



LoadMaster for Azure Resource Manager

Feature Description

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Used, under license, U.S. Patent Nos. 6,473,802, 6,374,300, 8,392,563, 8,103,770, 7,831,712, 7,606,912, 7,346,695, 7,287,084 and 6,970,933

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1 Introduction

Microsoft Azure has two different models for deploying services: **Resource Manager** and **Classic**. The main body of this guide covers setting up the LoadMaster using the **Resource Manager** method.

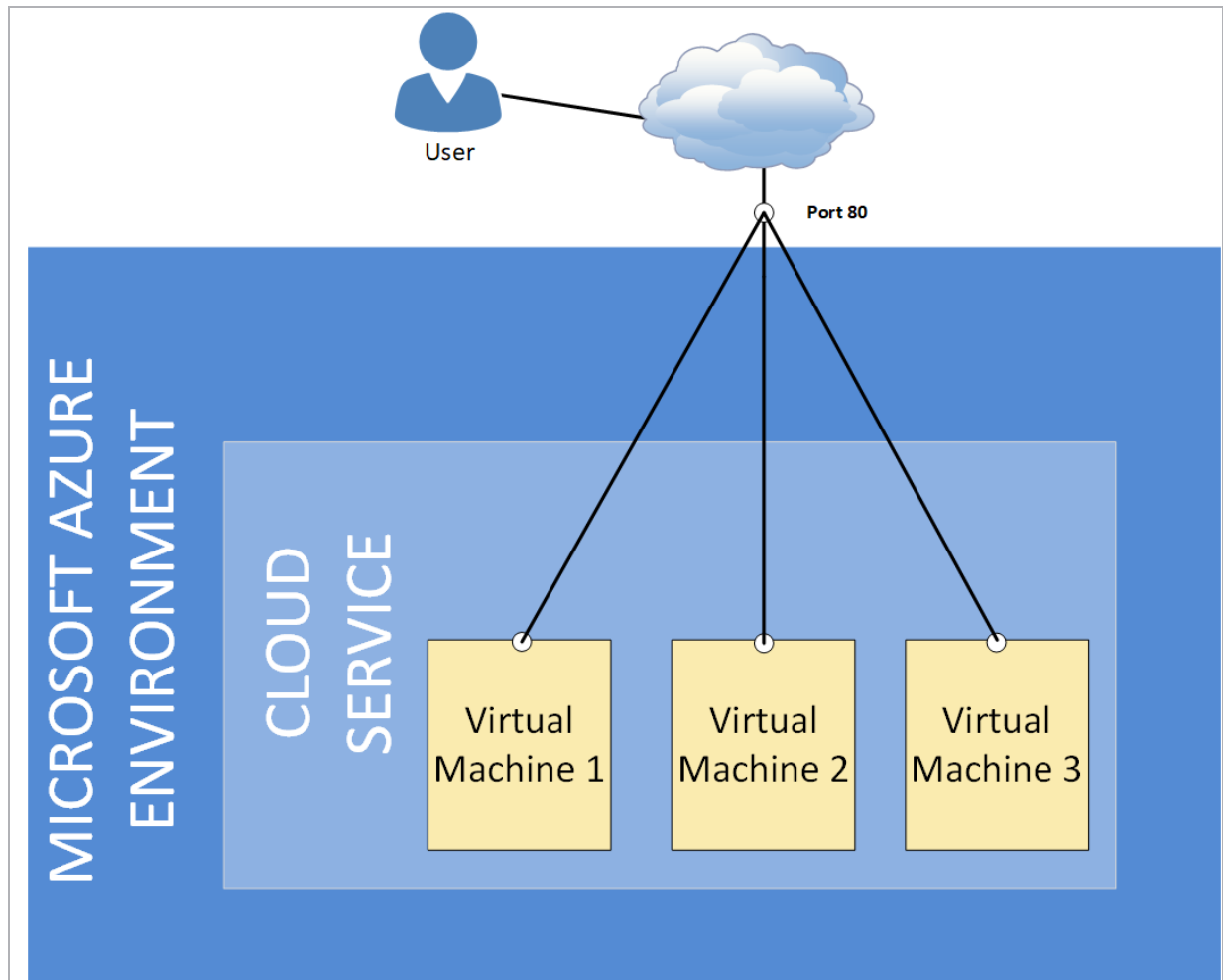
Microsoft are recommending the use of the new Azure Resource Manager (ARM) portal, rather than the old classic interface. Please refer to the following KEMP knowledge base article on why KEMP recommends using the ARM mode of deployment: <https://support.kemptechnologies.com/hc/en-us/articles/115000520183>

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 for Azure and to introduce some basic aspects of LoadMaster functionality.

