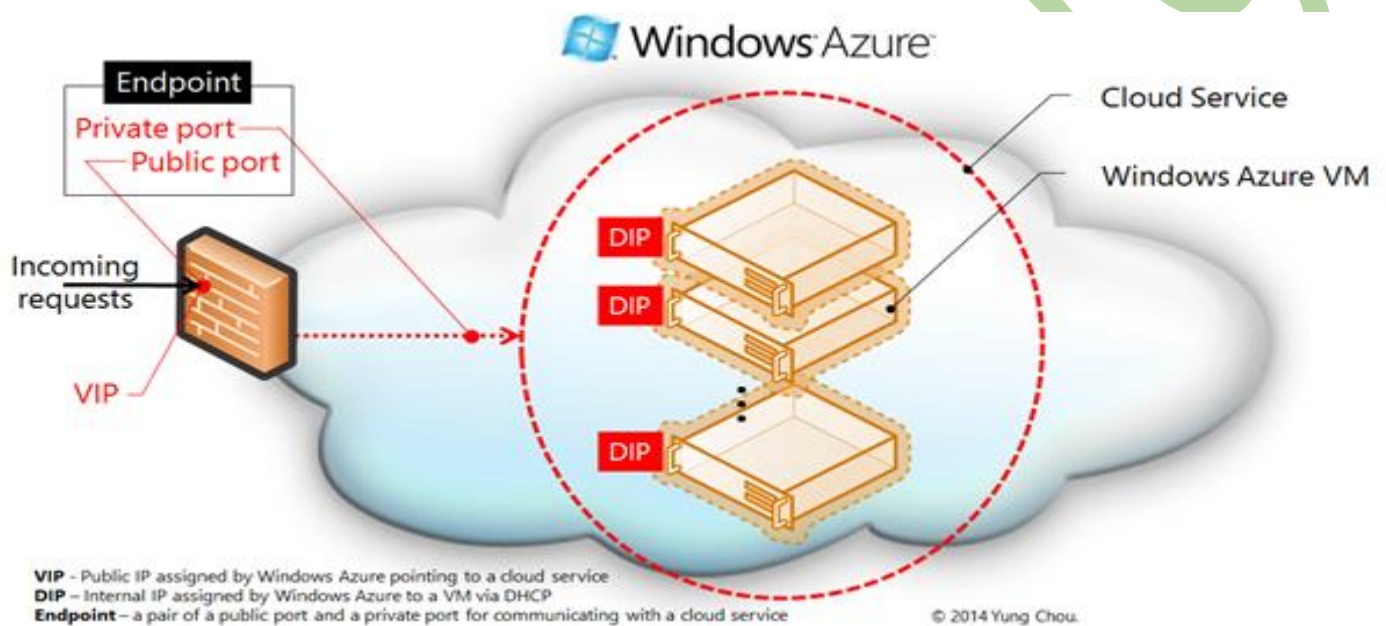


Prepare Azure Tenant for IaaS (EMS)

In this part we will prepare Windows Azure to host some Virtual machine where we will start build our EMS lab on it like "Active Directory, ADFS Server, Azure RMS Connector, File Server".

But before starting the implementation we need to know some terminologies like: Cloud Service, Endpoint, VIP, DIP.



Terminologies

VIP

A VIP is the public IP address associated with a VM. Every Azure VM has a VIP, with all the VMs in a cloud service having the same VIP.

Notice that a VIP once assigned is not released from a cloud service till every VM instance in the cloud services has either a "Stopped (Deallocated)" status or deleted.

The VIP is allocated at random from a pool of IP addresses managed by Microsoft. However, it is possible to [reserve](#) an IP address from the Microsoft pool and allocate that reserved IP address as a VIP.

There is a limit of 5 reserved IPs for a subscription. Unless a reserved IP address is used, the VIP is given up and returned to the Microsoft pool once the last VM with that VIP is deallocated or deleted. Internet-bound traffic coming from the VM is SNATted to have the VIP be its source address

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DIP

A DIP (an internal IP assigned by Windows Azure with DHCP) is the IP address assigned to the VM for communicating within Windows Azure. Notice that a DIP once assigned is not released from a VM till the VM has a "Stopped (Deallocated)" status.

Endpoint

Endpoint is a pair of two ports associated with the VIP of the cloud service. **The public port** of an endpoint is the one facing Internet, while within Windows Azure the corresponding port is **the private port**.

IP Assignments in Windows Azure Virtual Network (VNET)

When deploying VMs to a VNET, the DIPs (i.e. internal IP addresses) of VMs are allocated from a configured address pool (as defined in VNET) in the order of each VM is deployed. Therefore, deploying the same VMs in a different order to the VNET or deallocating then redeploying VMs in a VNET will likely result in different internal IP addresses assigned.

For example, two VMs in a VNET had had a Stopped Deallocated state and then both were restarted in a random order. The new internal IP addresses assigned to the two VMs will likely be different than those IP addresses previously assigned before deallocation.

This behavior is most noticeable after restarting those VMs with a Stopped Deallocated state which as addressed earlier releases the internal IP address. And it is an issue for a deployment expecting VMs with persistent IP addresses throughout the lifetime of an associated service. However, if static IP addresses were assigned to VMs, the same predictable IP address will be in the VM upon.

Install Azure PowerShell

If you haven't done so already, use the instructions in How to install and configure Azure PowerShell to install Azure PowerShell on your local computer. Then, open an Azure PowerShell command prompt.

