

Installing Windows Server-2016 Nano Server using PowerShell

Objective:

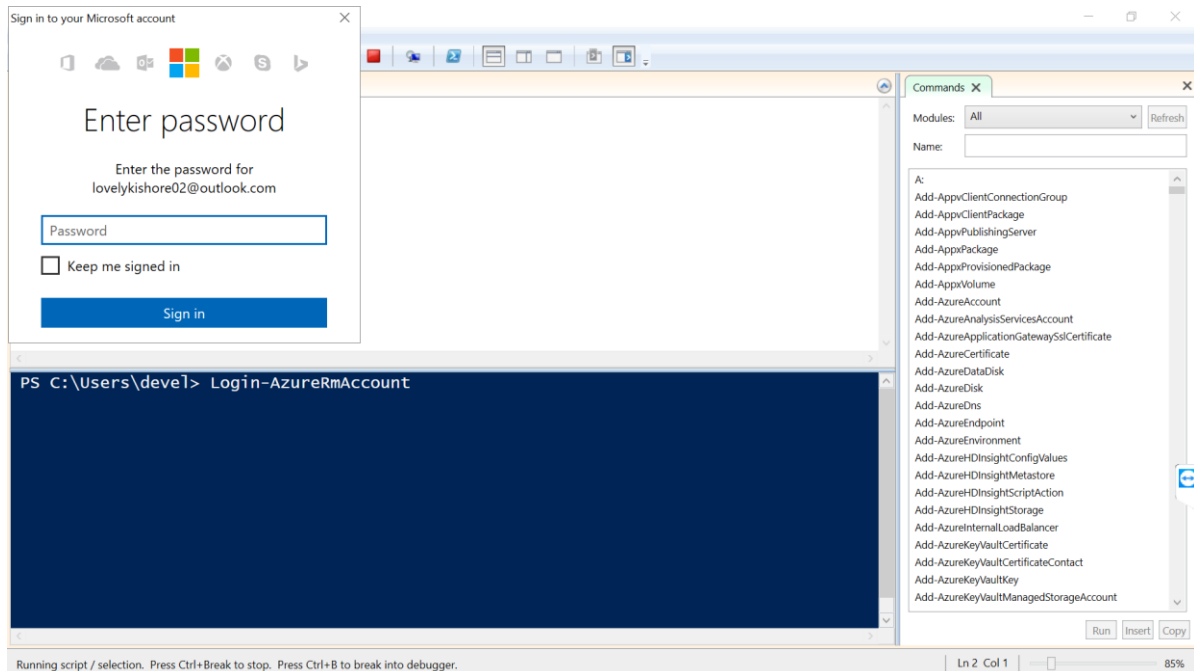
The following exercise is all about the installation of **Windows Server 2016-Nano Server**. Open your PowerShell in the administrator privileges.

Step 1: Logging into Azure portal

- After opening PowerShell run the following command to login into your azure portal.

Login-AzureRmAccount

- Now you will be prompted to enter your credentials. Enter them and login.



```
PS C:\Users\devel> Login-AzureRmAccount

Environment      : AzureCloud
Account          : lovelykishore02@outlook.com
TenantId         : 659c4304-3c01-4448-bc5f-92f9d3d8a334
SubscriptionId   : 09010e57-9f2b-4b3b-a4a1-6e7f752b3954
SubscriptionName : Visual Studio Enterprise
CurrentStorageAccount :
```

- The next step is to select the subscription. For selection of the subscription, run the following commands. Replace with the subscription name.

Select-AzureRmSubscription -SubscriptionName "Visual Studio Enterprise"

Step 2: Creation of Nano Server VM

- Now create a new resource group and in some location in the following code.

New-AzureRmResourceGroup -Name "NanoServerAzurePS" -Location "South India"