1.1 Load Balancing in Microsoft Azure

Before we create a LoadMaster Virtual Machine (VM) in Azure, 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 .

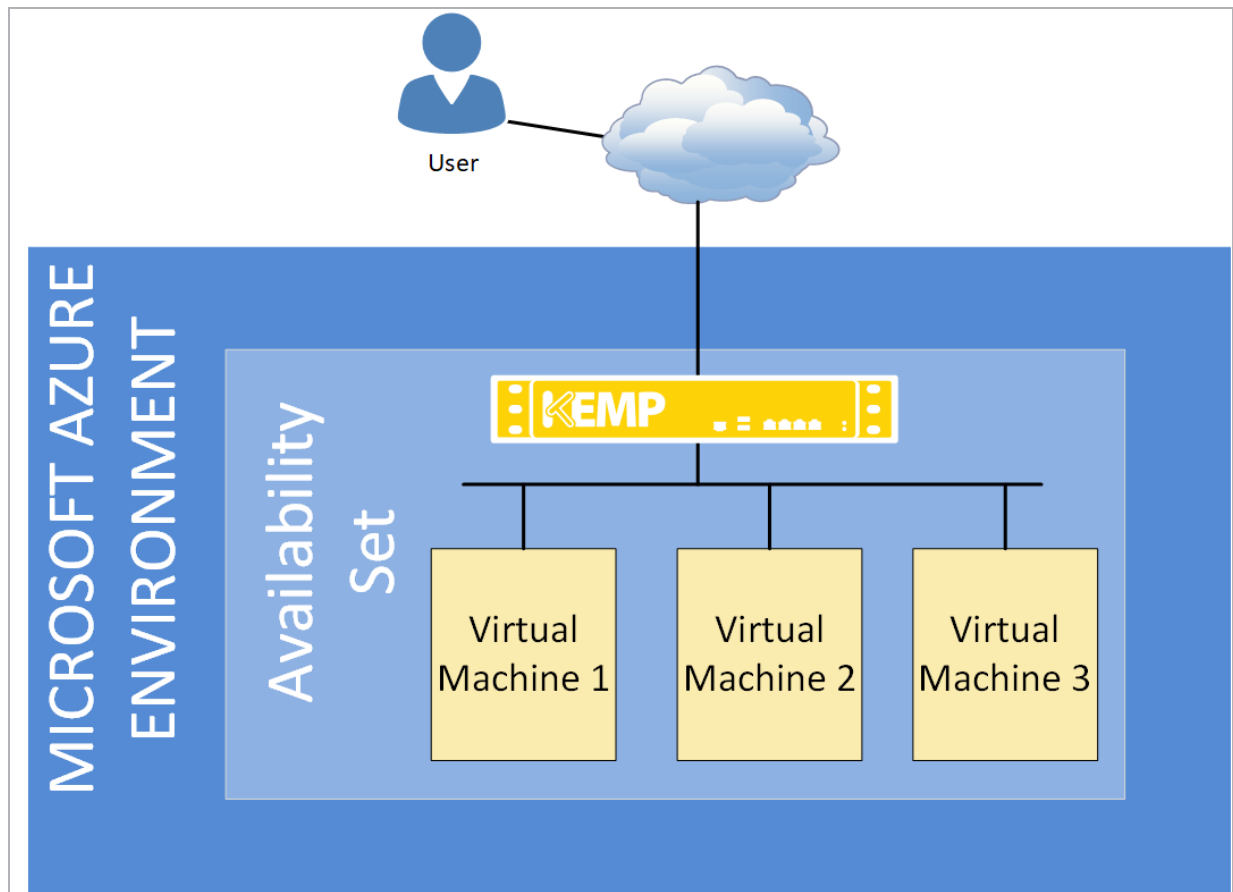


Any workload being published consists of an availability set, which represents a single VM or multiple VMs. When a VM is created, if an availability set exists, you have an option to connect the VM to an existing availability set. As more VMs are connected to an existing VM (and thus to an existing availability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

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

1. The LoadMaster for Azure 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.
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 the Azure LoadMaster. **Transparency** must be disabled in the Virtual Service settings on the LoadMaster (**Virtual Services > View/Modify Services > Modify > Standard Options**).
- 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.

