redhat.

RHEL in Azure

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Agenda

- History and overview of Red Hat and Azure offerings
- General requirements (subscription and process requirements)
- RHEL build specifics
- Azure CLI installation and configuration
- Cloud deployment

What is Azure?

- Microsoft's cloud platform
  - Build infrastructure
  - Develop applications
  - Managed SQL / NoSQL
  - Manage identity and access

Joint November 2015 Announcement

- Customers can use Red Hat Cloud Access to bring the following subscriptions to Azure
  - Red Hat Enterprise Linux
  - Red Hat Enterprise Linux Atomic Host
  - Red Hat Enteprise Application Server
  - Red Hat JBoss Enterprise Web Server
  - Red Hat Gluster Storage
  - Red Hat OpenShift Enterprise

- Red Hat and Microsoft engineering are collaborating on the following
  - .NET support for both Red Hat Enterprise Linux and OpenShift
  - Cloud Forms integration of both Azure and Microsoft System Center

- Joint support
  - Co-located engineers
  - Coordinated escalations and resolution

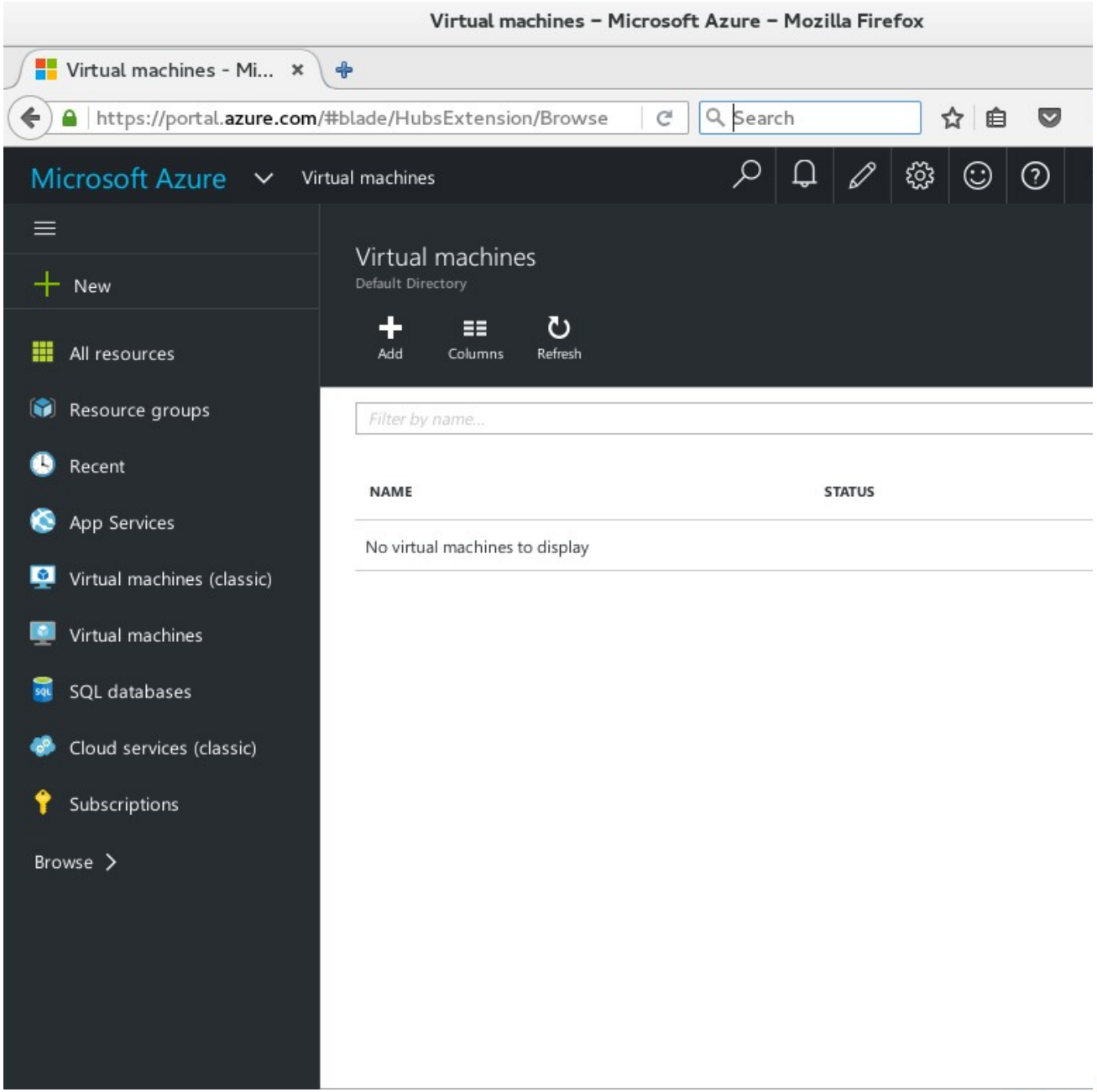
February 17, 2016 Announcement

- As of Feb 17th, 2016, RHEL is available from the Azure Marketplace!
- RHEL 6.7 and RHEL 7.2 are currently available
- Newer versions of RHEL will be available as they are released
- Existing RHEL subscription not consumed, pay-per-hour instead

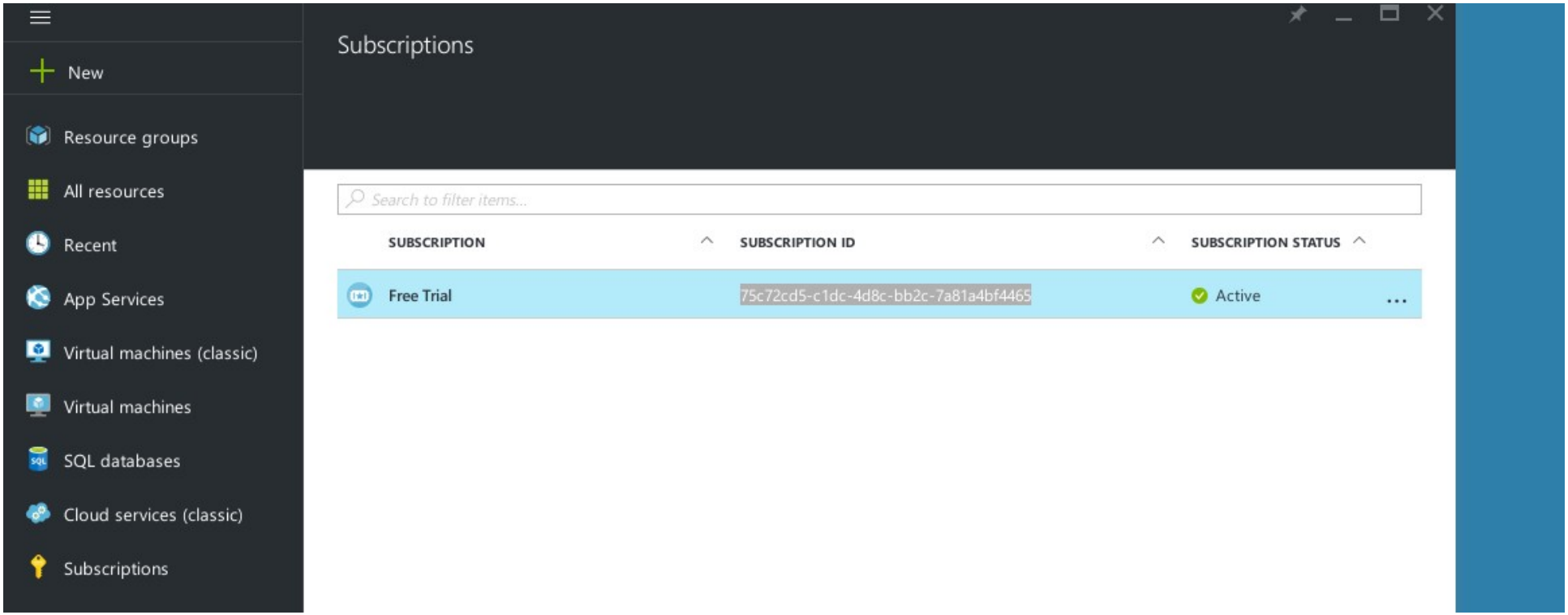
Steps needed to migrate existing RHEL to Azure

1. Have an Azure subscription
2. Have a RHEL subscription
3. Cloud Access enabled on RHEL subscription tying it to Azure subscription (glue!)
4. Your RHEL build (currently Azure Gallery doesn't offer a RHEL image)
5. Upload RHEL 6.x or RHEL 7.x image with Azure CLI
6. Create a VM with Azure CLI

