Module 2 - Implementing and managing Azure networking

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Overview

- Overview of Azure networking
- Implementing and managing Azure virtual networks
- Configuring Azure virtual networks
- Configuring Azure virtual network connectivity
- Overview of Azure classic networking

Overview

- **Lab** : Using a deployment template to implement Azure virtual networks
- Creating an Azure virtual network by using a deployment template
- Creating a virtual network by using PowerShell
- Configure virtual networks

Overview

- Lab : Configuring connectivity between classic and Azure Resource Manager virtual networks
- Using a PowerShell script to connect a classic VNet and an Azure Resource Manager VNet
- Configuring a point-to-site VPN
- Validating virtual network connectivity

Overview

- After completing this module, students will be able to:
- Plan virtual networks in Azure.
- Explain how to implement and manage virtual networks.
- Use a deployment template and Azure PowerShell to implement Azure virtual networks.
- Explain how to configure an Azure virtual network.
- Describe Azure classic networking.

Using a deployment template and Azure PowerShell to implement Azure virtual networks

Using a deployment template implement Azure virtual networks

- Creating an Azure virtual network by using a deployment template
  - Open http://aka.ms/Mt32e4 or

    https://github.com/Azure/azure-quickstart-templates/tree/master/101-vnet-two-subnets
- Open a GitHub template that you can use to create a virtual network with two subnets
  - Resource Group name: AdatumLabRG
  - Vnet Name : HQ

  Review setting and click on Purchase

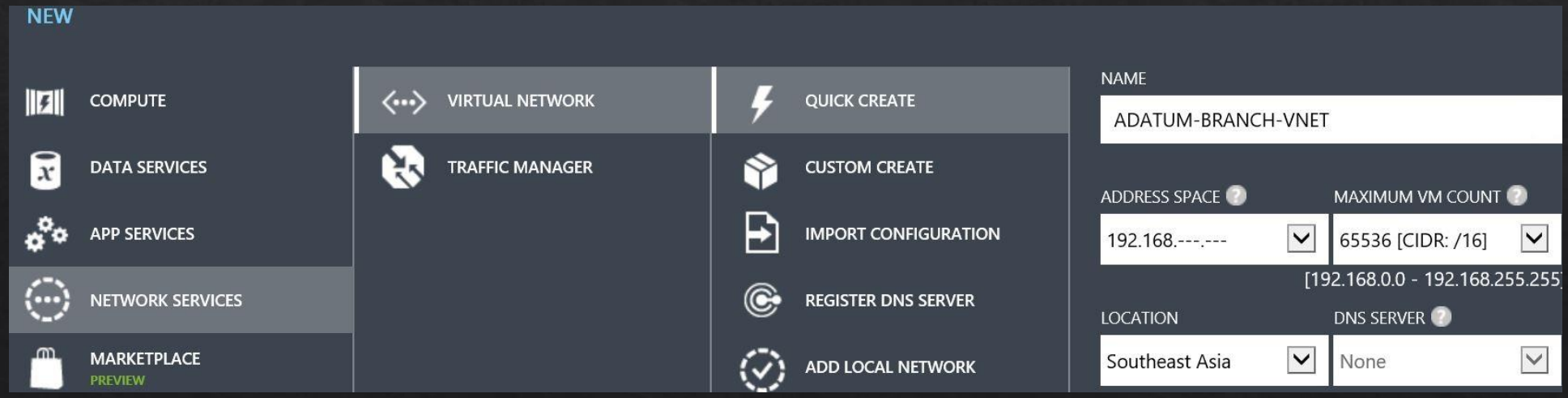
Creating a virtual network by using PowerShell

```
 #Login to PowerShell
Login-AzureRmAccount

#Select the Azure Subscription Free Trial or Developer Program Benefit
Set-AzureRmContext -SubscriptionName "Developer Program Benefit"

#intialize the variable
$rgName = "AdatumTestRG"
$locName = "South India"

$vnetName = "AdatumTestVnet"
$vnetAddressprefix = "10.10.0.0/16"

$subnetName = "FrontEnd"
$subnetAddressprefix = "10.10.0.0/24"
```

2. Create_IaaS_V2_Vnet_usingPS.ps1

Create IaaS V1 virtual network

- Create an IaaS v1 virtual network using Classic Portal
  - Switch to http://manage.windowsazure.com
  - Select Virtual Network from Navigation bar on the left
  - Create a new Vnet **ADATUM-BRANCH-VNET**
  - **Modify Vnet and create Subnet-1 with Address prefix 192.168.0.0/24**



Export IaaS V1 virtual network configuration (Optional)

- Export IaaS V1 Vnet Configuration using PowerShell

#Export Azure IaaS V1 Vnet Configuration

Add-AzureAccount

Get-AzureSubscription

Select-AzureSubscription -SubscriptionName 'Developer Program Benefit'

Get-AzureVNetConfig -ExportToFile "$pwd\NetworkConfig.xml"

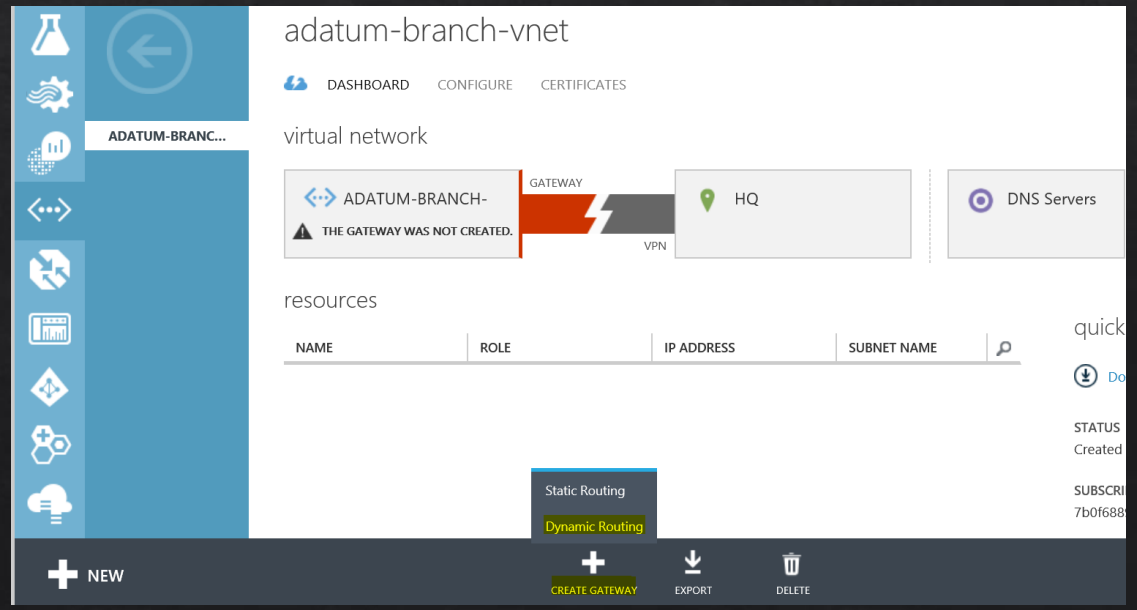
Modify IaaS V1 virtual network

- Use PowerShell modify the virtual network configuration **ADATUM-BRANCH-VNET**
  - Create Local Network HQ
  - Add DNS server address 192.168.0.4
  - Add Gateway Subnet 192.168.3.0/29 into ADATUM-BRANCH-VNET

```
#Modify Azure IaaS V1 Vnet
Add-AzureAccount
Select-AzureSubscription -SubscriptionName 'Developer Program Benefit'
$netconfigpath = Join-Path $pwd  "NetworkConfig.txt"
Set-AzureVNetConfig -ConfigurationPath $netconfigpath
```