2 Installation Prerequisites

To support LoadMaster for Azure, 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 for Azure VM

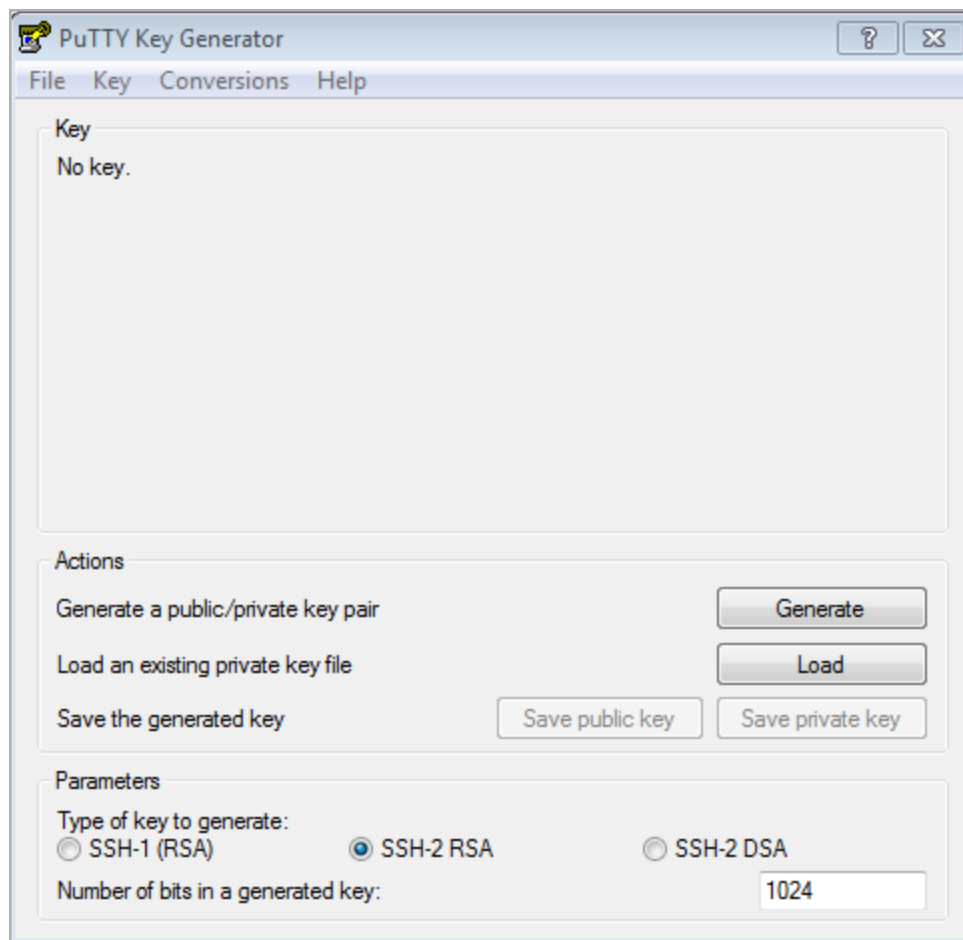
Please ensure that the prerequisites documented in the earlier section are met.

3.1 Create an SSH Key Pair

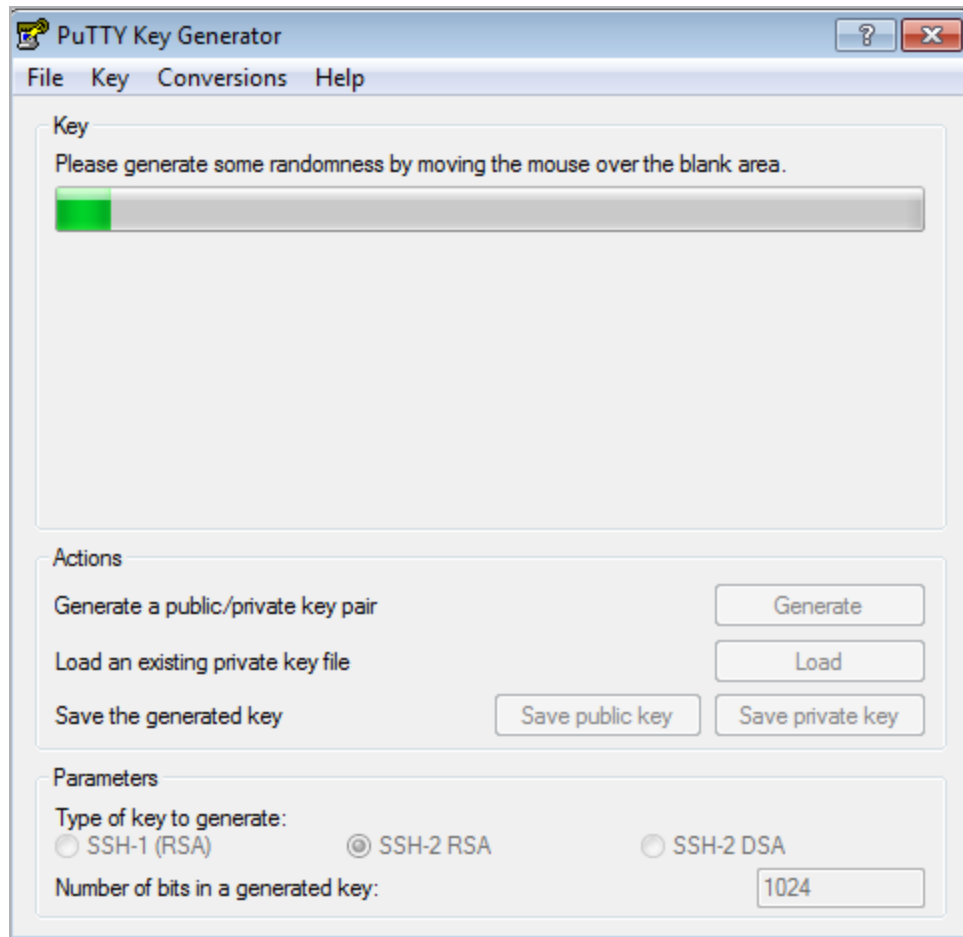
When creating a LoadMaster for Azure VM, there are two options for authentication - a password or an SSH public key. KEMP recommends using a password, but either way will work fine. If you choose to use a password, this section can be skipped and you can move on to the **Licensing Options** section to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



