



LoadMaster in Azure Government

Installation Guide

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1 Introduction

Microsoft are recommending the use of the new Azure Resource Manager (ARM) portal, rather than the old classic interface.

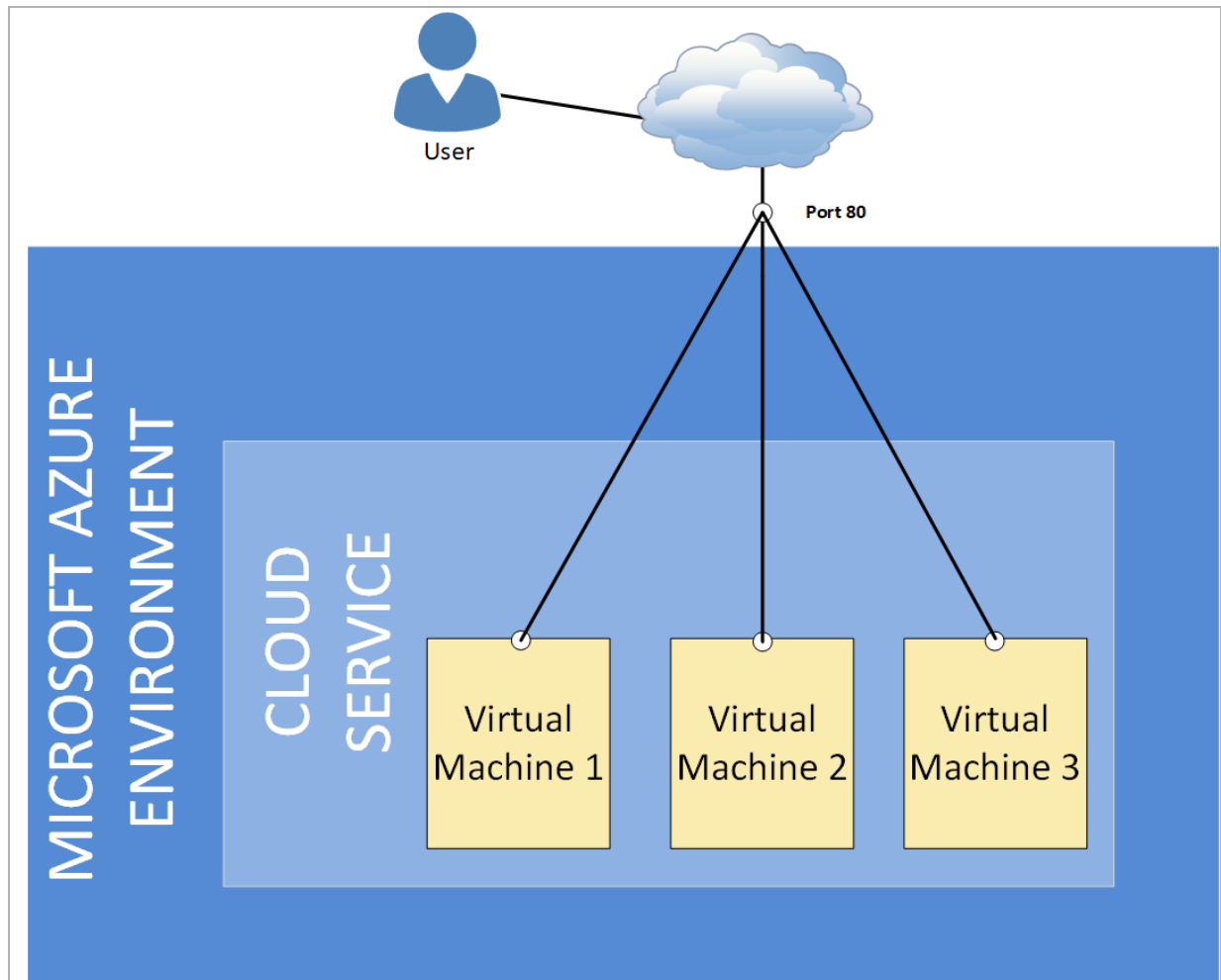
This document provides step-by-step instructions on how to deploy a Kemp Virtual LoadMaster using the ARM portal. This document is intended to provide an overview of LoadMaster in Azure Government and to introduce some basic aspects of LoadMaster functionality.

