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Article



Installing Windows Server-2016 Nano Server Using PowerShell

By **Kishore Chowdary** on Jul 30 2017

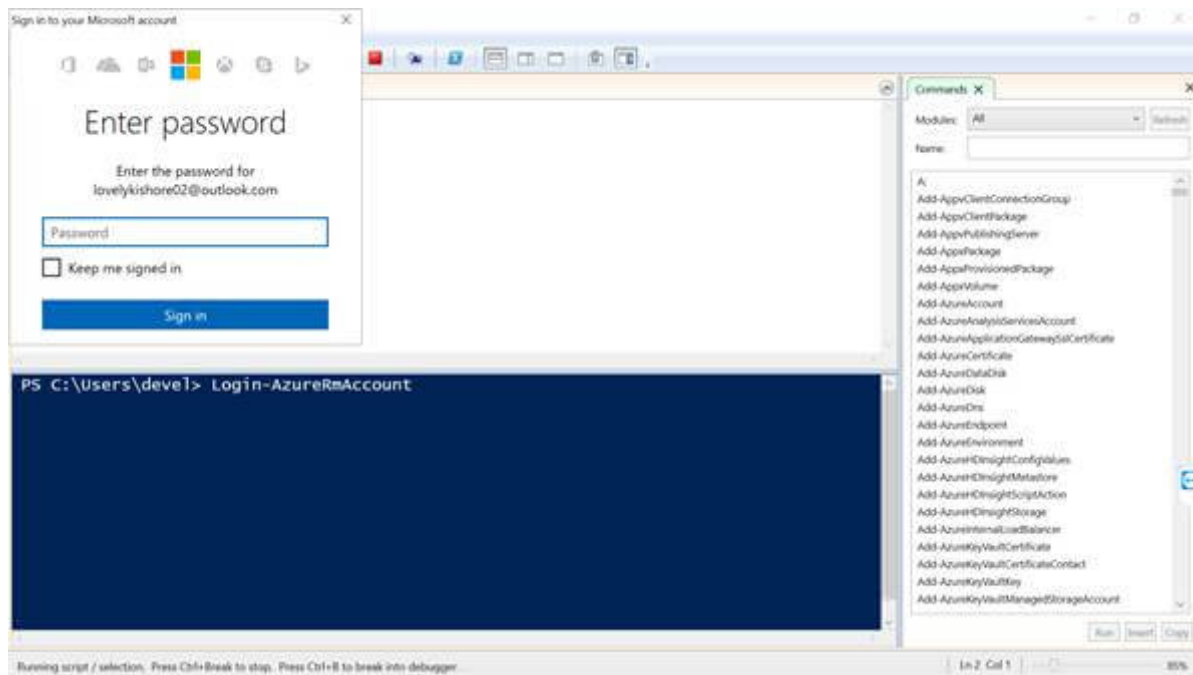
The following exercise is all about the installation of Windows Server 2016-Nano Server. Open your PowerShell in the administrator privileges.

