, or the graphical user interface (GUI). This guide explains the GUI. For the other two options, refer to the Load Balancer Administration Guide, V6.1, http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/topic/com.ibm.websphere.edge.doc/edge/LBguide.htm.

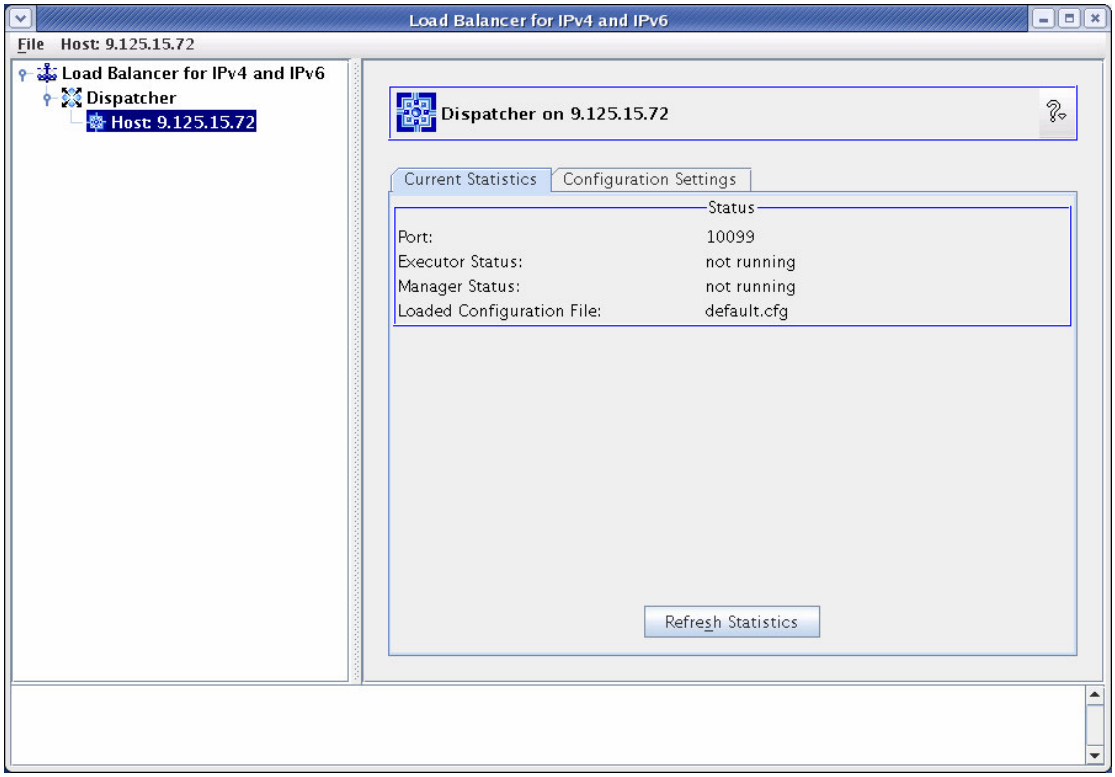
Define a cluster and set the cluster options:

