Progress®
Kemp® LoadMaster®

# Installation Guide Microsoft Hyper V

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# 1

# Introduction

## Introduction

The Virtual LoadMaster is a version of the LoadMaster that runs as a virtual machine within a hypervisor and can provide all the features and functions of a hardware-based LoadMaster.

This document describes the installation of the Virtual LoadMaster (VLM) within a Microsoft Hyper-V environment. The VLM has been tested with Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, Windows 8, and Hyper-V 2016.

There are several different versions of the VLM available. Full details of the currently supported versions are available on our website: www.kemptechnologies.com.

The Microsoft Hyper-V virtual machine guest environment for the VLM, at minimum, must include:

- 2 x virtual processors
- 2 GB RAM
- 16 GB virtual hard disk capacity
- At least one Network Interface Card (NIC)

Multiple NICs can be used, but these are supported only by the larger Microsoft Azure VM sizes and must be added when the VM is created. For further details, refer to the Microsoft Azure documentation.

There may be maximum configuration limits imposed by Hyper-V such as maximum RAM per VM, Virtual NICs per VM and so on. For further details regarding the configuration limits imposed by Microsoft Hyper-V, please refer to the relevant Microsoft Hyper-V documentation.

# 2

# Installing Virtual LoadMaster (VLM) using Hyper-V Manager

## Installing Virtual LoadMaster (VLM) using Hyper-V Manager

The following instructions describe how to install a Virtual LoadMaster on a Hyper-V environment using the Hyper-V Manager.

**Related Links**

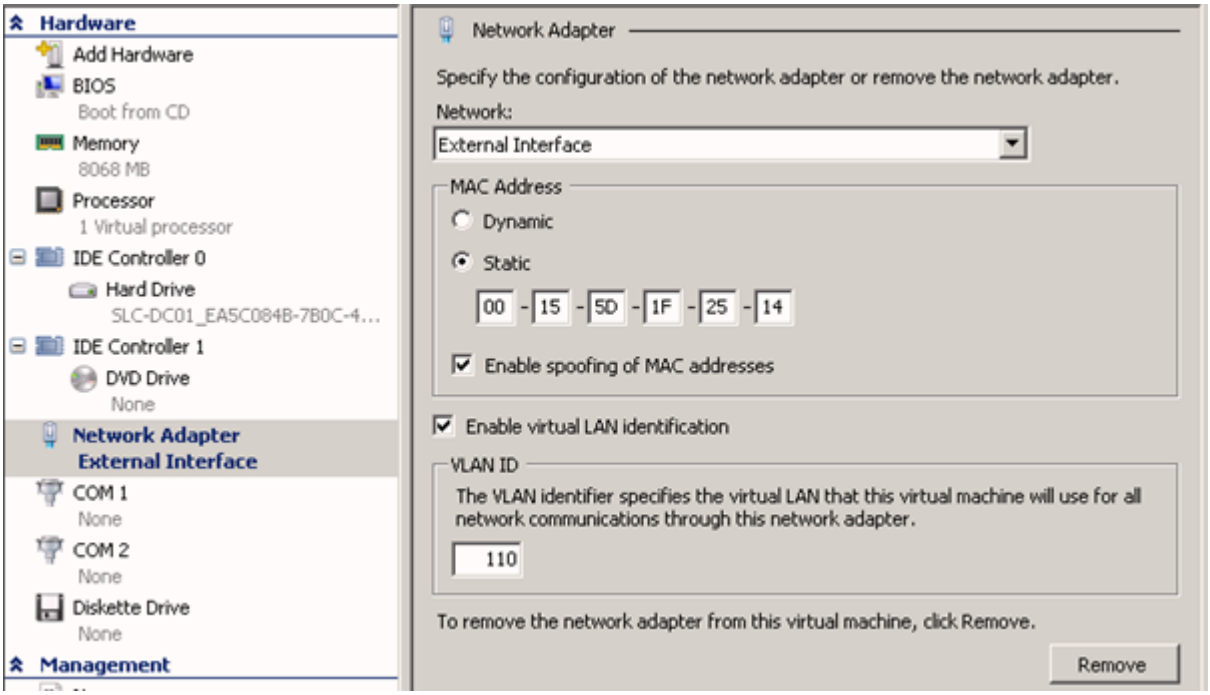
For details, see the following topics:

