

Red Hat Solutions on Microsoft Azure

Cleveland Red Hat Users Group Meeting

November 7th 2016

Stuart R. Kirk, MCSA: Linux On Azure, RHCA
Technology Solutions Professional

Global Black Belt Team - Open Source Azure Incubation



Agenda

- Who am I ?
- Microsoft and Open Source
- Running Linux Workloads on Azure
- A tour of github and the Azure Marketplace
- A tour of the Azure Portal
- Deciphering ARM (Azure Resource Manager) Templates
- Deploying a 10-node load balanced Linux cluster using ARM

Who am I ? – Stuart R. Kirk

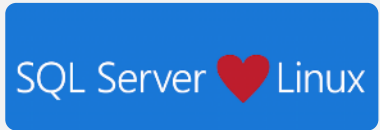
- Joined Microsoft in June/2016
- Live in Ann Arbor, Michigan, originally from Canada
- Part of Americas Global Black Belt OSS Team
- Majority of career in OSS: Wipro, Dell, Cisco, Red Hat
- MCSA: Linux on Azure
- Red Hat Certified Architect (RHCA)
- Interests: Linux Infrastructure, Open Source PaaS, Docker, DevOps
- Enjoys: NCAA Hockey, Travel / Cruises, Music, All things Disney!



Microsoft and Open Source

Microsoft + Open Source: Empowering Customers

Our Products



SQL Server on Linux



HD Insight managed service on Linux



Acquisition

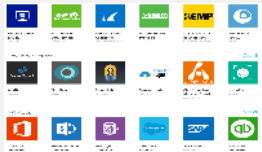
Windows Subsystem for Linux

```
C:\Users\markhill> bash
root@localhost: #
```

Run Linux on Windows natively

Our Offerings

Azure Marketplace



1 out of 3

60% of all images in Azure Marketplace are based on Linux/OSS

1 out of 3 VMs on Azure run Linux, and more than half of all new VMs run Linux

Our Partnerships



Jenkins project on Azure



Microsoft joins Eclipse Foundation



Partnership with the Linux Foundation for Linux on Azure certification

Our Employees



Ross Gardler
President Apache SW Foundation



Brendan Burns
Co-Founder of Kubernetes

600 Million+
Lines of open source code
[Microsoft Open Source Hub](#)

Linux Distribution Status

Red Hat Enterprise Linux (RHEL)

<i>Version</i>	<i>32/64?</i>	<i>LIS Built-in?</i>	<i>LIS download?</i>
5.2 thru 5.4*	32 & 64		LIS 4.1
5.5 thru 5.8	32 & 64		LIS 4.1
5.9 thru 5.11	32 & 64	Yes	LIS 4.1
6.0 thru 6.3	32 & 64		LIS 4.1
6.4 thru 6.7	32 & 64	Yes	LIS 4.1
6.8	32 & 64	Yes	Soon
7.0 thru 7.1	64 only	Yes	LIS 4.1
7.2	64 only	Yes	LIS 4.1

CentOS

<i>Version</i>	<i>32/64?</i>	<i>LIS Built-in?</i>	<i>LIS download?</i>
5.2 thru 5.4*	32 & 64		LIS 4.1
5.5 thru 5.8	32 & 64		LIS 4.1
5.9 thru 5.11	32 & 64	Yes	LIS 4.1
6.0 thru 6.3	32 & 64		LIS 4.1
6.4 thru 6.7	32 & 64	Yes	LIS 4.1
6.8	32 & 64	Yes	Soon
7.0 thru 7.1	64 only	Yes	LIS 4.1
7.2	64 only	Yes	LIS 4.1



RHEL versions with LIS built-in are certified by Red Hat for running on Hyper-V/Azure, so you get the full benefits of your RHEL subscription.