1.1 Load Balancing in Microsoft Azure

Before we create a LoadMaster Virtual Machine (VM) with Azure Government, it is important to understand the traffic flow so that VMs in Microsoft Azure can be configured appropriately.

Microsoft Azure Infrastructure as a Service (IaaS) deployments accept traffic only on published endpoints. Any request to access Microsoft Azure workloads passes through the default load balancing layer of the Microsoft Azure platform. The figure below depicts the default deployment without the use of a Kemp LoadMaster in Azure .

1 Introduction



Any workload being published consists of an availability set, which represents a single VM or multiple VMs. When a VM is created, if an availability set exists, you have an option to connect the VM to an existing availability set. As more VMs are connected to an existing VM (and thus to an existing availability set), the built-in Microsoft Azure load balancer distributes connections when creating a load-balanced endpoint.

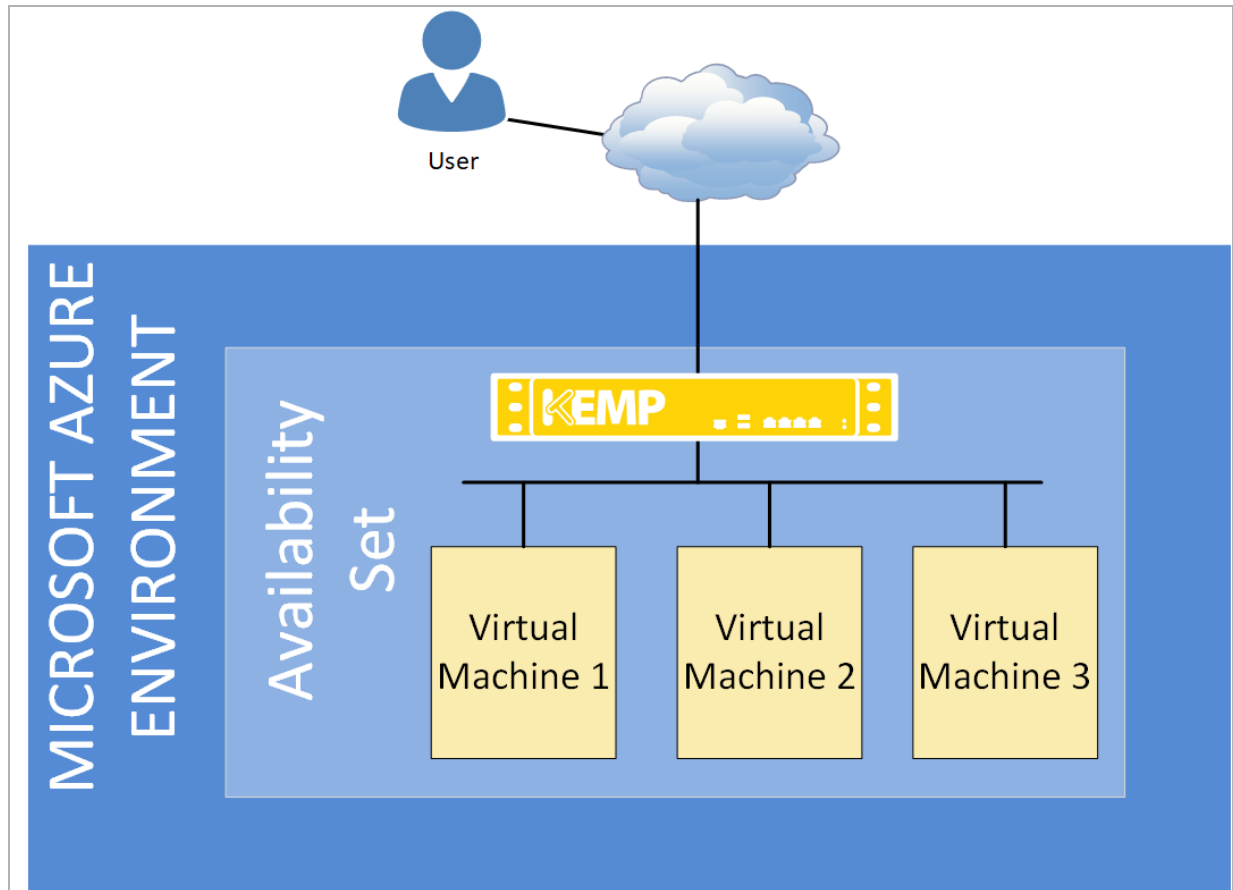
If you wish to use LoadMaster in Azure Government for your deployment, the following steps must be completed:

