



# LoadMaster in Azure Government

## Installation Guide

UPDATED: 27 July 2023

**© 2022 Progress Software Corporation and/or one of its subsidiaries or affiliates. All rights reserved.**

These materials and all Progress® software products are copyrighted and all rights are reserved by Progress Software Corporation. The information in these materials is subject to change without notice, and Progress Software Corporation assumes no responsibility for any errors that may appear therein. The references in these materials to specific platforms supported are subject to change.

#1 Load Balancer in Price/Performance, 360 Central, 360 Vision, Chef, Chef (and design), Chef Habitat, Chef Infra, Code Can (and design), Compliance at Velocity, Corticon, Corticon.js, DataDirect (and design), DataDirect Cloud, DataDirect Connect, DataDirect Connect64, DataDirect XML Converters, DataDirect XQuery, DataRPM, Defrag This, Deliver More Than Expected, DevReach (and design), Driving Network Visibility, Flowmon, Inspec, Ipswitch, iMacros, K (stylized), Kemp, Kemp (and design), Kendo UI, Kinvey, LoadMaster, MessageWay, MOVEit, NativeChat, OpenEdge, Powered by Chef, Powered by Progress, Progress, Progress Software Developers Network, SequeLink, Sitefinity (and Design), Sitefinity, Sitefinity (and design), Sitefinity Insight, SpeedScript, Stylized Design (Arrow/3D Box logo), Stylized Design (C Chef logo), Stylized Design of Samurai, TeamPulse, Telerik, Telerik (and design), Test Studio, WebSpeed, WhatsConfigured, WhatsConnected, WhatsUp, and WS\_FTP are registered trademarks of Progress Software Corporation or one of its affiliates or subsidiaries in the U.S. and/or other countries.

Analytics360, AppServer, BusinessEdge, Chef Automate, Chef Compliance, Chef Desktop, Chef Workstation, Corticon Rules, Data Access, DataDirect Autonomous REST Connector, DataDirect Spy, DevCraft, Fiddler, Fiddler Classic, Fiddler Everywhere, Fiddler Jam, FiddlerCap, FiddlerCore, FiddlerScript, Hybrid Data Pipeline, iMail, InstaRelinker, JustAssembly, JustDecompile, JustMock, KendoReact, OpenAccess, PASOE, Pro2, ProDataSet, Progress Results, Progress Software, ProVision, PSE Pro, Push Jobs, SafeSpaceVR, Sitefinity Cloud, Sitefinity CMS, Sitefinity Digital Experience Cloud, Sitefinity Feather, Sitefinity Thunder, SmartBrowser, SmartComponent, SmartDataBrowser, SmartDataObjects, SmartDataView, SmartDialog, SmartFolder, SmartFrame, SmartObjects, SmartPanel, SmartQuery, SmartViewer, SmartWindow, Supermarket, SupportLink, Unite UX, and WebClient are trademarks or service marks of Progress Software Corporation and/or its subsidiaries or affiliates in the U.S. and other countries. Java is a registered trademark of Oracle and/or its affiliates. Any other marks contained herein may be trademarks of their respective owners.

Please refer to the NOTICE.txt or Release Notes – Third-Party Acknowledgements file applicable to a particular Progress product/hosted service offering release for any related required third-party acknowledgements.

# Table of Contents

---

|   |           |
|---|-----------|
| <b>1 Introduction</b>                                 | <b>4</b>  |
| 1.1 Load Balancing in Microsoft Azure                 | 4         |
| 1.2 Known Issues/Limitations                          | 7         |
| <b>2 Installation Prerequisites</b>                   | <b>8</b>  |
| <b>3 Creating a LoadMaster in Azure Government VM</b> | <b>9</b>  |
| 3.1 Create an SSH Key Pair                            | 9         |
| 3.2 Licensing Options                                 | 12        |
| 3.3 Creating a LoadMaster in Azure Government VM      | 13        |
| 3.3.1 Recommended Pricing Tier                        | 21        |
| 3.4 Licensing and Initial Configuration               | 21        |
| <b>4 Creating Virtual Services</b>                    | <b>23</b> |
| <b>5 Deploying a LoadMaster Programmatically</b>      | <b>25</b> |
| <b>References</b>                                     | <b>27</b> |
| <b>Last Updated Date</b>                              | <b>28</b> |