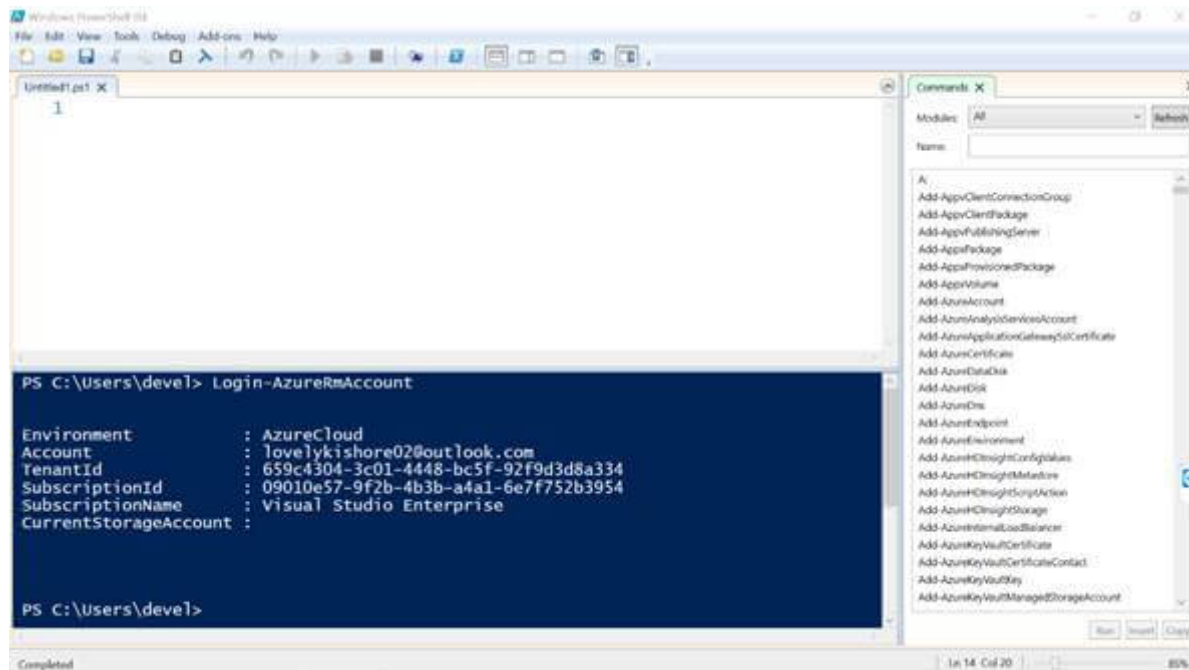
Step 1 Logging into Azure portal

- After opening PowerShell, run the following command to log into your Azure portal.

Login-AzureRmAccount

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





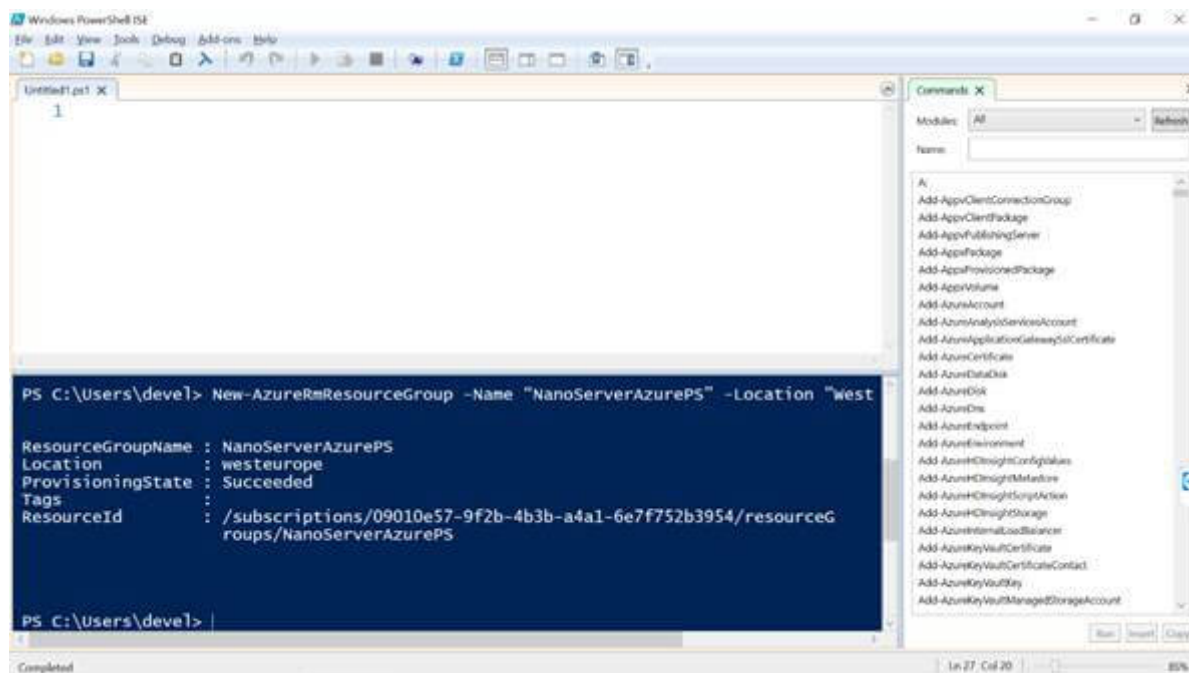
- The next step is to select the subscription. For selection of the subscription, run the following commands. Replace with the subscription name.

Select-AzureRmSubscription -SubscriptionName "Visual Studio Enterprise"

Step 2 Creation of Nano Server VM

- Now, create a new resource group in the same location in the following code.