1. The LoadMaster in Azure Government needs to be deployed first.
2. All the VMs that need to be load balanced using the LoadMaster can then be created and must be connected to the existing LoadMaster VM to create the required grouping.

1 Introduction

3. Finally, when creating endpoints, we cannot use the **Load-Balance traffic on an existing endpoint** option in Azure as we do not want to use the Microsoft Azure Load Balancer to load balance incoming connections.

The figure below depicts the flow when LoadMaster for Azure is deployed:



Notice that VM1, VM2 and VM3 in this example are grouped into a single availability set and the endpoint for published Virtual Services is created only on the LoadMaster VM. By doing this, we receive all load balanced traffic on the LoadMaster VM and the logic of load balancing incoming connections are applied as per the configured Virtual Service on the LoadMaster for a given workload.

Also, notice that VM1, VM2 and VM3 will not have any endpoints as they are not going to be published directly to the internet.

There may be exceptions to this rule for connections that require direct connectivity to the VM such as Remote Desktop Connections to Windows Server OS.

1.2 Known Issues/Limitations

There are a couple of known issues/limitations to be aware of:

- Transparency is not possible in HA setups in Azure environments. For more information and requirements, refer to the **Transparency Feature Description** document on the [Kemp Documentation page](#).
- Do not downgrade from firmware version 7.2.36 or higher to a version below 7.2.36. If you do this, the LoadMaster becomes inaccessible and you cannot recover it.
- The Virtual Service IP address must be the same IP address as the network interface.
- Alternate default gateway support is not permitted in a cloud environment.

2 Installation Prerequisites

To support LoadMaster in Azure Government, the following are required:

- An active subscription of Microsoft Azure Virtual Machines
- A client computer running Windows 7 or newer
- Internet Explorer 9 or newer, or any modern browser
- A minimum of 2GB RAM on the cloud environment

It is not possible to bond interfaces on Azure LoadMasters.

3 Creating a LoadMaster in Azure Government VM

Please ensure that the prerequisites documented in the earlier section are met.