<https://azure.microsoft.com/en-us/documentation/articles/powershell-install-configure/>

Create a Cloud Service by Azure PowerShell

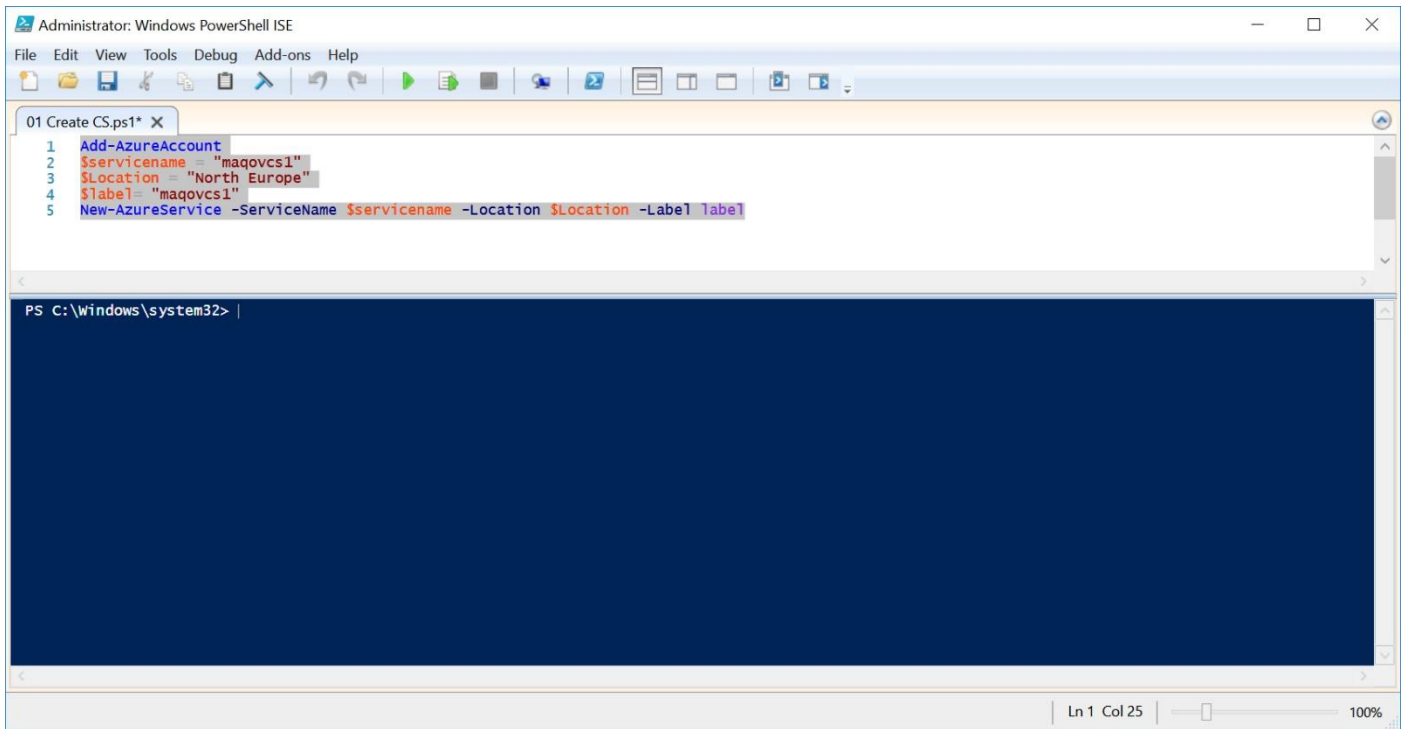
We will use the cloud service to access our VMS hosted inside over the internet, however we need to some tricks to make the **VIP** reserved after restarting the VM or shutdown it.

The Cloud service is required to create a public IP address through which our VM's can be accessible over the internet.

To ensure the "Public Virtual IP (**VIP**) Address" is maintained even after all Virtual Machines are turned off and de-allocated (to prevent cost) a reserved IP address can be set for the Cloud Service. This can only be done through creating the VM by PowerShell.

First open **Microsoft Azure PowerShell**, then write the below commands accordingly.

```
Add-AzureAccount
$serviceName = "maqovcs1"
$Location = "North Europe"
$label= "maqovcs1"
New-AzureService -ServiceName $serviceName -Location $Location -Label label
```