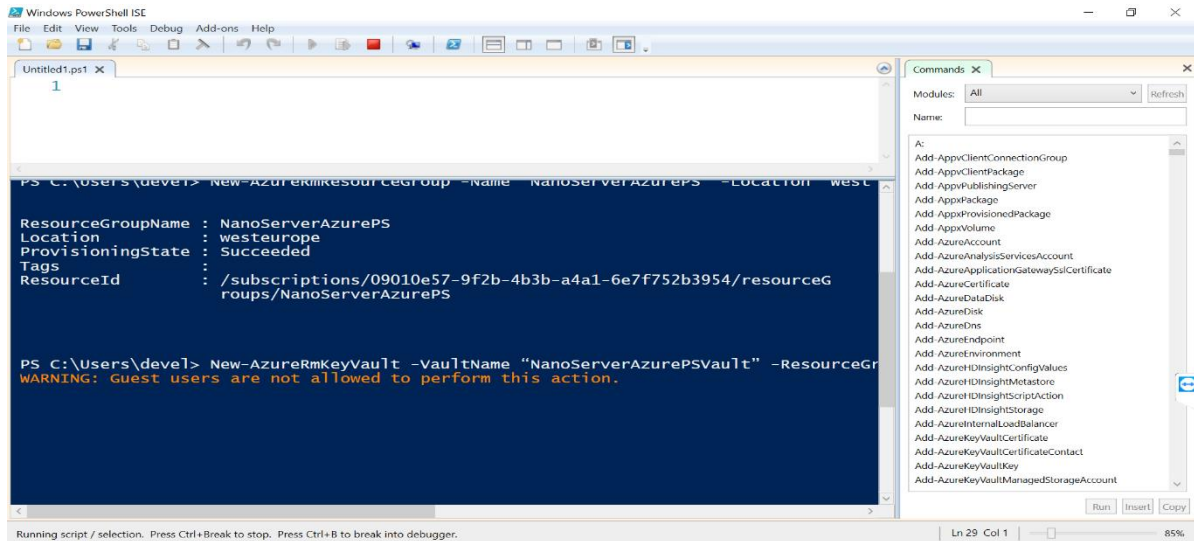
```
PS C:\Users\devel> New-AzureRmResourceGroup -Name "NanoServerAzurePS" -Location "West

ResourceGroupName : NanoServerAzurePS
Location           : westeurope
ProvisioningState  : Succeeded
Tags               :
ResourceId         : /subscriptions/09010e57-9f2b-4b3b-a4a1-6e7f752b3954/resourceG
roups/NanoServerAzurePS

PS C:\Users\devel>
```

- The next step is the creation the key vault which will be used for managing your Nano Server. For creation of the Key Vault, execute the code.

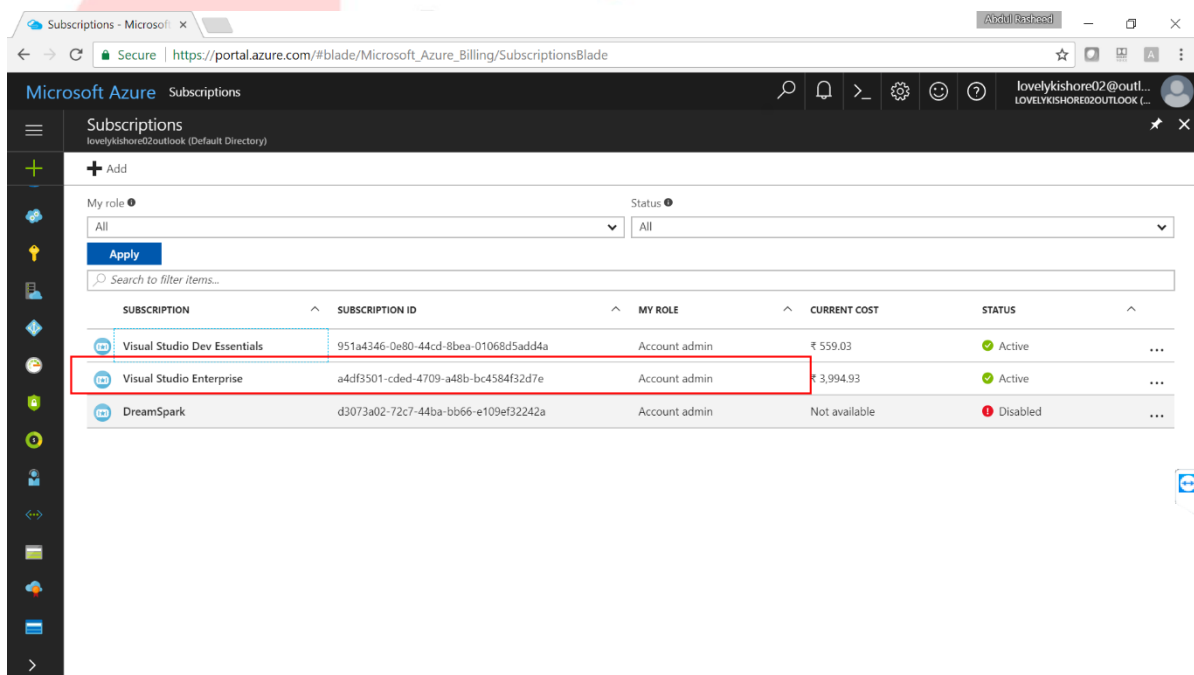
New-AzureRmKeyVault -VaultName "CwtKeyVault" -ResourceGroupName "NanoServerAzurePS" -Location "South India" -EnabledForDeployment