Create an IaaS v1 virtual network gateway

- Create an IaaS v1 virtual network gateway
  - Switch to http://manage.windowsazure.com
  - Select Virtual Network from Navigation bar on the left
  - Select Vnet **ADATUM-BRANCH-VNET -> Dashboard**
  - **In command ribbon below click on Create Gateway**



Deploy IaaS V1 VMs

- Deploy IaaS V1 VMS (CN1 and CN2) on cloud service WebC and Vnet 'ADATUM-BRANCH-VNET'

$servicename = "WebC"

$locName = "Southeast Asia"

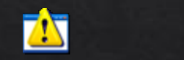
$vnet = 'ADATUM-BRANCH-VNET'

7. Create_IaaSV1_Vms.ps1

Deploy an IaaS v2 virtual machine into an IaaS v2 virtual network

- Run 8. ARM_CreateVirtualMachine.ps1

```
# Set variables:
$rgName = "AdatumLabRG"
$vnetName = "HQ"
$vmName = "ARMSrv2"

# Store the start time
$starttime = Get-Date

Login-AzureRmAccount

Set-AzureRmContext -SubscriptionName "Developer Program Benefit"

$vnet = Get-AzureRmVirtualNetwork -Name $vnetName -ResourceGroupName
$rgName
```



Configuring connectivity between IaaS v1 and IaaS v2

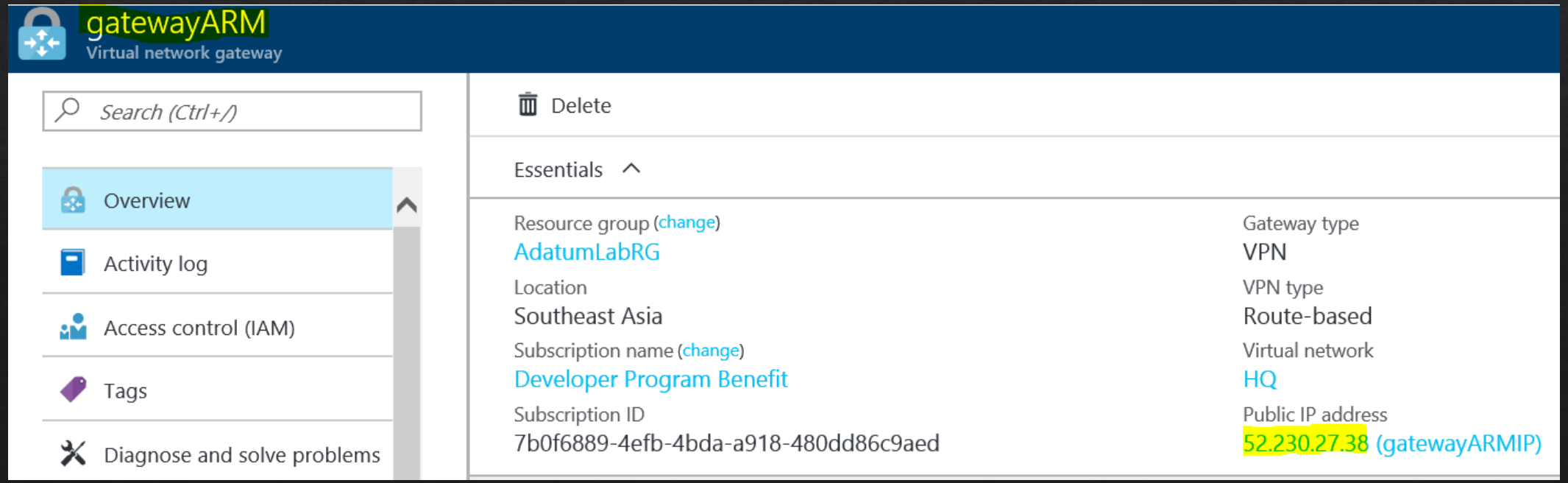
- Modify the parameters and run the script ConfigureArmGateway.ps1 script

```
$subscriptionName = "Developer Program Benefit"
```

9. ConfigureARMGateway.ps1

Configure classic virtual network

- Switch to https://portal.azure.com
- In the Hub menu select the virtual network and select the HQ
- In the HQ blade, in the **Connected devices** section, click on the **gatewayARM** device and note the value in the **Public IP address**



Configure classic virtual network (Contd.)

- Replace 1.1.1.1 with recorded Public IP address of the gateway in NetworkConfig.txt file

NetworkConfig - Notepad

File Edit Format View Help

```
<NetworkConfiguration xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  <VirtualNetworkConfiguration>
    <Dns>
      <DnsServers>
        <DnsServer name="ADATUM-DNS" IPAddress="192.168.0.4" />
      </DnsServers>
    </Dns>
    <LocalNetworkSites>
      <LocalNetworkSite name="HQ">
        <AddressSpace>
          <AddressPrefix>10.0.0.0/16</AddressPrefix>
        </AddressSpace>
        <VPNGatewayAddress>52.230.27.38</VPNGatewayAddress>
      </LocalNetworkSite>
    </LocalNetworkSites>
```

Configure classic virtual network (Contd.)