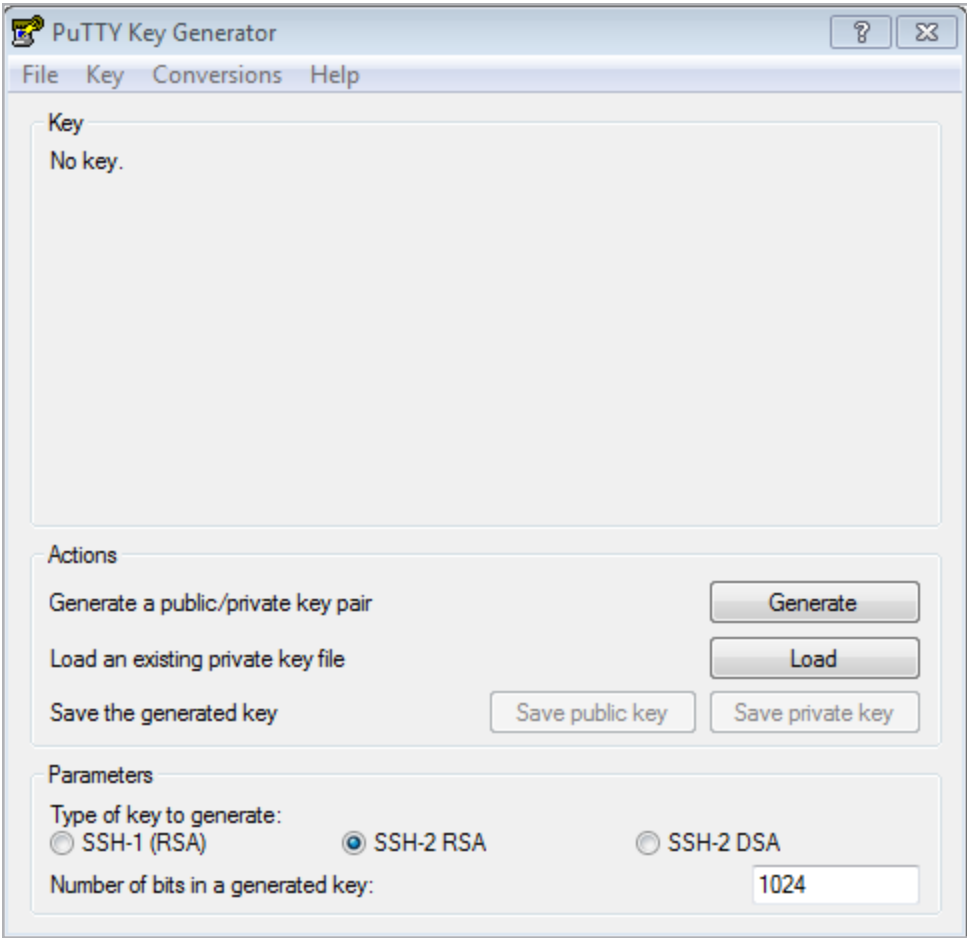
3.1 Create an SSH Key Pair

When creating a LoadMaster in Azure Government VM, there are two options for authentication - a password or an SSH public key. Kemp recommends using a password, but either way will work fine. If you choose to use a password, this section can be skipped and you can move on to the **Licensing Options** section to create the LoadMaster in Azure Government VM. If you choose to use an SSH public key, an SSH key pair will need to be created.

To create an SSH key pair, you will need to use a program such as the **PuTTYgen** or **OpenSSH**. As an example for this document, the steps in **PuTTYgen** are below:

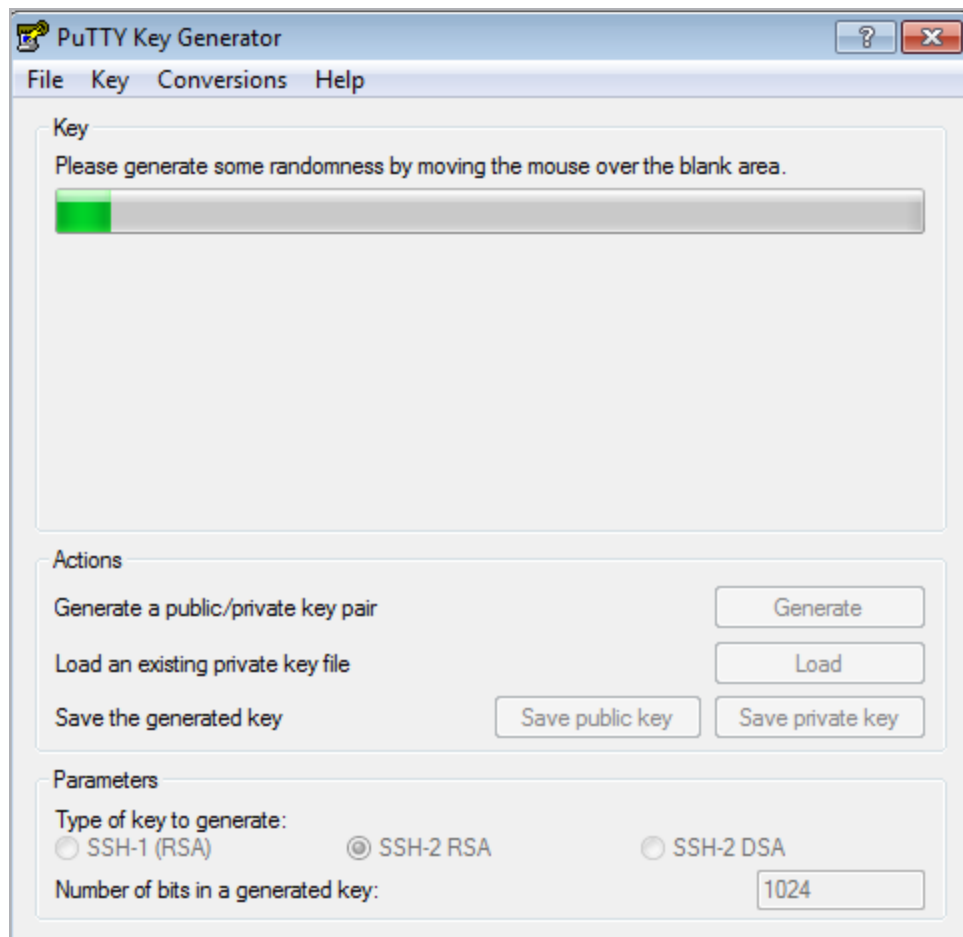
1. Open PuTTYgen.