Administrator: Windows PowerShell ISE

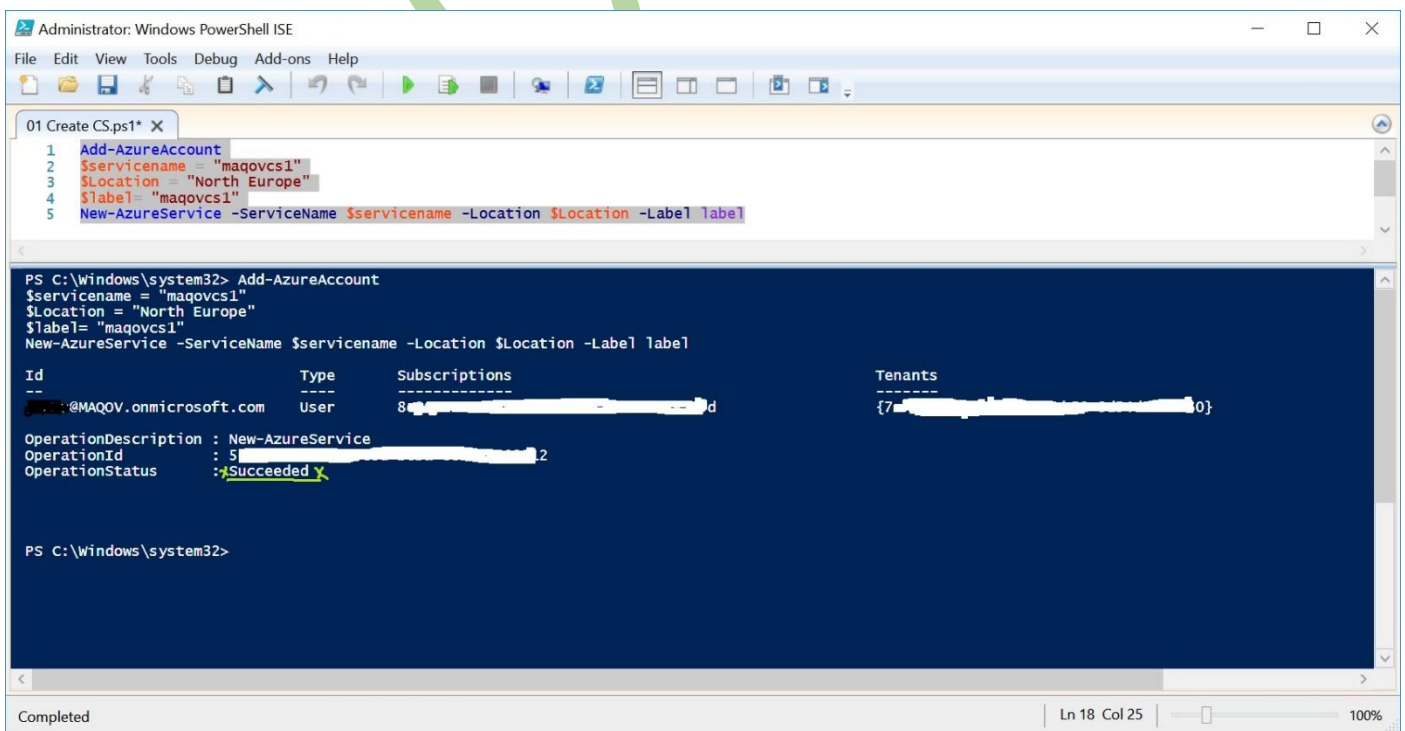
File Edit View Tools Debug Add-ons Help

01 Create CS.ps1* X

```
1 Add-AzureAccount
2 $serviceName = "maqovcs1"
3 $Location = "North Europe"
4 $label= "maqovcs1"
5 New-AzureService -ServiceName $serviceName -Location $Location -Label label
```

PS C:\Windows\system32> |

Ln 1 Col 25 100%



Administrator: Windows PowerShell ISE

File Edit View Tools Debug Add-ons Help

01 Create CS.ps1* X

```
1 Add-AzureAccount
2 $serviceName = "maqovcs1"
3 $Location = "North Europe"
4 $label= "maqovcs1"
5 New-AzureService -ServiceName $serviceName -Location $Location -Label label
```

PS C:\Windows\system32> Add-AzureAccount
\$serviceName = "maqovcs1"
\$Location = "North Europe"
\$label= "maqovcs1"
New-AzureService -ServiceName \$serviceName -Location \$Location -Label label

Id	Type	Subscriptions	Tenants
...	User	8...	{7...

OperationDescription : New-AzureService
OperationId : 5...
OperationStatus : Succeeded

PS C:\Windows\system32>

Completed Ln 18 Col 25 100%

Once the operation is succeeded we can check the cloud service at azure management portal

://manage.windowsazure.com/MAQOV.onmicrosoft.com#Wt Cloud services - Microsoft Az...

Microsoft Azure Check out the new portal CREDIT STATUS @MAQOV.onmicrosoft.com

cloud services

NAME	SERVICE STATUS	PRODUCTION	STAGING	SUBSCRIPTION	LOCATION	URL
maqovcs1	✓ Created	-	-	BizSpark	North Europe	http://maqovcs1.cloudapp.net
tmqvvm1	✓ Created	■ Stopped	-	BizSpark	North Europe	http://tmqvvm1.cloudapp.net
tmqvvm2	✓ Created	■ Stopped	-	BizSpark	North Europe	http://tmqvvm2.cloudapp.net

ALL ITEMS

WEB APPS 0

VIRTUAL MACHINES 3

MOBILE SERVICES 0

CLOUD SERVICES 3

BATCH SERVICES 0

SQL DATABASES 0

STORAGE 1

HDINSIGHT 0

MEDIA SERVICES 0

SERVICE BUS 0

MOBILE ENGAGEMENT 0

Create Storage Account by Azure PowerShell

The Storage will be used to store all your Virtual Machines including the vhd's. If you don't create a Storage Account, these can be created automatically when Virtual Machines are created.