Azure is an open cloud

DevOps

Nagios



Clients



Xamarin



APACHE CORDOVA™

Management



ANSIBLE



mist.io



SCALR
CLOUD MANAGEMENT

Applications



PaaS &
DevOps

apprenda®

Jelastic



App Frameworks & Tools



nodeJS



IntelliJ IDEA

eclipse

Databases & Middleware



redis



clear db

cloudera



mongoDB



Couchbase

Infrastructure



redhat



bitnami

ORACLE
LINUX



FreeBSD



docker

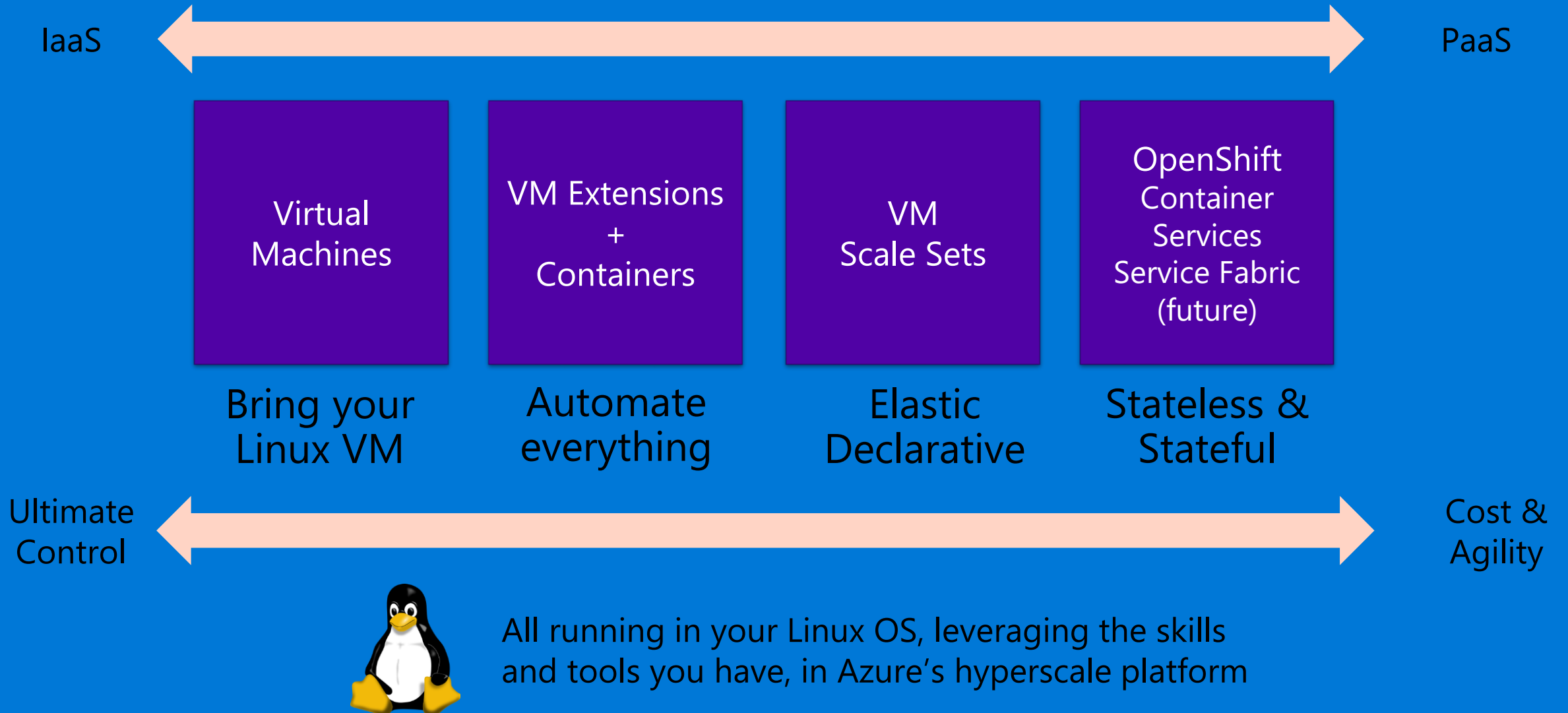
Why Linux on Azure

- ✓ Our customers want it!
- ✓ Roughly 1 out of 3 VMs run Linux & OSS
- ✓ Enterprise grade cloud leadership
- ✓ Only true hybrid cloud



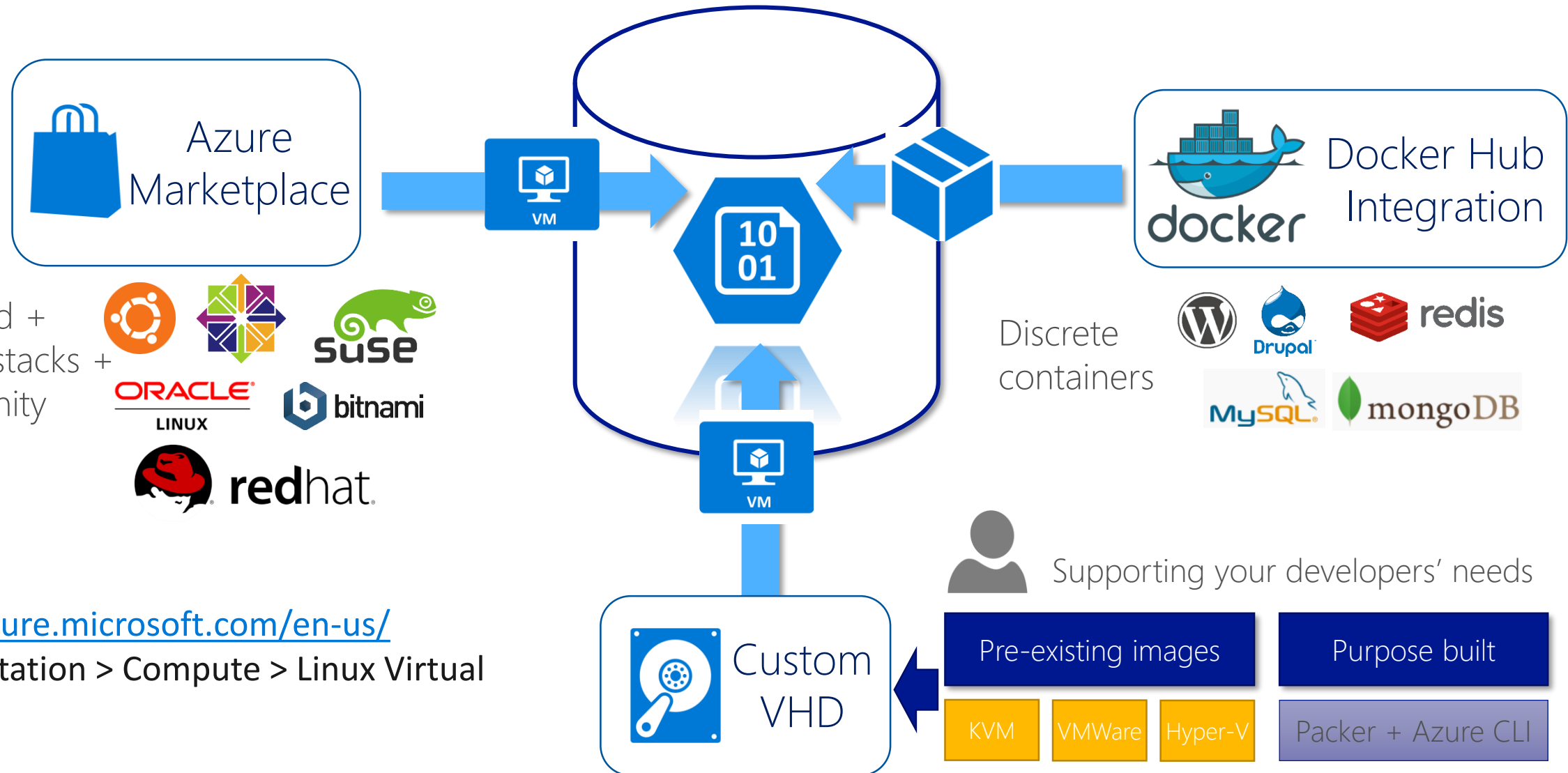
➔ Our goal is to be the most complete and *open* cloud