Log into Azure: https://portal.azure.com

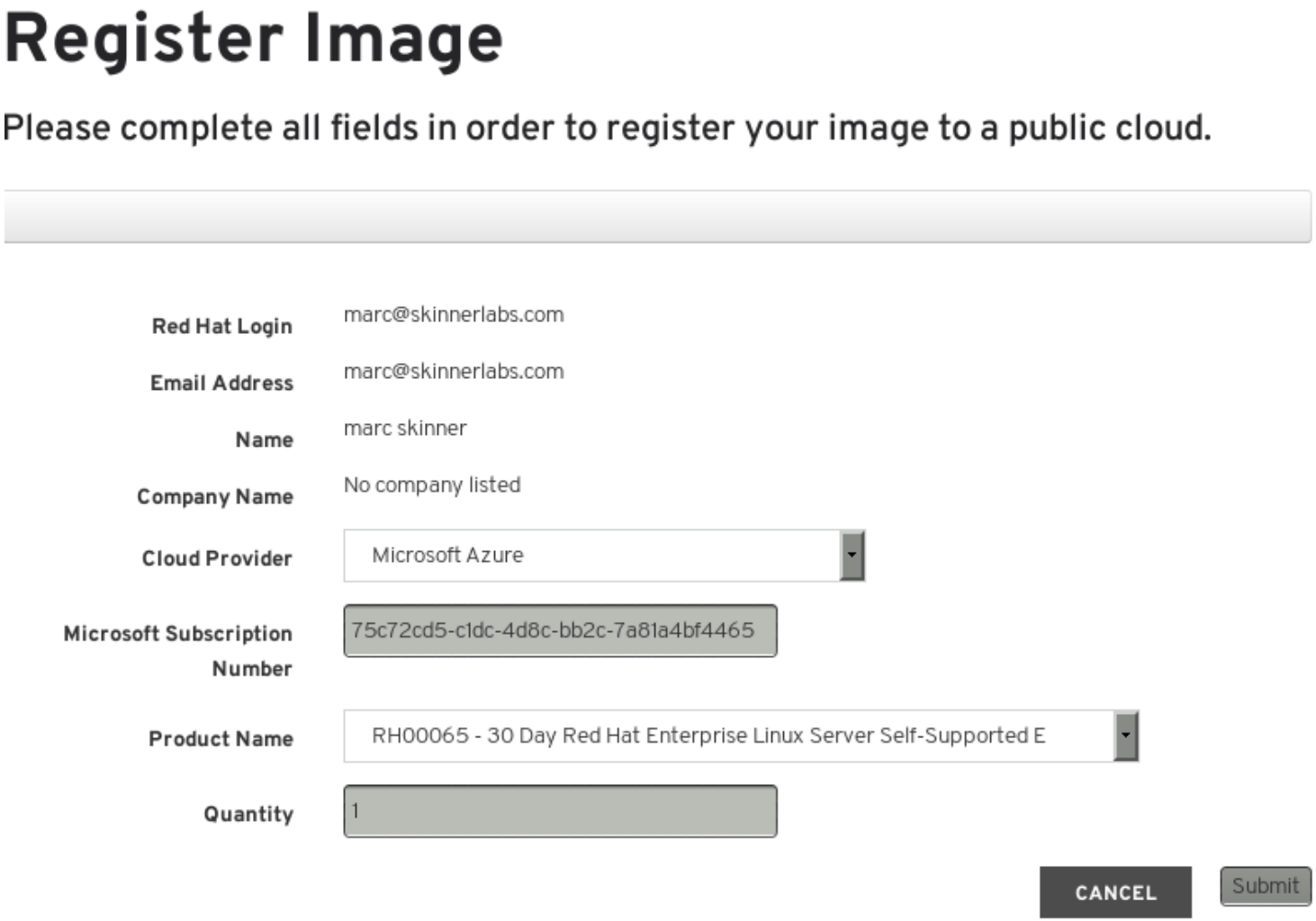


Find your Azure Subscription ID

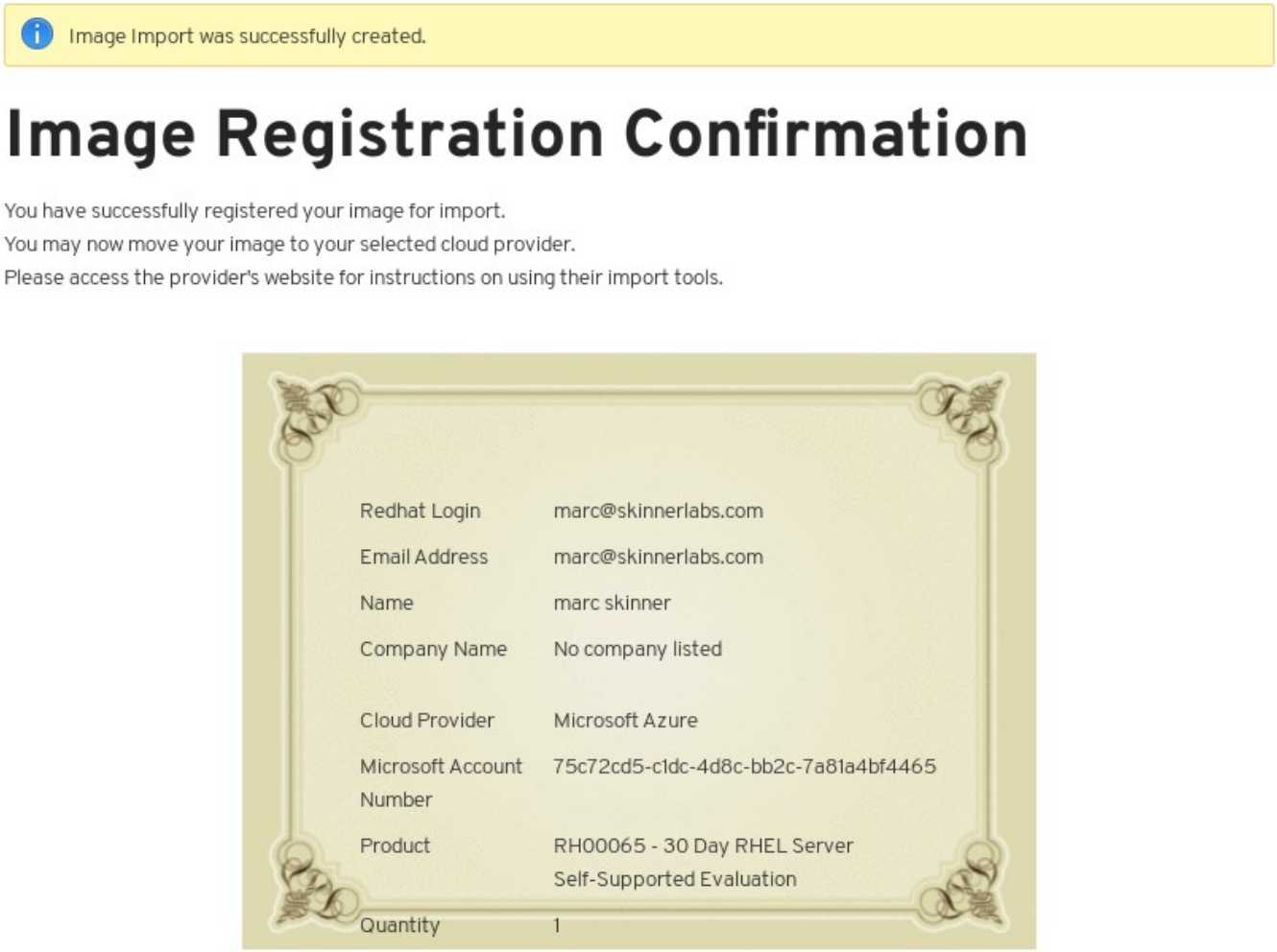


Register your Subscriptions for Cloud Access

https://access.redhat.com/cloude/manager/image_imports/new



Cloud Access Registration Confirmation



RHEL on Azure image requirements

- NO LVM currently supported – only formatted partitions for primary OS disk
- LVM / DM-RAID may be used for data disks
- SSH must be enabled for remote access (key or password auth)
- IPv4 only
- Primary virtual network adapter should be configured for dhcp
- Swap space configured on Azure resource disk (either in image or later)
- Hyper-V device drivers
  - RHEL 6 installer will auto install them
    - # lsinitrd | grep hv
  - RHEL 7
    - Manual steps to follow (dracut)
    - # lsinitrd | grep hv

Image requirements

- Build/clone a RHEL 6.x or 7.x image on your hypervisor of choice:
  - KVM / virt-manager
  - VMware vSphere
  - Microsoft Hyper-V
  - Kickstart in Azure: http://bit.ly/1oHM9yY
  - Probably others (VirtualBox, Fusion could work)