- Static MAC Addresses Must Be Configured
- Download the Hyper-V Files
- Creating the VLM
- Check the Virtual Machine Settings
- Power On the LoadMaster
- License and Configure the LoadMaster

# Static MAC Addresses Must Be Configured

## Static MAC Addresses Must Be Configured

In case you move a VLM system to a different Virtual Machine, ensure that the MAC addresses of the Virtual Machine's NICs stay the same.




Static MAC addresses must be configured for all NICs within Virtual Machines.

For further information on configuring static MAC addresses, please refer to the relevant Hyper-V documentation.

# Download the Hyper-V Files

## Download the Hyper-V Files

The VLM is packaged within a .vhd file for ease of deployment. This file can be freely downloaded from Progress Kemp for a 30 day evaluation period. To download the VLM please follow the instructions below:

1. Go to http://www.Kemptechnologies.com/try.
2. Click the **Download Now** button.
3. Within the **Select your hypervisor** section, select the relevant option for **Microsoft Hyper-V**.
4. Select your country from the drop-down list provided.
5. Read the End User License Agreement.

6. To proceed with the download, ensure the **I agree to the End User License Agreement terms** check box is ticked.
7. Click the **Download** button.
8. Unzip the contents of the zip file to an accessible location.

# Creating the VLM

## Creating the VLM

To create the VLM, use the **New Virtual Machine** function within the Hyper-V Manager:

1. Open the Hyper-V Manager and select the relevant server node in the left panel.
2. Click **New** in the **Actions** column and select **Virtual Machine** from the list.
3. Click **Next** then type the name of the virtual machine and click **Next**.
4. Select **Generation 1** and click **Next**.

   **Note:** The LoadMaster Operating System (LMOS) does not support the use of **Generation 2** configured virtual machines.
5. Specify the amount of memory to allocate to the virtual machine then click **Next**.
6. Configure your networking connection then click **Next**.
7. Click **Browse**. Navigate to the location where the .vhd file is saved and select it.
8. The LoadMaster instance should be completed and should now appear within the **Virtual Machines** pane in the Hyper-V Manager.

# Check the Virtual Machine Settings

## Check the Virtual Machine Settings

Please verify that the Virtual Machine settings are configured with the following minimum values:

- 2 x virtual processors
- 2 GB RAM
- 16 GB virtual hard disk capacity

# Power On the LoadMaster

## Power On the LoadMaster

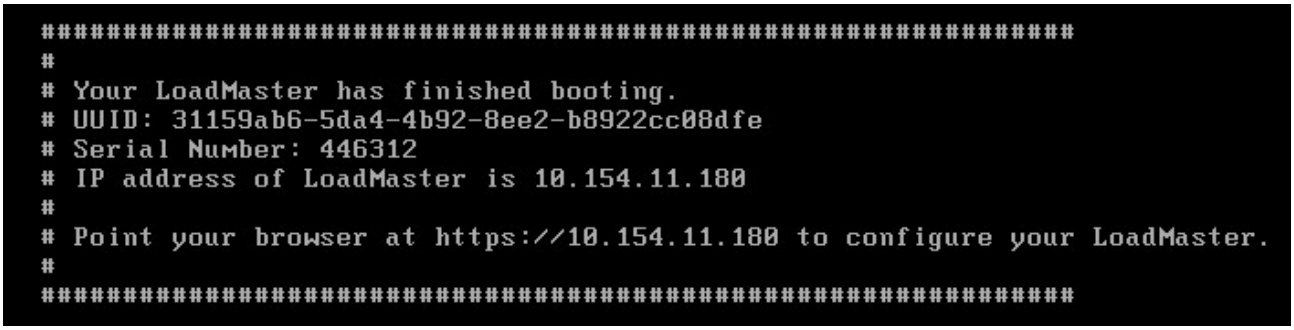
Once the VLM has been deployed it can be powered on:

1. Right-click the Virtual Machine that was imported within the Virtual Machines pane.

2. Click **Start**.

   **Note:** The VLM should begin to boot up.

3. Right-click the VLM and select **Connect** to open the console window.




On initial deployment, DHCPv4 and DHCPv6 both run to attempt to obtain an IP address. If the LoadMaster obtains an IP address using DHCP, take note of it because this is how you will access the LoadMaster.

