

# *MikroTik's* CHR

on



- setup and use cases -



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# topics



## Microsoft Azure

- as platform

## CHR deployment

- prerequisites
- deploying on Azure

some use cases



# Microsoft Azure as platform



## Microsoft Azure

DEVELOPER + APP PLATFORM	Visual Studio Family + Azure App Service			
DATA + ANALYTICS	Cortana Analytics Suite			
INTERNET OF THINGS	Azure IoT Suite			
CLOUD INFRASTRUCTURE	Compute	Security + Management	Networking	Hybrid Operations
	<ul style="list-style-type: none"><li>Virtual Machines</li><li>Containers</li><li>Remote App</li><li>Batch</li></ul>	<ul style="list-style-type: none"><li>Active Directory</li><li>Multi-Factor Auth</li><li>Automation</li><li>Key Vault</li></ul>	<ul style="list-style-type: none"><li>Express Route</li><li>Virtual Network</li><li>Load Balancer</li><li>DNS</li><li>Traffic Manager</li><li>VPN Gateway</li><li>Application Gateway</li></ul>	<ul style="list-style-type: none"><li>Azure AD Connect Health</li><li>AD Privileged Identity Mgmt</li><li>Backup</li><li>Operational Insights</li><li>Import/Export</li><li>StorSimple</li><li>Site Recovery</li></ul>
	Storage			
	<ul style="list-style-type: none"><li>Blob Storage</li><li>Azure Files</li><li>Premium Storage</li></ul>			

Source: Azure presentation by Shahed Chowdhuri

34 Azure regions

2x the amount of regions as AWS



# Azure – subscription options



- Trial for 1-month  
worth €170 (credit card info only needed for verification, no charge !)
- Pay-as-you-go  
on monthly basis, payment via credit card
- MS Enterprise Agreement  
within annual contract
- MSDN subscription  
up to €130 per month
- MS Dreamspark for students  
up to ten Azure Webapps (hosted projects - html, js, node, php,  
python and more)
- MS Partner Network

# Azure - costs (indication)



Pricing Calculator available: <https://azure.microsoft.com/en-us/pricing/calculator/>

The screenshot displays the Azure Pricing Calculator interface. It is divided into several sections:

- Virtual Machines:** Includes a title bar with an information icon and a close button. Below it, there are dropdown menus for REGION (West Europe), TYPE (Page Blob and Disk), PRICING TIER (Basic), and DATA REDUNDANCY (LRS). A rate of €0.015/hr is shown.
- Storage:** Includes a title bar with an information icon and a close button. Below it, there are dropdown menus for REGION (West Europe), TYPE (Page Blob and Disk), PRICING TIER (Basic), and DATA REDUNDANCY (LRS). A rate of €0.015/hr is shown.
- Capacity:** A text input field contains the number '1', with 'GB' selected in a dropdown menu. The result is '= €0.04/mo'.
- Storage transactions:** A text input field contains the number '5', with 'Transaction units (100,000 transactions)' below it. A multiplier 'x €0.0030' and 'Per unit' are shown. The result is '= €0.02/mo'.
- Sub-total:** The final result is 'Sub-total €0.06/mo'.
- Your estimate:** A summary box on the right shows the currency set to 'Euro (€)'. It lists the costs: Storage (€0.06), Virtual Machines (€11.29), and Support Options (€0.00). The total estimated monthly cost is '€11.35'. Below this, there are buttons for 'Purchase options' and 'Export estimate'. A disclaimer at the bottom states: 'Prices are estimates and are not intended as actual price quotes.'

# deployment, 'the extra mile'



CREATE A VIRTUAL MACHINE

## Choose an Image

ch|




- ALL
- MICROSOFT
  - WINDOWS SERVER
  - SHAREPOINT
  - SQL SERVER
  - BIZTALK SERVER
  - VISUAL STUDIO
  - DYNAMICS
- UBUNTU
- COREOS
- CENTOS-BASED
- SUSE
- ORACLE
- PUPPET LABS


MY IMAGES

MY DISKS

MSDN ?

FEATURED

-  BizTalk Server 2016 Community Technology Preview 2
-  HPC Pack Technical Preview
-  Windows Server 2012 R2

 BizTalk Server 2016 Community Technology Preview 2

Microsoft BizTalk Server 2016 Community Technology Preview 2 on Windows Server 2016 Technical Preview 4. This release focuses on a number of important improvements. Support for SQL Server 2016 AlwaysOn Availability Groups makes production high availability (HA) workloads in Azure a reality. We have also made numerous improvements and enhancements to BizTalk based on your feedback, we hope you like them. See [documentation](https://msdn.microsoft.com/en-US/library/mt670742.aspx) at <https://msdn.microsoft.com/en-US/library/mt670742.aspx> for more information.

OS FAMILY Windows

PUBLISHER Microsoft BizTalk Server Group

PRICING INFORMATION

Pricing varies based on the subscription you select to provision your virtual machine.