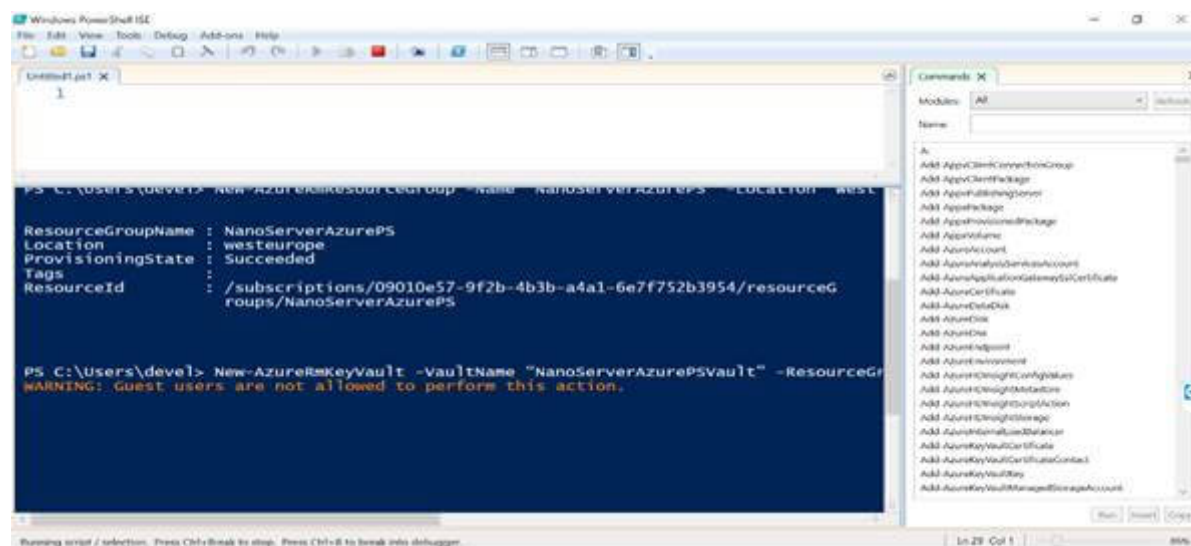
New-AzureRmResourceGroup -Name "NanoServerAzurePS" -Location "South India"



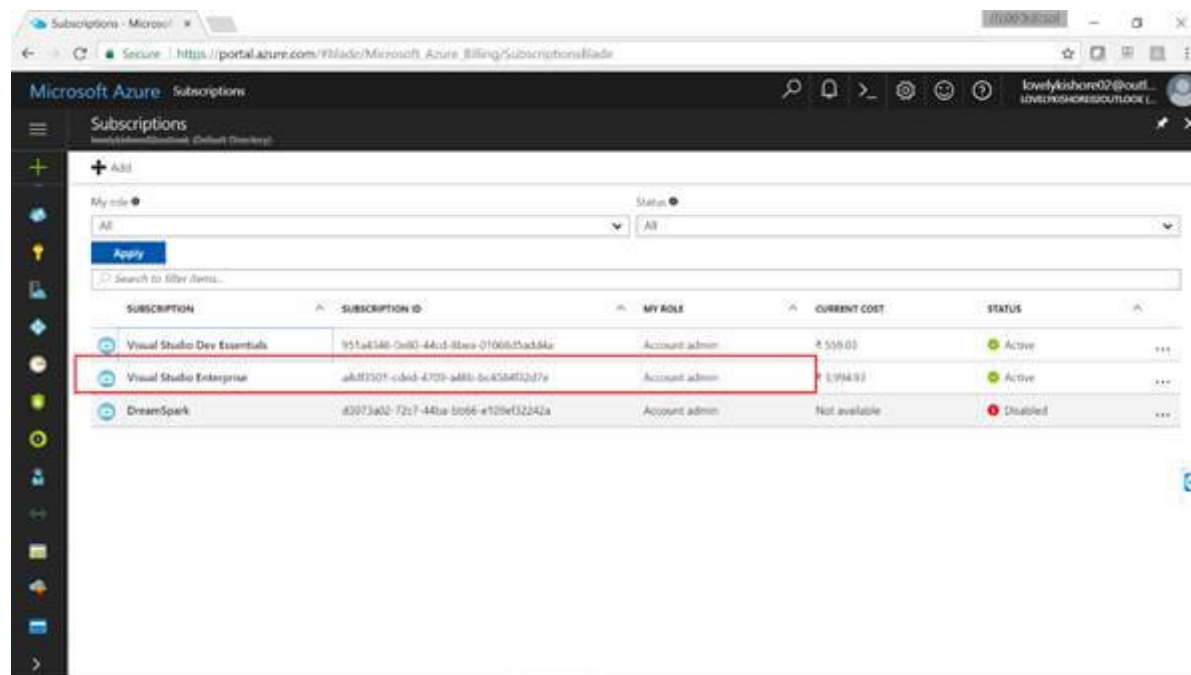
- The next step is the creation of key vault which will be used for managing your Nano Server. For creation of the Key Vault, execute the code.

