XEN Fully Virtualized

Installation Guide

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Copyright Notices

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1 Introduction

The KEMP Virtual LoadMaster is a version of the KEMP 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 Xen, fully-virtualized environment.

The VLM has been tested with Xen.org versions 3.1, 4.0 and 4.1.

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 Xen virtual machine guest environment for the VLM, at minimum, must include:

- 2 x virtual processors

- 2 GB RAM

- 16 GB virtual hard disk capacity (sparse where possible)

Full virtualization provides total abstraction of the underlying physical system. No modification of the guest OS or application is required. The guest OS or applications do not realize they are in a virtual environment.

> In tests, the Xen para-virtualized VLM had much better performance levels than the Xen fully-virtualized VLM

There may be maximum configuration limits imposed by Xen such as maximum RAM per VM, Virtual NICs per VM etc. For further details regarding the configuration limits imposed by Xen, please refer to the relevant Xen documentation.

A wide variety of Linux distributions can be used as the Dom0 operating system. For a full list of the compatible Linux distributions, please refer to www.xen.org.

KEMP LoadMaster has been tested with the following Dom0 operating systems and versions of Xen.org.

Dom0 OS	Xen.org Version
OpenSUSE 12.1	3.1
OpenSUSE 11.4	4.0.2
Debian 6.0	4.1
CentOS 6.3	4.1

If you have any issues with the Virtual LoadMaster when using a different combination of Xen.org versions and Linux distributions as the Dom0, then please contact KEMP Support.

2 Installing Virtual LoadMaster (VLM) on a Xen Environment

The following instructions describe how to install a Virtual LoadMaster on a Xen environment.

2.1 Download the Xen, Fully-Virtualized, Files

The VLM is packaged within a .tar.gz file for ease of deployment. This file can be freely downloaded from KEMP Technologies 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 option for **Xen**.

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 file to an accessible location within the Xen environment. The .zip file contains the following files, where x.x-xx denotes the release number:

   - **Installation_Guide-KVM.pdf**

   - **Installation_Guide-XEN_Fully_Virtualized.pdf**

   - **LoadMaster-VLM-7.2.36.2.14271.RELEASE-Linux-KVM-XEN.tar.gz**: a zip file containing the disk image

   - **LoadMaster-VLM-7.2.36.2.14271.RELEASE-Linux-KVM-XEN.tar.gz.checksum.xml**

   - **LoadMaster-VLM-7.2.36.2.14271.RELEASE-Linux-KVM-XEN.tar.gz.md5**

   - **LoadMaster-VLM-7.2.36.2.14271.RELEASE-Linux-KVM-XEN.tar.gz.sha**

2.2 Deploy the LoadMaster

KEMP recommends using Virtual Machine Manager to deploy the LoadMaster. The steps below were documented using Virtual Machine Manager:

1. Click the Create a new virtual machine button.

2. Enter a **Name** for the Virtual Machine.

> The name cannot contain any spaces.

3. Select **Import existing disk image**.

4. Click **Forward**.

5. Click **Browse**.

6. Browse to and select the disk file.

7. Select **Linux** as the **OS type**.

8. In the **Version** drop-down list, scroll to the bottom and click **Show all OS options**.

9. Click the **Version** drop-down list again. Scroll to the bottom and select **Generic 2.6.25 or later with virtio**.

10. Click **Forward**.

11. Click **Virtualization Method**.

12. Select **Full Virtualization or HVM**.

13. Click **Apply**.

14. Enter a minimum of **2048** MB in the **Memory** text box.

15. Enter a minimum of **2** in the **CPUs** text box.

16. Click **Forward**.

17. Tick the **Customize configuration before install** check box.

18. Expand the **Advanced options** section.

19. Make any amendments to this section, as needed.

20. Click **Finish**.

21. Click the **Disk** option on the left.

22. Expand the **Advanced Options** section.

23. Select **Virtio** as the **Disk bus**.

24. Click the **NIC** option on the left.

25. Click **Yes** to apply the changes.

26. Select **virtio** as the **Device model**.

27. Change any other settings as needed.

28. Click **Apply**.

29. Click **Begin Installation**.

2.3 Check the Virtual Machine Settings

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

- 2 x virtual processors

- 2 GB RAM

- 16 GB virtual hard disk capacity (sparse where possible)

2.4 LoadMaster IP Address

The VLM should obtain an IP address via DHCP. Make a note of this address.