3 Creating a LoadMaster in Azure Government VM



2. Click **Generate**.

3 Creating a LoadMaster in Azure Government VM



3. Move the mouse over the blank area in the middle. This generates a random pattern that is used to generate the key pair.



4. Copy and save the public and private key as needed.

It is recommended to store SSH keys in a secure location.

3.2 Licensing Options

There are two main licensing options when deploying a LoadMaster in Azure Government:

- Bring Your Own License (BYOL)
- Free version

To use the BYOL option, follow the steps below:

1. Deploy the **BYOL – Trial and perpetual license** version of the Virtual LoadMaster (follow the steps in the section below to do this).
2. Contact a Kemp representative to get a license.

3. Update the license on your LoadMaster to apply the license change (**System Configuration > System Administration > Update License**).
4. Kemp recommends rebooting after updating the license.

3.3 Creating a LoadMaster in Azure Government VM

Microsoft are recommending the use of the new Azure Resource Manager (ARM) portal, rather than the old classic interface.

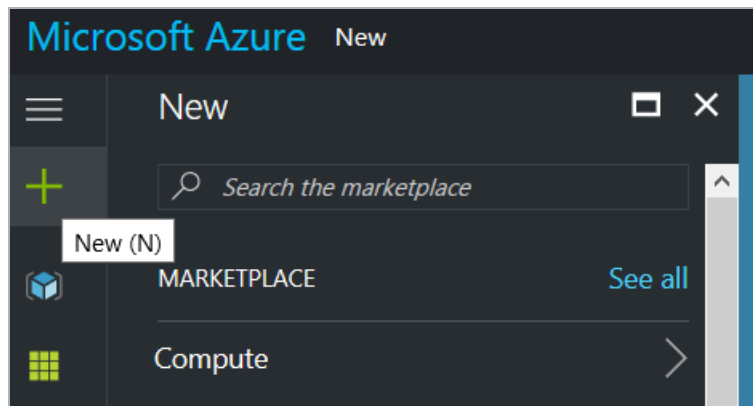
This section provides step-by-step instructions on how to deploy a Kemp Virtual LoadMaster in the ARM dashboard.

The steps in this document reflect the steps in the Azure Marketplace (<https://portal.azure.us>).

To deploy a new LoadMaster using ARM, follow the steps below:





1. From the Azure Management Portal dashboard, click **Marketplace**.



3 Creating a LoadMaster in Azure Government VM

2. In the menu on the left, click the **New** icon.

Results

NAME	PUBLISHER	CATEGORY
 BYOL - Trial and perpetual license	KEMP Technologies Inc	Compute
 Free 20Mbps LoadBalancer	KEMP Technologies Inc	Compute

3. Enter **Kemp** in the search bar.

4. Click the desired Virtual Machine type.

Select a deployment model ⓘ

Resource Manager
 ▼

Create

5. Select **Resource Manager** in the drop-down list and click **Create**.

If deploying a Bring Your Own License (BYOL) LoadMaster it is also possible to choose the classic deployment model. The remaining steps may vary slightly if using the classic deployment model.