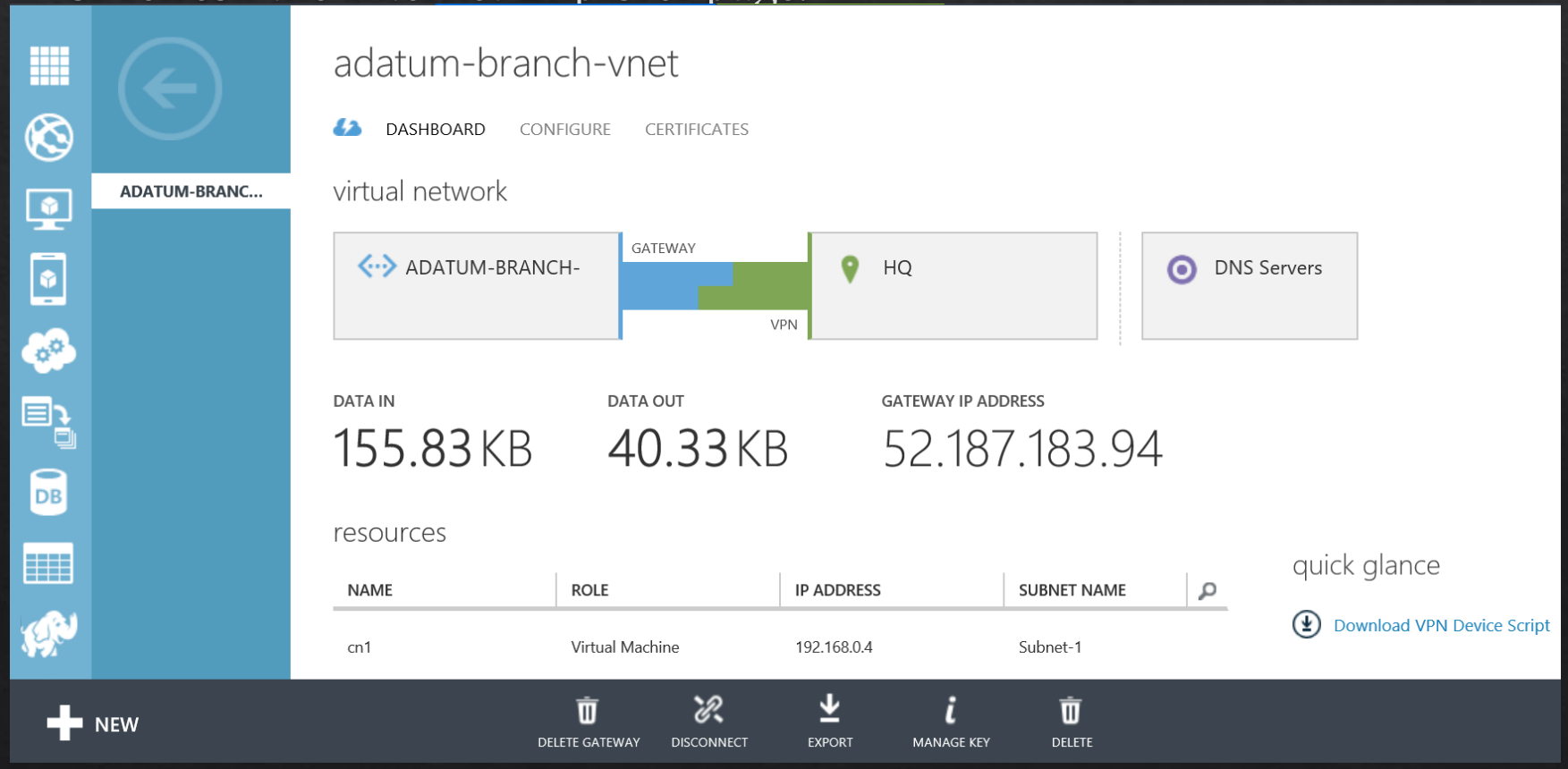
- Execute the script to modify the local network gateway public address

```
#Modify Azure IaaS V1 Vnet with Public address of the local network gateway in ADATUM-BRANCH-VNET
#Note replace the 1.1.1.1 with Public address of the local network gateway in NetworkConfig.txt file
Add-AzureAccount

Get-AzureSubscription

Select-AzureSubscription -SubscriptionName 'Developer Program Benefit'

$netconfigpath = Join-Path $pwd  "NetworkConfig.txt"

Set-AzureVNetConfig -ConfigurationPath $netconfigpath

Set-AzureVNetGatewayKey -VnetName Adatum-Branch-Vnet -LocalNetworkSiteName  HQ -SharedKey 12345
```

10. Modify_IaaSV1_Vnet_with_LGW_addr.ps1

Configure classic virtual network (Contd.)

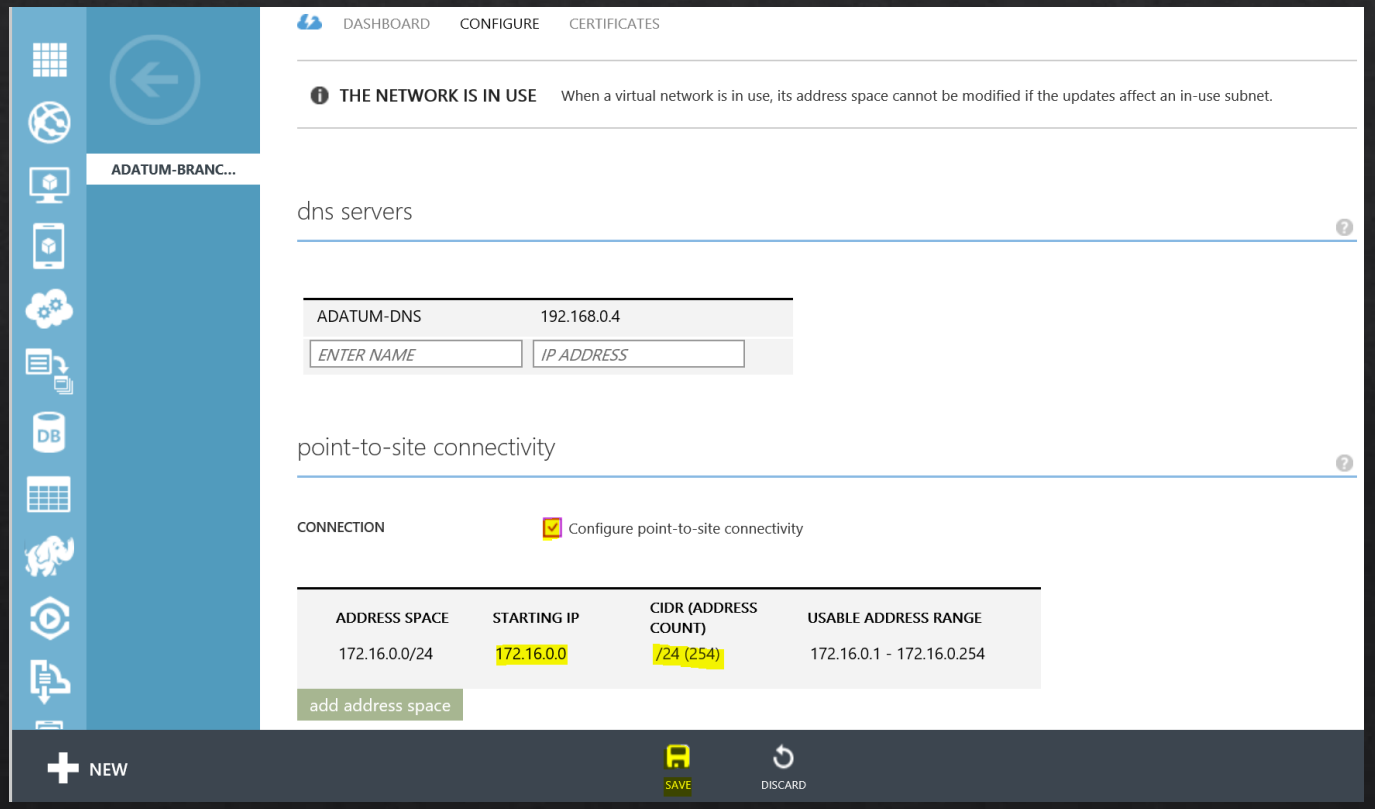
- Verify the Vnets are connected from https://manage.windowsazure.com portal under Network ADATUM-BRANCH-VNET dashboard. You might need to click **CONNECT** in the menu bar or refresh the Internet Explorer page.