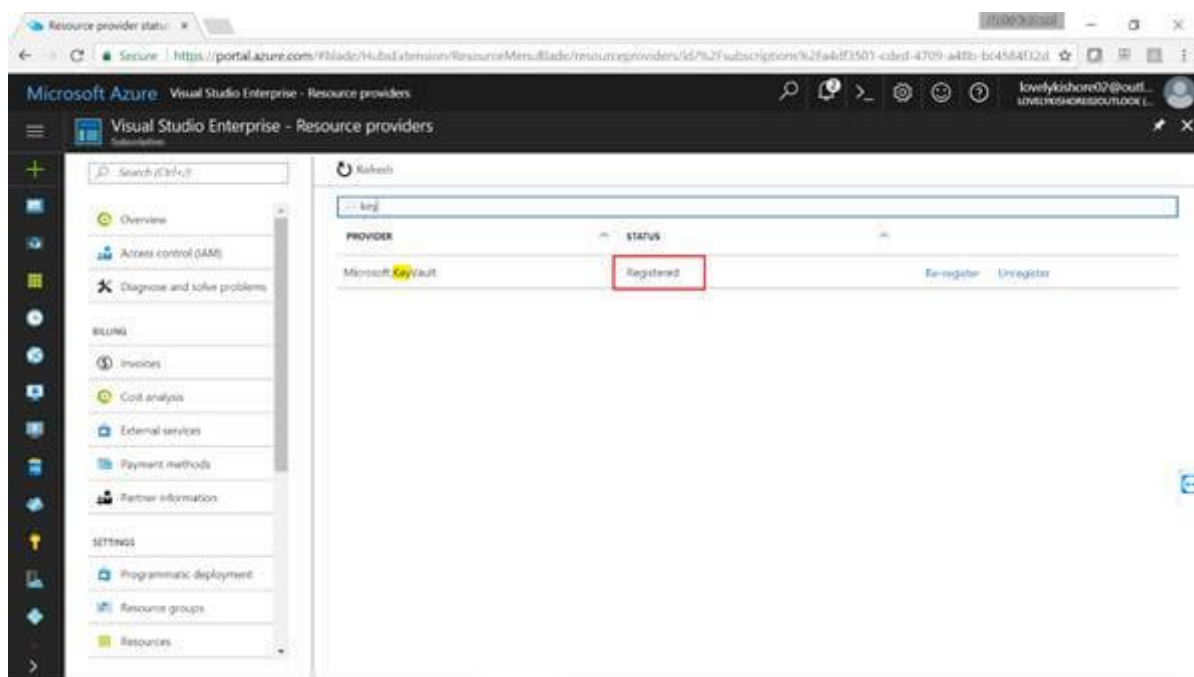
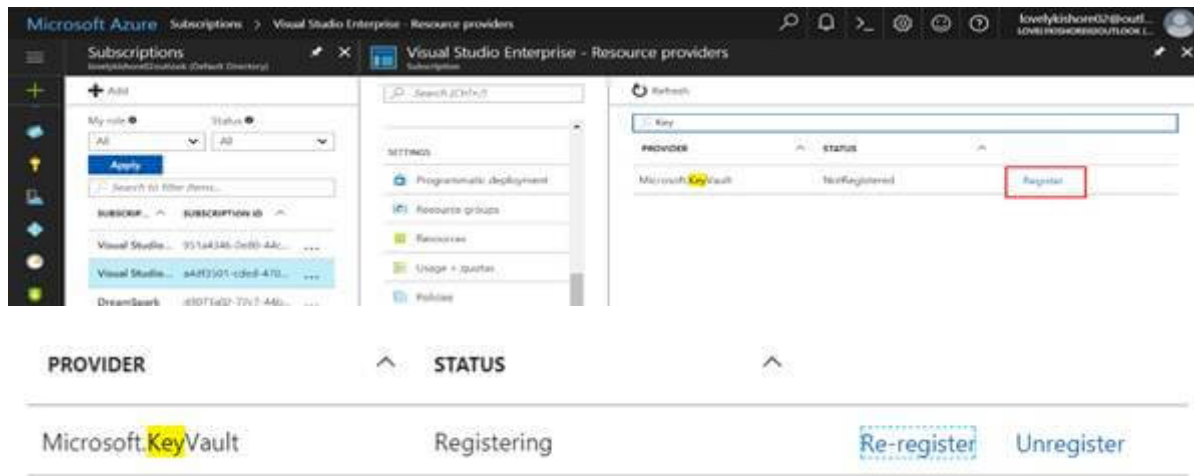
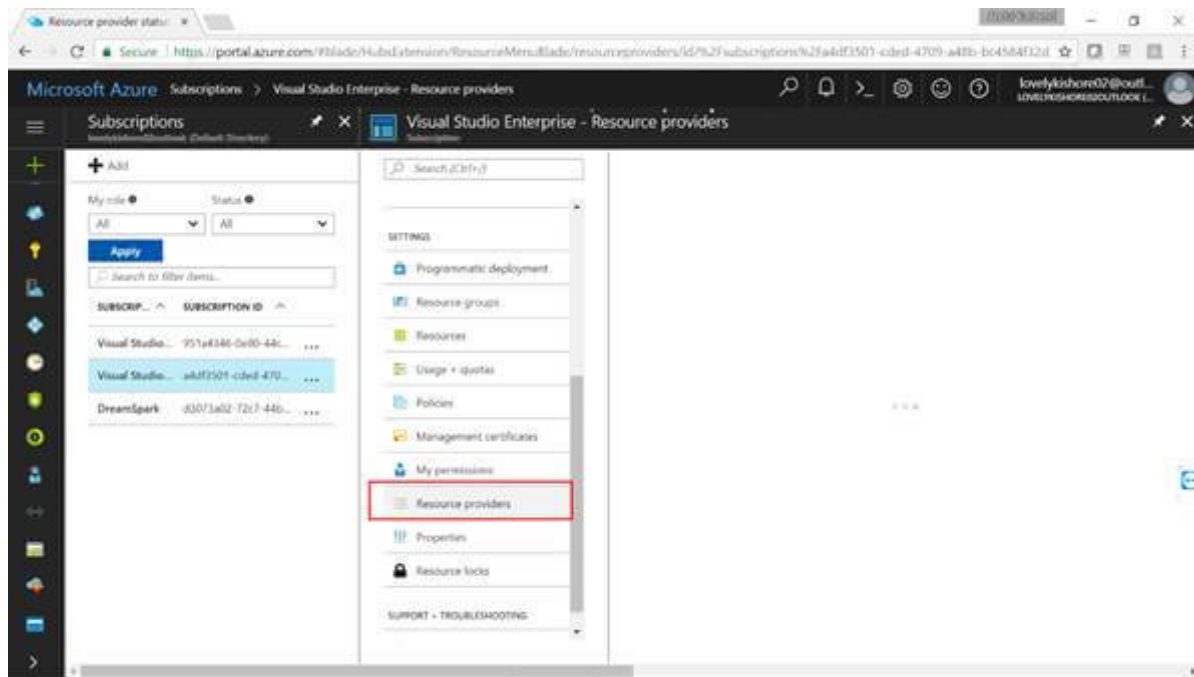
New-AzureRmKeyVault -VaultName "CwtKeyVault" -ResourceGroupName "NanoServerAzurePS" -