*

Name

KEMP-GOV1

✓

VM disk type ⓘ

HDD

▼

*

User name

bal

✓

*

Authentication type

SSH public key

Password

*

Password

●●●●●●●●●●

✓

*

Confirm password

●●●●●●●●●●

✓

Subscription

Microsoft Azure Government Trial

▼

*

Resource group ⓘ

☒ Create new

☐ Use existing

KEMPGOV-RG1

✓

Location

USGov Virginia

▼

OK

6. Enter a **Name** for the Virtual Machine.
7. Enter a **User name**.

a) This will not be used by LoadMaster in Azure Government. Provide a name of your choice. The default username to access the LoadMaster is **bal**.

b) Fill out the authentication details. There are two possible methods of authentication - using a password or an SSH key. Depending on what you select, complete the relevant step below:

- **Password:** Enter a password.

This password is used to access the LoadMaster WUI.

- **SSH Public Key:** Paste the SSH public key which was created in the **Create an SSH Key Pair** section. The private key is needed to connect to the LoadMaster using SSH.

It is recommended to store SSH keys in a secure location.

8. Select the relevant **Subscription**.
9. Select the relevant **Resource group**, or create one if needed.
10. Select the relevant **Location**.
11. Click **OK**.

3 Creating a LoadMaster in Azure Government VM

★ Recommended | [View all](#)

A1 Standard ★	A3 Standard ★	A5 Standard ★
1 Core	4 Cores	2 Cores
1.75 GB	7 GB	14 GB
2 Data disks	8 Data disks	4 Data disks
2x500 Max IOPS	8x500 Max IOPS	4x500 Max IOPS
Load balancing	Load balancing	Load balancing
Auto scale	Auto scale	Auto scale
44.64 USD/MONTH (ESTIMATED)	178.56 USD/MONTH (ESTIMATED)	186.00 USD/MONTH (ESTIMATED)

Available sizes may change depending on the region.

12. Select from the recommended pricing tiers. Click **View all** if the recommended pricing tier is not meeting the recommended requirements (see the table in the **Recommended Pricing Tier** section for further information regarding recommended pricing tiers).

13. Click **Select**.

Storage

Disk type ⓘ

Standard

Premium (SSD)

* Storage account ⓘ

Imarmtest1949

>

Network

* Virtual network ⓘ

LM-ARMTTest

>

* Subnet ⓘ

default (10.7.0.0/24)

>

* Public IP address ⓘ

(new) ExampleLoadMaster

>

* Network security group ⓘ

(new) ExampleLoadMaster

>

Extensions

Extensions ⓘ

No extensions

>

Monitoring

OK

14. Select the relevant **Disk type**.
15. Select the relevant **Storage account**, or create one if needed.
16. Select the relevant **Virtual network**, or create one if needed.
17. Select the relevant **Subnet**.
18. Select the relevant **Public IP address**, or create one if needed.
19. Select the relevant **Network security group**, or create one if needed.

The security group should contain rules for port 8443 (management), 22 (SSH) and any other ports that are needed by the backend.

Do not block port 6973.

20. Select **Disabled** for **Diagnostics**.

21. Click **OK**.

i Validation passed

Basics	
Subscription	KEMPCorp
Resource group	AA-TestWeb
Location	East US

Settings	
Computer name	ExampleLoadMaster
User name	bal
Size	Standard A1
Disk type	Standard
Storage account	lmarmtest1949
Virtual network	LM-ARMTTest
Subnet	default (10.7.0.0/24)
Public IP address	(new) ExampleLoadMaster
Network security group	(new) ExampleLoadMaster
Availability set	None
Diagnostics	Disabled

OK

22. A summary of the settings is displayed. Click **OK**.

The creation of a VM may take a few minutes or more depending on the Azure portal's responsiveness and other factors. Ensure that the VM is created without any errors. Resolve any errors if needed.