2. Click **Generate**.



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 for Azure:

- Hourly consumption
- Bring Your Own License (BYOL)

To use the BYOL option, follow the steps below:

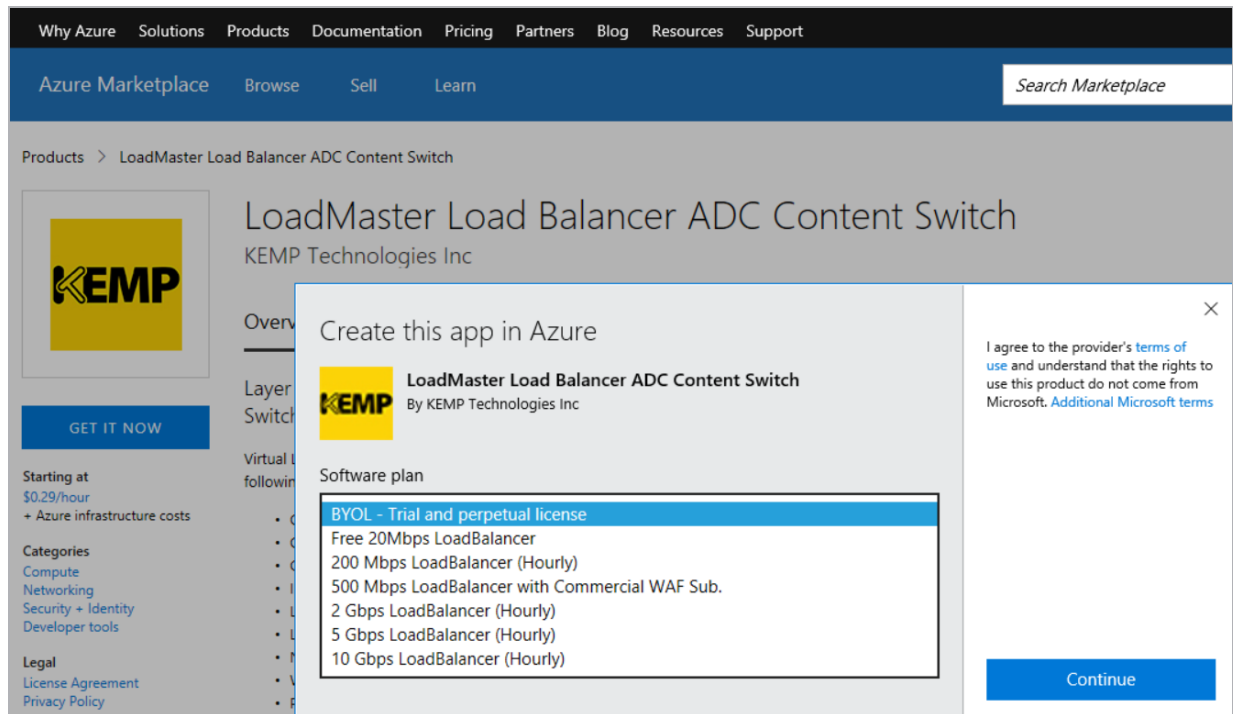
1. Deploy the **BYOL – Trial and perpetual license** version of the Virtual LoadMaster (follow the steps in the section below to do this).
2. Contact a KEMP representative to get a license.