1 Start the server function by typing **dsserver** in the command line.

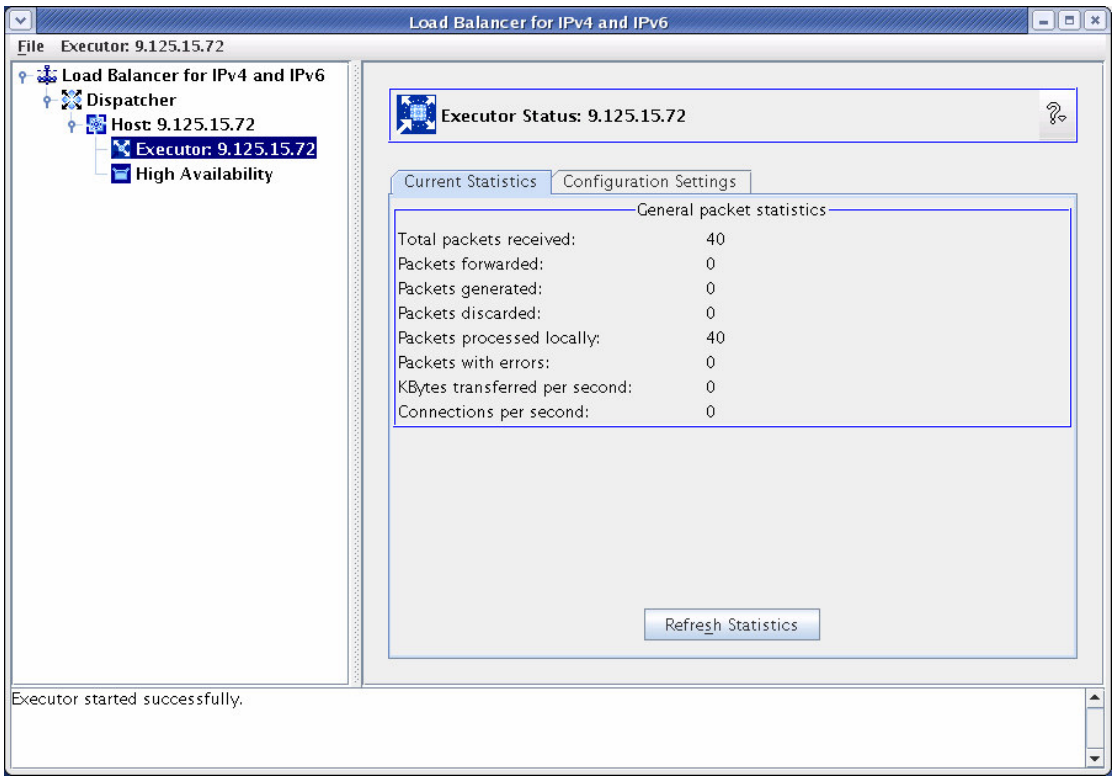
2 Start the administrative console by running the **lbadmin** command.
The administrative console appears as shown.



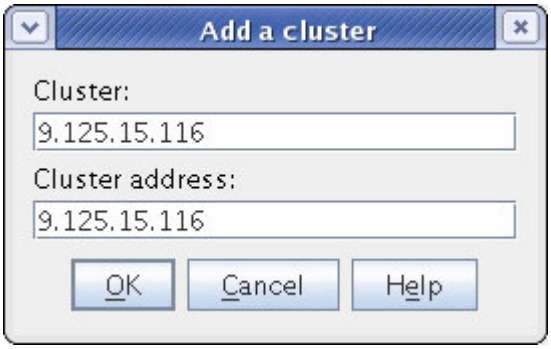
3 Right-click **Dispatcher** in the left panel of the administrative console and select **Connect to Host…** from the pop-up menu.



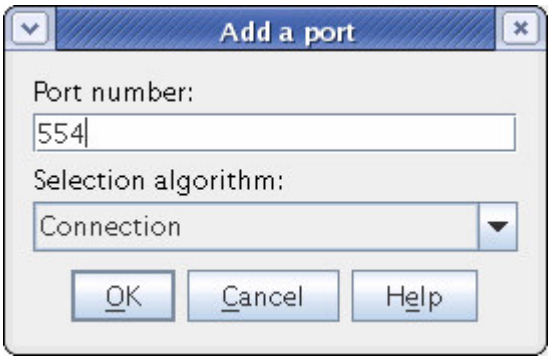
4 Right-click **Host** in the left panel and click **Start Executor** from the pop-up menu.