# 1 Introduction

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

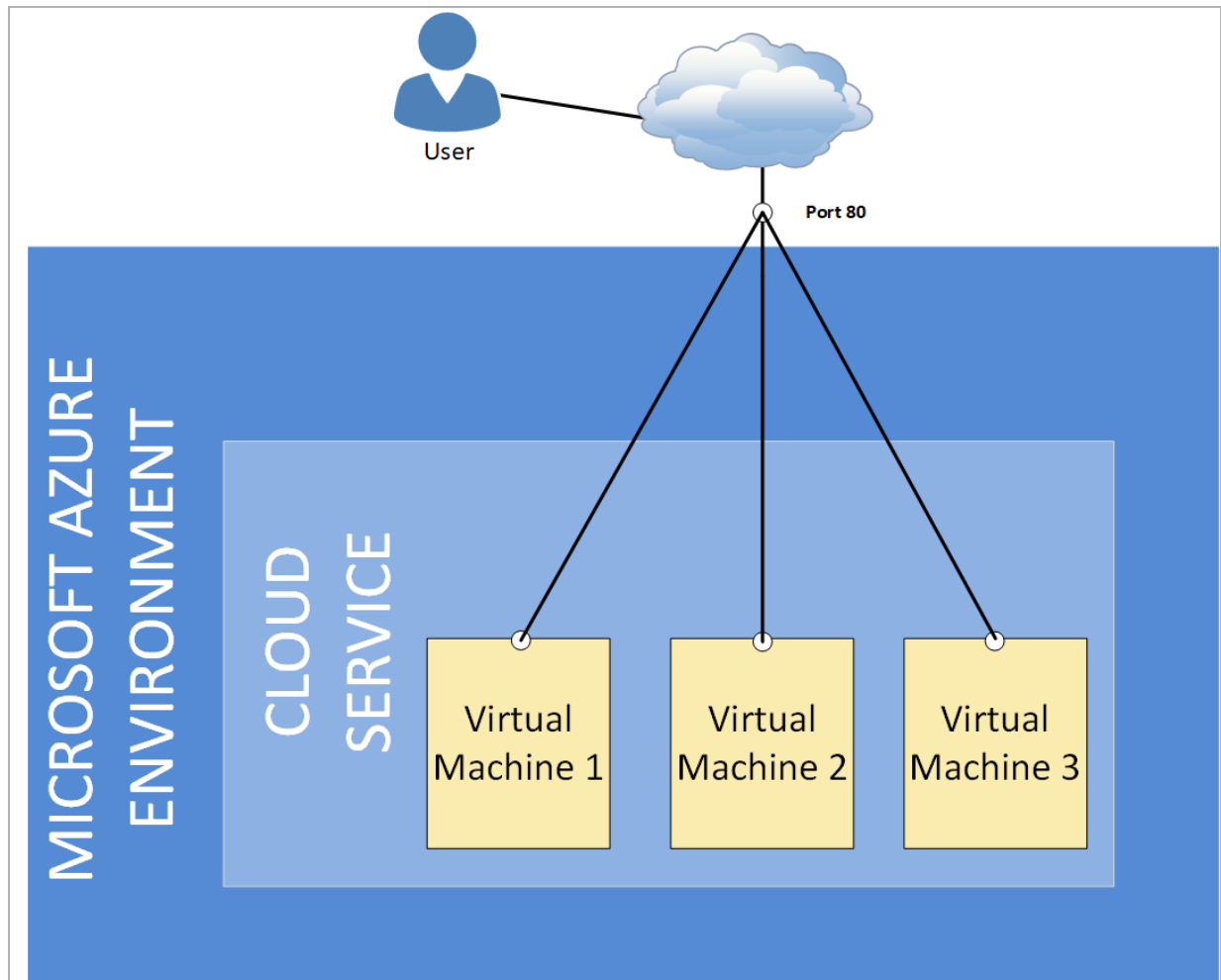
This document provides step-by-step instructions on how to deploy a Kemp Virtual LoadMaster using the ARM portal. This document is intended to provide an overview of LoadMaster in Azure Government and to introduce some basic aspects of LoadMaster functionality.