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 for Azure VM

Microsoft are recommending the use of the new Azure Resource Manager (ARM) portal, rather than the old classic interface. Please refer to the following KEMP knowledge base article on why KEMP recommends using the ARM mode of deployment: <https://support.kemptechnologies.com/hc/en-us/articles/115000520183>

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



There is a new button on the Microsoft Azure portal called "**GET IT NOW**". When you click this button and log in, you are brought to the marketplace and a choice of products is displayed. When you select a product and click **Continue**, you are brought to the dashboard screen to create a Virtual Machine. Continue from the [Create step](#) below.

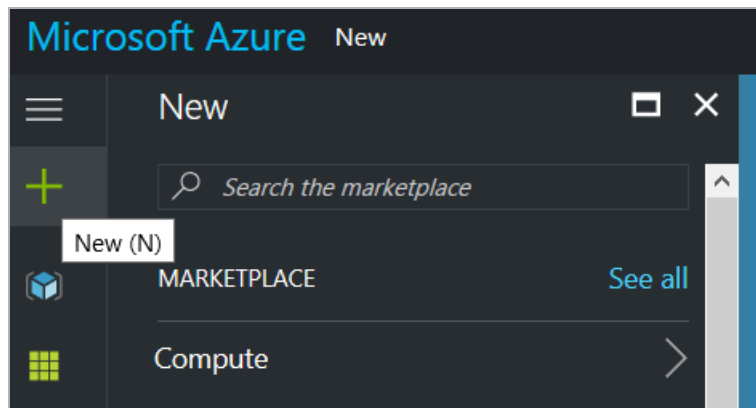
The steps in this document reflect the steps in the Azure Marketplace (<http://portal.azure.com>).

The steps below are carried out from <http://portal.azure.com> and not from <http://manage.windowsazure.com>.

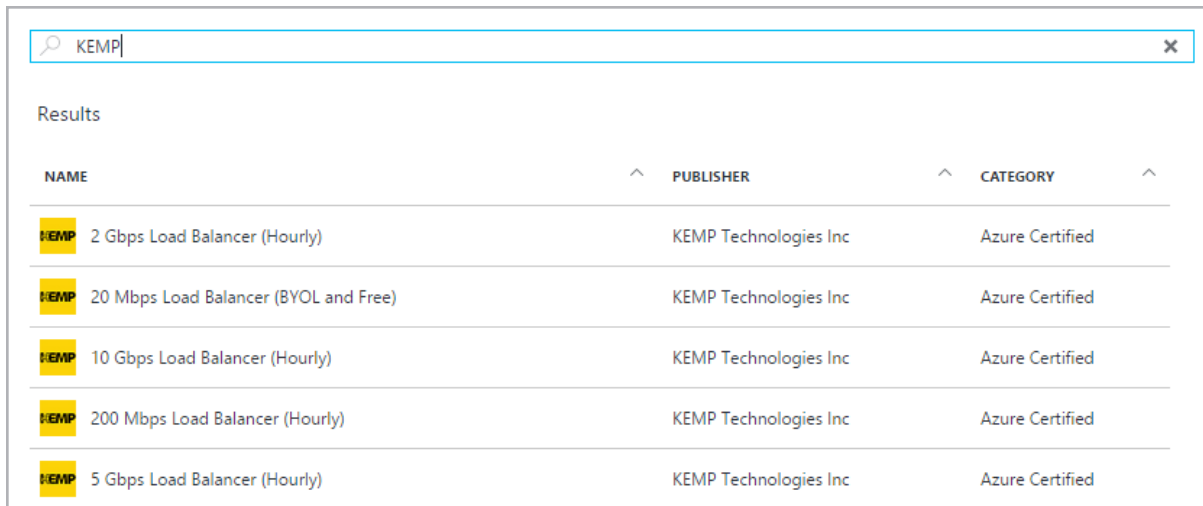
To deploy a new LoadMaster using ARM, follow the steps below:








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



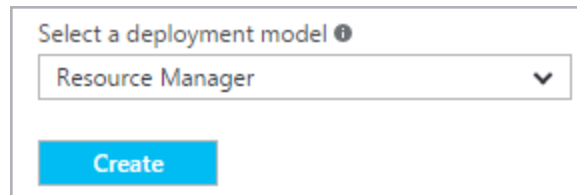
2. In the menu on the left, click the **New** icon.