When creating connected VMs, ensure to select the same **Virtual network** as the LoadMaster.

3.3.1 Recommended Pricing Tier

When creating a LoadMaster in Azure Government Virtual Machine, you must select a pricing tier. The recommended pricing tiers are listed in the table below.

If the relevant pricing tier is not displayed, click **View all**.

VLM Model	Recommended Pricing Tier
VLM-200	A1, A2, A3
VLM-2000	A2, A3, A4
VLM-5000	A3, A4, A5
VLM-10G	A7, A8, A9

3.4 Licensing and Initial Configuration

The following procedure will help you set up LoadMaster in Azure Government by ensuring appropriate licensing and basic configuration before you can create a Virtual Service and publish the required workloads:

1. Using a supported web browser, navigate to **https://<DNSName>:8443**.

Substitute <DNSName> with the DNS name you created in previous section.

2. Take the appropriate steps to acknowledge notification about the self-signed certificate to proceed.
3. The LoadMaster requires you to log in before you can proceed any further. The password used to log in will vary depending on whether you choose to use **Password** authentication or **SSH Public Key** authentication when creating the VM in the **Licensing Options** section:

- **Password:** Provide the username **bal** and the password which was set in the **Licensing Options** section.

Click **Continue**.

- **SSH Public Key:** Provide the default username **bal** and password **1fourall** to proceed. You are required to change the default password soon after.

4. You are presented with the End User License Agreement (EULA). You must accept the EULA to proceed further. Click **Agree** to accept the EULA.
5. After accepting the EULA, you are presented with a password change screen. Provide a secure password of your choice. Click **Set Password** to commit changes. The new password is effective immediately.
6. On the password notification screen, click **Continue**.
7. The LoadMaster requires you to authenticate with a new password. Enter **bal** in the user field and the new password in the password field. Click **Ok** to proceed.
8. Before using the LoadMaster, it must be licensed. For instructions on how to license the LoadMaster, refer to the **LoadMaster Licensing Feature Description** on the [Kemp Documentation Page](#).

When licensing a trial, you can usually only get a trial VLM-5000.

9. After licensing, you are presented with a screen about allowing call home functionality (data collection).
10. You are then presented with the main menu and home screen of the LoadMaster.

Before you can create Virtual Services, you should create VMs that you are load balancing through LoadMaster in Azure Government. Ensure that your Network Security Group (NSG) is set up correctly depending on which services you are load balancing. The following section will provide some details on this topic.

4 Creating Virtual Services

The following steps describe how to create a Virtual Service on the LoadMaster in Azure Government.

1. Using a supported web browser, navigate to **https://<DNSName>:8443**. Substitute **<DNSName>** with the DNS name you created in the **Creating a LoadMaster in Azure Government VM** section.
2. Take the appropriate steps to acknowledge notification about the self-signed certificate to proceed further.

The certificate used by the WUI will take the public name used by Azure.

3. If prompted, log in to the WUI.
4. From the main menu, expand the **Virtual Services** section and click **Add New**.
5. In the Virtual Service parameters section, provide the following details:
 - a) **Virtual Address:** This field is pre-populated with the eth0 IP address:
 - i. If only one Network Interface Card (NIC) is present for the Virtual Machine - the LoadMaster is limited to a single IP. To create a Virtual Service, you must use the internal IP address of the LoadMaster VM. You can find the internal IP address in the VM's dashboard page.
 - ii. If more than one NIC is present in the Virtual Service, it is possible to use any of the internal IP addresses as the Virtual Service address.

Only the IP address on eth0 is connected to the public IP.

- b) **Port:** This must be the same port as the Private Port defined while creating the endpoint in earlier section.
 - c) **Service Name:** While optional, service name helps identify the purpose of the Virtual Service being created
 - d) **Protocol:** This must be the same as the protocol selected during creation of the endpoint in the earlier section.
6. Click the **Add this Virtual Service** button.