If the LoadMaster does not obtain an IP address using DHCP the static IP address of **192.168.1.101** is assigned and the LoadMaster must be manually configured using the console.

Refer to the Configuring the LoadMaster via the Console section for instructions on manually configuring the IP address.

# License and Configure the LoadMaster

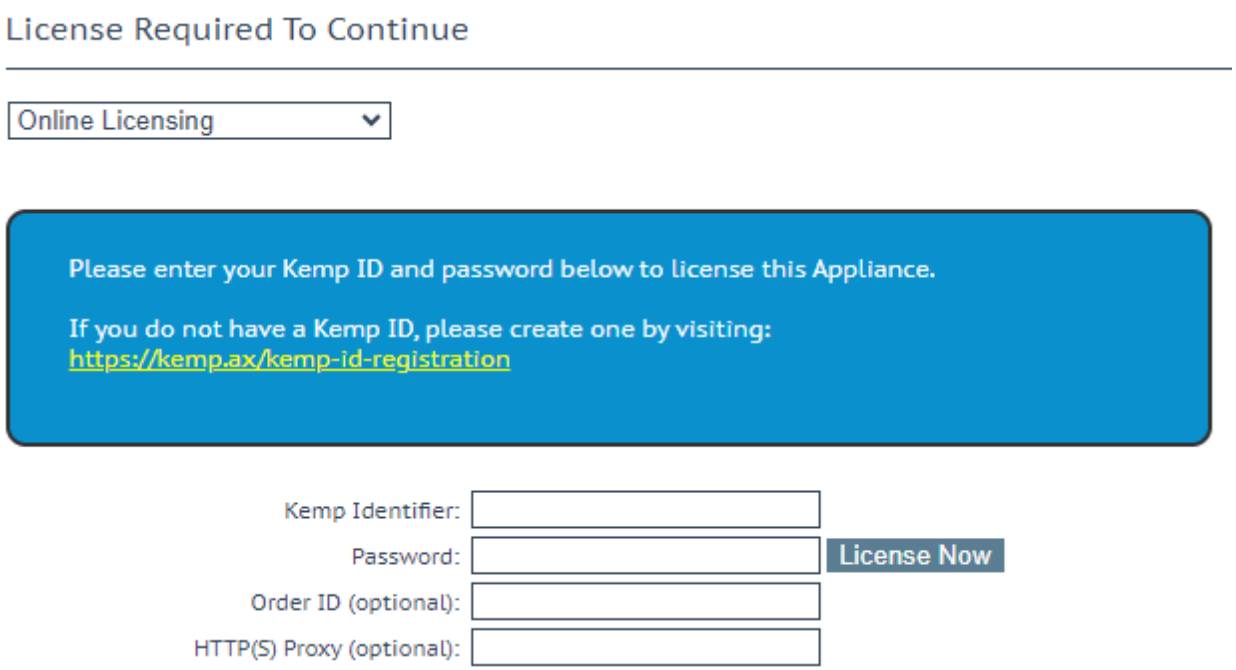
The LoadMaster must now be configured to operate within the network configuration.

1. In an internet browser, enter the IP address that was previously noted.

   **Note:** Ensure to enter **https://** before the IP address.

2. A warning may appear regarding website security certificates. Please click the continue/ignore option.
3. The LoadMaster End User License Agreement screen appears.

   Please read the license agreement and, if you are willing to accept the conditions therein, click on the **Agree** button to proceed.