NAME	PUBLISHER	CATEGORY
 2 Gbps Load Balancer (Hourly)	KEMP Technologies Inc	Azure Certified
 20 Mbps Load Balancer (BYOL and Free)	KEMP Technologies Inc	Azure Certified
 10 Gbps Load Balancer (Hourly)	KEMP Technologies Inc	Azure Certified
 200 Mbps Load Balancer (Hourly)	KEMP Technologies Inc	Azure Certified
 5 Gbps Load Balancer (Hourly)	KEMP Technologies Inc	Azure Certified

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

4. Click the desired Virtual Machine type.



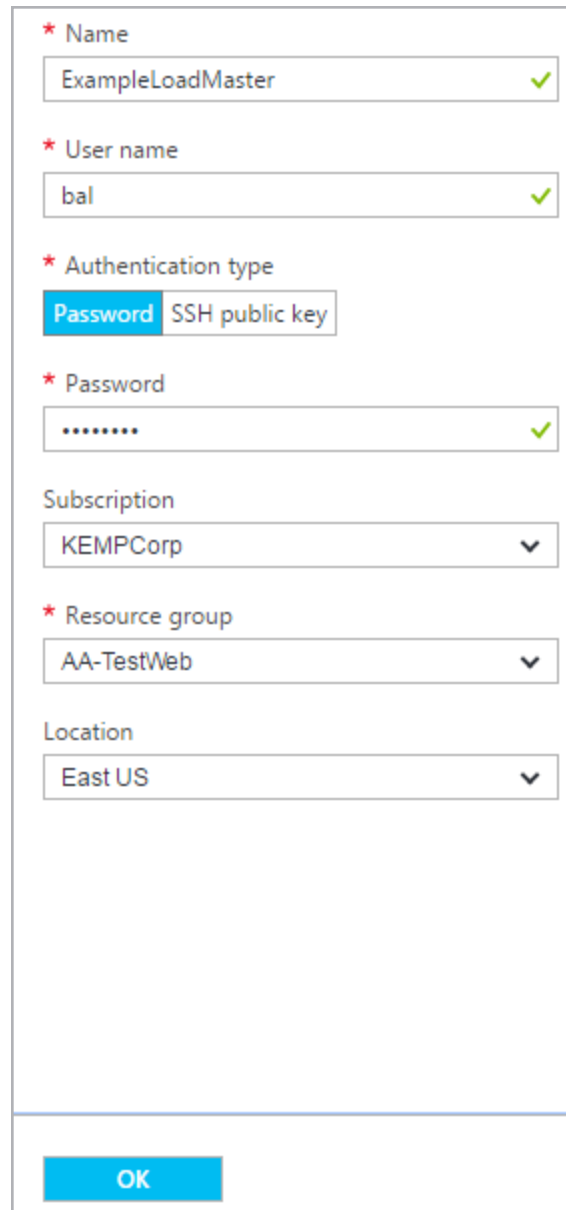
Select a deployment model ⓘ

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
ExampleLoadMaster ✓

* User name
bal ✓

* Authentication type
Password SSH public key

* Password
..... ✓

Subscription
KEMPCorp ▼

* Resource group
AA-TestWeb ▼

Location
East US ▼

OK

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

7. Enter a **User name**.

a) This will not be used by LoadMaster for Azure. 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:

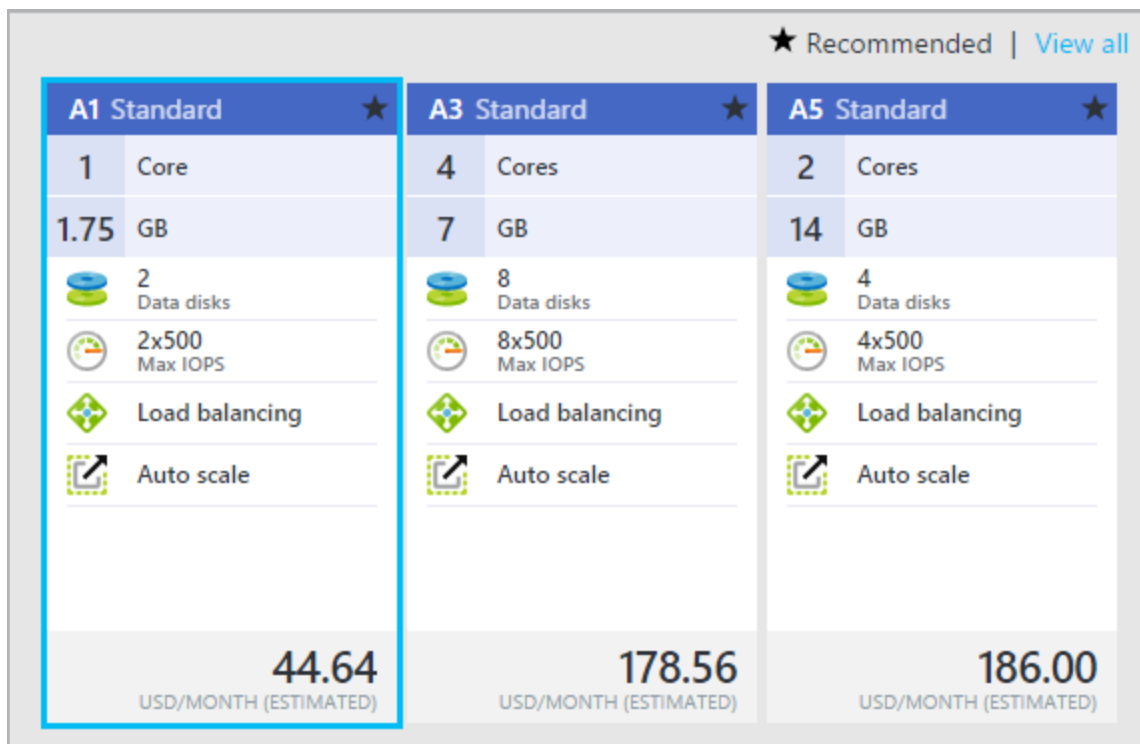
- **Password:** Enter a password.