If the VLM does not obtain an IP address, or if the IP address needs to be changed, it can be manually configured in the console by following the steps in the **Configuring the LoadMaster via the Console** section.

2.5 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.

> 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. A screen appears asking if you are OK with the LoadMaster regularly contacting KEMP to check for updates and other information. If you are OK with this, click **Continue** to proceed. If you want to disable this functionality, remove the check from the **Enable Call Home** check box and click **Continue** to proceed.

License Required To Continue

Please select License Method to proceed: Online Licensing ▼

Please enter your KEMP ID and password below to license this LoadMaster.

If you do not have a KEMP ID, please create one by visiting:
https://alsi-qa.kemptechnologies.com/register

KEMP ID:
Password: License Now
Order ID# (optional):
HTTP(S) Proxy (optional):

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

> 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 KEMP **Order ID#** if this was provided to you.

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

> For detailed instructions on how to register for a KEMP ID and license the LoadMaster, refer to the **Licensing, Feature Description** on the KEMP Documentation Page.
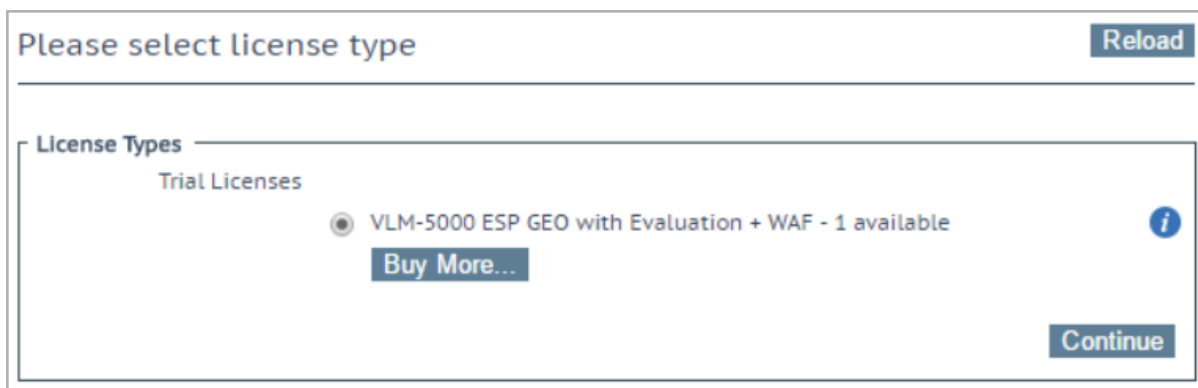
6. If you entered an **Order ID**, a screen appears that provides a list of available licenses for that order ID, in addition to any licenses registered for the KEMP ID based on the LoadMaster platform type. Select the license type you want to apply to this LoadMaster.

> If the license type you want is not displayed, please contact your KEMP representative.

7. Click **Continue**.

8. The login screen appears, enter the **bal** user name and the password.

9. In the screen informing you that the password has changed, press the **Continue** button

10. 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.
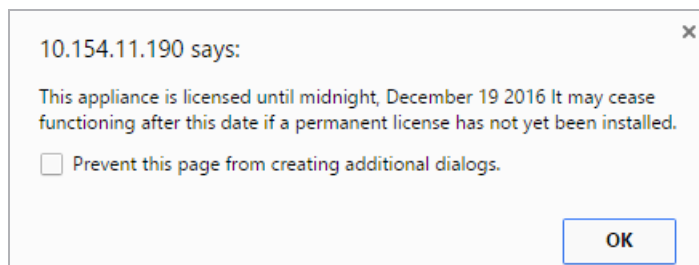
Click **OK** .