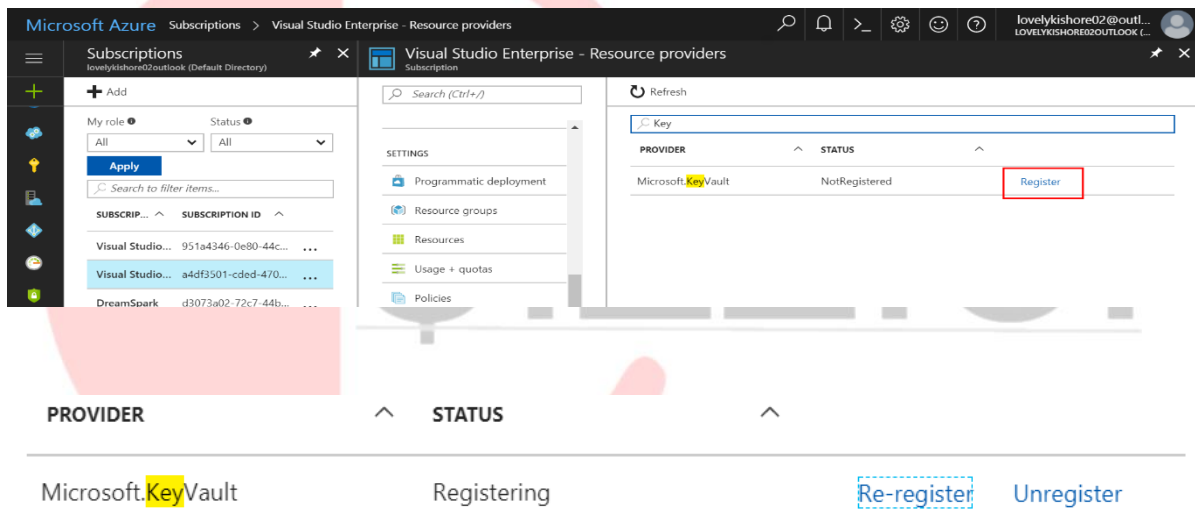
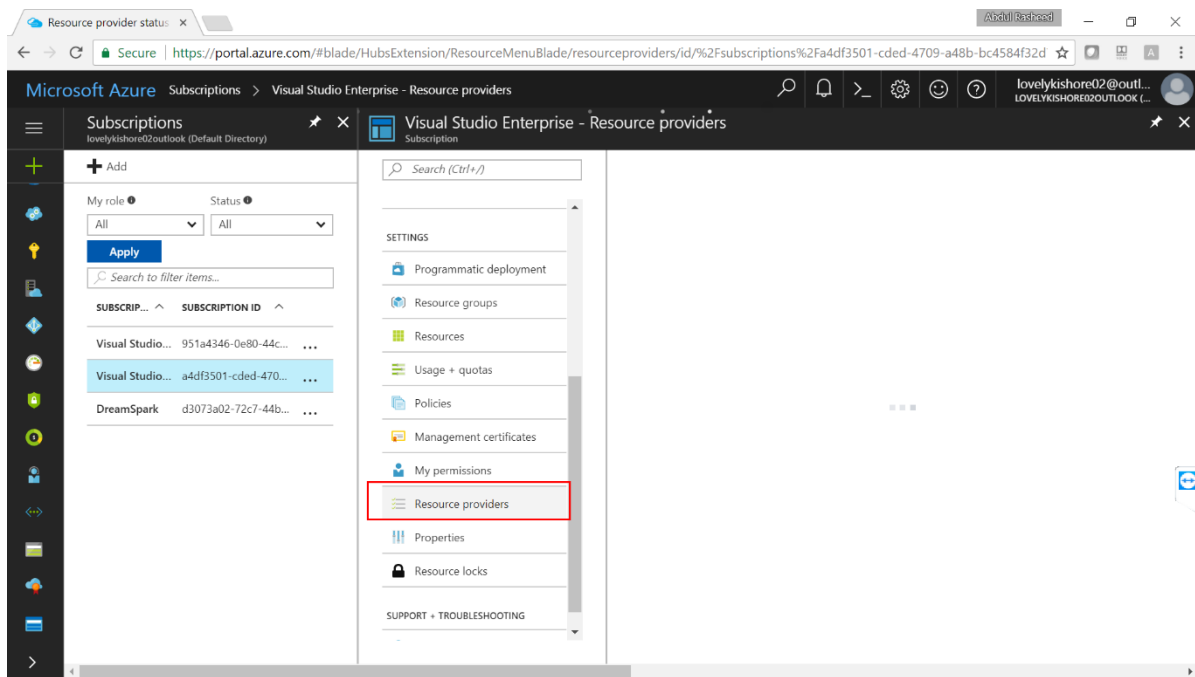
```
PS C:\Users\devel> New-AzureRmResourceGroup -Name NanoServerAzurePS -Location west
ResourceGroupName : NanoServerAzurePS
Location           : westeurope
ProvisioningState  : Succeeded
Tags               :