- We used KVM and virt-manager to build and manipulate images

Create RHEL 6 image

- Virt-manager
  - Create new image – PXE boot, Satellite or ISO installation
  - Selected 4Gb RAM, 2VCPU
  - Selected 4Gb disk size using raw format
  - Installed “Basic Server”

RHEL6 :: Networking Configuration

- Modify /etc/sysconfig/network-scripts/ifcfg-eth0

  TYPE=Ethernet
  BOOTPROTO=dhcp
  PEERDNS=yes
  USERCTL=no
  IPV6INIT=no
  DEVICE=eth0
  ONBOOT=yes

RHEL6 :: Kernel / SSH Tweaks

- # vi /boot/grub.cfg
- Add the following parameters to the kernel line
  - earlyprintk=ttyS0 console=ttyS0 rootdelay=300 numa=off
- Remove the following parameters from the kernel line
  - rhgb quiet crashkernel=auto

- # vi /etc/ssh/sshd_config
- Update the following lines
  - PasswordAuthentication yes
  - ClientAliveInterval 180

RHEL 6 :: Package Requirements

- Assumption :: registered to RHN/Satellite for subscription
- # yum install -y wget yum-utils
- # subscription-manager repos --enable rhel-6-server-extras-rpms
- # yum -y install WALinuxAgent
- # chkconfig waagent on
- Edit /etc/waagent.conf
  - ResourceDisk.FileSystem=ext4
  - ResourceDisk.EnableSwap=y
  - ResourceDisk.SwapSizeMB=2048
  - Provisioning.DeleteRootPassword=y
- # rm -rf /etc/udev/rules.d/7*-persistent-net.rules
- # subscription-manager unregister
- # waagent --force --deprovision
- # export HISTSIZE=0
- # poweroff

Create RHEL 7 image

- virt-manager
  - Create new image – PXE boot, Satellite or ISO installation
  - Selected 4Gb RAM, 2VCPU
  - Selected 4Gb disk size using raw format
  - Installed “Minimal” and disabled kdump on the main install screen

RHEL7 :: Networking Configuration

- Modify /etc/sysconfig/network-scripts/ifcfg-eth0

  TYPE=Ethernet
  BOOTPROTO=dhcp
  PEERDNS=yes
  USERCTL=no
  IPV6INIT=no
  DEVICE=eth0
  ONBOOT=yes

RHEL7 :: Hyper-V Drivers

- Hyper-V drivers
  - Add following line to /etc/dracut.conf
  - add_drivers+=”hv_vmbus hv_netvsc hv_storvsc”
  - # dracut -f -v
  - # lsinitrd | grep hv

RHEL7 :: Kernel / SSH Tweaks

- # vi /etc/default/grub
- Add the following parameters to the end of GRUB_CMDLINE_LINUX
  - earlyprintk=ttyS0 console=ttyS0 rootdelay=300 numa=off
- Remove the following parameters from GRUB_CMDLINE_LINUX
  - rhgb quiet crashkernel=auto
- Rebuild grub2 config
- # grub2-mkconfig -o /boot/grub2/grub.cfg

- # vi /etc/ssh/sshd_config
- Update the following lines
  - PasswordAuthentication yes
  - ClientAliveInterval 180

RHEL 7 :: Package Requirements

- Assumption – registered to RHN/Satellite for subscription
- # yum install -y wget yum-utils net-tools
- # subscription-manager repos --enable rhel-7-server-extras-rpms
- # yum -y install WALinuxAgent
- # systemctl enable waagent.service
- Edit /etc/waagent.conf
  - ResourceDisk.FileSystem=ext4
  - ResourceDisk.EnableSwap=y
  - ResourceDisk.SwapSizeMB=2048
  - Provisioning.DeleteRootPassword=y
- # rm -rf /etc/udev/rules.d/7*-persistent-net.rules
- # subscription-manager unregister
- # waagent --force --deprovision
- # export HISTSIZE=0
- # poweroff

Convert Image to VHD Format - VHDX is not currently supported

- virt-manager default image location is: /var/lib/libvirt/images

- **RHEL 6**
- # qemu-img convert -f raw -o subformat=fixed -O vpc rhel6.7-azure-template.img rhel6.7-azure-template.vhd

- **RHEL 7**
- # qemu-img convert -f raw -o subformat=fixed -O vpc rhel7.2-azure-template.img rhel7.2-azure-template.vhd

- qemu-img also supports conversion of: vmdk, qcow2, vdi, etc.