First open Microsoft Azure PowerShell, then write the below commands accordingly.

```
#begin
# Update with the name of your subscription.
$SubscriptionName= "BizSpark"

# Give a name to your new storage account. It must be lowercase!
$StorageAccountName="maqovsa1"

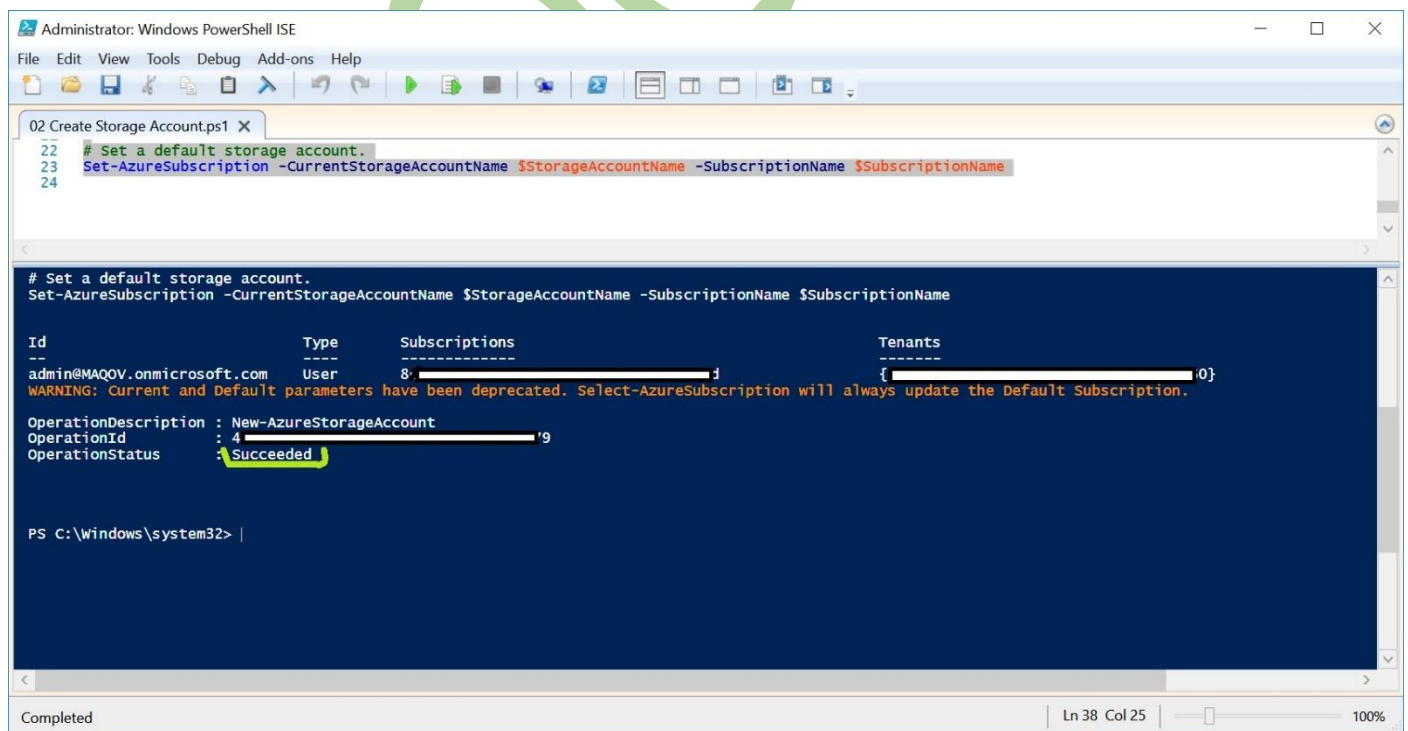
# Choose "west US" as an example.
$Location = "North Europe"

# Add your Azure account to the local PowerShell environment.
Add-AzureAccount

# Set a default Azure subscription.
Select-AzureSubscription -SubscriptionName $SubscriptionName -Default

# Create a new storage account.
New-AzureStorageAccount -StorageAccountName $StorageAccountName -Location $Location

# Set a default storage account.
Set-AzureSubscription -CurrentStorageAccountName $StorageAccountName -SubscriptionName
$SubscriptionName
```



```
Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
02 Create Storage Account.ps1 X
22 # Set a default storage account.
23 Set-AzureSubscription -CurrentStorageAccountName $StorageAccountName -SubscriptionName $SubscriptionName
24

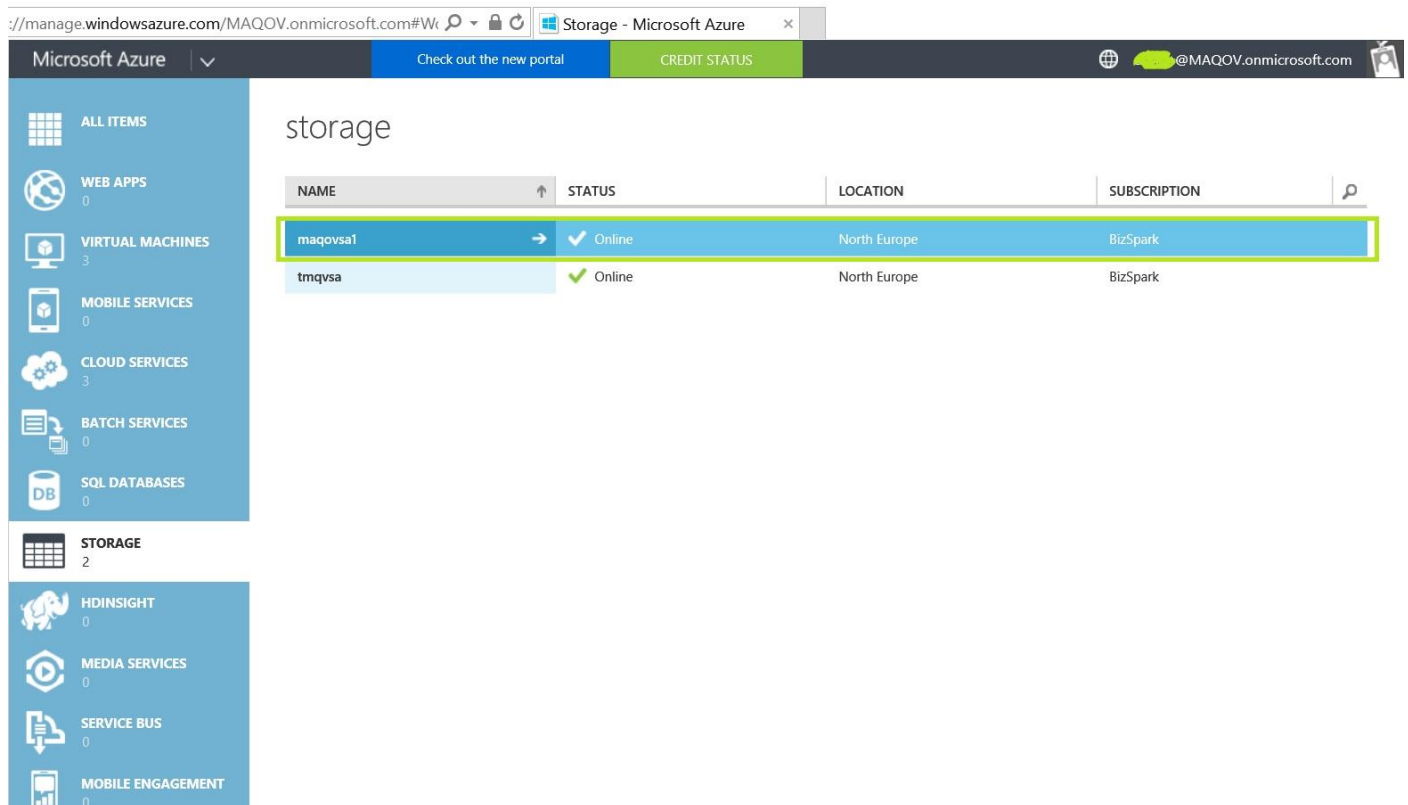
# Set a default storage account.
Set-AzureSubscription -CurrentStorageAccountName $StorageAccountName -SubscriptionName $SubscriptionName

Id          Type          Subscriptions          Tenants
--          -
admin@MAQOV.onmicrosoft.com User 8: [redacted] { [redacted] }
WARNING: Current and Default parameters have been deprecated. Select-AzureSubscription will always update the Default Subscription.
OperationDescription : New-AzureStorageAccount
OperationId          : 4
OperationStatus      : Succeeded

PS C:\Windows\system32> |
```