Linux in Azure



Running Linux Workloads on Azure

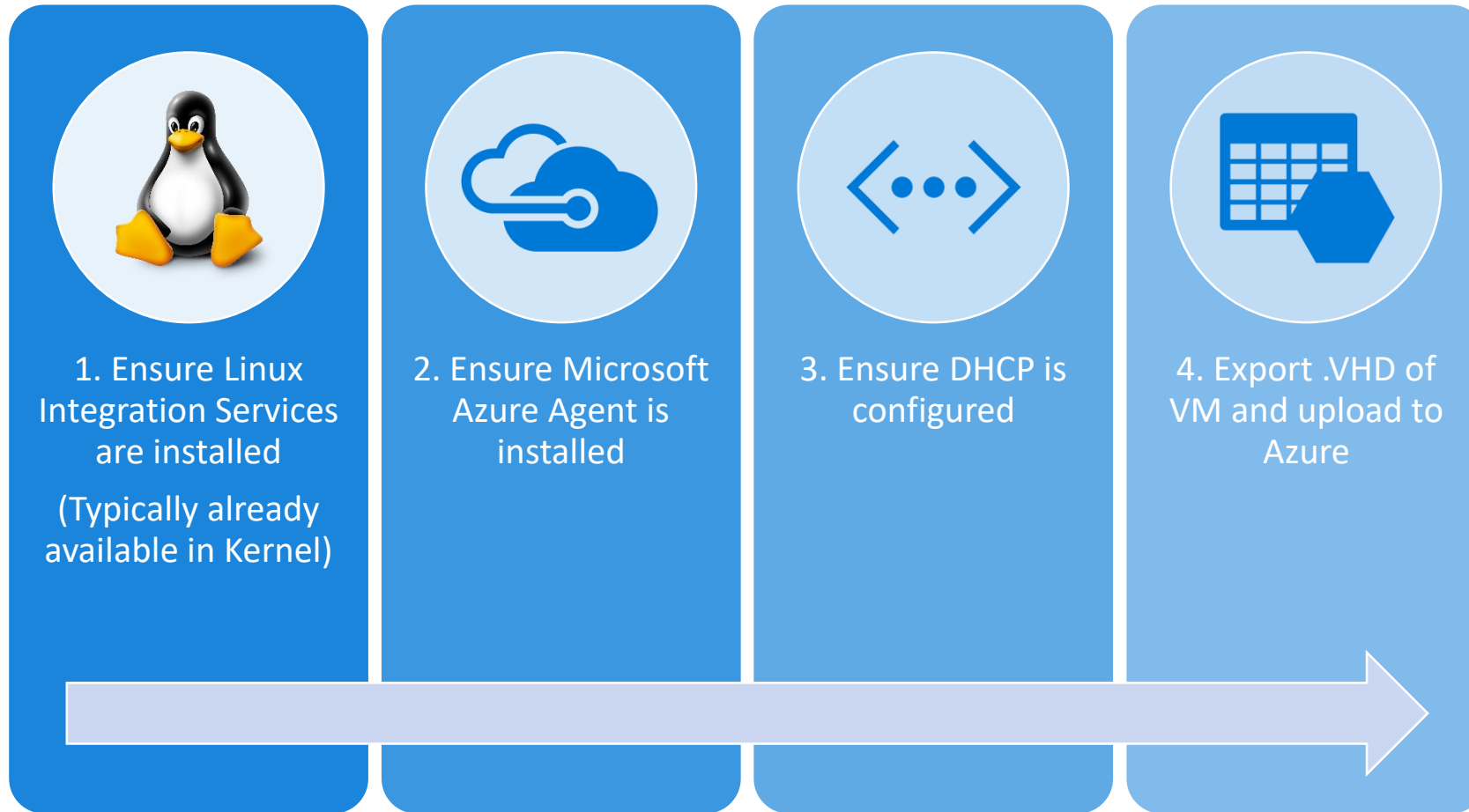
Linux images in Azure



<https://azure.microsoft.com/en-us/>

Documentation > Compute > Linux Virtual Machines

Creating a Linux VM Image for Azure



<https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-linux-agent-user-guide/>

<https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-linux-redhat-create-upload-vhd/>

Linux images in the Azure Marketplace

Azure Endorsed Linux Distributions

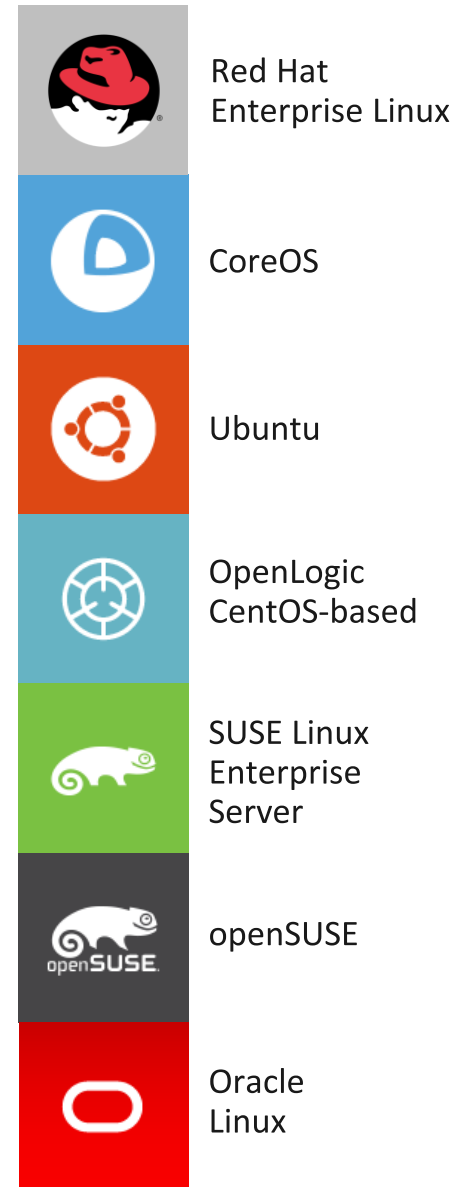
Published, maintained and supported by partners, curated & tested by Microsoft
Most endorsed distros maintain repos in each Azure region for fast updating