ResourceId         : /subscriptions/09010e57-9f2b-4b3b-a4a1-6e7f752b3954/resourceG
roups/NanoServerAzurePS

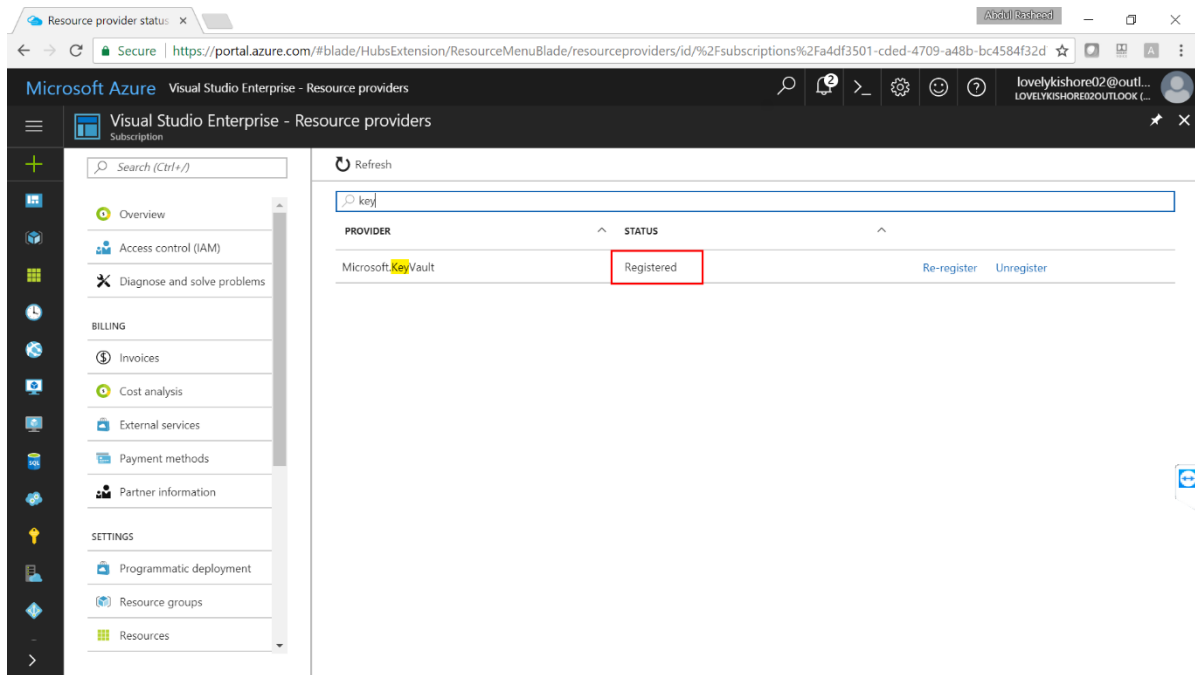
PS C:\Users\devel> New-AzureRmKeyVault -VaultName "NanoServerAzurePSVault" -ResourceGr
WARNING: Guest users are not allowed to perform this action.
```