Completed | Ln 38 Col 25 | 100%

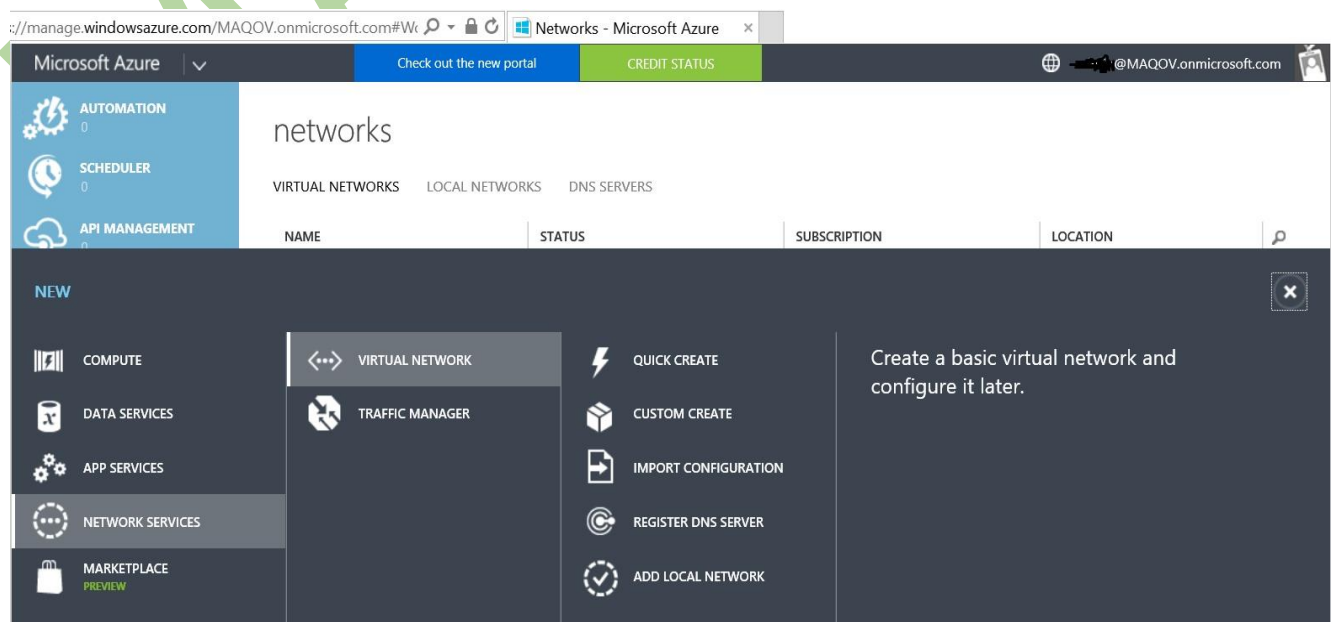
Once the operation is succeeded we can check the Storage at azure management portal



NAME	STATUS	LOCATION	SUBSCRIPTION
maqovsa1	Online	North Europe	BizSpark
tmqvsa	Online	North Europe	BizSpark

Create Virtual Network

1. Create Azure Virtual Network
 - a. Select **"Networks"**
 - b. Select **" + NEW "** in the bottom left.
 - c. Select **Custom Create**.



networks

VIRTUAL NETWORKS LOCAL NETWORKS DNS SERVERS

NAME STATUS SUBSCRIPTION LOCATION

NEW

COMPUTE DATA SERVICES APP SERVICES NETWORK SERVICES MARKETPLACE PREVIEW

VIRTUAL NETWORK TRAFFIC MANAGER

QUICK CREATE CUSTOM CREATE IMPORT CONFIGURATION REGISTER DNS SERVER ADD LOCAL NETWORK

Create a basic virtual network and configure it later.

- d. Enter the Name "**maqovvnetmobility**" of your Virtual Network and select the Location closest to you. This must be the same as the location as the location specified in Hydration.