Standard Images

- Customers** can contact Linux vendor/partner for Linux support
- Azure-related platform issues supported by Microsoft
- Limited support for Linux issues -- from Microsoft

Premium Images

- Microsoft engages** the Linux vendor/partner on behalf of the customer for support
- Includes updates, patches, and support through 24x7 web, email, chat and phone
- Available for Red Hat Enterprise Linux and SUSE Linux Enterprise Server



Working with Microsoft Azure

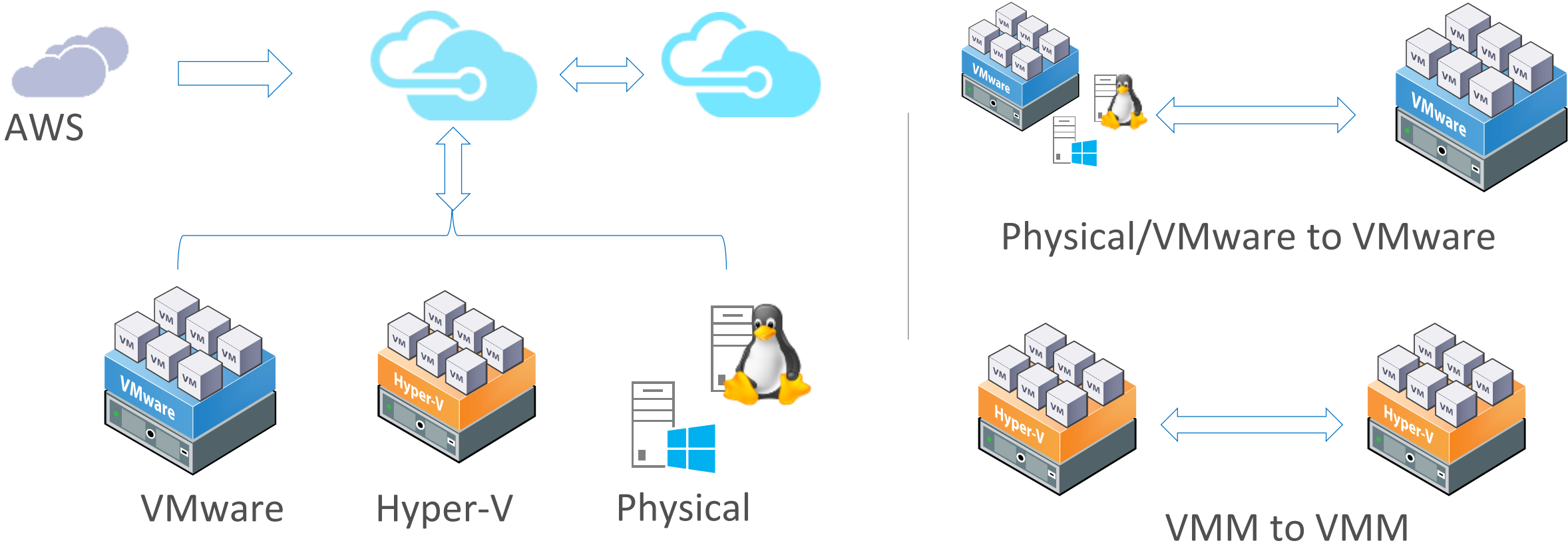
- Many methods to access Microsoft Azure
- Main interfaces are through the Azure Portal and CLI
 - Web Portal: <http://portal.azure.com>
 - CLI: NodeJS-based command line toolset (`npm install -g azure-cli`) or available as Docker container
 - PowerShell: `Install-Module AzureRM ; Install-Module Azure`
- Integration into IDEs
 - Microsoft Visual Studio
 - Eclipse

Transitioning to Azure

- Azure Site Recovery (ASR)
 - Physical (Bare Metal) to Cloud
 - Vmware to Cloud
 - Hyper-V to Cloud
 - AWS to Azure
- Cloudforms Automation Method (Jason Ritenour – Red Hat)
 - Hyper-V to Cloud
 - Uses Cloudforms & Ansible Playbook
 - https://www.youtube.com/watch?v=6_YA8uiA_0g

Azure Site Recovery: The DR / Migration Solution

Site to Azure Any cloud Site to site



A tour of github & the Azure Marketplace

A tour of github & the Azure Marketplace

- Azure Quickstart Templates
- <https://github.com/Azure/azure-quickstart-templates>
- Powershell for Everyone!
- <https://github.com/PowerShell/PowerShell>
- Most Open Source Contributors on github
- <https://octoverse.github.com/>