- By default, the subscription will not have the access to work with the **Vault Service**. The screenshots below give the steps.



SUBSCRIPTION	SUBSCRIPTION ID	MY ROLE	CURRENT COST	STATUS
Visual Studio Dev Essentials	951a4346-0e80-44cd-8bea-01068d5add4a	Account admin	₹ 559.03	Active
Visual Studio Enterprise	a4df3501-cded-4709-a48b-bc4584f32d7e	Account admin	₹ 3,994.93	Active
DreamSpark	d3073a02-72c7-44ba-bb66-e109ef32242a	Account admin	Not available	Disabled





- Once the Vault gets created, you will see something like this.

```
PS C:\Users\devel> New-AzureRmKeyVault -VaultName "NanoServerAzurePSVault" -ResourceGroupName "NanoServerAzurePS" -L

Vault Name                : NanoServerAzurePSVault
Resource Group Name       : NanoServerAzurePS
Location                  : West Europe
Resource ID               : /subscriptions/a4df3501-cded-4709-a48b-bc4584f32d7e/resourceGroups/NanoServerAzurePS/providers/Microsoft.KeyVault/vaults/NanoServerAzurePSVault
Vault URI                 : https://NanoServerAzurePSVault.vault.azure.net
Tenant ID                 : 15a34fa5-0dd9-4e1c-b2de-2a7b3c24559f
SKU                       : Standard
Enabled For Deployment?   : True
Enabled For Template Deployment? : False
Enabled For Disk Encryption? : False
Soft Delete Enabled?     :
Access Policies            :
                           : Tenant ID
                           : 15a34fa5-0dd9-4e1c-b2de-2a7b3c24559f
                           : Object ID
                           : f9368d3b-6daa-4755-8790-89e76069275b
                           : Application ID
                           : Display Name
                           : kishore chowdary (lovelykishore02_outlook.com#
```

- Now the next step is to import some script that has given as some module. You can download it from the following link - [Model Scripts](#)
- Paste the folder somewhere in your machine.
- Now we need to open the JSON template named **NanoServerAzureHelper** which consists of the script to create your Nano Server.

```

File Edit View Tools Debug Add-ons Help
New Ctrl+N
Open... Ctrl+O
Save Ctrl+S
Save As...
Run F5
Run Selection F8
Stop Operation Ctrl+Break
Close Ctrl+F4
New PowerShell Tab Ctrl+T
Close PowerShell Tab Ctrl+W
New Remote PowerShell Tab... Ctrl+Shift+R
Start PowerShell.exe Ctrl+Shift+P
C:\Opsgility\Training\ServiceCatalogPolicy.json
C:\Opsgility\Training\create-azure-vm.ps1
Exit Alt+F4

Application ID :
Display Name :
User : lovelykishore chowdary (lovelykishore02_outlook.com#
Email : lovelykishore02outlook.onmicrosoft.com)
Permissions to Keys :
get, create, delete, list, update, import,
backup, restore, recover
Permissions to Secrets :
get, list, set, delete, backup, restore,
recover
Permissions to Certificates :
get, delete, list, create, import, update,
deleteissuers, getissuers, listissuers,
managecontacts, manageissuers, setissuers
Permissions to (Key Vault Managed) Storage :
delete, deletesas, get, getsas, list,
listsas, regeneratekey, set, setsas, update

Tags :

PS C:\Users\devel>

```

- The next step is to run the command let

Import-Module

C:\NanoServerAzureHelper_20160927\NanoServerAzureHelper.psm1 -Verbose

Note: Replace the path with the path of the folder where you have pasted the model scripts.

```

# $global:xxxtpo = $tpo # DEBUG

New-AzureRmResourceGroupDeployment -Name $vmName `
  -TemplateFile $TemplateFile `
  -ResourceGroupName $ResourceGroupName `
  -TemplateParameterObject $tpo `
  -Force -Verbose
}

function Set-HelpAzureRmCustomScript
{
  .SYNOPSIS
  Create or set the CustomScript Extension conveniently in the Azure Resource Manager.

  EXAMPLE
}

PS C:\Users\devel> Import-Module .\Downloads\NanoServerAzureHelper_20160927\NanoServerAzureHelper.psm1 -Verbose
VERBOSE: Loading module from path 'C:\Users\devel\Downloads\NanoServerAzureHelper_20160927\NanoServerAzureHelper.psm1'.
VERBOSE: Exporting function 'Copy-Cert'.
VERBOSE: Exporting function 'New-AzureVMCert'.
VERBOSE: Exporting function 'Protect-CustomString'.
VERBOSE: Exporting function 'Unprotect-CustomString'.
VERBOSE: Exporting function 'Protect-CustomFiles'.
VERBOSE: Exporting function 'Unprotect-CustomFiles'.
VERBOSE: Exporting function 'Unprotect-DockerCerts'.
VERBOSE: Exporting function 'Initialize-DockerCerts'.
VERBOSE: Exporting function 'New-NanoServerAzureVM'.

```

- Now we will be creating our VM. For that run, the following command.