Configure a point-to-site VPN

Configure a VPN from a client to the Branch virtual network

- In https://manage.windowsazure.com portal under Network **On adatum-branch-vnet** page, click **CONFIGURE.** Select the **Configure point-to-site connectivity** checkbox and click on Save
- Select the **Configure point-to-site connectivity** checkbox

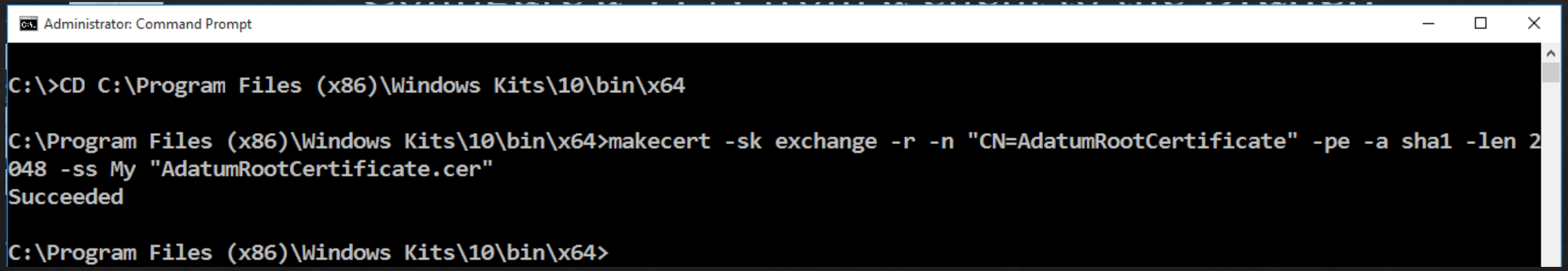


Configure a VPN from a client to the Branch virtual network

- Create AdatumRootCertificate using windows SDK makecert.exe command. Run as administrator CMD and run below command

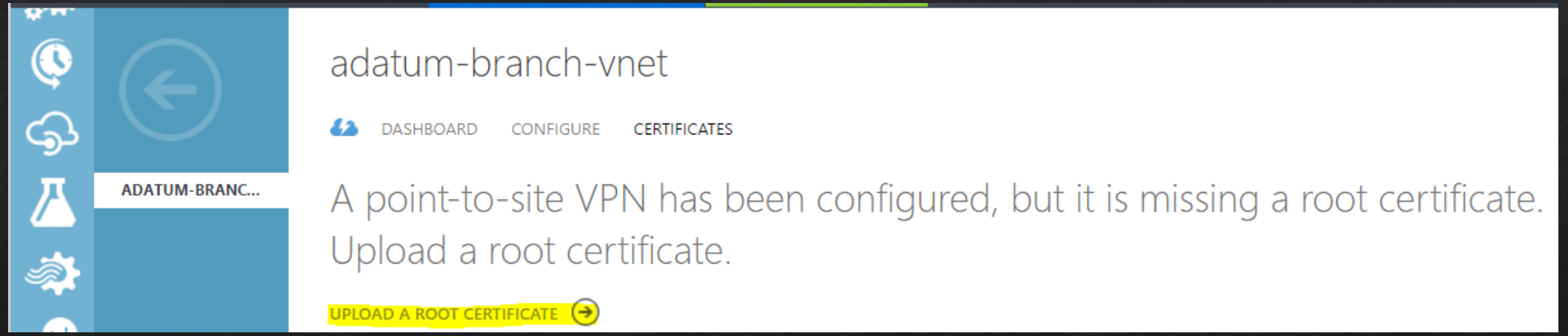
CD C:\Program Files (x86)\Windows Kits\10\bin\x64

makecert -sk exchange -r -n "CN=AdatumRootCertificate" -pe -a sha1 -len 2048 -ss My "AdatumRootCertificate.cer"



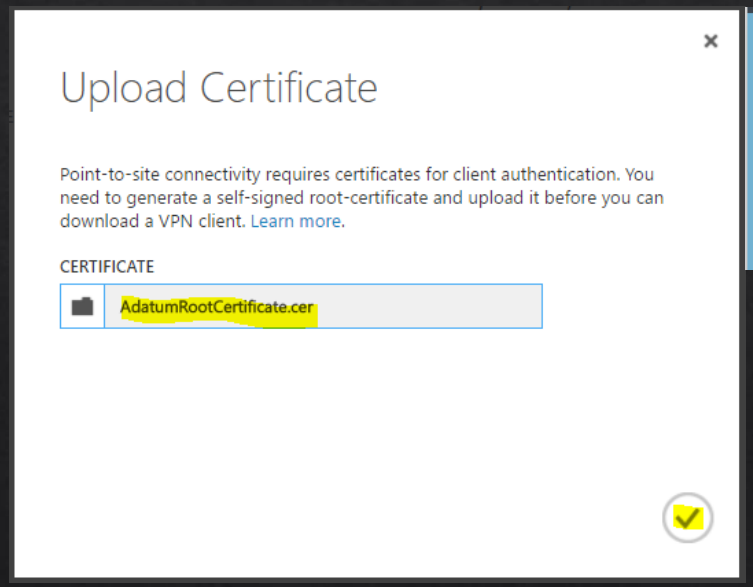
Configure a VPN from a client to the Branch virtual network

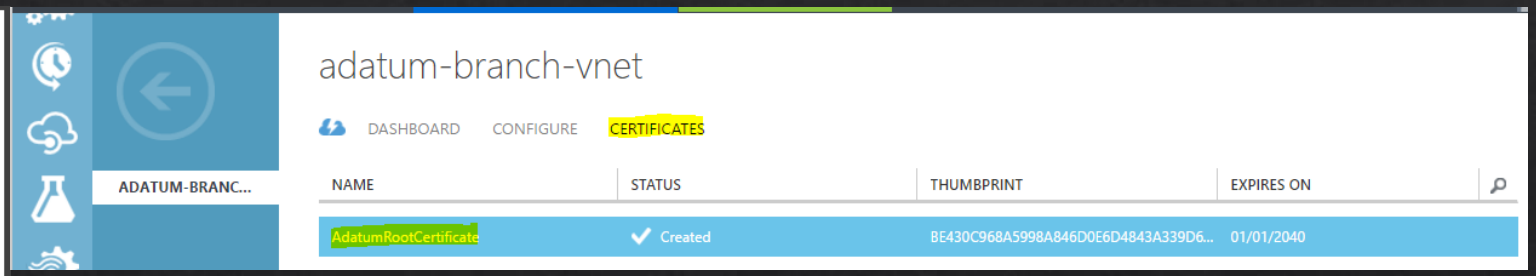
- https://manage.windowsazure.com portal on the **adatum-branch-vnet** page, click **CERTIFICATES**.
- Click **UPLOAD A ROOT CERTIFICATE -** C:\Program Files (x86)\Windows Kits\10\bin\x64\AdatumRootCertificate.cer