A tour of the Azure Portal

A Tour of the Azure Portal

The screenshot displays the Microsoft Azure Portal interface. The top navigation bar includes the 'Microsoft Azure' logo and a breadcrumb trail: 'New > Marketplace > Everything > Red Hat Enterprise Linux 7.2'. The left sidebar contains a 'New' button and a list of resource categories: Resource groups, All resources, Recent, DevTest labs, Virtual machines, Automation Accounts, Log Analytics (LWA), Recovery Services vaults, Security Center, Container services, App Services, Subscriptions, Virtual networks, Availability sets, Storage accounts, Route tables, Virtual machine scale sets, and Billing. The main content area is divided into three sections. The 'Marketplace' section on the left lists categories: Everything, Virtual Machines, Web + Mobile, Data + Storage, Data + Analytics, Internet of Things, Networking, Media + CDN, Enterprise Integration, Security + Identity, Developer Services, Management, Intelligence, and Containers. The 'Everything' section in the center displays a search filter 'RHEL' and a table of results. The table has columns for NAME, PUBLISHER, and CATEGORY. The results include: Virtual machine scale set (Microsoft, Virtual Machines), Virtual machine scale set (Linux) (Microsoft, Virtual Machines), Red Hat Enterprise Linux 7.2 (Red Hat, Virtual Machines), Red Hat Enterprise Linux 8.8 (Red Hat, Virtual Machines), Activation Workload Scheduler - Free Plan (Activision, Virtual Machines), and Red Hat Enterprise Linux 6.7 (Red Hat, Virtual Machines). The 'Red Hat Enterprise Linux 7.2' item is highlighted. The right sidebar provides details for 'Red Hat Enterprise Linux 7.2 - Pay-As-You-Go Premium Image'. It includes a description: 'Red Hat Enterprise Linux is the world's leading enterprise Linux platform built to meet the needs of today's modern enterprise. Red Hat Enterprise Linux is the preferred choice for enterprise Linux virtual machine (VM) workloads on Microsoft Azure. Red Hat Enterprise Linux is an open, reliable and secure platform designed for customers who want deployment flexibility for their business critical workloads - from the data center to the Azure cloud - backed by tightly integrated, enterprise-grade support from Red Hat and Microsoft.' It also includes a 'Pricing' section with a link to 'Red Hat Enterprise Linux pricing' and a 'Legal Terms' section with a link to 'Legal terms and privacy statement'. At the bottom, there is a 'Related to your search' section with links to 'Virtual machine scale set (Windows)', 'Shell Control Box', and 'Public IP address'.

Red Hat Enterprise Linux 7.2 - Pay-As-You-Go Premium Image

Red Hat Enterprise Linux is the world's leading enterprise Linux platform built to meet the needs of today's modern enterprise. Red Hat Enterprise Linux is the preferred choice for enterprise Linux virtual machine (VM) workloads on Microsoft Azure. Red Hat Enterprise Linux is an open, reliable and secure platform designed for customers who want deployment flexibility for their business critical workloads - from the data center to the Azure cloud - backed by tightly integrated, enterprise-grade support from Red Hat and Microsoft.

Pricing

Use of this Pay-As-You-Go image carries a separate hourly charge that is in addition to Microsoft Linux VM rates. Total price of the VM consists of the base Linux VM price (shown on the next) plus RHEL VM image surcharges. See [Red Hat Enterprise Linux pricing](#) for details.

No free trials, no monetary credit trials

Provisioning a VM from this image requires a subscription with no spending limit and a valid payment method (usually a credit card) associated with the subscription. If you provision RHEL without removing the spending limit your subscription will get disabled and all VMs/services stopped. If you do run into this state, to re-enable the subscription [remove the spending limit](#) remaining credits will be restored for the current billing cycle but **RHEL VM image surcharges** against your credit card. If you choose to re-start and continue running it.

Legal Terms

By clicking 'Create' I agree to the [legal terms](#) and [privacy statement](#) associated with this offer and authorize Microsoft to charge or bill my current payment method for the fees associated with use of the offering, including applicable taxes, with the same billing frequency as my Azure subscription, until I discontinue use of the offering and I agree that Microsoft may share my contact information and transaction details with Red Hat. Microsoft does not provide rights to its proprietary services. See the [Azure Marketplace Terms](#) for additional terms.

FOR OFFER: Red Hat

USEFUL LINKS: [Learn more](#), [Documentation](#), [Pricing details](#)

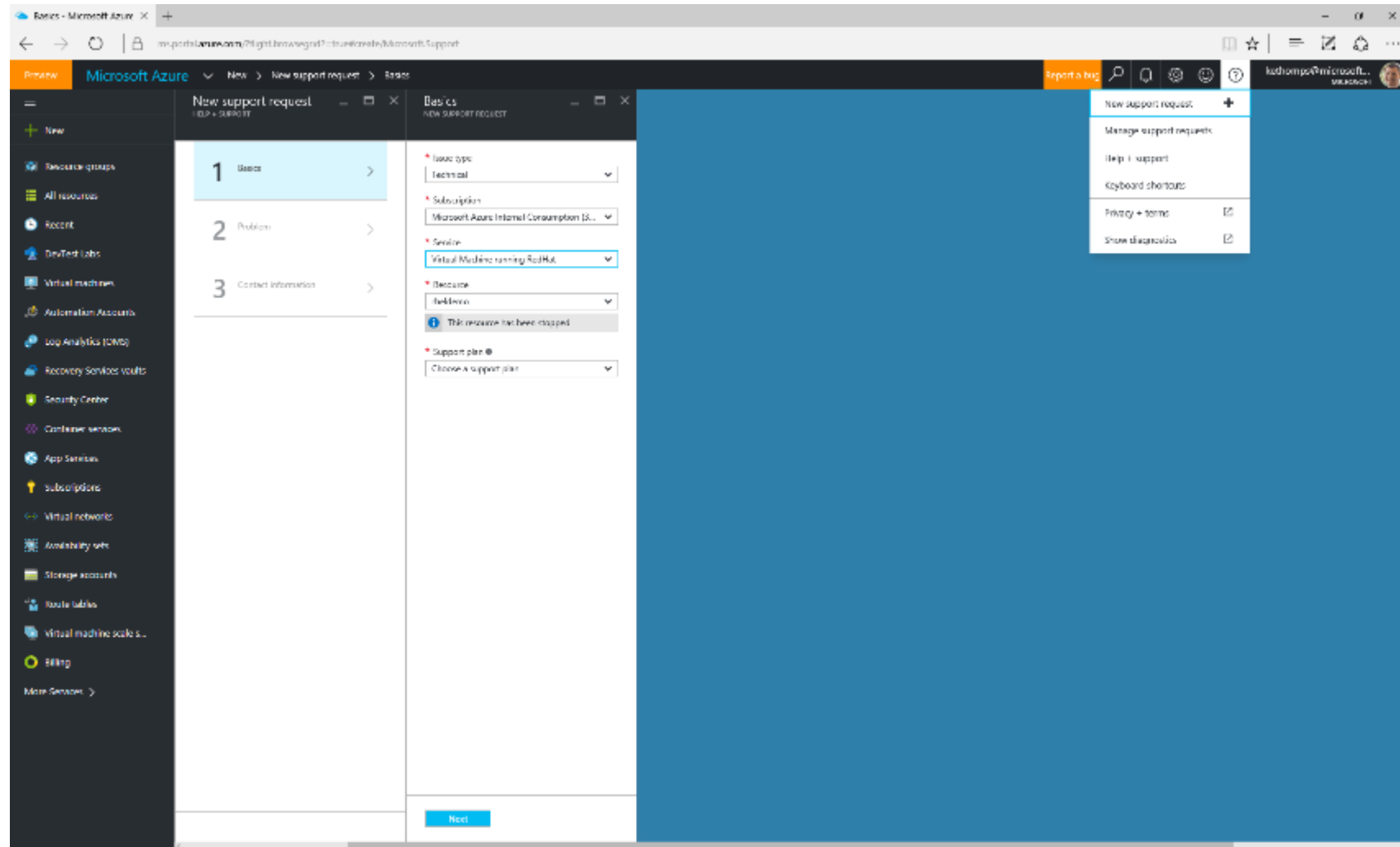
Select a deployment model: Resource Manager