New-NanoServerAzureVM

- Now you will be prompted to enter the Location, Rg name and Vault name. Enter all the names which you created previously and hit enter.

```

570 #Global:xxtpo = $tpo # DEBUG
571
572 New-AzureRmResourceGroupDeployment -Name $vmName
573 -TemplateFile $TemplateFile
574 -ResourceGroupName $ResourceGroupName
575 -TemplateParameterObject $tpo
576 -Force -Verbose
577 }
578
579 function Set-HelperAzureRmCustomScript
580 {
581
VERBOSE: Importing function 'New-NanoServerAzureVM'.
VERBOSE: Importing function 'Protect-CustomFiles'.
VERBOSE: Importing function 'Protect-CustomString'.
VERBOSE: Importing function 'Set-HelperAzureRmCustomScript'.
VERBOSE: Importing function 'Unprotect-CustomFiles'.
VERBOSE: Importing function 'Unprotect-CustomString'.
VERBOSE: Importing function 'Unprotect-DesktopContent'.
PS C:\Users\devel> New-Nan
  
```

```

488 [Parameter(Mandatory=$true)]
489 [string] $AdminUsername,
490 ## Administrator password,
491 [Parameter(Mandatory=$true)]
492 [SecureString] $AdminPassword,
493 ## Virtual machine size string.
494 ## If not specified anywhere, defaults to "Basic_A1".
495 [string] $VMSize = "Basic_A1",
496 ## Name of the new storage account to be created to keep the VHDs of this VM.
497 ## If not specified, will be auto-generated based on VM name.
498 [string] $StorageAccountName,
499 ## Name of the resource group that contains the key vault, and will also contain the VM.
500 ## This resource group must be created in advance, then can be reused for multiple
501 ## VMs. It can be created as:
+ CategoryInfo          : (CloseError: (1) [Set-AzureKeyVaultSecret], UriFormatException
+ FullyQualifiedErrorId : Microsoft.Azure.Commands.KeyVault.SetAzureKeyVaultSecret

PS C:\Windows\system32> New-NanoServerAzureVM
cmdlet New-NanoServerAzureVM at command pipeline position 1
Supply values for the following parameters:
Location: South India
VMName: nanoserver007
AdminUsername: cwtuser
ResourceGroupName: NanoServerAzurePS1
VaultName: CwtKeyVault1
VERBOSE: 12:26:39 PM - Template is valid.
VERBOSE: 12:26:40 PM - Create template deployment 'nanoserver007'
VERBOSE: 12:26:40 PM - Checking deployment status in 5 seconds
VERBOSE: 12:26:45 PM - Checking deployment status in 5 seconds
VERBOSE: 12:26:50 PM - Resource Microsoft.Storage/storageAccounts 'nanoserver007t3wgnops3ca' provisioning status is running
VERBOSE: 12:26:50 PM - Checking deployment status in 5 seconds
VERBOSE: 12:26:55 PM - Resource Microsoft.Network/networkInterfaces 'nanoserver007-NIC' provisioning status is succeeded
VERBOSE: 12:26:55 PM - Resource Microsoft.Network/publicIPAddresses 'nanoserver007-PublicIP' provisioning status is succeeded
VERBOSE: 12:26:55 PM - Resource Microsoft.Network/virtualNetworks 'nanoserver007-VNet' provisioning status is succeeded
VERBOSE: 12:26:55 PM - Checking deployment status in 5 seconds
VERBOSE: 12:27:00 PM - Checking deployment status in 5 seconds
VERBOSE: 12:27:05 PM - Checking deployment status in 5 seconds
VERBOSE: 12:27:10 PM - Resource Microsoft.Storage/storageAccounts 'nanoserver007t3wgnops3ca' provisioning status is succeeded
VERBOSE: 12:27:10 PM - Checking deployment status in 5 seconds
  