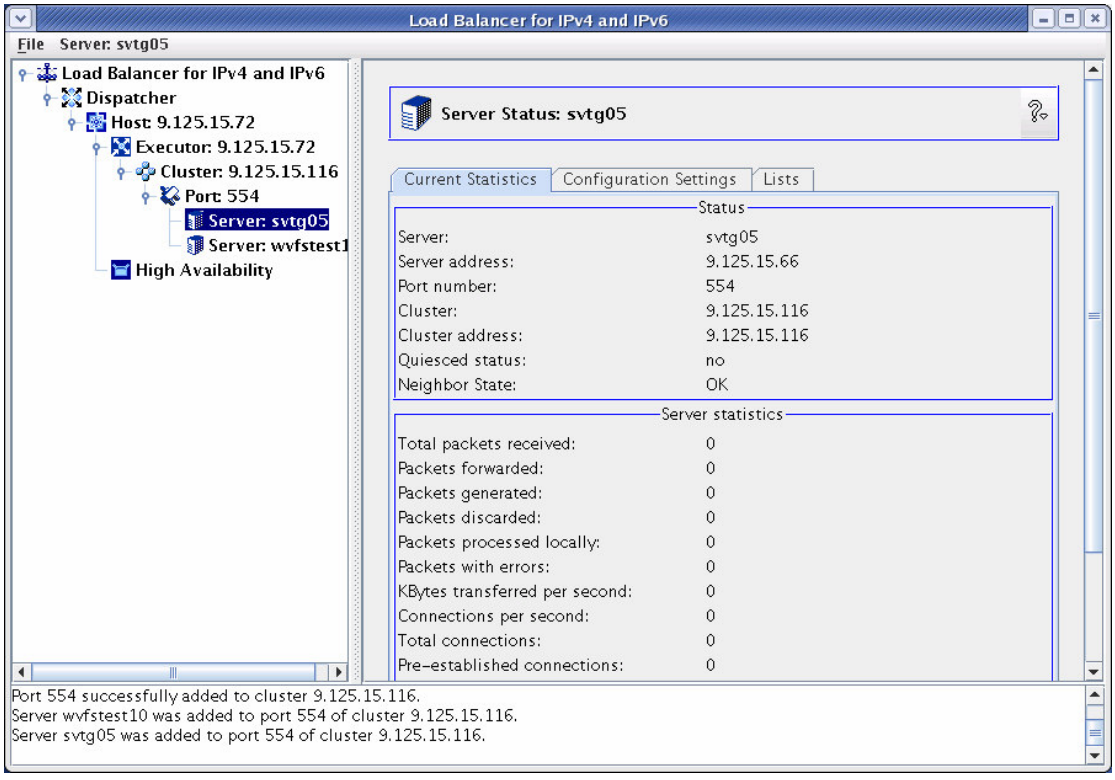
5 Right-click **Executor** and choose **Add Cluster….** A dialog pops up prompting for the cluster address. Enter the name and IP address for the cluster.



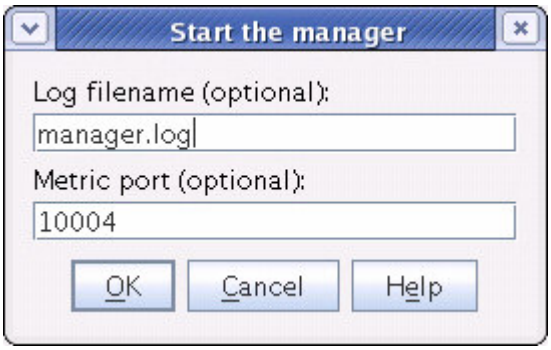
6 Right-click **Cluster** and select **Add Port…**. Set the port number to **554** (the default port for the RTSP protocol that WVS6.1.1 uses), choose **Connection** as the selection algorithm, and click **OK**.

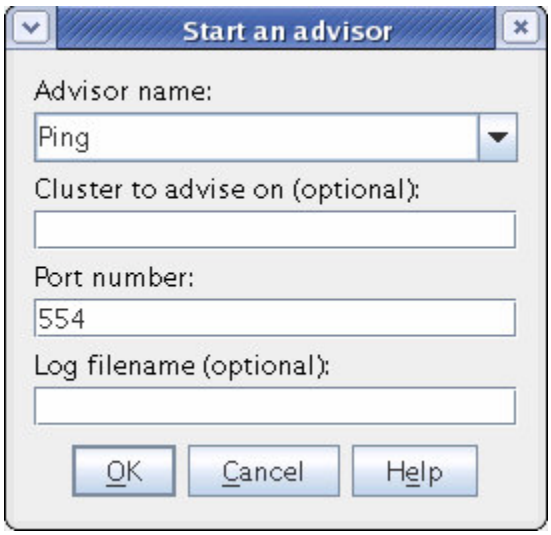


7 Right-click **Port** and choose **Add Server…**. In the dialog, enter the name and IP address for the WVS6.1.1 server to be load balanced. Repeat this step to add all WVS6.1.1 servers that you want as members of the cluster.