Create

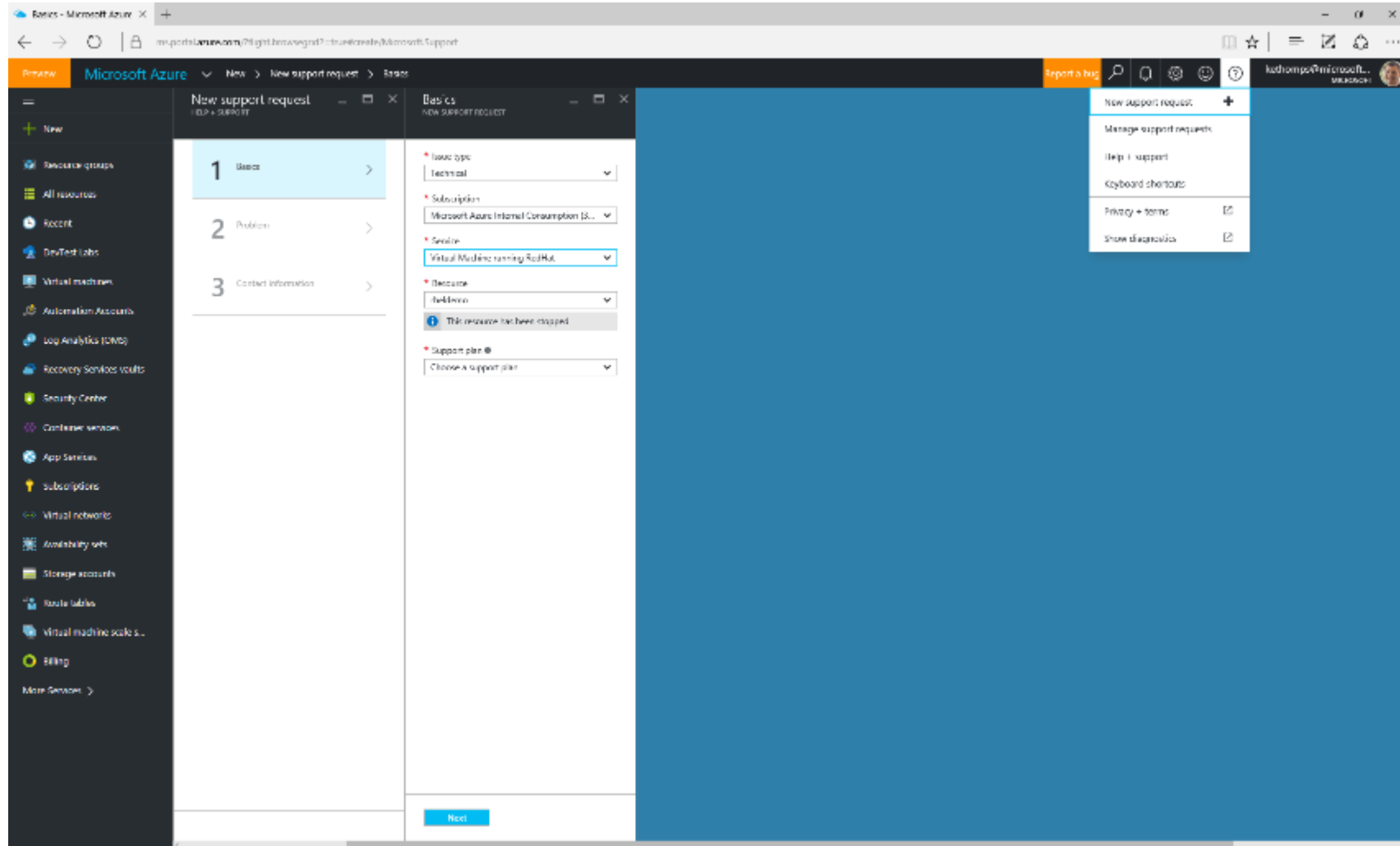
Related to your search:

- Virtual machine scale set (Windows) - Microsoft
- Shell Control Box - Red Hat
- Public IP address - Microsoft