```

- Now you will be prompted to enter the password. Enter a password with lower and upper-case letters with a length of 8 to 15 characters.


```
Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1 NanoServerAzureHelper.psm1 X
736 } else { Set-AzureRmVMExtension -ResourceGroupName $ResourceGroupName -VMName $VMName -Location $Location -Name
737 }
738 Set-AzureRmVMExtension -ResourceGroupName $ResourceGroupName -VMName $VMName -Location $Location -Name
739 }
740 }
741 }

VERBOSE: Exporting function 'Unprotect-DockerCerts'.
VERBOSE: Exporting function 'Initialize-DockerCerts'.
VERBOSE: Exporting function 'New-NanoServerAzureVM'.
VERBOSE: Exporting function 'Set-HelpAzureRmCustomScript'.
VERBOSE: Importing function 'Copy-Cert'.
VERBOSE: Importing function 'Initialize'.
VERBOSE: Importing function 'New-AzureVM'.
VERBOSE: Importing function 'New-NanoServerAzureVM'.
VERBOSE: Importing function 'Protect-CustomString'.
VERBOSE: Importing function 'Protect-CustomString'.
VERBOSE: Importing function 'Set-HelpAzureRmCustomScript'.
VERBOSE: Importing function 'Unprotect-CustomFiles'.
VERBOSE: Importing function 'Unprotect-CustomString'.
VERBOSE: Importing function 'Unprotect-DockerCerts'.

PS C:\Users\devel> New-NanoServerAzureVM -Location southeastasia
cmdlet New-NanoServerAzureVM at command pipeline position 1
Supply values for the following parameters:
VMName:
PS C:\Users\devel> New-NanoServerAzureVM -Location "southeastasia" -VMName "cwt-nanops" -AdminUsername "cwtuser" -Va
cmdlet New-NanoServerAzureVM at command pipeline position 1
Supply values for the following parameters:
```

```
Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1 NanoServerAzureHelper.psm1 X
1 #
2 # Copyright (c) Microsoft Corporation. All rights reserved.
3 #
4 #
5 <#
6 .SYNOPSIS
7 Module with the helper functions for passing the encrypted data through
8 the CustomData.
9 #>
10 $script:ErrorActionPreference = "Stop"
11
12 function Copy-Cert
13 {
14 <#

Supply values for the following parameters:
VERBOSE: TemplateFile: C:\Users\devel\Downloads\NanoServerAzureHelper_20160927\NanoServerAzureTemplate.json
VERBOSE: MakecertExePath: C:\Users\devel\Downloads\NanoServerAzureHelper_20160927\makecert.exe
VERBOSE: Explicit arg VM name: cwt-nanops
VERBOSE: Explicit arg VM size: Basic_A1
VERBOSE: Explicit arg admin user name: cwtuser
VERBOSE: Explicit arg storage account name: cwtanopsq0bpgdqjsw
VERBOSE: Explicit arg VM location: southeastasia
VERBOSE: Explicit arg key vault name: CloudWorldVault
VERBOSE: Explicit arg resource group name: NanoServerCWTAzurePS
VERBOSE: Explicit arg image SKU: 2016-Nano-Server
VERBOSE: Explicit arg image version: latest
VERBOSE: FQDN: cwt-nanops.southeastasia.cloudapp.azure.com
VERBOSE: Succeeded
```

- You have to wait for some 5 to 10 minutes for your VM to get created. Once the VM gets created, you will get something like this.


```

Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1 NanoServerAzureHelper.psm1 X
1 #
2 # Copyright (c) Microsoft Corporation. All rights reserved.
3 #
4
5 <#
6 .SYNOPSIS
7 Module with the helper functions for passing the encrypted data through
8 the CustomData.

Parameters
:
=====
Name Type Value
=====
newStorageAccountName String cwt-nanopsq0bpgdqjsyw
virtualMachineLocation String southeastasia
virtualMachineSize String Basic_A1
adminUsername String cwtuser
adminPassword SecureString
dnsNameForPublicIP String cwt-nanops
imagePublisher String MicrosoftWindowsServer
imageOffer String WindowsServer
imageSku String 2016-Nano-Server
imageVersion String latest
vaultName String CloudWorldVault
vaultResourceGroup String NanoServerCWTAzurePS
certificateUrl String https://cloudworldvault.vault.azure.net:4
39/secrets/cwt-nanops-southeastasia-cloudapp-azure-com/1c5b24a767754ab098a37dad8944aa
39

Outputs
DeploymentDebugLogLevel :
Completed Ln 175 Col 87 85%

```

Step 3: Connecting with Nano Server Using PowerShell

- Now we need to get the **Public IP** address of our Nano Server. For that run this command.

Get-AzureRmPublicIpAddress -ResourceGroupName "NanoServerAzurePS"

```

Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1 NanoServerAzureHelper.psm1 X
1 #
2 # Copyright (c) Microsoft Corporation. All rights reserved.
3 #
4
5 <#
6 .SYNOPSIS
7 Module with the helper functions for passing the encrypted data through
8 the CustomData.

DeploymentDebugLogLevel :

PS C:\WINDOWS\system32> Get-AzureRmPublicIpAddress -ResourceGroupName "NanoServerCWTAzurePS"

Name           : cwt-nanops-PublicIP
ResourceGroupName : NanoServerCWTAzurePS
Location        : southeastasia
Id              : /subscriptions/ce98d8af-daa5-4aa1-a09c-7a8d523fa070/resourceGroups/NanoServerCWTAzurePS/providers/Microsoft.Network/publicIPAddresses/cwt-nanops-PublicIP
Etag            : w/"a3d74479-509a-4e89-b325-551d112626e2"
ResourceGuid    : 0e68547f-bed4-4d94-987e-c20ebec2f46e
ProvisioningState : Succeeded
Tags            :
                Name Value
                =====
                displayName PublicIPAddress
Completed Ln 195 Col 1 85%