CREATE A VIRTUAL NETWORK

Virtual Network Details

NAME

maqovvnetmobility

LOCATION

North Europe

NETWORK PREVIEW

maqovvnetmobility

- e. Go to the next screen by selecting the arrow "->".
- f. Skip the "**DNS Servers and VPN Connectivity**" screen. You will come back to this later after a DNS server is configured.
- g. Go to the next screen by selecting the arrow "->".
- h. Under the CIDR (Address Count) for the Address Space select /24 (256).
- i. Under CIDR (Address Count) in the Subnet line also select /24 (256).

CREATE A VIRTUAL NETWORK

Virtual Network Address Spaces

ADDRESS SPACE	STARTING IP	CIDR (ADDRESS COUNT)	USABLE ADDRESS RANGE
10.1.1.0/24	10.1.1.0	/24 (256)	10.1.1.0 - 10.1.1.255

SUBNETS

Subnet-1

10.1.1.0

/24 (256)

10.1.1.0 - 10.1.1.255

add subnet

add address space

NETWORK PREVIEW

maqovvnetmobility

- j. Accept the remaining settings in Virtual Network Address Spaces and select to complete the wizard by clicking "tick symbol" in the bottom right of the screen.

://manage.windowsazure.com/MAQOV.onmicrosoft.com#Wk

Networks - Microsoft Azure

Microsoft Azure

Check out the new portal

CREDIT STATUS

@MAQOV.onmicrosoft.com

networks

VIRTUAL NETWORKS LOCAL NETWORKS DNS SERVERS

NAME	STATUS	SUBSCRIPTION	LOCATION
Group Group t_mqv_n1	✓ Created	BizSpark	North Europe
maqovnetmobility	→ ✓ Created	BizSpark	North Europe

MAQOV.V

Create Virtual Machine by Azure PowerShell

Add-AzureAccount

```
$family="windows Server 2012 R2 Datacenter"
$image=Get-AzureVMImage | where { $_.ImageFamily -eq $family } | sort PublishedDate -Descending | select -ExpandProperty ImageName -First 1

$vmname="mobilityvm1"
$vmsize="Medium"
$vm1=New-AzureVMConfig -Name $vmname -InstanceSize $vmsize -ImageName $image

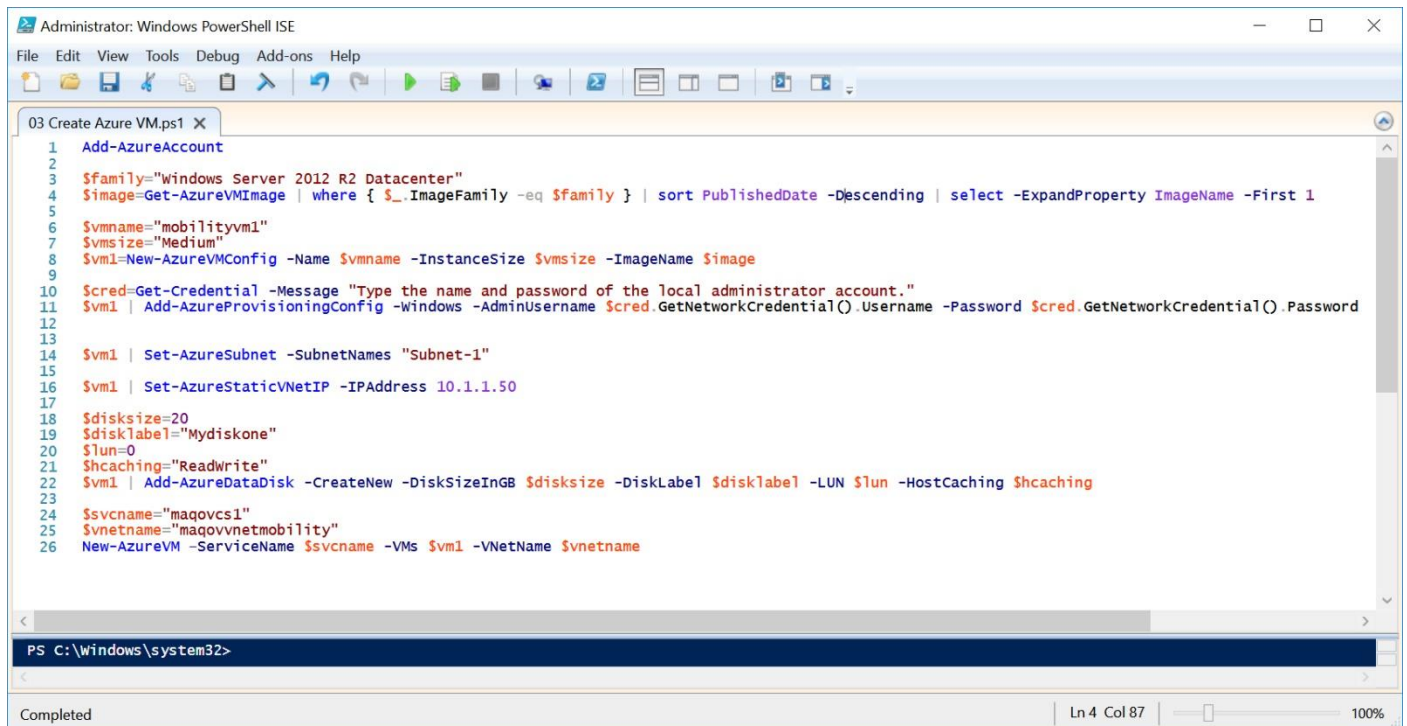
$cred=Get-Credential -Message "Type the name and password of the local administrator account."
$vm1 | Add-AzureProvisioningConfig -windows -AdminUsername $cred.GetNetworkCredential().Username -Password $cred.GetNetworkCredential().Password

$vm1 | Set-AzureSubnet -SubnetNames "Subnet-1"

$vm1 | Set-AzureStaticVNetIP -IPAddress 10.1.1.50

$disksize=20
$disklabel="Mydiskone"
$lun=0
$hcaching="ReadWrite"
$vm1 | Add-AzureDataDisk -CreateNew -DiskSizeInGB $disksize -DiskLabel $disklabel -LUN $lun -HostCaching $hcaching

$svcname="maqovcs1"
$vnetname="maqovvnetmobility"
New-AzureVM -ServiceName $svcname -VMs $vm1 -VNetName $vnetname
```