A Tour of the Azure Portal – Raise Support Ticket

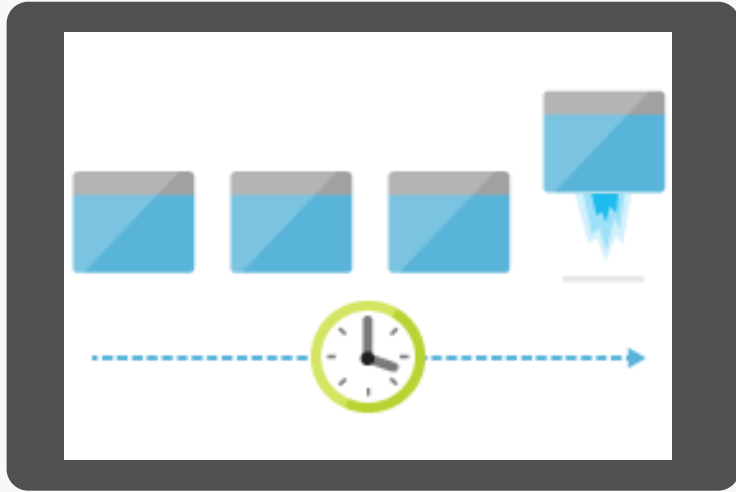


A Tour of the Azure Portal – Access Red Hat Customer Portal

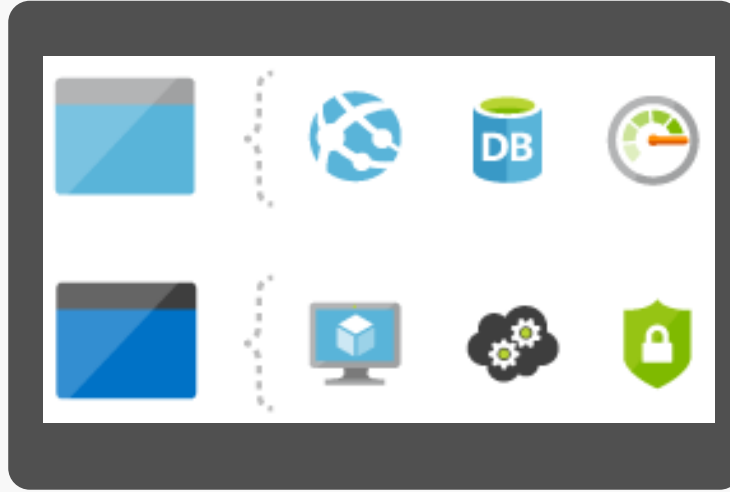


Deciphering ARM

Areas of Focus



Deploy



Organize

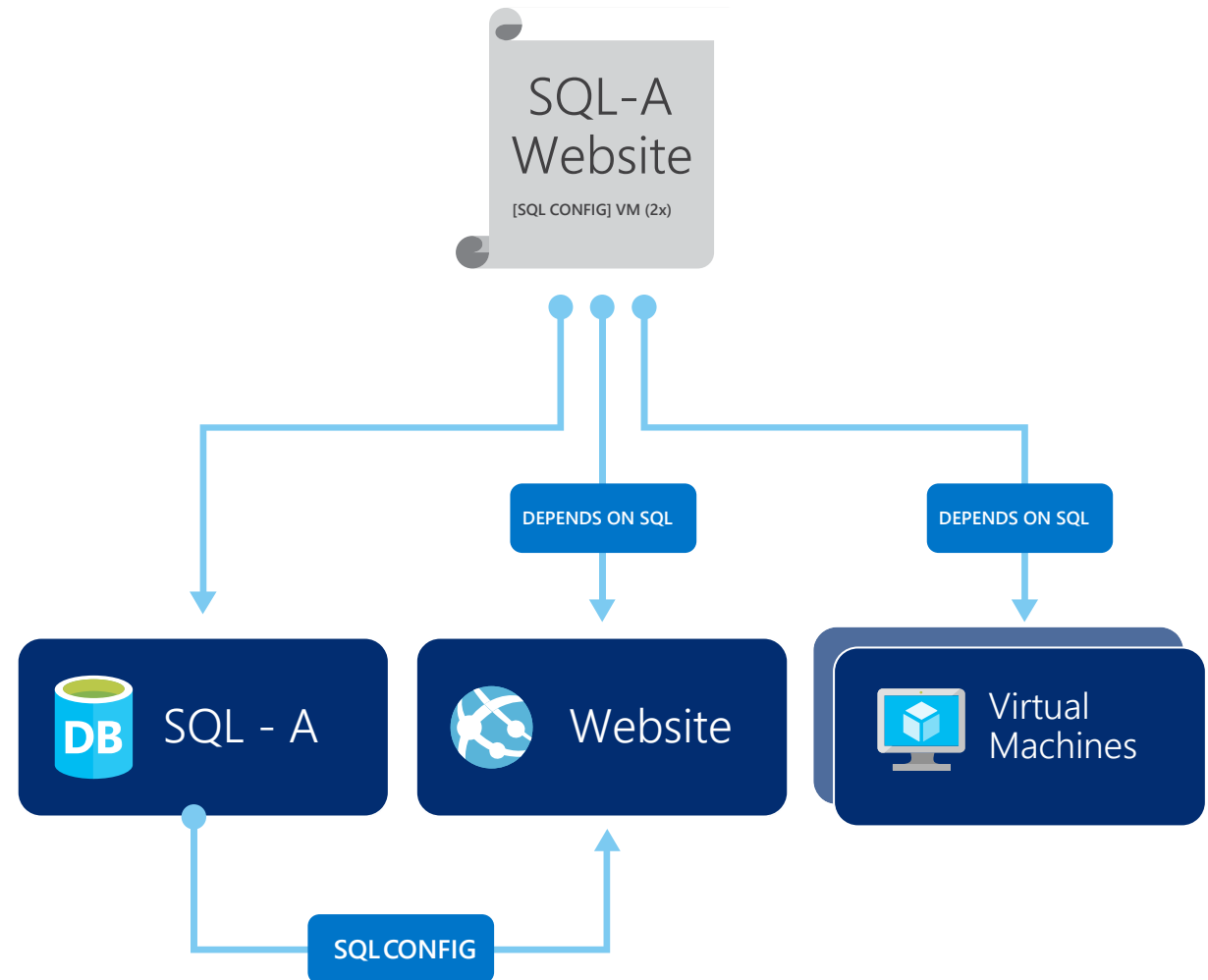


Control

What are Azure Resource Manager (ARM) templates?