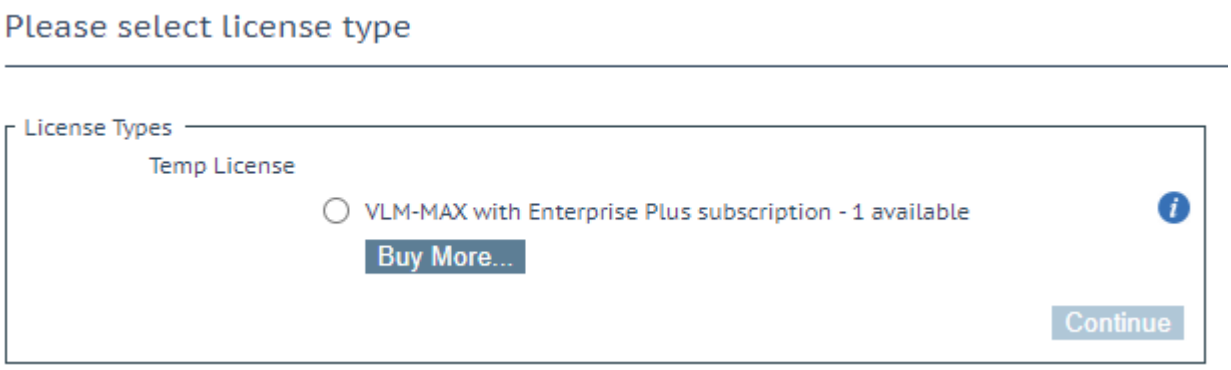



4. If using the **Online** licensing method, fill out the fields and click **License Now**.

**Note:** If you are starting with a trial license, there is no need to enter an Order ID. If you are starting with a permanent license, enter the Progress Kemp **Order ID#** if this was provided to you.

**Note:** If using the **Offline Licensing** method, select **Offline Licensing**, obtain the license text, paste it into the **License** field and click **Apply License**.

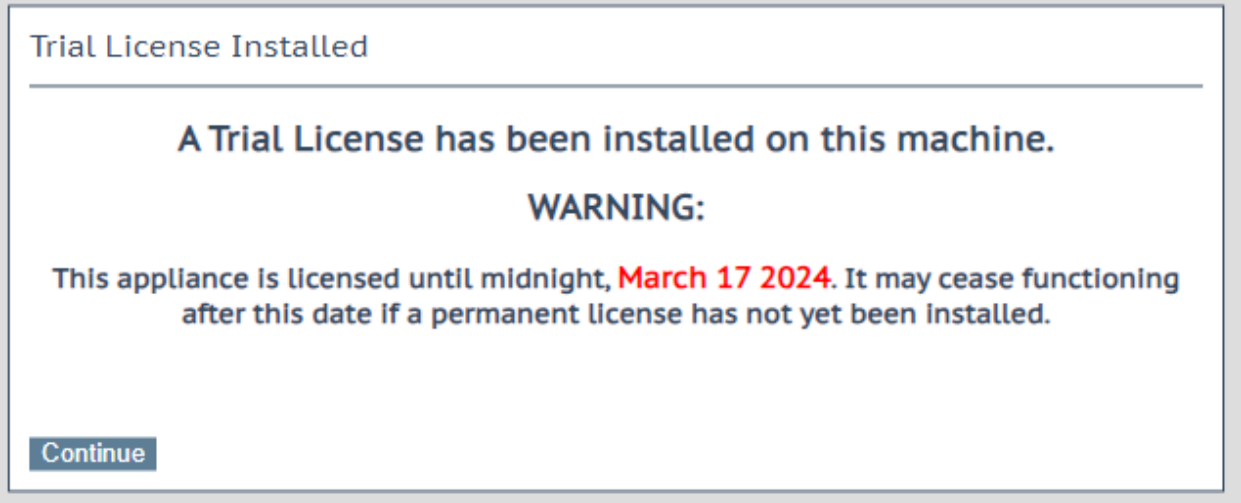
**Note:** For detailed instructions on how to register for a Progress ID (formerly Kemp ID) and license the LoadMaster, refer to the **Licensing, Feature Description** on the Documentation Page.