The screenshot shows the Windows PowerShell ISE interface. The title bar reads "Administrator: Windows PowerShell ISE". The menu bar includes File, Edit, View, Tools, Debug, Add-ons, and Help. The toolbar contains various icons for file operations and execution. The script editor shows a file named "03 Create Azure VM.ps1" with 26 lines of PowerShell code, which is a copy of the code block above. The console window at the bottom shows the command prompt "PS C:\windows\system32>" and the status "Completed". The status bar at the bottom right indicates "Ln 4 Col 87" and "100%" zoom.

Windows PowerShell credential request. ? X

Type the name and password of the initial windows account.

User name:

Password:

OK Cancel

Microsoft Azure

Check out the new portal CREDIT STATUS

virtual machines

INSTANCES IMAGES DISKS

NAME	STATUS	SUBSCRIPTION	LOCATION	DNS NAME
mobilityvm1	Starting (Provisioning)	BizSpark	North Europe	maqovcs1.cloudapp.net
tmqvm1	Stopped (Deallocated)	BizSpark	North Europe	tmqvm1.cloudapp.net
tmqvm2	Stopped (Deallocated)	BizSpark	North Europe	tmqvm2.cloudapp.net
tmqvm4	Stopped (Deallocated)	BizSpark	North Europe	tmqvm1.cloudapp.net

NEW CONNECT RESTART SHUT DOWN ATTACH DETACH DISK CAPTURE DELETE

Administrator: Windows PowerShell ISE

```
File Edit View Tools Debug Add-ons Help
```

```
AvailabilitySetName : {mobilityvm1, Microsoft.WindowsAzure.Commands.ServiceManagement.Model.NetworkConfigurationSet}
ConfigurationSets  : {}
DataVirtualHardDisks : {}
Label              : mobilityvm1
OSVirtualHardDisk   : Microsoft.WindowsAzure.Commands.ServiceManagement.Model.OSVirtualHardDisk
RoleName            : mobilityvm1
RoleSize             : Medium
RoleType             : PersistentVMRole
WinRMCertificate     : {}
X509Certificates    : {}
NoExportPrivateKey   : False
NoRDPEndpoint        : False
NoSSHEndpoint        : False
DefaultWinRMCertificateThumbprint :
ProvisionGuestAgent  : True
ResourceExtensionReferences : {BGInfo}
DataVirtualHardDisksToBeDeleted :
VMIImageInput       :

WARNING: No deployment found in service: 'maqovcs1'.

OperationDescription : New-AzureVM
OperationId           : 2f161e54-cef3-66e7-a873-64ac284ff45f
OperationStatus       : Succeeded
```

```
03 Create Azure VM.ps1 X
8 $vm1=New-AzureVMConfig
9
10 $cred=Get-Credential -M
11 $vm1 | Add-AzureProvisi
12
13
14 $vm1 | Set-AzureSubnet
15
16 $vm1 | Set-AzureStaticV
17
18 $disksize=20
19 $disklabel="Mydiskone"
20 $lun=0
21 $hcaching="Readwrite"
22 $vm1 | Add-AzureDataDis
23
24 $svcname="maqovcs1"
25 $vnetname="maqovvnetmob
26 New-AzureVM -ServiceNam
```

https://manage.windowsazure.com/MAQOV.onmicrosoft.com#Wk Virtual machines - Microsoft ...

Microsoft Azure | Check out the new portal | CREDIT STATUS | @MAQOV.onmicrosoft.com

9:10 9:15 9:20 9:25 9:30 9:35 9:40 9:45 9:50 9:55 10:00 10:05 10:10

mobilityvm1
tmqvm1
tmqvm4
tmqvm2

web endpoint status PREVIEW
You have not configured a web endpoint for monitoring. Configure one to get started.
CONFIGURE WEB ENDPOINT MONITORING

autoscale status
To start using autoscaling, add virtual machines to an availability set
CONFIGURE AVAILABILITY SET
AUTOSCALE OPERATION LOGS

usage overview
MOBILITYVM1 OTHER ROLES AVAILABLE
2 CORE(S)
MOBILITYVM1 2 of 20 CORE(S)

disks

quick glance
Visit the new portal
View Applicable Applications and services
Reset password (new portal)
Reset remote configuration (new portal)
Learn more about backup and restore

STATUS
Running

DNS NAME
maqovcs1.cloudapp.net

HOST NAME
mobilityvm1

PUBLIC VIRTUAL IP (VIP) ADDRESS
40.127.199.108

INTERNAL IP ADDRESS
10.1.1.50

mobilityvm1 - maqovcs1.cloudapp.net:57451 - Remote Desktop Connection

Deployment Id: f9d50327cdf44638b65d4ac6750ffb29
Internal IP: 10.1.1.50
Public IP: 40.127.199.108
Boot Time: 1/26/2016 6:07 PM
Free Space: C:\ 117.13 GB NTFS
D:\ 133.58 GB NTFS
Host Name: MOBILITYVM1
Memory: 3584 MB
OS Version: Windows Server 2012 R2 Datacenter
User Name: maqov