Azure Templates:

- Source code, checked-in
- Enable repeated deployment and consistent state
- Simplify Orchestration
- Simplify Roll-back
- Provide unified management and Update Support
- Able to specify resources, dependencies (VMs, WebSites, DBs) and connections (config, LB sets)
- Based on parametrized input/output
- VM extensions enable imperative & desired state configuration of resources (Scripts, PowerShell, Chef/Puppet/Ansible)



Export ARM Template from Azure Portal

Preview

Microsoft Azure

Resource groups

RedHatDemoRG951324 - Automation script

Report a bug

Search resources

@microsoft... MICROSOFT

Resource groups

Microsoft

+

Columns

Refresh

RedHatDemoRG951324 - Automation script

Resource group - PREVIEW

Download

Add to library

Deploy

Subscriptions: All 3 selected

Filter items...

All subscriptions

NAME

AustraliaSEDevelopment

autoShutdown

osedemo

RedHatDemoRG951324

securitydata

Search (Ctrl+)

Overview

Activity log

Access control (IAM)

Tags

SETTINGS

Quickstart

Resource costs

Deployments

Properties

Locks

Automation script

MONITORING

Metrics

Alert rules

Diagnostics logs

Application insights

Log analytics (OMS)

Log search

SUPPORT + TROUBLESHOOTING

New support request

Automate deploying resources with Azure Resource Manager templates in a single, coordinated operation. Define resources and configurable input parameters and deploy with script or code. [Learn more about template deployment.](#)

Template

Parameters

CLI

PowerShell

.NET

Ruby

Parameters (19)

Variables (0)

Resources (18)

[parameters('labs_redhatdemo_na...]

[parameters('vaults_RedHatDemo1...]

[parameters('vaults_RedHatDemo8...]

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[parameters('storageAccounts_red...]

[parameters('storageAccounts_red...]

[parameters('virtualmachines_redh...]

[parameters('artifactsources_privat...]

[parameters('artifactsources_public...]

[parameters('formulas_rh_apache_...]

[parameters('schedules_labpolycyp...]

[parameters('schedules_labpolycyp...]

[parameters('schedules_labpolycyp...]

[parameters('schedules_labpolycyp...]

[parameters('schedules_labpolycyp...]

[parameters('schedules_labvmsshu...]

[parameters('virtualnetworks_dtlre...]

1 {

2

3 "\$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",

4 "contentVersion": "1.0.0.0",

5 "parameters": {

6 "labs_redhatdemo_name": {

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8 "type": "String"

9 },

10 "vaults_RedHatDemo1207_name": {

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25 },

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29 },

30 "virtualmachines_redhatdemolabvm_name": {

31 "defaultValue": "redhatdemo/redhatdemolabvm",

32 "type": "String"

33 },

34 "artifactsources_privaterepo672_name": {

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36 "type": "String"

37 },

38 "artifactsources_public_repo_name": {

39 "defaultValue": "redhatdemo/public_repo",

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41 },

42 "formulas_rh_apache_name": {

43 "defaultValue": "redhatdemo/rh_apache",

44 "type": "String"

45 }

OpenShift Enterprise ARM Template

←

→

↺

GitHub, Inc. [US]

github.com/haroldwongms/openshift-enterprise

📖

☆

☰

🔗

🔔

...

🐙

This repository

Search

Pull requests

Issues

Gist

🔔

+

👤

📁

haroldwongms / openshift-enterprise

👁 Watch 1

★ Unstar 4

🍴 Fork 4

<> Code

🕒 Issues 0

🔗 Pull requests 0

📁 Projects 0

📖 Wiki

📡 Pulse

📊 Graphs

OpenShift Enterprise

📄 32 commits

🌿 1 branch

📦 0 releases

👤 1 contributor

Branch: master

New pull request

Create new file

Upload files

Find file

Clone or download

👤 haroldwongms removed reference to Docker 1.9

Latest commit c2830d6 2 days ago

📄 README.md

Updated to explain new parameters

2 days ago

📄 azuredeploy.json

Corrections for custom domain selection

2 days ago

📄 azuredeploy.parameters.json

Initial Commit

2 months ago

📄 deployOpenShift.sh

Updated labels

3 days ago

📄 masterPrep.sh

removed reference to Docker 1.9

2 days ago

📄 nodePrep.sh

revert

a month ago

📄 openshiftdeploy.json

Removed erroneous variables

2 days ago

📖 README.md

OpenShift Enterprise with Username / Password authentication for OpenShift

☁ Deploy to Azure

🖼 Visualize

This template deploys OpenShift Enterprise with basic username / password for authentication to OpenShift. It includes the following resources:

Resource	Properties
Virtual Network	Address prefix: 192.168.0.0/16 Master subnet: 192.168.1.0/24 Node subnet: 192.168.2.0/24

Deploying a 10-node Load Balanced Cluster

Deploying a 10-node Load Balanced Linux Cluster Using ARM

- How long would it take to deploy a 10 node cluster?
- Public Networking
- Private Networking
- Configuring a Load Balancer
- Deploy your configuration using ARM:

<https://github.com/Azure/azure-quickstart-templates/tree/master/centos-2nics-lb-cluster>