2 3 4



# deployment, prerequisites



- CHR-VM image
- Azure-account and active Azure subscription
- Azure Management tool  
GUI: up-to-date browser required  
or  
command line: MS Powershell and Azure Powershell Enhancement  
available via <https://github.com/Azure/azure-powershell>  
alternatively for multiple platforms <https://github.com/Azure/azure-cli/>



# CHR, available VM images



Cloud Hosted Router

	6.36.4 (Bugfix only)	6.37.1 (Current)	5.26 (Legacy)	6.38rc29 (Release candidate)
<b>Images</b>	vmdk, vhdx, vdi, img			
VHDX image			-	
VMDK image			-	
VDI image			-	
Raw disk image			-	
Extra packages			-	
The Dude server			-	
The Dude client			-	
Changelog			-	
MD5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>

as of mid-November 2016

**CHR-virtual machine converted into VHD is needed, since VHD is (currently) the only supported VM format on Azure !**



# deployment, preparation



Converting any downloadable CHR-image to a pre-allocated VHD

- Freeware : Oracle's Virtualbox GUI / vboxmanage (command line) and a lot more ...
- MS HyperV Manager (if avail.), MS Powershell

**Hint:** Check VHD-filesize after conversion, must be larger than 130 megabytes to serve as pre-allocated VHD

# CHR deployment on Azure



1. Setup Azure blob storage and container
2. Upload CHR VHD-image into container as page blob
3. Setup disk, Azure Virtual Machine and Cloud Service
4. Setup CHR

**Hint:** When using Azure CLI, setup account, access and environment variables first

# deployment, setup storage



storage

NEW

COMPUTE	SQL DATABASE	QUICK CREATE
DATA SERVICES	STORAGE	
APP SERVICES	HDINSIGHT NOT AVAILABLE	
NETWORK SERVICES	RECOVERY SERVICES	
MARKETPLACE PREVIEW	MACHINE LEARNING	
	STREAM ANALYTICS	
	STORSIMPLE MANAGER NOT AVAILABLE	

URL  
chrrcblob  
\*.core.windows.net

LOCATION  
West Europe

SUBSCRIPTION

REPLICATION  
Locally Redundant

CREATE STORAGE ACCOUNT



# deployment, setup container



The screenshot shows the Azure portal interface for a storage account named 'chrrcblob'. The account is in a 'West Europe' location and has a status of 'Online'. The 'CONTAINERS' tab is selected, showing a message: 'This storage account has no containers.' Below this message is a 'CREATE A CONTAINER' button. A 'New container' dialog box is open, showing the name 'chr-rcs' and the access type set to 'Private'. The left sidebar contains various service categories, with 'STORAGE' having 2 items. The bottom navigation bar includes 'NEW', 'ADD', 'EDIT', and 'DELETE' options.

NAME	STATUS	LOCATION
chrrcblob	Online	West Europe

chrrcblob

DASHBOARD MONITOR CONFIGURE **CONTAINERS** IMPORT/EXPORT

This storage account has no containers.

CREATE A CONTAINER

New container

NAME: chr-rcs

ACCESS: Private

# deployment, upload check



The screenshot shows the Azure Storage Explorer interface. On the left is a navigation pane with various icons and a 'chr-rcs' folder selected. The main area displays a table with the following data:

NAME	URL	LAST MODIFIED	SIZE
chr-6.38rc25.vhd	<a href="https://chrrcblob.blob.core.windows.net/chr-rcs/chr-6.38rc25.vhd">https://chrrcblob.blob.core.windows.net/chr-rcs/chr-6.38rc25.vhd</a>	11/10/2016 9:56:20 PM	128 MB

At the bottom of the interface is a dark grey action bar with icons for '+ NEW', 'DOWNLOAD', 'EDIT', 'DELETE', and a help icon (?).

# deployment, setup disk



virtual machines

INSTANCES IMAGES **DISKS**

No disks have been created. To get started, click Create a disk.

**CREATE A DISK** →

Create a disk from a VHD

NAME

CHR-RC25

VHD URL

https://chrrcblob.blob.core.windows.net/chr-racs/

The VHD contains an operating system. ?

OPERATING SYSTEM FAMILY

Linux

- ALL ITEMS
- WEB APPS 0
- VIRTUAL MACHINES 0**
- MOBILE SERVICES 0
- CLOUD SERVICES 0
- BATCH SERVICES 0
- SOL DATABASES 0
- STORAGE 1
- HDINSIGHT 0
- MEDIA SERVICES 0



# deployment, setup VM I



The screenshot displays the Azure portal interface for creating a virtual machine. On the left, the 'NEW' menu is expanded, showing various service categories. The 'VIRTUAL MACHINE' option is highlighted, and the 'FROM GALLERY' sub-option is also selected. On the right, the 'CREATE A VIRTUAL MACHINE' wizard is shown, with the 'Choose an Image' step active. The 'LINUX CHR-RC25' image is highlighted in the 'FEATURED' section. The 'MY DISKS' option is also visible in the 'MY IMAGES' section.