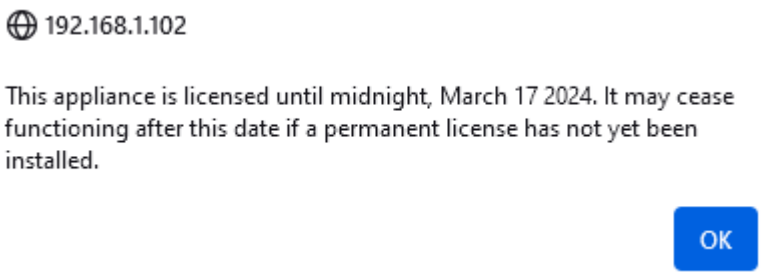

5. If you entered an **Order ID**, a screen appears that provides a list of available licenses for that order ID, in addition to any licenses registered for the Progress ID based on the LoadMaster platform type. Select the license type you want to apply to this LoadMaster.

**Note:** If the license type you want is not displayed, please contact your Progress Kemp representative.

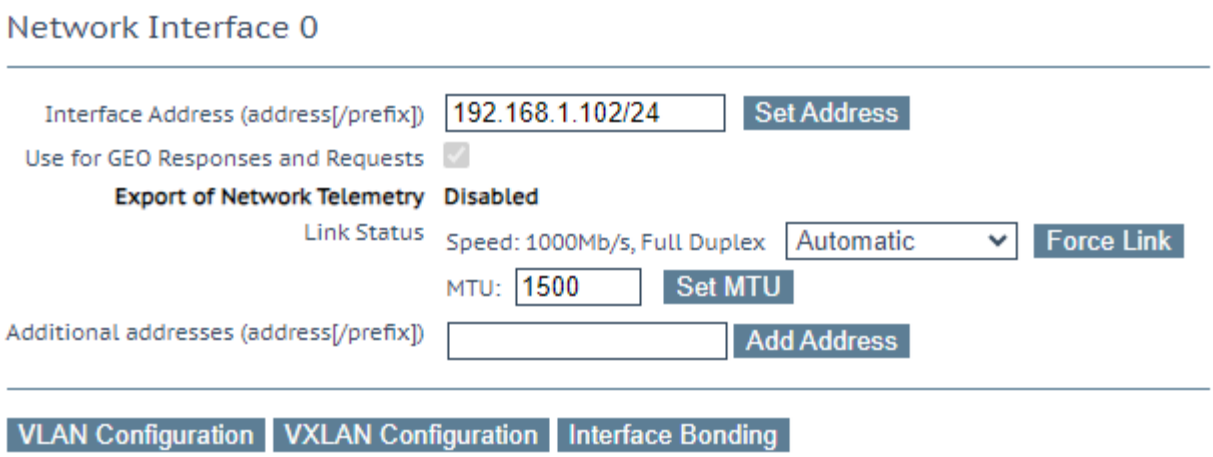
6. Click **Continue**.




7. The login screen appears, enter the **bal** user name and the password.
8. In the screen informing you that the password has changed, press the **Continue** button.
9. If your machine has shipped with a temporary license you should get a warning informing you that a temporary license has been installed on your machine and for how long the license is valid.




10. Click **OK** .
11. You should now connect to the **Home** screen of the LoadMaster.
12. Go to **System Configuration > Network Setup** in the main menu.
13. Click the **eth0** menu option within the **Interfaces** section.




14. In the **Network Interface 0** screen, enter the IP address of the eth0 interface, the network facing interface of the LoadMaster, in the **Interface Address** input field.
15. Click the **Set Address** button.
16. Click the **eth1** menu option within the **Interfaces** section.
17. In the **Network Interface 1** screen, enter the IP address of the eth1 interface, the farm-side interface of the LoadMaster, in the **Interface Address** input field.
18. Click on the **Set Address** button.

    This interface is optional, depending on the network configuration.