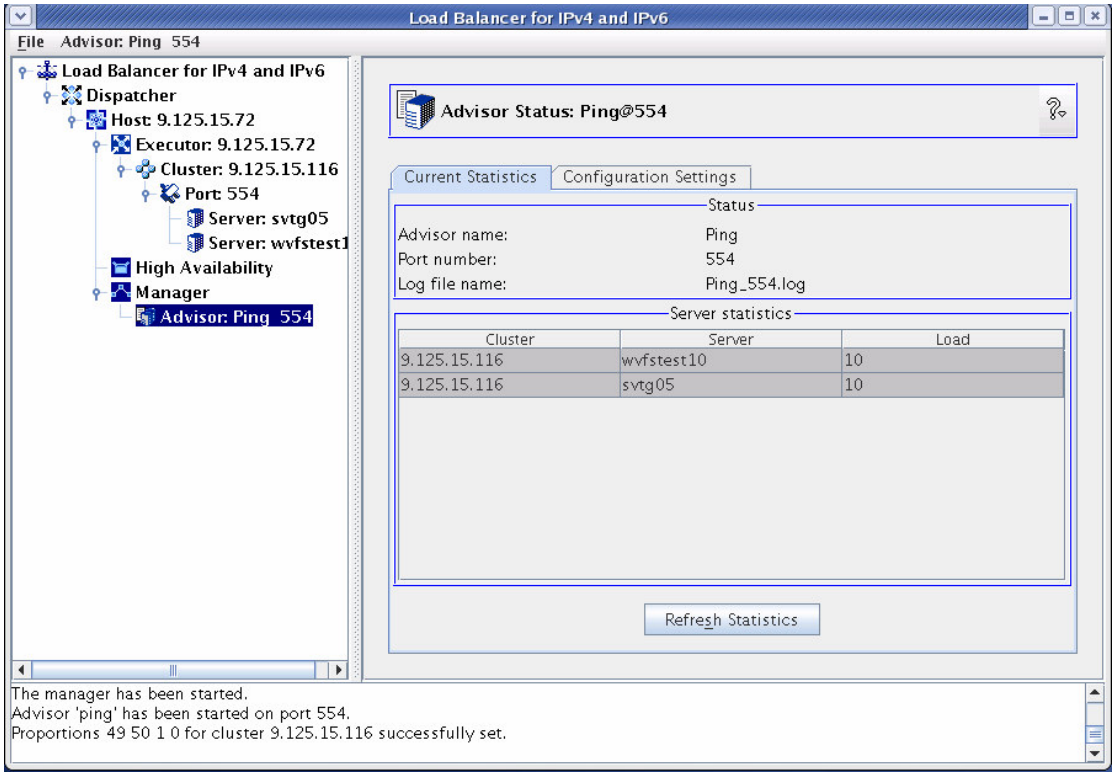


8 Right-click **Host** and select **Start Manager**. Use the default settings or change the values if necessary in the **Start the manager** dialog, and click **OK** to close the dialog. In the **Start an advisor dialog**, select **Ping** as the advisor name and **554** as the port number, then click **OK** to close the dialog.





The Dispatcher computer configuration is now complete.



NOTE: For more information about configuring the Dispatcher component, refer to the Load Balancer Administration Guide, V6.1, http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/topic/com.ibm.websphere.edge.doc/edge/LBguide.htm.

NOTE: For Linux, the LB for IPv4 and IPv6 runs in user space and the LB natively advertises the cluster address on the network, but the cluster address does not appear aliased on any interface. This is normal and you must not alias the network interface card (NIC) of the Dispatcher computer by yourself. This is in contrast to kernel space LB, which requires manually aliasing NIC.

Alias the Loopback Device on WVS6.1.1 Backend Servers

For the load-balanced server computers to work, you must set (or preferably alias) the loopback device (often called **lo**) to the cluster address. When using the MAC forwarding method, the Dispatcher component does not change the destination IP address in the TCP/IP packet before forwarding the packet to a TCP server computer. By setting or aliasing the loopback device to the cluster address, the load balanced server computers accept a packet that was addressed to the cluster address.

To alias the loopback device of WVS6.1.1 servers to be load balanced on Linux, run following commands for each backend server within the cluster:

```
sysctl -w net.ipv4.conf.all.arp_ignore=3

sysctl -w net.ipv4.conf.all.arp_announce=2

ip -version addr add cluster_address/prefix_length dev
loopback_dev_name
```

where

- The *prefix_length* is 32 for IPv4 and 128 for IPv6.
- The *version* parameter indicates whether the cluster address is IPv4 or IPv6. The candidate values are 4 and 6, respectively.

For example, if the cluster address is **9.125.15.116** and the loopback device name is **lo**, run these commands:

```
sysctl -w net.ipv4.conf.all.arp_ignore=3
sysctl -w net.ipv4.conf.all.arp_announce=2
ip -4 addr add 9.125.15.116/32 dev lo
```

Note: Execute the commands in this order.