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**.



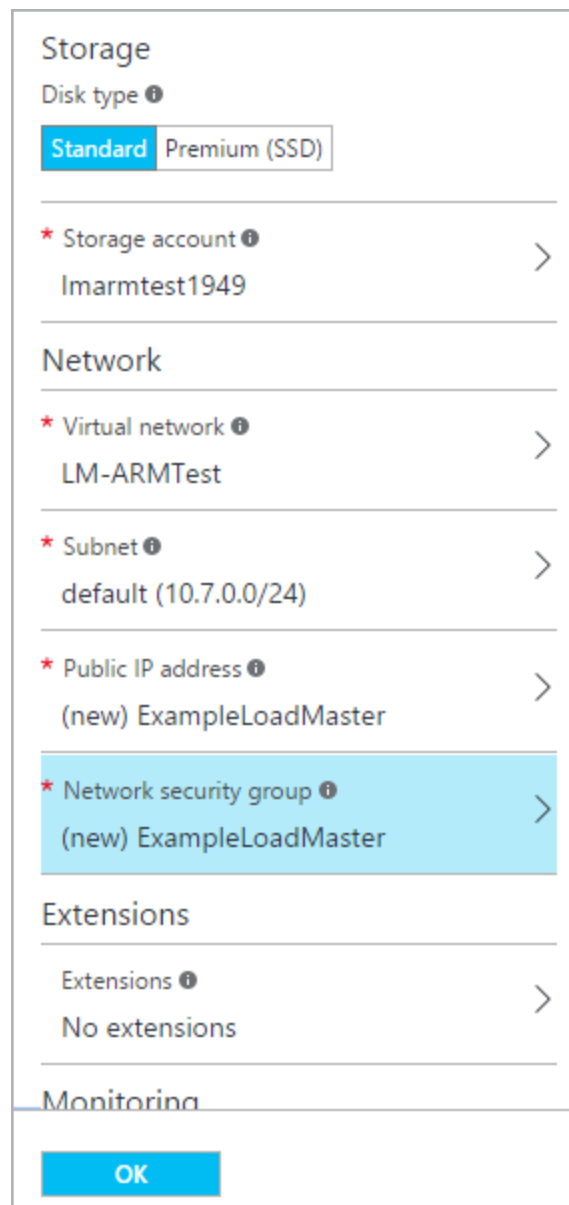
★ Recommended | [View all](#)

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**.



The screenshot shows a configuration dialog box for an Azure VM. It is divided into several sections: Storage, Network, Extensions, and Monitoring. The Storage section has a 'Disk type' dropdown menu with 'Standard' selected and 'Premium (SSD)' as an option. Below this is a 'Storage account' field with the value 'Imarmtest1949'. The Network section includes a 'Virtual network' field with 'LM-ARMTTest', a 'Subnet' field with 'default (10.7.0.0/24)', a 'Public IP address' field with '(new) ExampleLoadMaster', and a 'Network security group' field with '(new) ExampleLoadMaster'. The Extensions section shows 'No extensions'. At the bottom, there is an 'OK' button.

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	Imarmtest1949
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**.

Offer details

LoadMaster Load Balancer ADC Content Switch by KEMP Technologies Inc Terms of use privacy policy	0.0000 USD/hr	
Standard A1 by Microsoft Terms of use privacy policy	0.0600 USD/hr Pricing for other VM sizes	

 **Marketplace purchases will be billed separately**
You cannot use your Azure monetary commitment funds or subscription credits for these purchases. You will be billed separately for marketplace purchases.