Configure a VPN from a client to the Branch virtual network

- https://manage.windowsazure.com portal on the **adatum-branch-vnet** page, click **CERTIFICATES**.
- Click **UPLOAD A ROOT CERTIFICATE -** C:\Program Files (x86)\Windows Kits\10\bin\x64\AdatumRootCertificate.cer

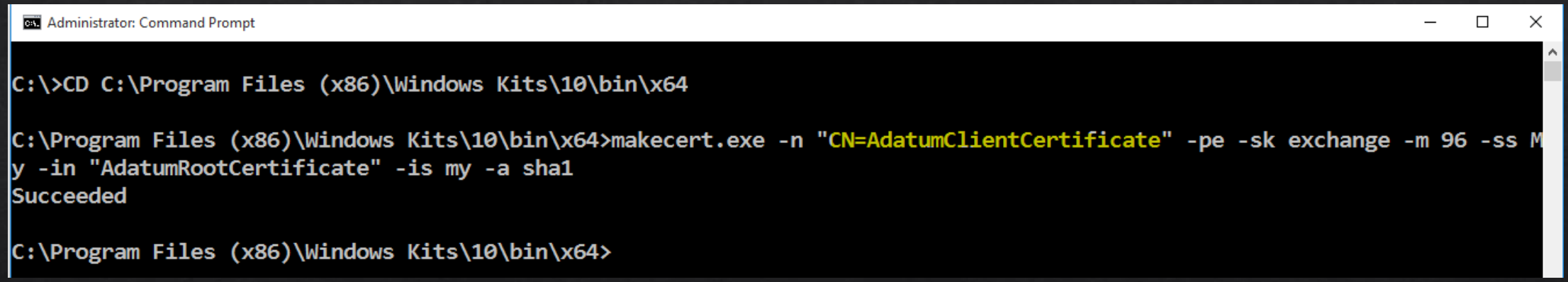




Configure a VPN from a client to the Branch virtual network

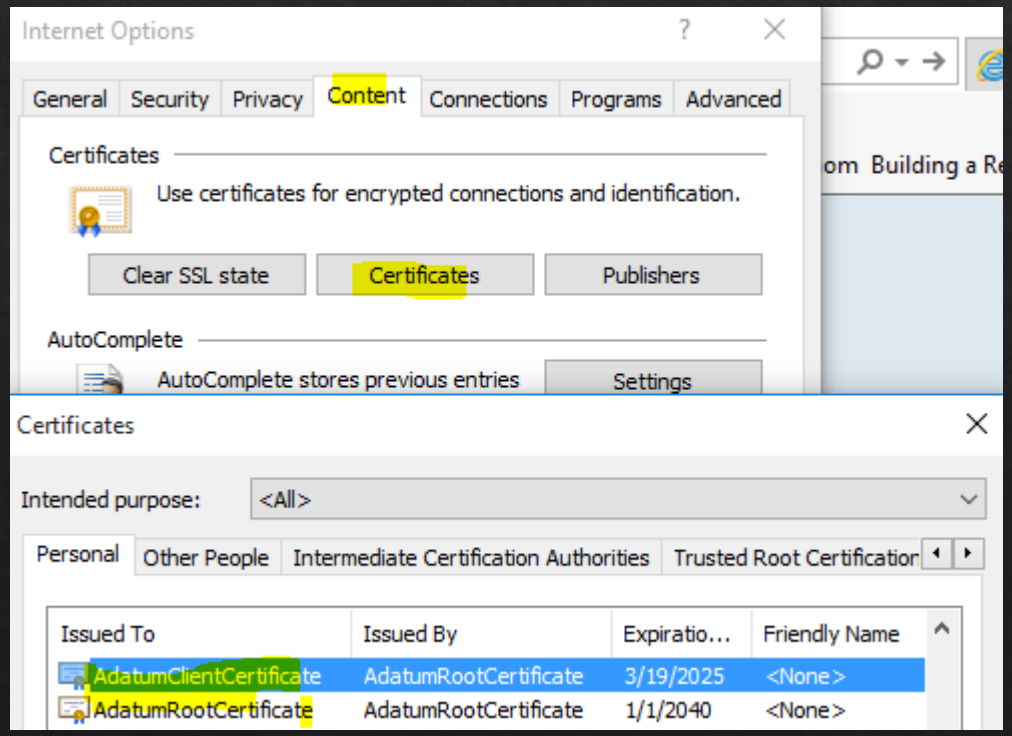
- Create client certificate (Note: copy this certificate to client)

makecert.exe -n "CN=AdatumClientCertificate" -pe -sk exchange -m 96 -ss My -in "AdatumRootCertificate" -is my -a sha1