Now we will find that our new VM is created with right configuration

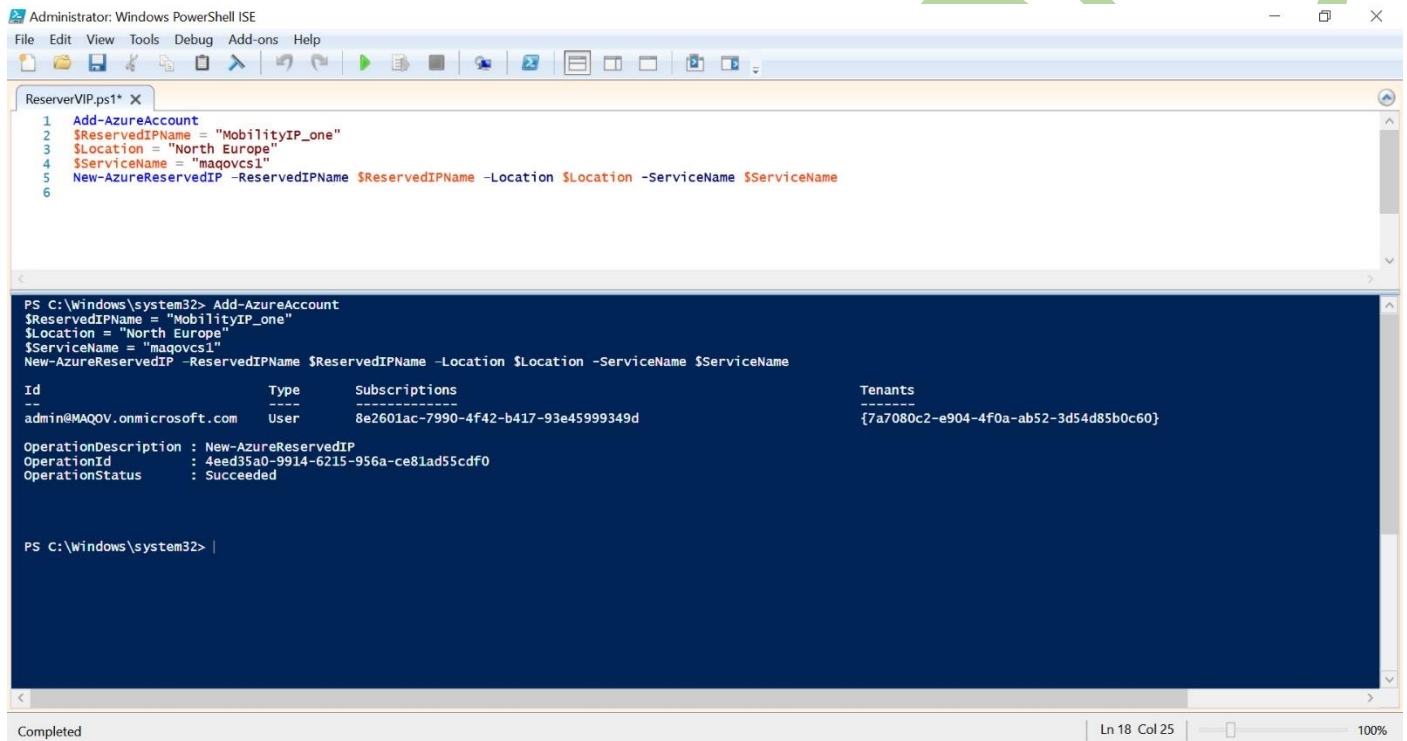
The exact cloud service, storage account, and virtual network with a static DIP.

So the next challenge is to reserve the current VIP to the running cloud service.

New Reserved IP to Existing Cloud Service

You can own these IP addresses for as long as you want in your subscription and also associate them with your Cloud Service Deployments in the region of the Reserved IP addresses. This new announcement is specifically focusing public facing IP addresses. The platform already supports reserving internal IPs, as described

```
Add-AzureAccount
$ReservedIPName = "MobilityIP_one"
$Location = "North Europe"
$ServiceName = "maqovcs1"
New-AzureReservedIP -ReservedIPName $ReservedIPName -Location $Location -ServiceName $ServiceName
```



```
Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help

ReserverVIP.ps1 X
1 Add-AzureAccount
2 $ReservedIPName = "MobilityIP_one"
3 $Location = "North Europe"
4 $ServiceName = "maqovcs1"
5 New-AzureReservedIP -ReservedIPName $ReservedIPName -Location $Location -ServiceName $ServiceName
6

PS C:\Windows\system32> Add-AzureAccount
$ReservedIPName = "MobilityIP_one"
$Location = "North Europe"
$ServiceName = "maqovcs1"
New-AzureReservedIP -ReservedIPName $ReservedIPName -Location $Location -ServiceName $ServiceName

Id                Type      Subscriptions      Tenants
--                -
admin@MAQOV.onmicrosoft.com  User      8e2601ac-7990-4f42-b417-93e45999349d {7a7080c2-e904-4f0a-ab52-3d54d85b0c60}

OperationDescription : New-AzureReservedIP
OperationId           : 4eed35a0-9914-6215-956a-ce81ad55cdf0
OperationStatus       : Succeeded

PS C:\Windows\system32> |
```

Completed | Ln 18 Col 25 | 100%

Congratulations now you can Shut down all the VMs inside this cloud service without losing the public IP.

Reference Links

<https://azure.microsoft.com/en-us/documentation/articles/powershell-install-configure/>

<https://azure.microsoft.com/en-us/documentation/articles/cloud-services-powershell-create-cloud-container/>

<https://azure.microsoft.com/en-us/documentation/articles/storage-powershell-guide-full/>

<https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-ps-create-preconfigure-windows-vms/>

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