Location "South India" –EnabledForDeployment

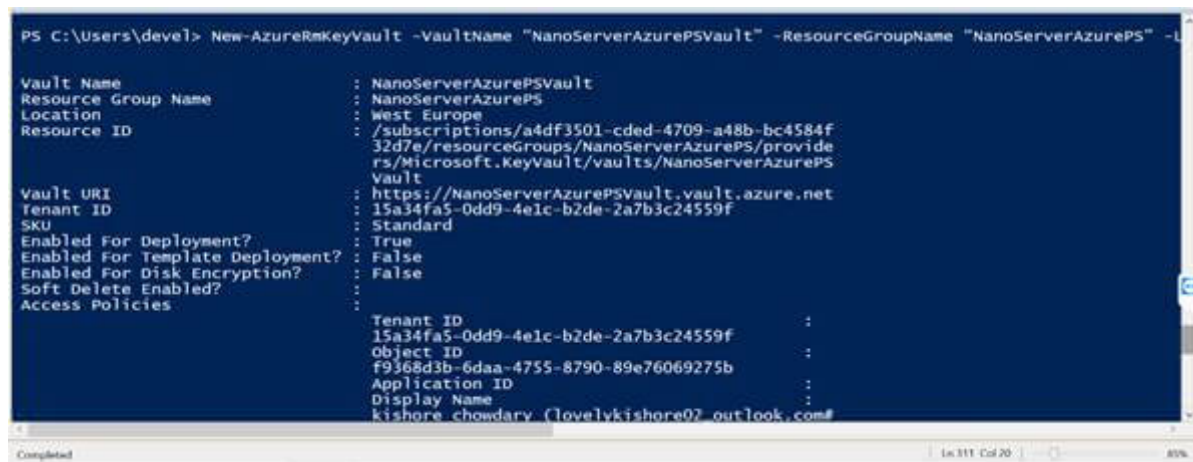


- By default, the subscription will not have access to the work with the Vault Service. The screenshots below give the steps.