Azure CLI Installation

- Install Azure CLI on an admin system:
  - Node.js 0.10 application
  - Support for Windows, OS X, Linux
  - npm install -g azure-cli

- For RHEL6:
- # subscription-manager repos --enable rhel-server-rhscl-6-rpms
- # yum -y install nodejs010
- # scl enable nodejs010 bash
- # npm install -g azure-cli

Azure CLI

https://azure.microsoft.com/en-us/documentation/articles/xplat-cli-install

Upload image to Azure

- # azure account download
- Save the download “[something].publishsettings”
- # azure account import “[something].publishsettings”
- Stores credentials into ~/.azure directory
- # azure account list
- # azure account show “your-subscription-ID”
- # azure vm image create rhel6-rhug --location "Central US" --os Linux /var/lib/libvirt/images/rhel6.7-azure-template.vhd
- # azure vm image create rhel7-rhug --location "Central US" --os Linux /var/lib/libvirt/images/rhel7.2-azure-template.vhd

More about locations:

https://azure.microsoft.com/en-us/regions

Create/Start a VM in Azure

- **Deploying a machine with an SSH public key (recommended)**
- # azure vm create rhel6-rhug-2 rhel6-rhug azure-user --location "Central US" --vm-size Medium –ssh -t .ssh/id_rsa.pub -P
- # azure vm create rhel7-rhug rhel7-rhug azure-user --location "Central US" --vm-size Medium –ssh -t .ssh/id_rsa.pub -P

- **Deploying a machine with a password (Upper+lower+number+symbol)**
- # azure vm create rhel6-rhug-2 rhel6-rhug azure-user Pa$$w0rd --location "Central US" --vm-size Medium --ssh
- # azure vm create rhel7-rhug rhel7-rhug azure-user Pa$$w0rd --location "Central US" --vm-size Medium –ssh

Minimum recommended size for RHEL should be Medium (Standard_A2)