Note: The changes resulting from the first two commands are lost after the server reboots. To make them persistent, modify `/etc/sysctl.conf` by adding the following lines:

```
net.ipv4.conf.all.arp_ignore=3
net.ipv4.conf.all.arp_announce=2
```

Verify the Installation and Configuration

This section explains how you can ensure successful configuration:

- The Dispatcher is properly configured and running
- WVS6.1.1 servers are running on the backed servers
- Firewalls on the Dispatcher and WVS6.1.1 computers are properly configured or disabled so that they do not block client requests
- You can successfully ping the cluster address and the backend WVS6.1.1 servers within the cluster from a client computer

To simply and quickly verify the configuration:

1 Open an Internet Explorer (IE) window on the client computer, and try to access this URL: **http://clusteraddress:554/**. The IE window should not show any errors and the administrative console should show that the WVS6.1.1 server accepts the connection request.

2 Use a call driver to verify the configuration. Make sure RTSP requests can be properly routed to and responded from backend WVS6.1.1 servers and load balanced among the servers.

3 Verify the parameters in the configuration files:

- In the **cwv.properties** file, ensure `com.ibm.voice.server.sesmgr.localIP=IP_Address`.
- In the **.cwvs.properties** file, ensure `com.ibm.voice.server.common.httpserverbase=http\://hostname\:80/`.

Chapter 3 Install and Configure LB for IPv4 on Windows 2003

This chapter applies when the Load Balancer and WVS6.1.1 servers are all installed on Windows Server 2003 computers. The WVS6.1.1 product ships LB for IPv4 for Windows Server 2003.

The section describes the procedures for installing LB for IPv4, setting up the dispatcher computer, aliasing the loopback device on WVS6.1.1 servers, and verifying the installation and configuration.

Install LB for IPv4 on Windows 2003

Before you install

Before beginning the installation procedure, ensure you have logged in as the Administrator or as a user with administrative privileges.

If you have an earlier version installed, uninstall it before installing the current version.

Installation steps

1. Download the latest fix level (6.1.0.20 or above) of LB for IPv4 for Windows from the Edge Components FTP server. The file name is **eLBW2K-6.1.0.*level*.zip**. Please note that fix levels have no valid license file. You must use the one shipped with the LB product media.

2. Insert the product media shipped with WVS6.1.1 for Windows 2003 and run **setup.exe** from the LB directory of the media. When the setup is complete, save a copy of the LB license file (**lb61Full.LIC**). The default installation path is **C:\Program Files\IBM\edge\lb\servers\conf\lb61Full.LIC**.

3. You only need the license file, so uninstall the LB installed in Step 2.

4. Install the fix level by unzipping the fix level file you downloaded and running setup.exe.

5. Copy the saved license file from Step 2 to directory **$LB_ROOT\servers\conf**. The default path is **C:\Program Files\IBM\edge\lb\servers\conf**.

The default LB installation includes the paths listed in Table 3.

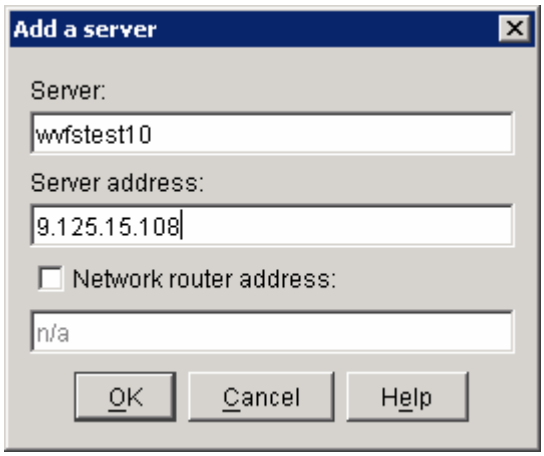
Table 3: Installation paths

Administration	**C:\Program Files\IBM\edge\lb\admin**
Load Balancer components	**C:\Program Files\IBM\edge\lb\servers**
Metric Server	**C:\Program Files\IBM\edge\lb\ms**
Doc (Administration Guide)	**C:\Program Files\IBM\edge\lb\documentation**

Set Up the Dispatcher Computer

1. Start the Dispatcher server function and the administrative console.
   The LB server starts automatically as a service on Windows systems. To start the administrative console, click **Start > All Programs > IBM WebSphere > Edge Components > Load Balancer > Load Balancer**.

2. Define the cluster and set the cluster options.
   Setting up the cluster and cluster options using IPv4 code base through the administrative console is similar to using LB for IPv4 and IPv6 except for aliasing NIC to configure the cluster address. See Set up the Dispatcher Computer in the previous section.
   When adding servers to the cluster, disable the network router address.