 **Azure resource**
You may use your Azure monetary commitment funds or subscription credits for these purchases. Prices presented are retail prices and may not reflect discounts associated with your subscription.

Terms of use

By clicking "Purchase", I (a) agree to the legal terms and privacy statement(s) associated with each Marketplace offering above, (b) authorize Microsoft to charge or bill my current payment method for the fees associated with my use of the offering(s), including applicable taxes, with the same billing frequency as my Azure subscription, until I discontinue use of the offering(s), and (c) agree that Microsoft may share my contact information and transaction details with the seller(s) of the offering(s). Microsoft does not provide rights for third-party products or services. See the [Azure Marketplace Terms](#) for additional terms.

Purchase

23. Click **Purchase**.

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 for Azure 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 for Azure 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](#).

Azure licenses are automatically issued as permanent – there are no trial licenses.

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 for Azure. 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 for Azure.

1. Using a supported web browser, navigate to **https://<DNSName>:8443**. Substitute **<DNSName>** with the DNS name you created in the **Creating a LoadMaster for Azure 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 for Azure 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 Technologies website: <http://kemptechnologies.com/documentation>

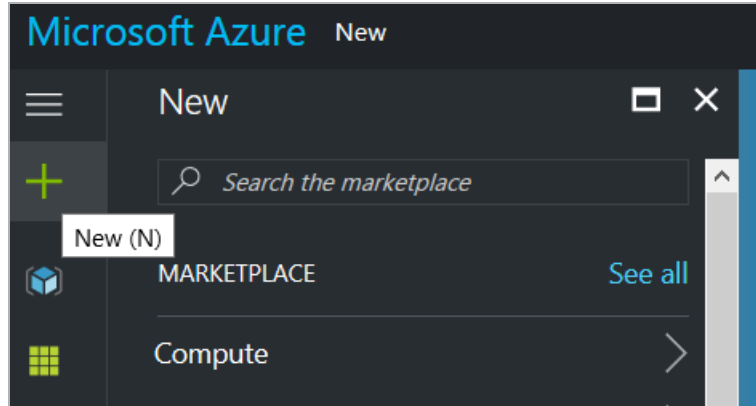
9. Add VMs being load balanced in the **Real Servers** section of the Virtual Service.

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

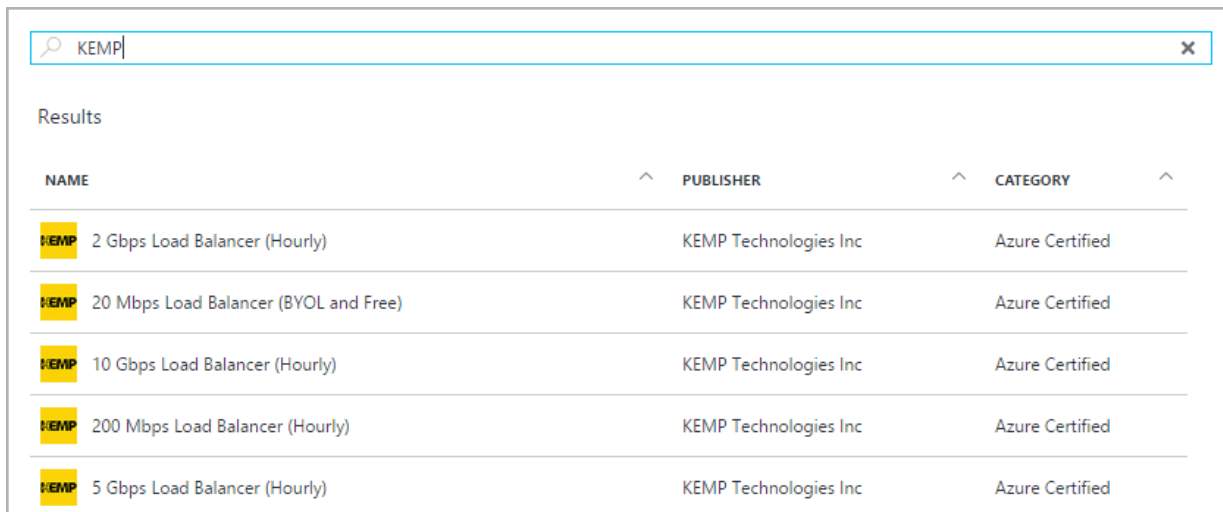
5 Deploying a LoadMaster Programmatically

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.



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

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	<input checked="" type="button" value="Enable"/>	<input type="button" value="Disable"/>

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: <http://forums.kemptechnologies.com/>

Last Updated Date

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