7. Expand the **Standard Options** section.

▼ Standard Options	
Force L7	<input checked="" type="checkbox"/>
Transparency	<input type="checkbox"/>
Subnet Originating Requests	<input type="checkbox"/>
Extra Ports	<input type="text"/> Set Extra Ports
Persistence Options	Mode: <input type="text" value="None"/>
Scheduling Method	<input type="text" value="round robin"/>
Idle Connection Timeout (Default 660)	<input type="text"/> Set Idle Timeout
Use Address for Server NAT	<input type="checkbox"/>
Quality of Service	<input type="text" value="Normal-Service"/>

Virtual Services in the LoadMaster in Azure Government may be set to transparent.

8. Configure the remaining virtual parameters as necessary. Use the Kemp LoadMaster guides from the Product Documentation section located on the Kemp website: <http://kemptechnologies.com/documentation>

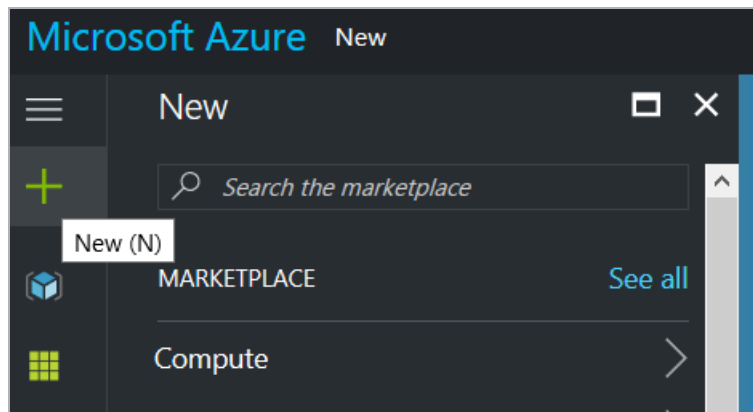
9. Add VMs being load balanced in the **Real Servers** section of the Virtual Service.

Repeat the steps above as necessary to create more Virtual Services on LoadMaster for Azure.



5 Deploying a LoadMaster Programmatically

If you want to deploy a LoadMaster outside of the portal, for example using a template or a script, you must first enable programmatic deployment of the offering in the portal. To do this, follow the steps below:

1. From the Azure Management Portal dashboard, click **Marketplace**.



2. In the menu on the left, click the **New** icon.

<input type="text" value="KEMP"/>			
Results			
NAME	PUBLISHER	CATEGORY	
 BYOL - Trial and perpetual license	KEMP Technologies Inc	Compute	
 Free 20Mbps LoadBalancer	KEMP Technologies Inc	Compute	

3. Enter **Kemp** in the search bar.
4. Click the desired Virtual Machine type.

5 Deploying a LoadMaster Programmatically

Select a deployment model ⓘ

Resource Manager ▼

Create

Want to deploy programmatically? [Get started →](#)

5. Click the **Want to deploy programmatically?** link at the bottom.

SUBSCRIPTION NAME	SUBSCRIPTION ID	STATUS	
KEMPCorp	7bbfc9a3-3321-425c-8a76-1a55b2fd2218	<div>Enable</div>	<div>Disable</div>
<div><div>Save</div><div>Discard</div></div>			

6. Select **Enable** and click **Save**.

You must repeat these steps for any other Virtual Machine types that you want to deploy programmatically.

References

While the instructions above provide a basic overview of how to deploy and configure LoadMaster for Azure, it is not designed to be a comprehensive guide to configure every possible workload. This section identifies some of many guides published on our resources section of our website. Unless otherwise specified, the following documents can be found at <http://kemptechnologies.com/documentation>.

Kemp LoadMaster, Product Overview

Web User Interface (WUI), Configuration Guide

CLI, Interface Description

RESTful API, Interface Description

Virtual Services and Templates, Feature Description

SubVSs, Feature Description

SSL Accelerated Services, Feature Description

Port Following, Feature Description

Content Rules, Feature Description

ESP, Feature Description

Quickstart Guide

HA for Azure, Feature Description

Licensing, Feature Description

You can find more documentation here: <http://kemptechnologies.com/documentation>

You can engage in community discussions on forums at:

<https://support.kemptechnologies.com/hc/en-us/community/topics>

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