# deployment, setup VM II



CREATE A VIRTUAL MACHINE

## Virtual machine configuration

VIRTUAL MACHINE NAME ?

CHR-RC25

TIER

BASIC STANDARD

SIZE ?

A0 (shared core, 768 MB memory)

1

CREATE A VIRTUAL MACHINE

## Virtual machine configuration

CLOUD SERVICE ?

⚠ You will not be able to select a cloud service below if it is deployed to an affinity group.

Create a new cloud service

CLOUD SERVICE DNS NAME

CHR-RC25 .cloudapp.net

SUBSCRIPTION

REGION/VIRTUAL NETWORK ?

West Europe

AVAILABILITY SET ?

(None)

ENDPOINTS

NAME	PROTOCOL	PUBLIC PORT	PRIVATE PORT
SSH	TCP	30022	22
Winbox	TCP	38291	8291
ENTER OR SELECT A VALUE			

1 2

LINUX CHR-RC25

OS FAMILY  
Linux

NUMBER OF DISKS  
1

SUBSCRIPTION

LOCATION  
West Europe

PRICING INFORMATION

Pricing varies based on the subscription you select to provision your virtual machine.



4



# deployment, setup VM III



CREATE A VIRTUAL MACHINE x

## Virtual machine configuration

**VM AGENT** ?

The VM agent that supports extensions is already installed.

**VM AGENT** ?

The VM agent that supports extensions is already installed.

**LEGAL TERMS**

If any third-party extensions have been selected for installation, I acknowledge that I am getting such software from the third-party publishers identified above and that such publishers' legal terms and privacy statements apply to it.

**OS FAMILY**  
Linux

**NUMBER OF DISKS**  
1

**SUBSCRIPTION**

**LOCATION**  
West Europe

**PRICING INFORMATION**  
Pricing varies based on the subscription you select to provision your virtual machine.

← ✓



1 2 3



# deployment, finish & get Info



The screenshot displays the CloudStack interface for a virtual machine named 'chr-rc25'. The left sidebar contains navigation icons, with 'CHR-RC25' highlighted. The main content area is divided into sections: 'usage overview' showing 1 core usage, 'disks' with a table of disk configurations, 'extensions' (none installed), and 'services' (password reset, configuration reset, backup info). The right sidebar shows the VM's status as 'Running' and lists key information: DNS name (chr-rc25.cloudapp.net), host name (-), public virtual IP (40.68.209.124), internal IP (100.109.192.74), SSH details (chr-rc25.cloudapp.net : 30022), size (Basic\_A0), and location (West Europe). The bottom toolbar includes actions like 'NEW', 'CONNECT', 'RESTART', 'SHUT DOWN', 'ATTACH', 'DETACH DISK', 'CAPTURE', and 'DELETE', with 'RESTART' and 'SHUT DOWN' highlighted in red.

chr-rc25

usage overview

CHR-RC25 OTHER ROLES AVAILABLE

1 CORE(S)

CHR-RC25 3 of 20 CORE(S)

disks

DISK	TYPE	HOST CACHE	VHD
CHR-RC25	OS disk	Read/Write	https://chrrc25.blob.core.windows.net/chr-rc25/c

extensions

No extensions are installed.

services

- Reset password (new portal)
- Reset remote configuration (new portal)
- Learn more about backup and restore

STATUS

Running

DNS NAME

chr-rc25.cloudapp.net

HOST NAME

-

PUBLIC VIRTUAL IP (VIP) ADDRESS

40.68.209.124

INTERNAL IP ADDRESS

100.109.192.74

SSH DETAILS

chr-rc25.cloudapp.net : 30022

SIZE

Basic\_A0 (shared core, 768 MB memory)

SSH CERTIFICATE THUMBPRINT

-

LOCATION

West Europe

+ NEW

+ NEW

CONNECT RESTART SHUT DOWN ATTACH DETACH DISK CAPTURE DELETE

# Setting up CHR



- Secure your CHR-VM immediately after deployment by
  - issuing admin passwords,
  - closing service ports/limiting access
  - and applying firewall rules
- Make sure that every port, which needs to be publicly available, is configured in the VM Endpoints menu of your Azure CHR-VM

# Some use cases



- Testing and solution development  
IoT, RADIUS - Microsoft Active Directory auth.
- Training support  
Linux-Server with RADIUS, Wireshark, .. installed
- Network management support  
for distant networks via tunnels
- CAPsMAN
- Dude server for remote routers
- Deployment of endpoints in different data centers worldwide



# key take-aways



- Deploying and using CHR on Azure cloud infrastructure is simple and enhances on-premise-services
- Easy configurable, scalable resources
- Perfect platform for R & D, testing (not only in Windows environment)

and managing remote network infrastructure

# Stayin' connected ...

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