```

```
Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1 NanoServerAzureHelper.psm1 X
1 #
2 # Copyright (c) Microsoft Corporation. All rights reserved.
3 #
4
5 <#
6 .SYNOPSIS
7 Module with the helper functions for passing the encrypted data through
8 the CustomData.

ProvisioningState : Succeeded
Tags
Name Value
-----
displayName PublicIPAddress

PublicIpAllocationMethod : Dynamic
IpAddress : 52.163.127.94
PublicIpAddressVersion : IPv4
IdleTimeoutInMinutes : 4
IpConfiguration : {
  "Id": "/subscriptions/ce98d8af-daa5-4aa1-a09c-7a8d523fa070/resourceGroups/NanoServ
erCWTAzurePS/providers/Microsoft.Network/networkInterfaces/cwt-nanops-NIC/ipConfigur
ations/ipconfig1"
}

DnsSettings : {
  "DomainNameLabel": "cwt-nanops",
  "Fqdn": "cwt-nanops.southeastasia.cloudapp.azure.com"
}
```

- Finally connect with your Nano Server using its domain name. You can find the Domain Name of the VM in the last line above image.

Enter-PSSession -ConnectionUri

"https://nanoserver007.southindia.cloudapp.azure.com:5986/WSMAN" -
Credential "~\cwtuser"

Note: Replace the URI with your VM URI

```
Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1 NanoServerAzureHelper.psm1 X
1 #
2 # Copyright (c) Microsoft Corporation. All rights reserved.
3 #
4
5 <#
6 .SYNOPSIS
7 Module with the helper functions for passing the encrypted data through
8 the CustomData.

ss : 52.163.127.94
AddressVersion : IPv4
outInMinutes : 4
uration : {
  "Id": "/subscriptions/ce98d8af-daa5-4aa1-a09c-7a8d523fa070/resourceGroups/NanoServ
erCWTAzurePS/providers/Microsoft.Network/networkInterfaces/cwt-nanops-NIC/ipConfigur
ations/ipconfig1"
}

ings : {
  "DomainNameLabel": "cwt-nanops",
  "Fqdn": "cwt-nanops.southeastasia.cloudapp.azure.com"
}

[WINDOWS\system32> Enter-PSSession -ConnectionUri "https://cwt-nanops.southeastasia.cloudapp.azure.com:5986/WSMAN" -Cr
```

```
1 # Copyright (c) Microsoft Corporation. All rights reserved.
2 #
3 #
4 #
5 #<#
6 .SYNOPSIS
7 Module with the helper functions for passing the encrypted data through
8 the CustomData.

IpAddress      : 52.163.127.94
PublicIpAddressVersion : IPv4
IdleTimeoutInMinutes : 4
IpConfiguration : {
  "Id": "/subscriptions/cwt-7a8d523fa070/resourceGroups/NanoServerInterfaces/cwt-nanops-NIC/ipConfigurations/ipconfig1"
}

DnsSettings    : {
  "DomainNameLabel": "cwt-nanops",
  "Fqdn": "cwt-nanops.southeastasia.cloudapp.azure.com"
}

PS C:\WINDOWS\system32> Enter-PSSession -ConnectionUri "https://cwt-nanops.southeastasia.cloudapp.azure.com:5986/WSMAN/cwt-nanops.southeastasia.cloudapp.azure.com"

Running script / selection. Press Ctrl+Break to stop. Press Ctrl+B to break into debugger. | Ln 231 Col 1 | 85%
```

This is how you create a **Nano Server VM** using the PowerShell script. You will be now able to connect with your Nano Server through PowerShell and work with it.

```
1 # Copyright (c) Microsoft Corporation. All rights reserved.
2 #
3 #
4 #
5 #<#
6 .SYNOPSIS
7 Module with the helper functions for passing the encrypted data through
8 the CustomData.

DnsSettings    : {
  "DomainNameLabel": "cwt-nanops",
  "Fqdn": "cwt-nanops.southeastasia.cloudapp.azure.com"
}

PS C:\WINDOWS\system32> Enter-PSSession -ConnectionUri "https://cwt-nanops.southeastasia.cloudapp.azure.com:5986/WSMAN/cwt-nanops.southeastasia.cloudapp.azure.com"
[cwt-nanops.southeastasia.cloudapp.azure.com]: PS C:\Users\cwtuser\Documents>

Completed | Ln 232 Col 79 | 85%
```

Reach us with the below details for queries:

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