- 2vcpu, 3.5gb ram, 1 nic

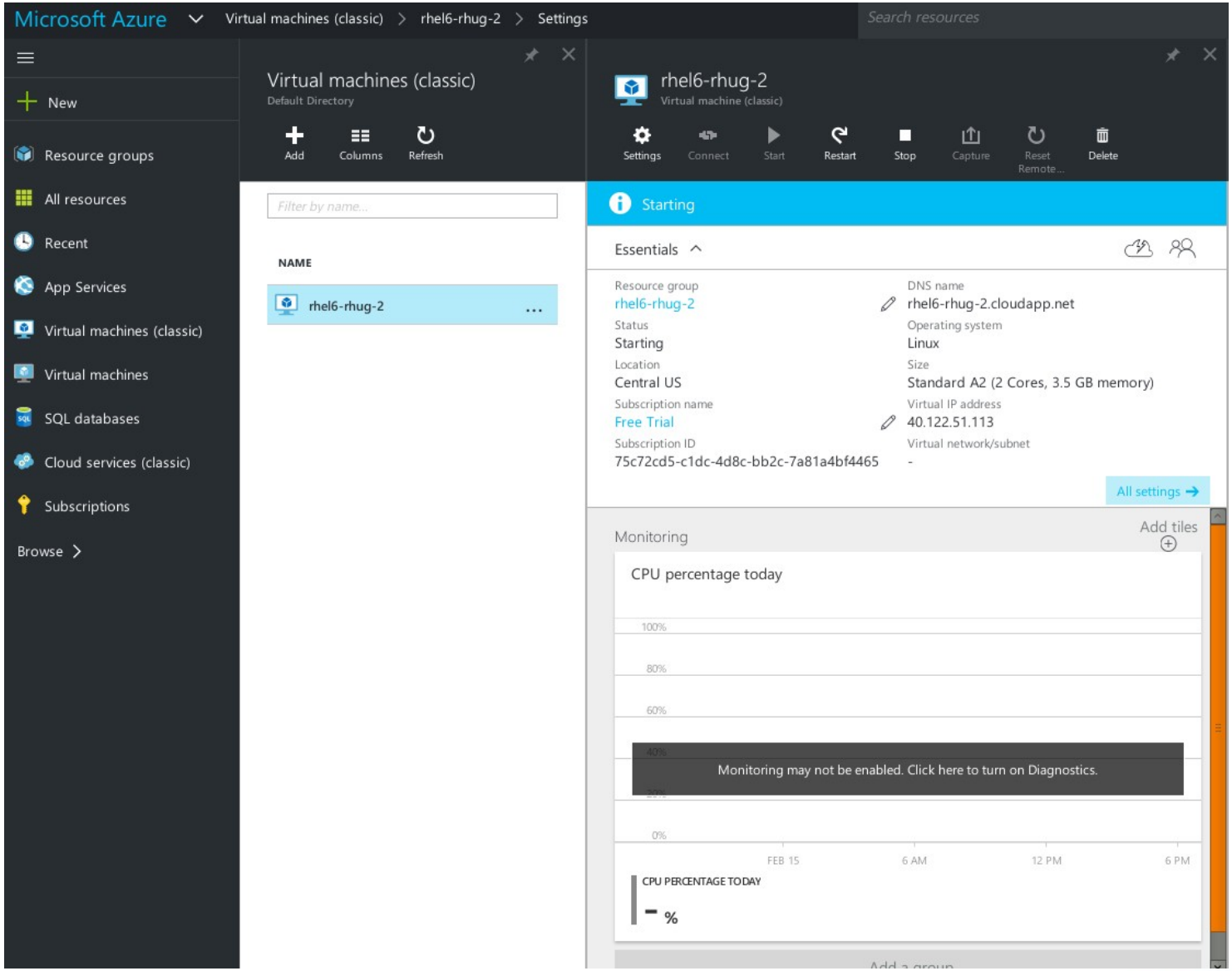
Sizing details

https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-size-specs

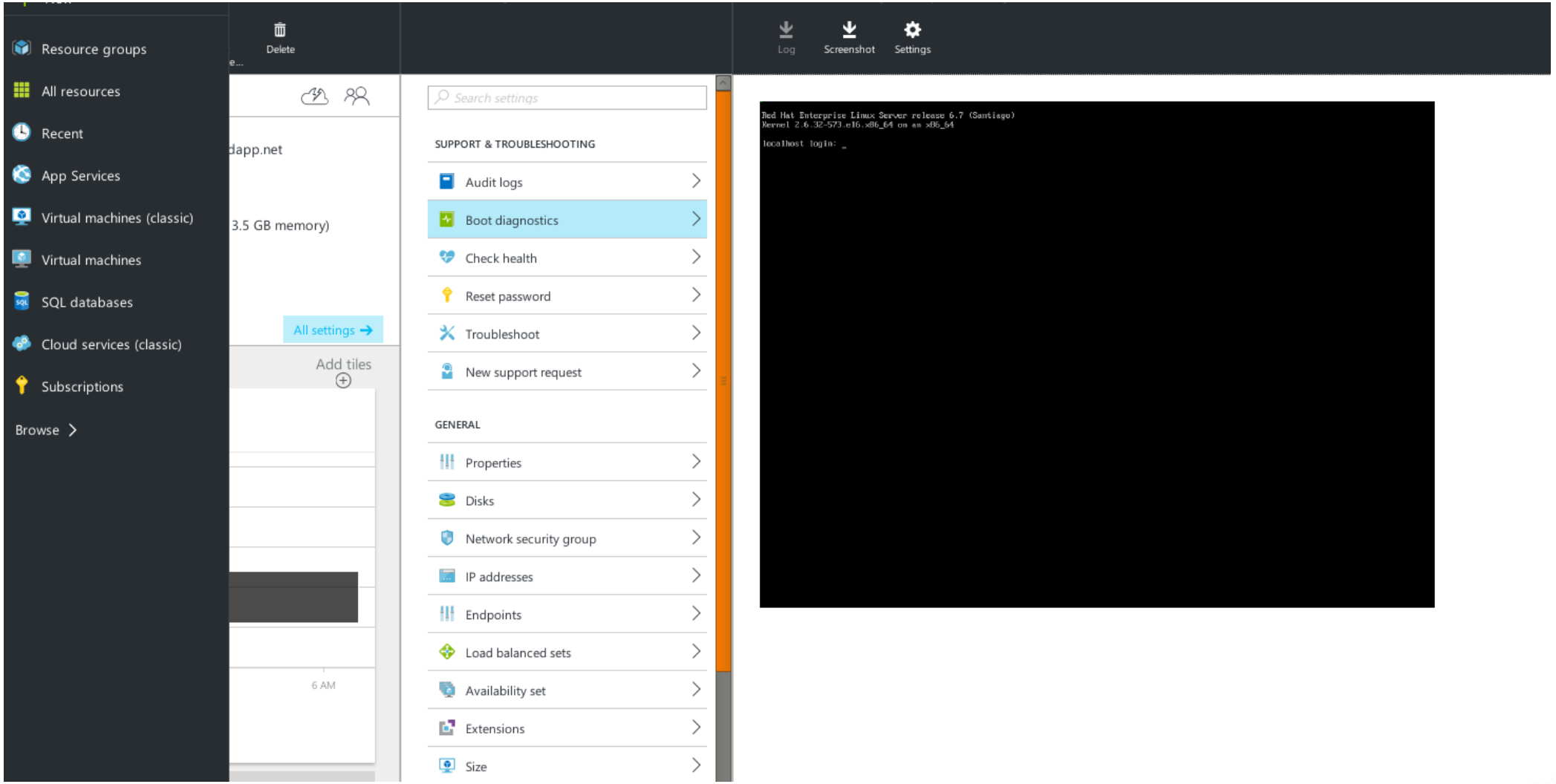
Get info on RHEL VM

- # azure vm show rhel6-rhug-2
- info: Executing command vm show
- + Getting virtual machines
- data: DNSName "**rhel6-rhug-2.cloudapp.net**"
- data: Location "Central US"
- data: VMName "rhel6-rhug-2"
- data: IPAddress "100.115.226.91"
- data: InstanceStatus "RoleStateUnknown"
- data: InstanceSize "Medium"
- data: Image "rhel6-rhug"
- data: OSDisk hostCaching "ReadWrite"
- data: OSDisk name "rhel6-rhug-2-rhel6-rhug-2-0-201602160055210847"
- data: OSDisk mediaLink "https://rhel66azuretemplatevhd14.blob.core.windows.net/vm-images/k1xc400s.fmc201602160055210394.vhd"
- data: OSDisk sourceImageName "rhel6-rhug"
- data: OSDisk operatingSystem "Linux"
- data: OSDisk iOType "Standard"
- data: ReservedIPName ""
- data: VirtualIPAddresses 0 address "**40.122.51.113**"
- data: VirtualIPAddresses 0 name "rhel6-rhug-2ContractContract"
- data: VirtualIPAddresses 0 isDnsProgrammed true
- data: Network Endpoints 0 localPort 22
- data: Network Endpoints 0 name "ssh"
- data: Network Endpoints 0 port 22
- data: Network Endpoints 0 protocol "tcp"
- data: Network Endpoints 0 virtualIPAddress "40.122.51.113"
- data: Network Endpoints 0 enableDirectServerReturn false
- info: vm show command OK

RHEL in Azure!



RHEL in Azure



Azure CLI

- Azure CLI is a Node.js application – I installed it on my admin server

Commands:

```
help:    account      Commands to manage your account information and publish settings