11. You should now connect to the **Home** screen of the LoadMaster.

> Last Login: Mon Dec 5 13:38:34 UTC 2016 from 10.0.30.86
> 111 Successful logins in last 30 days
>
> IP address   10.154.11.180
> LoadMaster Version   7.2.37.0.14221.DEV.20161129-1027
> Serial Number   446312
> Boot Time   Mon Dec 5 11:32:33 UTC 2016

12. Go to **System Configuration > Network Setup** in the main menu.

13. Click the **eth0** menu option within the **Interfaces** section.

> ## Network Interface 0
>
> Interface Address (address[/prefix]) [   ] Set Address
> Link Status   Speed: 10000Mb/s, Full Duplex   [Automatic ▾] Force Link
> MTU: [1500] Set MTU
> Additional addresses (address[/prefix]) [   ] Add Address
>
> VLAN Configuration   Interface Bonding

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. Click on the **Local DNS Configuration > Hostname Con**figuration menu option.

> ## Set Hostname
>
> Hostname [   ] Set Hostname

20. In the **Hostname configuration** screen, enter the hostname into the **Current Hostname** input field.

21. Click the **Set Hostname** button.

22. Click the **Local DNS Configuration > 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 http://kemptechnologies.com/documentation page.
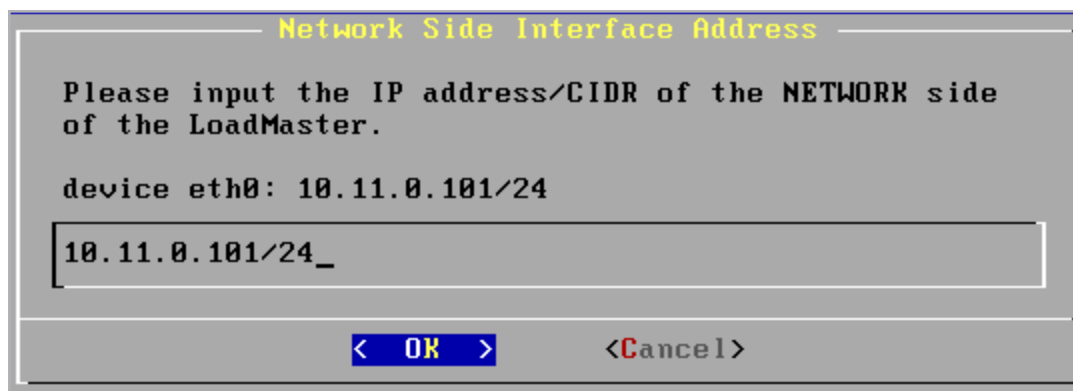
3 Troubleshooting and Notes

3.1 Configuring the LoadMaster via the Console

If the LoadMaster does not automatically obtain an IP address using DHCP, or if the user prefers to configure the LoadMaster via the console, then the following configuration steps must be completed before starting the LoadMaster.