## 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.

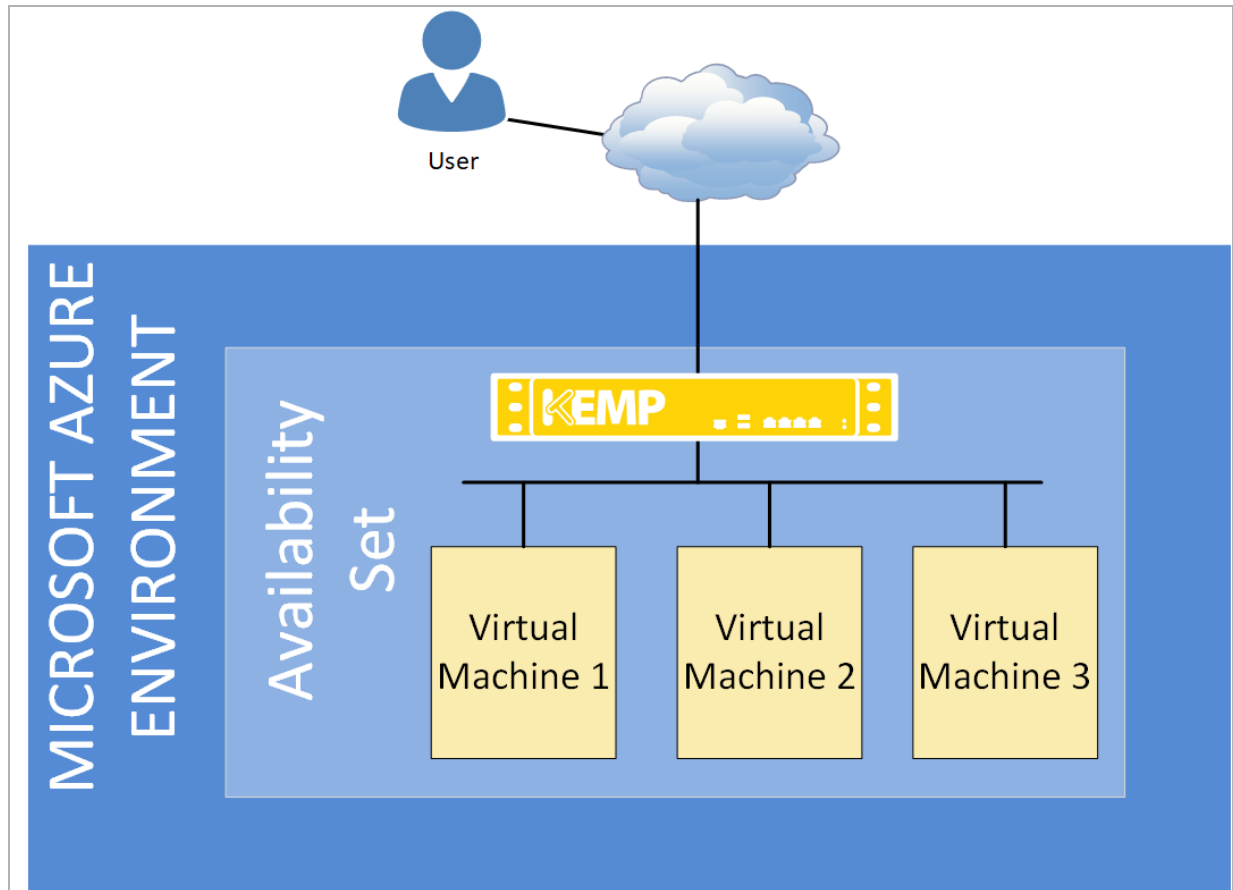
If you wish to use LoadMaster in Azure Government for your deployment, the following steps must be completed:

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.