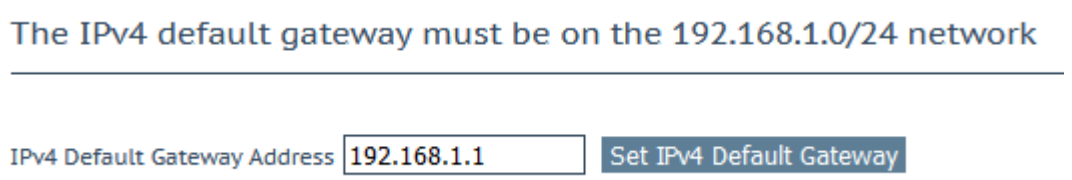
19. Go to **System Configuration > Network Setup > Host & DNS Configuration**.




20. In the **Hostname configuration** screen, enter the hostname into the **Current Hostname** input field.
21. Click the **Set Hostname** button.
22. Click the **System Configuration > Network Setup > Host & DNS Configuration** menu option.




23. In the **DNS configuration** screen, enter the IP address(es) of the DNS Server(s) which is used to resolve names locally on the LoadMaster into the **DNS NameServer** input field.
24. Click the **Add** button.
25. Enter the domain name that is to be prepended to requests to the DNS nameserver into the **DNS NameServer** input field.
26. Click the **Add** button.
27. Click the **System Configuration > Network Setup > Default Gateway** menu option.




28. In the **DNS configuration** screen, enter the IP address of the default gateway into the **IPv4 Default Gateway Address** input field.

    If you have an IPv6 Default Gateway, please enter the value in the **IPv6 Default Gateway Address** input field.

29. Click the **Set IPv4 Default Gateway** button.

The LoadMaster is now fully installed and ready to be used. For further information on how to configure and implement the Virtual LoadMaster, please refer to the LoadMaster documentation which can be downloaded from the https://docs.progress.com/ page.

# 3

# Troubleshooting

## Troubleshooting

Refer to the following sections for troubleshooting details.

**Related Links**

For details, see the following topics:

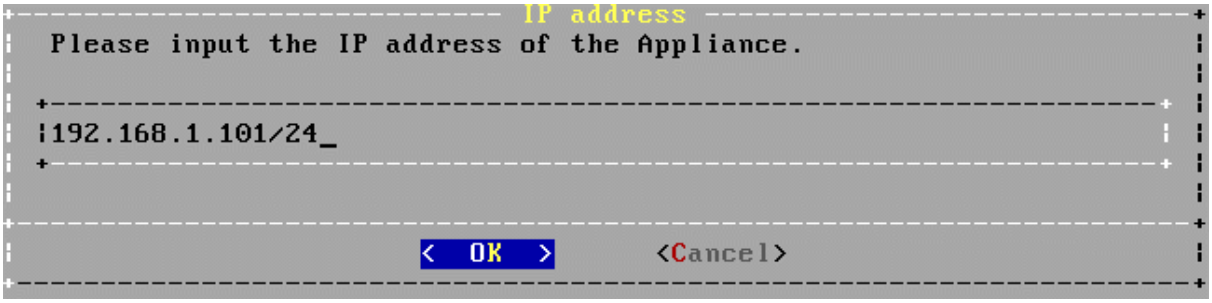
- Configuring the LoadMaster Using the Console
- NIC Types Cannot Be Mixed
- Make this VM Highly Available Option is Greyed Out
- Factory Reset
- Status of Degraded (Integration Services Upgrade Required)
- Time Drift
- Using Live Migration with VLM Bonded Interfaces