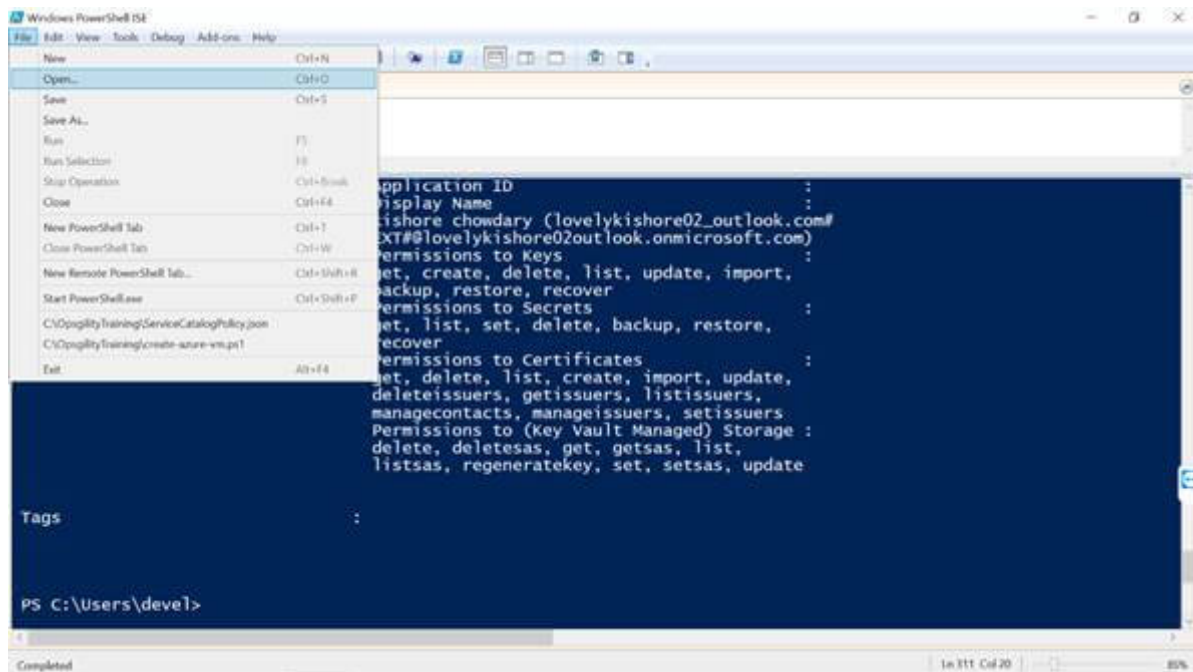
- Once the Vault gets created, you will see something like this.



```
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 is 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.



```
application ID :
display Name   : kishore chowdary (lovelykishore02_outlook.com#
               : XT#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
```

- The next step is to run the commandlet

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.

The screenshot displays a Windows PowerShell session. The top pane shows the content of the `NanoServerAzureHelper.psm1` script, which includes a `$global:xxtpo` variable, a `New-AzureRmResourceGroupDeployment` command, and a `function Set-HelpAzureRmCustomScript` definition. The bottom pane shows the command `Import-Module .\Downloads\NanoServerAzureHelper_20160927\NanoServerAzureHelper.psm1 -Verbose` being executed, with detailed verbose output listing the exported functions.

```

Windows PowerShell
File Edit View Tools Debug Add-ons Help
[Icons]
Untitled:1.ps1 NanoServerAzureHelper.psm1 X
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
580 function Set-HelpAzureRmCustomScript
581 {
582     <#
583     .SYNOPSIS
584     Create or set the CustomScript Extension conveniently in the Azure Resource Manager.
585     #>
586 }
587
588 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'.
Completed 1m 36s Col 20

```

- 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.

The screenshot shows the Windows PowerShell ISE interface. The top pane displays the content of the file 'NanoServerAzureHelper.ps1'. The script defines a global variable, a function to create an Azure Resource Group deployment, and a function to set a custom script. The bottom pane shows the output of running the 'New-NanoServerAzureVM' command, which imports the functions and displays the command parameters.