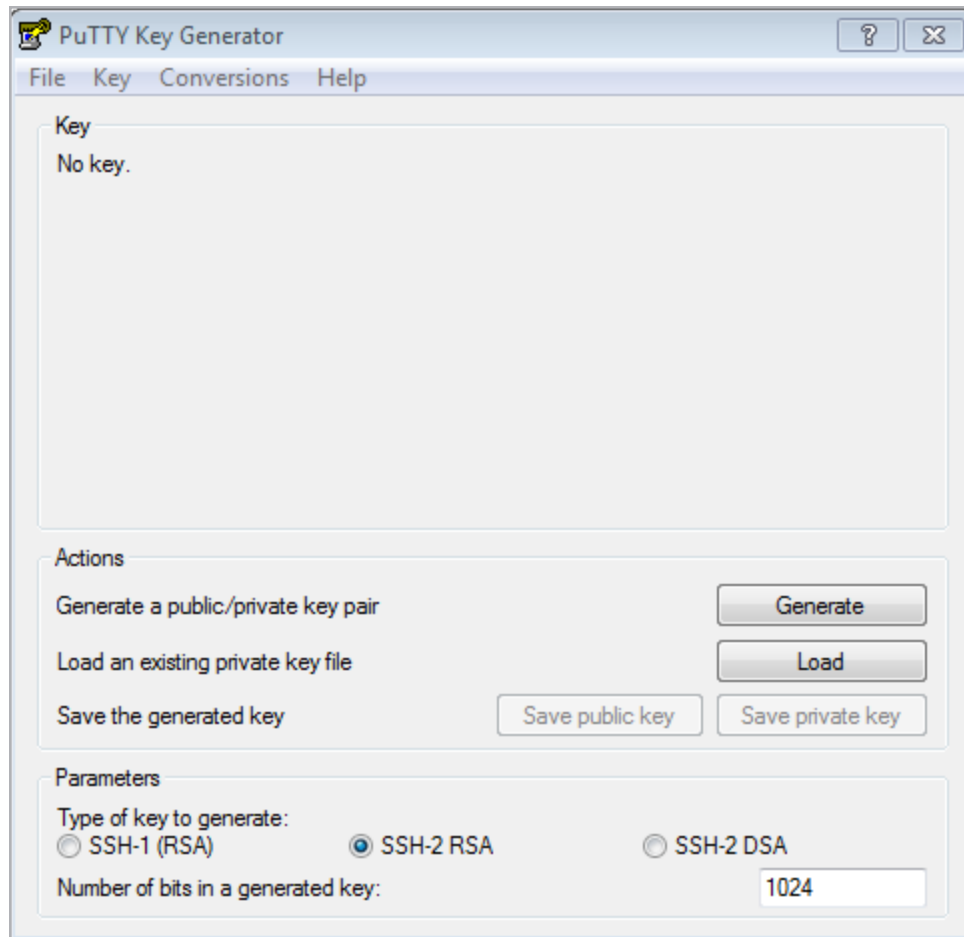
## 3.1 Create an SSH Key Pair

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:

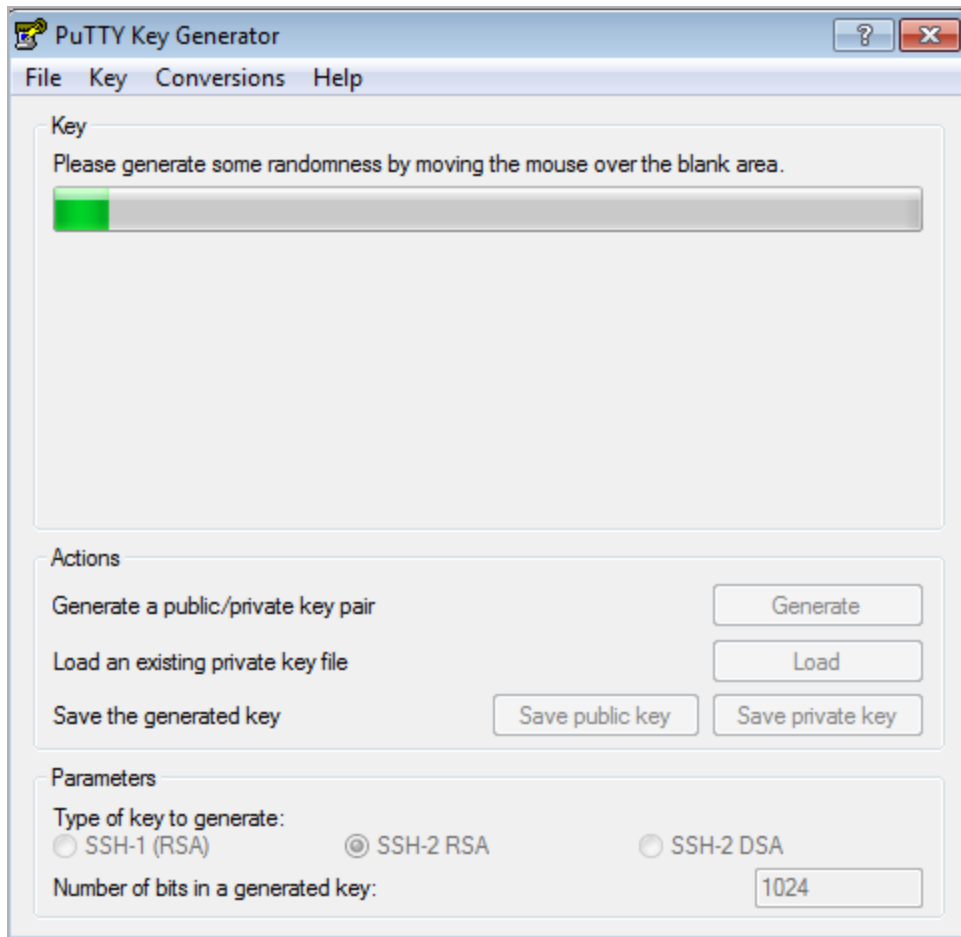
1. Open PuTTYgen.