help:    config       Commands to manage your local settings
help:    hdinsight    Commands to manage HDInsight clusters and jobs
help:    mobile       Commands to manage your Mobile Services
help:    network      Commands to manage your networks
help:    sb           Commands to manage your Service Bus configuration
help:    service      Commands to manage your Cloud Services
help:    site         Commands to manage your Web Sites
help:    sql          Commands to manage your SQL Server accounts
help:    storage      Commands to manage your Storage objects
help:    vm           Commands to manage your Virtual Machines
```

Resources:

Sign up for an Azure trial:
https://portal.azure.com

Log into your RHN account:
http://rhn.redhat.com

Register RHEL sub to the Cloud Access portal:
https://access.redhat.com/cloude/manager/image_imports/new

Virtual Machine conversion
https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-linux-create-upload-vhd-redhat

Red Hat RHEL deploy in Azure
https://access.redhat.com/articles/1989673

Partnership and announcements
https://www.redhat.com/en/partners/strategic-alliance/microsoft

https://www.redhat.com/en/about/press-releases/microsoft-and-red-hat-deliver-new-standard-enterprise-cloud-experiences

https://azure.microsoft.com/en-us/campaigns/redhat/

Summary

- Partnership of Red Hat and Microsoft Azure
- RHEL 6 and RHEL 7 are both supported offerings
- Options: Build new workloads or convert existing workloads
- Options: Use Azure Marketplace or bring your own RHEL sub

Questions?