```

570 #Global:xxxtpo = $tpo # DEBUG
571
572 New-AzureRmResourceGroupDeployment -Name $vmName `
573     -TemplateFile $templateFile `
574     -ResourceGroupName $resourceGroupName `
575     -TemplateParameterObject $tpo `
576     -Force -Verbose
577 }
578 }
579
580 function Set-HelpAzureRmCustomScript
581 {

```

```

VERBOSE: Importing function 'New-NanoServerAzureVM'.
VERBOSE: Importing function 'Protect-CustomFiles'.
VERBOSE: Importing function 'Protect-CustomString'.
VERBOSE: Importing function 'Set-HelpAzureRmCustomScript'.
VERBOSE: Importing function 'Unprotect-CustomFiles'.
VERBOSE: Importing function 'Unprotect-CustomString'.
VERBOSE: Importing function 'Unprotect-BackupCenter'.
New-NanoServerAzureVM
PS C:\Users\devl> New-Nan

```

```

New-NanoServerAzureVM [-Location] <string> [-VMName]
<string> [-AdminUsername] <string> [-AdminPassword]
<securestring> [[-VMSize] <string>] [[-StorageAccountName]
<string>] [-ResourceGroupName] <string> [-VaultName] <string>]
[[[-ImageSku] <string>] [[-ImageVersion] <string>]
[<CommonParameters>]

```

```

Administrator: Windows PowerShell [5]
File Edit View Tools Debug Add-ons Help

NanoServerAzureHelper.ps1 X
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 VMs 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          : (Errors: (1) [Set-AzureKeyVaultSecret], UniformException
+ 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: Exporting function 'Unprotect-DockerCerts'.
VERBOSE: Exporting function 'Initialize-DockerCerts'.
VERBOSE: Exporting function 'New-NanoServerAzureVM'.
VERBOSE: Exporting function 'Set-HelpertasklibCustomScript'.
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 'Set-HelpertasklibCustomScript'.
VERBOSE: Importing function 'Unprotect-CustomFiles'.
VERBOSE: Importing function 'Unprotect-CustomString'.
VERBOSE: Importing function 'Unprotect-DockerCerts'.

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 'nanoserver007t3agnops1ca' provisioning status is running
VERBOSE: 12:26:50 PM - Checking deployment status in 5 seconds.
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 'nanoserver007t3agnops1ca' provisioning status is succeeded
VERBOSE: 12:27:10 PM - Checking deployment status in 5 seconds.

Running script / selection. Press Ctrl-Break to stop. Press Ctrl-B to break into debugger.
Ln 373 Col 1 100%

```

- 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 [5]
File Edit View Tools Debug Add-ons Help

Untitled.ps1 NanoServerAzureHelper.ps1 X
736 Set-AzureRmVMExtension -ResourceGroupName $ResourceGroupName -VMName $VMName -Location $Location -Name
737 } else {
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-HelpertasklibCustomScript'.
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 'Set-HelpertasklibCustomScript'.
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:

Running script / selection. Press Ctrl-Break to stop. Press Ctrl-B to break into debugger
Ln 158 Col 1 88%

```

```

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 <#
15
16 Supply values for the following parameters:
17 VERBOSE: TemplateFile: c:\Users\devel\Downloads\NanoServerAzureHelper_20160927\NanoServerAzureTemplate.json
18 VERBOSE: MakecertExePath: C:\Users\devel\Downloads\NanoServerAzureHelper_20160927\makecert.exe
19 VERBOSE: Explicit arg VM name: cwt-nanops
20 VERBOSE: Explicit arg VM size: Basic_A1
21 VERBOSE: Explicit arg admin user name: cwtuser
22 VERBOSE: Explicit arg storage account name: cwtanopsq0bpgdqjysw
23 VERBOSE: Explicit arg VM location: southeastasia
24 VERBOSE: Explicit arg key vault name: CloudWorldVault
25 VERBOSE: Explicit arg resource group name: NanoServerCwTAzurePS
26 VERBOSE: Explicit arg image SKU: 2016-Nano-Server
27 VERBOSE: Explicit arg image version: latest
28 VERBOSE: FQDN: cwt-nanops.southeastasia.cloudapp.azure.com
29 VERBOSE: Succeeded
30
31 Running script / selection. Press Ctrl+Break to stop. Press Ctrl+B to break into debugger
32
33 1m 87 Col 1 88%