## 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.

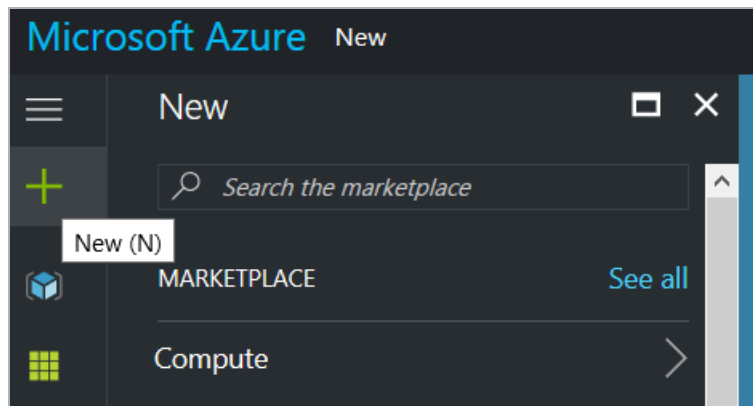
This section provides step-by-step instructions on how to deploy a Kemp Virtual LoadMaster in the ARM dashboard.

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<br>USD/MONTH (ESTIMATED) | 178.56<br>USD/MONTH (ESTIMATED) | 186.00<br>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 given the opportunity to enable Kemp Analytics. With this feature, LoadMaster collects and sends usage data to Kemp for analysis. This data is strictly about product usage, enabled capabilities, and statistics. No sensitive user data, or traffic of any kind is either collected or communicated. To enable this feature, click **Enable Kemp Analytics**. To proceed without enabling this feature, click **Don't Enable Kemp Analytics**. For more information, visit <https://kemp.ax/KempAnalytics>.

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"/> <button>Set Extra Ports</button>  |
| Persistence Options                   | Mode: <input type="text" value="None"/>                |
| Scheduling Method                     | <input type="text" value="round robin"/>               |
| Idle Connection Timeout (Default 660) | <input type="text"/> <button>Set Idle Timeout</button> |
| 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.

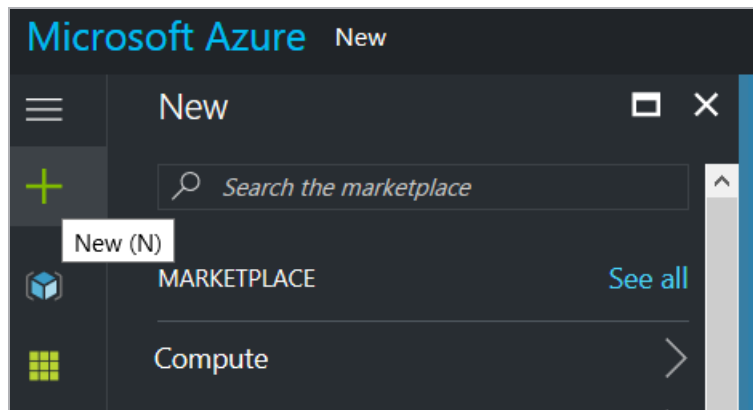
Repeat the steps above as necessary to create more Virtual Services on LoadMaster for Azure.





# 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>

# Last Updated Date

This document was last updated on 27 July 2023.