3. Alias the NIC of Dispatcher computer to configure the cluster address:
   From the command line, type **dscontrol executor configure cluster_address**.
   This command looks for an adapter with an existing address that belongs to the same subnet as the cluster address. It then issues the operating system's adapter configuration command for the cluster address, using the adapter it finds and the netmask for the existing address on that adapter.

4. Make the IP address accessible by running **ping cluster_address** in the command line.

NOTE: You may also complete this task before configuring the cluster and cluster options using the operating system's adapter configuration command/tool.

Alias the Loopback Device on Backend Servers

For each backend (WVS6.1.1) server in the cluster, you must alias the loopback device.

1. If you have not done so already, add the MS Loopback Adapter Driver:

   a. To launch the **Add Hardware Wizard**, from the Control Panel, click **Add Hardware** and **Next**.

   b. Select **Yes, I have already connected the hardware** and click **Next**.

   c. If the MS Loopback Adapter is in the list, it is already installed, so click **Cancel** to exit. If not, select **Add a New Device** and click **Next**.

   d. To select the hardware from a list, from the **Find New Hardware** panel, click **No** and **Next**.

   e. Select **Network Adapters** and click **Next**.

   f. In the **Select Network Adapter** panel, select **Microsoft®** in the **Manufacturers list**, and select **Microsoft Loopback Adapter**.

   g. To install the default settings, click **Next** twice (or select **Have Disk**, then insert the CD and install from there).

   h. To complete the installation, click **Finish**.

2. From the Control Panel, double-click **Network and Dial-up Connections**.

3. Select the connection with the device name **Microsoft Loopback Adapter**.

4. Select **Properties** from the dropdown list.

5. Select **Internet Protocol (TCP/IP)** and click **Properties**.

6. Click **Use the following IP address**. Fill in the IP address with the cluster address, and the subnet mask with the subnet mask of the back-end server.

Note: Do not enter a router address. Use the localhost as the default DNS server.

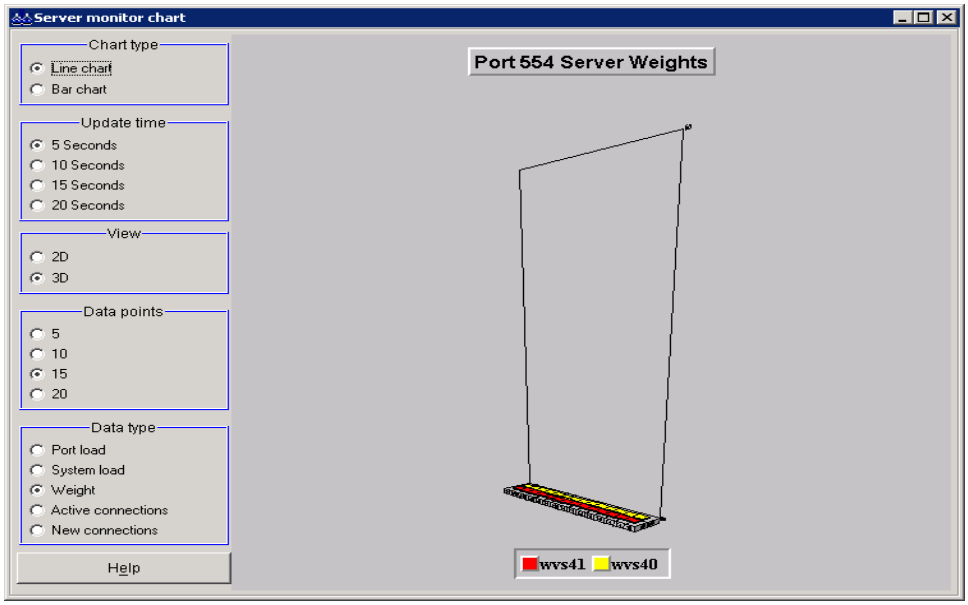
Verify the Installation and Configuration

See Verify the Installation and Configuration in the previous section.

LB for the IPv4 code base provides a GUI-based monitor to show information such as port load, system load, weight, active connections, and new connections.

NOTE: The GUI-based monitor significantly affects performance. Use it only if necessary.

To enable the monitor, select **Port: 554** in the left panel of the administrative console, then click menu **Port:554** and choose **Monitor…** from the dropdown list.



Verify the parameters in the configuration files:

- In the **cwv.properties** file, ensure
  `com.ibm.voice.server.sesmgr.localIP=IP_Address`

- In the **.cwvs.properties** file, ensure
  `com.ibm.voice.server.common.rrservletbase=http://hostname:80/`