```

- 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.

```

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
11 Parameters
12 :
13   Name                                Type                                Value
14   ----                                -
15   newStorageAccountName String                                cwtanopsq0bpgdqjysw
16   virtualMachineLocation String                                southeastasia
17   virtualMachineSize String                                Basic_A1
18   adminUsername String                                cwtuser
19   adminPassword SecureString
20   dnsNameForPublicIP String                                cwt-nanops
21   imagePublisher String                                MicrosoftWindowsServer
22   imageOffer String                                WindowsServer
23   imageSKU String                                2016-Nano-Server
24   imageVersion String                                latest
25   vaultName String                                CloudWorldVault
26   vaultResourceGroup String                                NanoServerCwTAzurePS
27   certificateUrl String                                https://cloudworldvault.vault.azure.net:4
28   43/secrets/cwt-nanops-southeastasia-cloudapp-azure-com/1c5b24a767754ab098a37dad8944aa
29   39
30
31 Outputs
32 :
33 DeploymentDebugLogLevel :
34
35 Completed
36
37 1m 175 Col 87 88%

```

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.ps1 X
1 #
2 # Copyright (c) Microsoft Corporation. All rights reserved.
3 #
4
5 -c#
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

```

```

Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1 NanoServerAzureHelper.ps1 X
1 #
2 # Copyright (c) Microsoft Corporation. All rights reserved.
3 #
4
5 -c#
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/NanoServerCwTAzurePS/providers/Microsoft.Network/networkInterfaces/cwt-nanops-NIC/ipConfigurations/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.

```

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

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

```

```

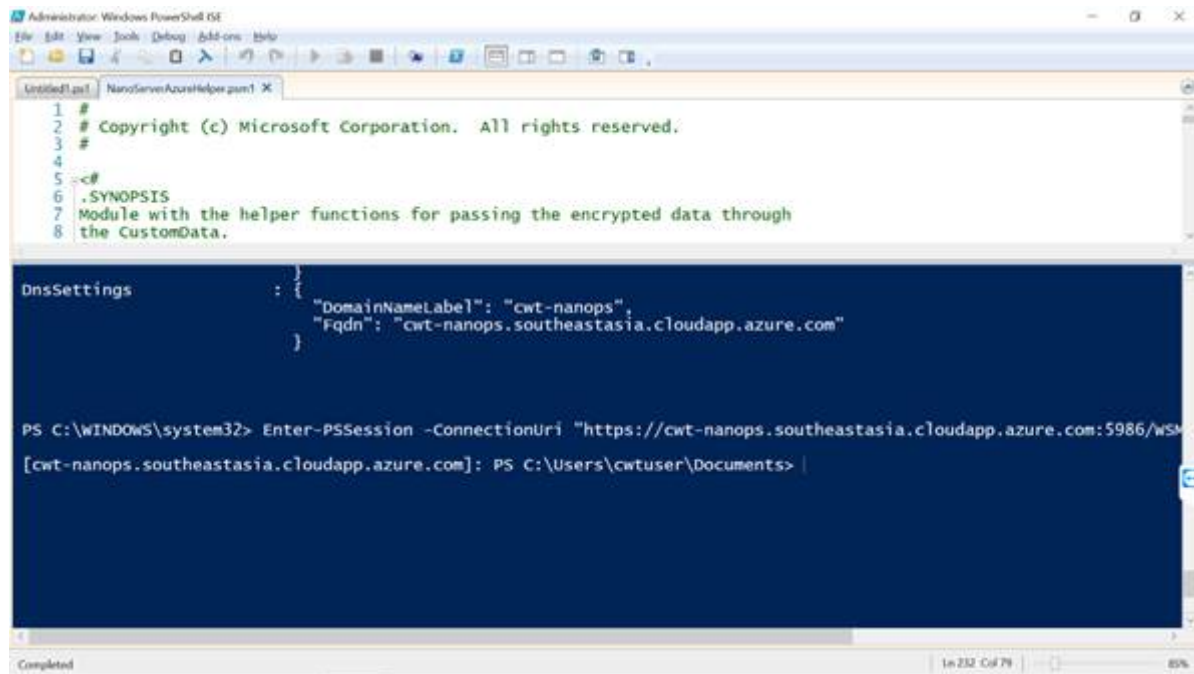
1 #
2 # Copyright (c) Microsoft Corporation. All rights reserved.
3 #
4
5 -c#
6 .SYNOPSIS
7 Module with the helper functions for passing the encrypted data through
8 the CustomData.

IPAddress : 52.163.127.94
PublicIpAddressVersion : IPv4
IdleTimeoutInMinutes : 4
IpConfiguration : {
  "Id": "/subscriptions/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"
}

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

```

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.



```
Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1 NanoServerAzureHelper.ps1 X
1 #
2 # Copyright (c) Microsoft Corporation. All rights reserved.
3 #
4
5 -c#
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/wsm
[cwt-nanops.southeastasia.cloudapp.azure.com]: PS C:\Users\cwtuser\Documents> |

Completed 1x 232 Col 79 89%
```

Thank you for using C# Corner