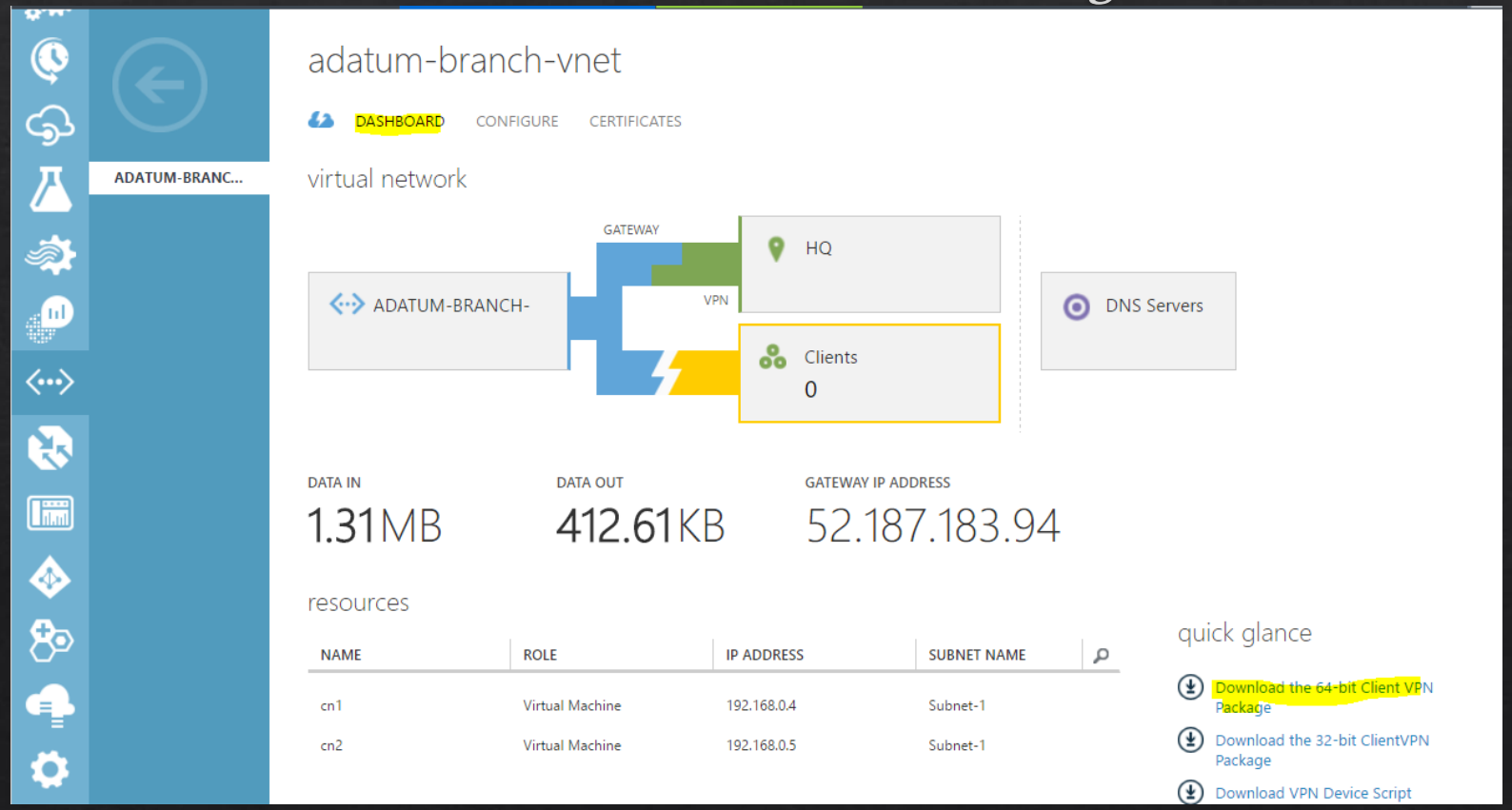
Configure a VPN from a client to the Branch virtual network

- In **Internet Options**, click the **Content** tab, and then click **Certificates**.
- Verify that both the **AdatumClientCertificate** and ** AdatumRootCertificate** display in the Personal store.



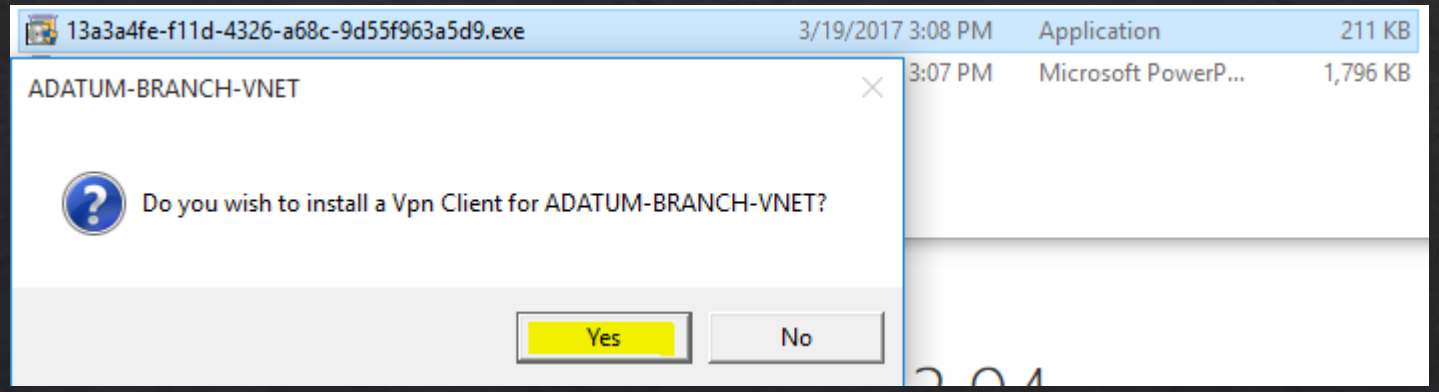
Configure a VPN from a client to the Branch virtual network

- click **Download the 64-bit Client VPN Package**



Configure a VPN from a client to the Branch virtual network

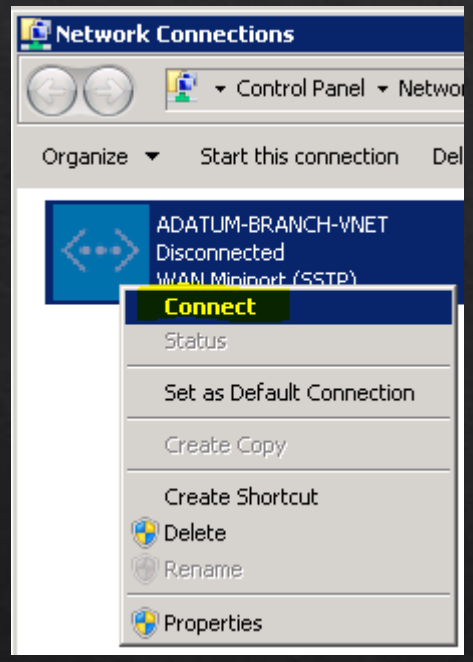
- click **Download the 64-bit Client VPN Package and install on the client machine**

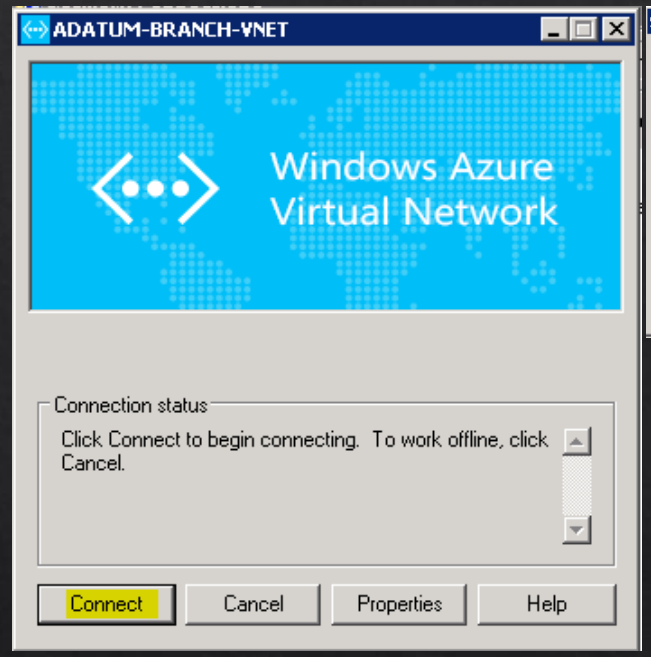


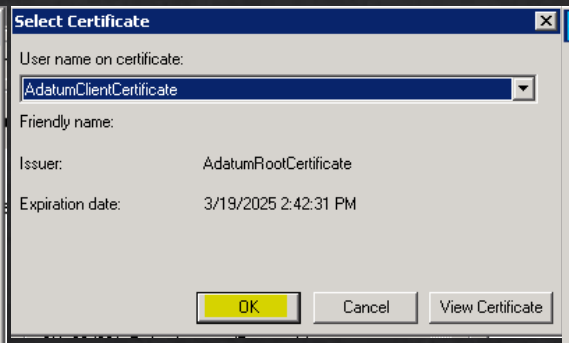
- **Export the client certificate AdatumClientCertificate from makecert.exe machine with Private key and import in Client machine (Usually Administrator Laptop)**