1. Login into the LoadMaster via the console using the settings

    - lb100 login: bal

    - Password: 1fourall

```
┌──────────────── Network Side Interface Address ────────────────┐
│                                                                │
│  Please input the IP address/CIDR of the NETWORK side          │
│  of the LoadMaster.                                            │
│                                                                │
│  device eth0: 10.11.0.101/24                                  │
│  ┌──────────────────────────────────────────────────────────┐ │
│  │10.11.0.101/24_                                            │ │
│  └──────────────────────────────────────────────────────────┘ │
│                                                                │
│              <  OK  >          <Cancel>                        │
└────────────────────────────────────────────────────────────────┘
```
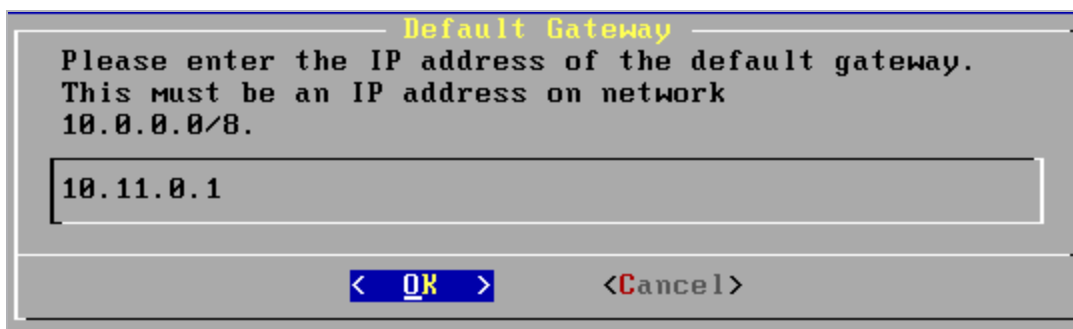
2. Enter the IP address of the eth0 interface, the network facing interface of the LoadMaster, in the input field within the **Network Side Interface Address** dialog box.

3. Press **OK.**

```
┌──────────────────── Default Gateway ────────────────────┐
│  Please enter the IP address of the default gateway.    │
│  This must be an IP address on network                  │
│  10.0.0.0/8.                                            │
│  ┌────────────────────────────────────────────────────┐ │
│  │10.11.0.1                                           │ │
│  └────────────────────────────────────────────────────┘ │
│                                                          │
│            <  OK  >          <Cancel>                    │
└──────────────────────────────────────────────────────────┘
```

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

5. Press **OK**.

6. 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.

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

7. A warning may appear regarding website security certificates. Please click the continue/ignore option.

8. The LoadMaster End User License Agreement screen appears.

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

10. 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.

11. Click **OK**.

12. The Appliance Vitals screen of the LoadMaster should appear.

IP address	10.154.11.51 (lb100:10.154.11.50)
Serial Number	1050788
Boot Time	Tue Sep 8 09:30:58 UTC 2015
Active Since	Tue Sep 8 09:31:13 UTC 2015
LoadMaster Version	7.1-29-1851.20150907-1730
License	UUID: 6987ad8c-ff52-4158-acbb-372a07faa13d
	Activation date: Thu Aug 20 09:04:46 UTC 2015
	Licensed until: September 20 2015
	Support Level: Evaluation + WAF
	Support Until: Sat Aug 20 04:00:00 UTC 2016
	License Type: VLM-5000 ESP GEO
	License Status: Single Temp
	Appliance Model: VLM-5000G+
	Upgrade ⌃
CPU Load	2%
TPS	Total 0 (SSL 0)
WAF Stats	Total handled: 0 Incidents: 0
NetLoad	Mbits/sec
eth0	0.0

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://kemptechnologies.com/documentation.

3.2 Factory Reset

If you perform a factory reset on your 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 via the console as described in the **Configuring the LoadMaster via the Console** section.

3.3 Items of Note

The following are some items to note when using LoadMaster in a Xen environment.

- A filename may not match the running DomU name. Do an XM list to get the DomU name.

- Xen VM's can be administered "locally" by either emulated serial, via xm console OR emulated VGA via VNC

- Usually the customer will have a bridge for networking, /dev/br0 or br1, etc. A VM will not start unless their networking is perfect.

- Xen logs are located in:

    - /var/log/xen/qemu-dm-LoadMaster_VLM.log

    - /var/log/xen/xend.log

4 References

Unless otherwise specified, the below documents can be found at
http://kemptechnologies.com/documentation.

Licensing, Feature Description

Last Updated Date

This document was last updated on 11 January 2018.