# Configuring the LoadMaster Using the Console

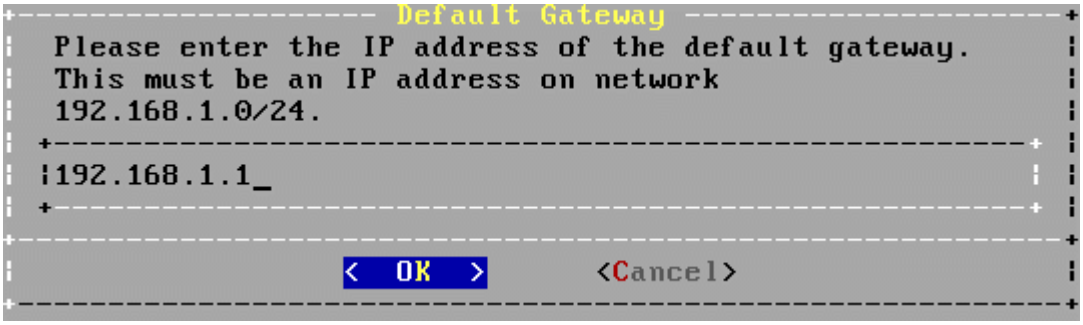
If the LoadMaster does not automatically obtain an IP address using DHCP, or if you would prefer to configure the LoadMaster using the console, then the following configuration steps must be completed

before starting the LoadMaster.

1. Login into the LoadMaster using the console with the following settings:
   - **lb100 login:** bal
   - **Password:** 1fourall



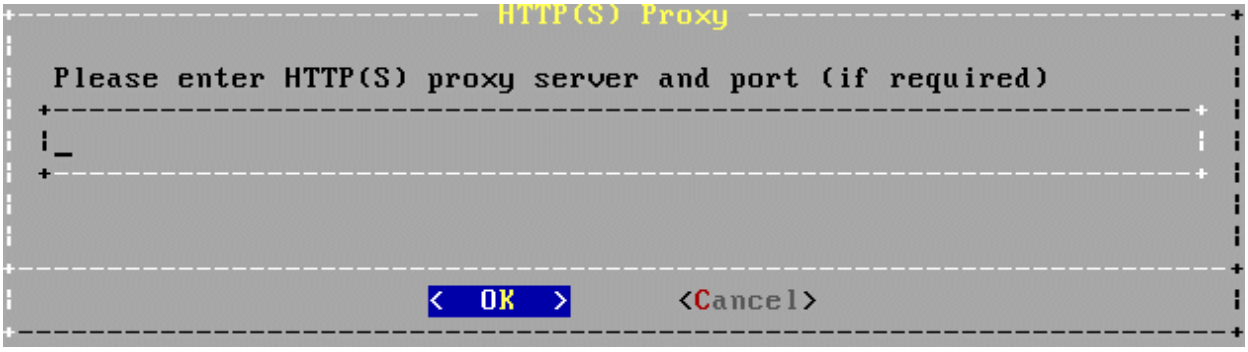

2. Enter the IP address of the eth0 interface, the network facing interface of the LoadMaster, in the input field within the **IP address** dialog box.
3. Press **OK**.




4. Enter the IP address of the default gateway in the input field of the **Default Gateway** dialog box.
5. Press **OK**.




6. Enter a space separated list of nameserver IP addresses.




7. Enter the HTTP(S) proxy server and port (if required).
8. Once these are set, a prompt will appear asking to connect to the web interface at the newly configured IP address. In an internet browser enter the IP address of the eth0 entered in Step 2.

**Note:** Ensure to enter **https://** before the IP address.

9. A warning may appear regarding website security certificates. Please click the continue/ignore option.
10. The LoadMaster End User License Agreement screen appears.
11. Please read the license agreement and, if willing to accept the conditions therein, click on the **Agree** button to proceed.
12. If the machine has shipped with a temporary license, a warning will appear informing that a temporary license has been installed on the machine and for how long the license is valid.
13. Click **OK**.
14. The home screen of the LoadMaster should appear.

The LoadMaster is now fully installed and ready to be used. For further information on how to configure and implement the Virtual LoadMaster, please refer to the LoadMaster documentation which can be found here: https://docs.progress.com/.

# NIC Types Cannot Be Mixed

## NIC Types Cannot Be Mixed

If you add new Network Adapters to a VLM then they must be of the same Adapter Type as those already configured on the VLM.