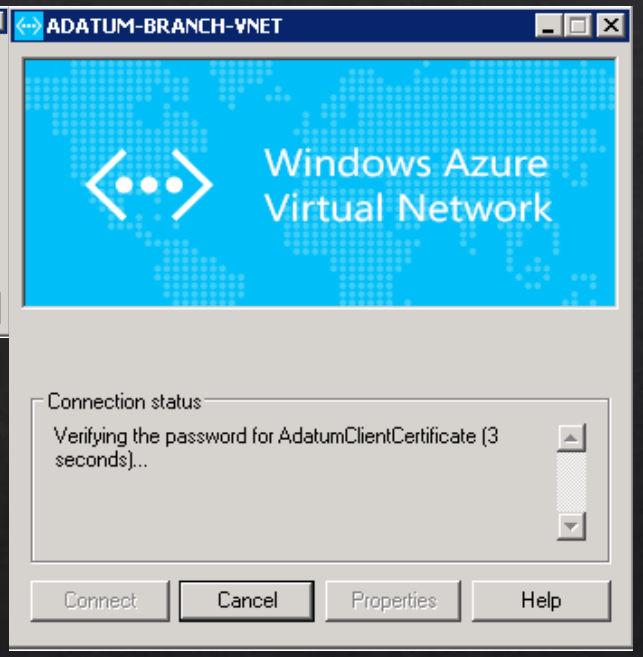
Configure a VPN from a client to the Branch virtual network

- **Open Network Control panel and connect adatum-branch-vnet conection**



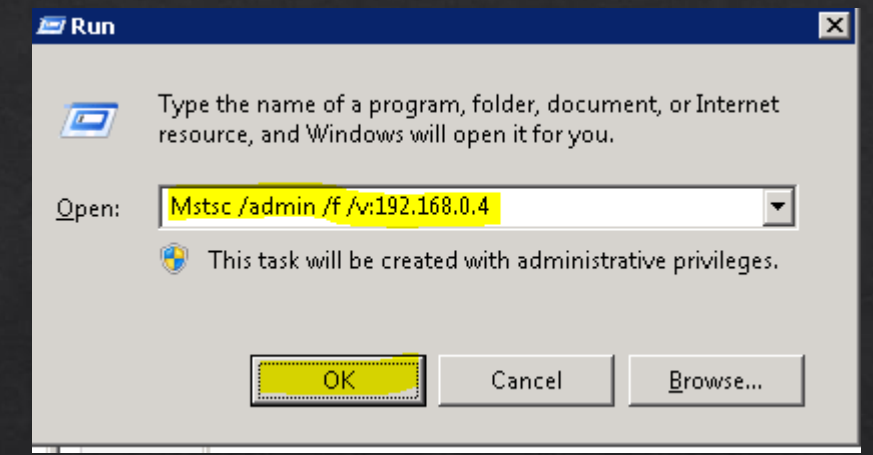




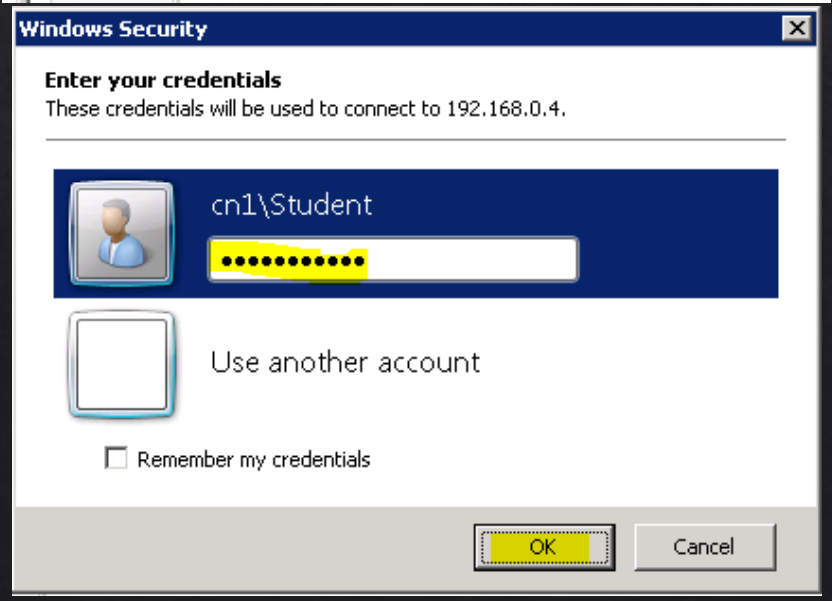


Configure a VPN from a client to the Branch virtual network

- **Once connection established with Adatum Branch Vnet**
- **IPConfig /All – ensure connected to VPN Connection**
- Mstsc /admin /f /v:192.168.0.4

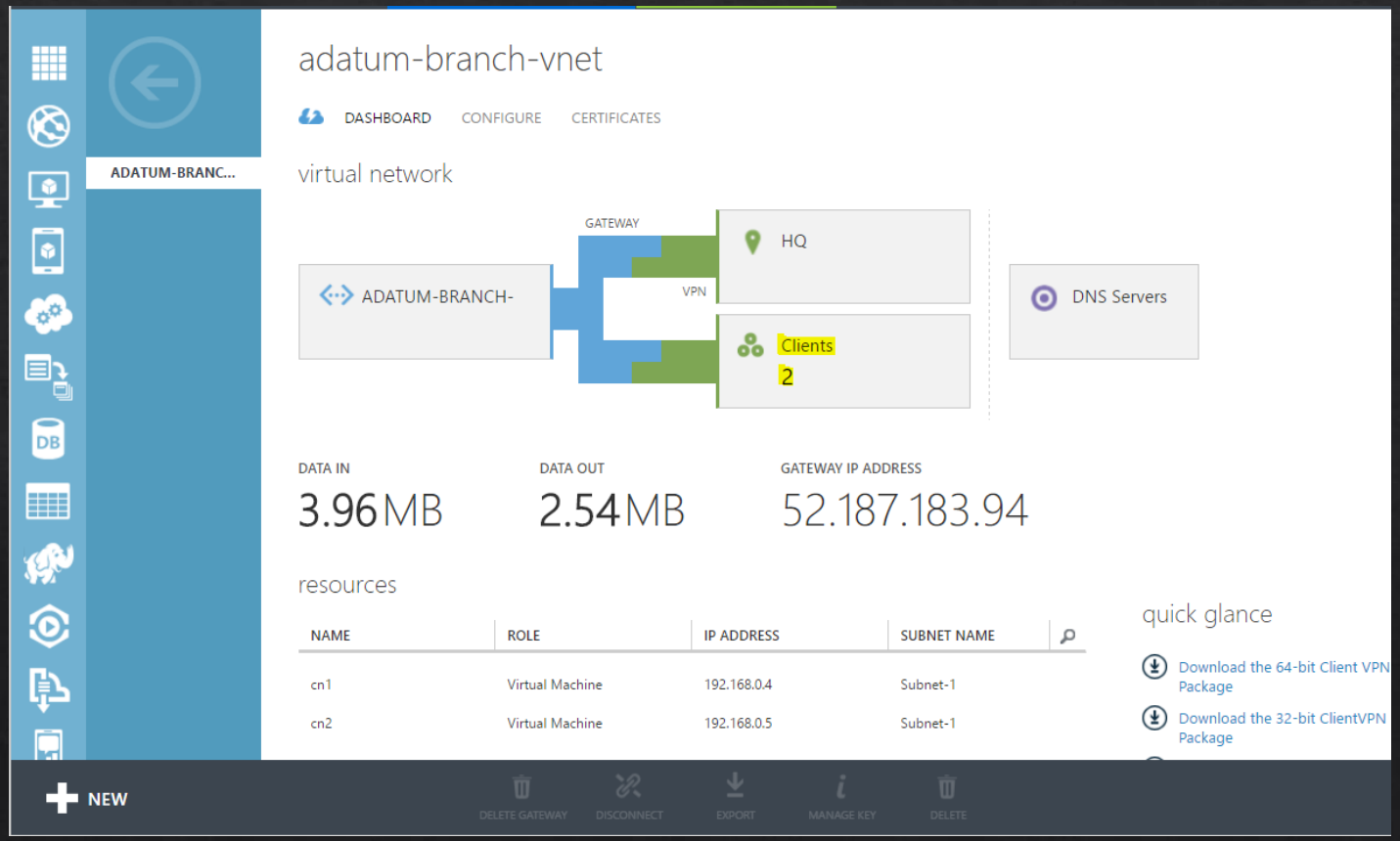



```
PPP adapter ADATUM-BRANCH-VNET:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : ADATUM-BRANCH-VNET
   Physical Address. . . . . . . . . :
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   IPv4 Address. . . . . . . . . . . : 172.16.0.6(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.255
   Default Gateway . . . . . . . . . :
   DNS Servers . . . . . . . . . . . : 192.168.0.4
   NetBIOS over Tcpip. . . . . . . . : Enabled
```



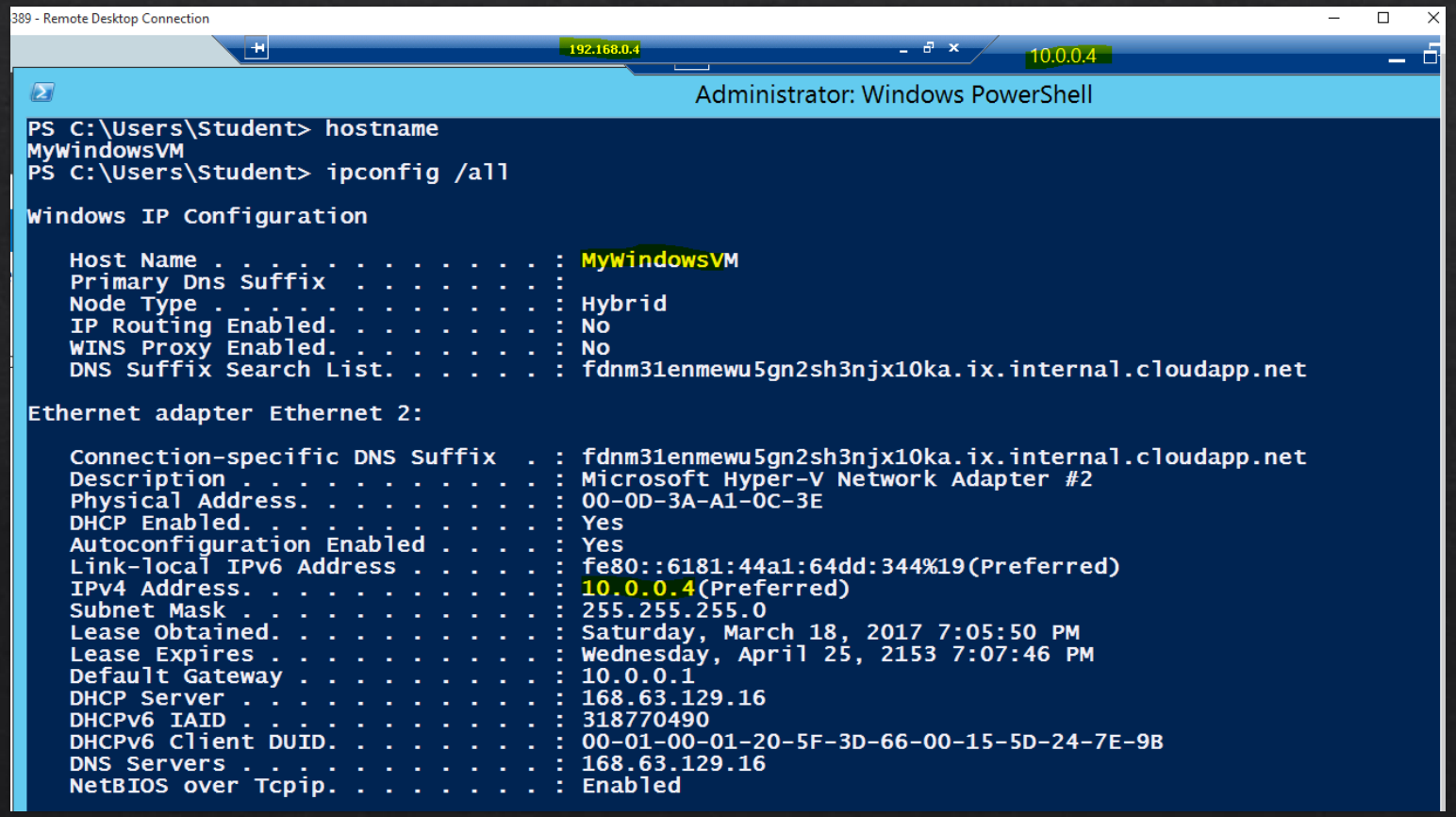
Configure a VPN from a client to the Branch virtual network

- Ensure VPN Client is connected to Adatum branch Vnet



Configure a VPN from a client to the Branch virtual network

- Connect to Mstsc /admin /f /v:10.0.0.4 machine present in HQ (Site to Site)



Thank You