If you install a Network Adapters with a different Adapter Type as those already configured on the VLM the VLM will not recognize the new interface.

# Make this VM Highly Available Option is Greyed Out

## Make this VM Highly Available Option is Greyed Out

There is an option in the Virtual Machine Manager called **Make this VM highly available**. This option is set

when the Virtual Machine is placed on a host. Therefore, the option will be grayed out, even when the Virtual Machine is not running. There is a way to work around this problem without having to delete and re-create the Virtual Machine. The Virtual Machine can be migrated. Follow the steps below to do this:

1. Open the Virtual Machine Manager console.
2. Right-click the relevant Virtual Machine that you want to make highly-available and select **Migrate**.
3. Select the current host from the list for migration.
4. Click **Yes** to the prompt asking if you want to make the Virtual Machine highly available.
5. The path can be changed if needed. Click **Next**.
6. Select the network and click **Move**.
7. Wait for the migration to complete.

# Factory Reset

## Factory Reset

### Factory Reset

If you perform a factory reset on the VLM, all configuration data, including the VLM's IP address is deleted. During the subsequent reboot the VLM attempts to obtain an IP address using DHCP. If the VLM is on a different subnet to the DHCP server then an IP address will not be obtained and the IP address is set to the default 192.168.1.101.

The VLM may not be accessible using this address. If this is the case then you must run through the quick setup using the console as described in the Configuring the LoadMaster via the Console section.

# Status of Degraded (Integration Services Upgrade Required)

## Status of Degraded (Integration Services Upgrade Required)

### Status of Degraded (Integration Services Upgrade Required)

| Adapter | Connection | IP Addresses | Status |
|---|---|---|---|
| Network Adapter (Static MAC: 00:15:5D:01:C8:ED) | MGMTLan | | Degraded (Integration services upgrade required) |
| Legacy Network Adapter (Dynamic MAC: 00:15:5D:01:3E:82) | STD-VMLan | | OK (Emulated) |

This is a warning message indicating that the LoadMaster software is too old to run on it and can be ignored. Integration services are used when booting to enable Hyper-V to see that the LoadMaster is running. After this point, it is no longer used.

# Time Drift

## Time Drift

In some cases, Virtual LoadMasters on Hyper-V using Network Time Protocol (NTP) can experience significant time drift. The load that the host server is under may be a significant factor in the magnitude of the time drift. This can lead to split brain scenarios and unnecessary High Availability (HA) fail-overs. If the Virtual LoadMaster is using NTP, consider disabling the **Time synchronization** option under the **Integration Services** section of the **Management** settings in the Hyper-V Manager.

# Using Live Migration with VLM Bonded Interfaces

## Using Live Migration with VLM Bonded Interfaces

If one or more bonding interfaces are created on a VLM, observe the following if you use or plan to use Azure Live Migration to move a VLM with minimal downtime:

- The recommended best practice to reduce downtime to a minimum is to bond interfaces at the hypervisor level, not using the LoadMaster Web User Interface (WUI) or API.
- If you instead bond interfaces using the LoadMaster WUI or API, the VLM must be rebooted after the Live Migration is complete to make the bonded interfaces work correctly.

# 4

# Best Practices for Backups

## Best Practices for Backups

Hypervisor snapshots cannot be used to restore a LoadMaster to a working state. The best way to back up your LoadMaster settings is by using the native backup and restore facility in the LoadMaster WUI or API.

To back up your LoadMaster configuration, follow these steps:

1. In the main menu, go to **System Configuration > System Administration > Backup/Restore**.
2. Click **Create Backup File**.

You can create a remote host for automated backups using SCP to save backups to a remote server.

For further details on backing up and restoring the LoadMaster configuration, including certificates and cipher sets, refer to the following links:

- Backup and Restore Technical Note
- How to Create and Restore a LoadMaster Configuration or Certificate Backup

# 5

# References

## References

Unless otherwise specified, the below documents can be found at https://docs.progress.com/.

**Microsoft Hyper-V – Windows 2008 R2, Installation Guide**

**Licensing, Feature Description**