



Compte rendu TP1

Cloud et Virtualisation

RT4 _ Groupe 1



- Réalisé par :

- Loulou Souha
- Ben Jemaa Mouhib

- Avant de commencer le TP, on a récupéré les 100\$ gratuites offertes par Microsoft aux étudiants.

1- Création d'un Virtual Network :

Azure Virtual Network (VNet) est l'élément essentiel qui constitue le réseau privé dans Azure. VNet permet à plusieurs ressources différentes d'Azure (telles que les machines virtuelles Azure VM) de communiquer de manière sécurisée entre elles, avec Internet et avec les réseaux sur site (on site).

VNet est similaire à un réseau traditionnel qu'on peut l'utiliser dans un centre de données personnel, mais il apporte des avantages supplémentaires de l'infrastructure Azure tels que l'échelle (scale), la disponibilité (availability) et l'isolation.

The screenshot shows the 'Create virtual network' wizard on the 'Basics' step. It includes fields for Subscription (Azure for Students), Resource group ((New) tp1rg), and Virtual network name (vnet1). The Region is set to (Europe) North Europe. At the bottom, there are navigation buttons (< Previous, Next : Security >, Review + create) and a 'Give feedback' link.

The screenshot shows the 'Create virtual network' wizard on the 'Security' step. It displays validation status (Validation passed) and lists security settings: Azure Bastion (Disabled), Azure Firewall (Disabled), and Azure DDoS Network Protection (Disabled). At the bottom, there are navigation buttons (< Previous, Next >, Create) and a 'Give feedback' link.

Microsoft Azure Search resources, services, and docs (G+/)

All services > Virtual network >

Create virtual network

Validation passed

Basics Security IP addresses Tags Review + create

Name vnet1
Region North Europe

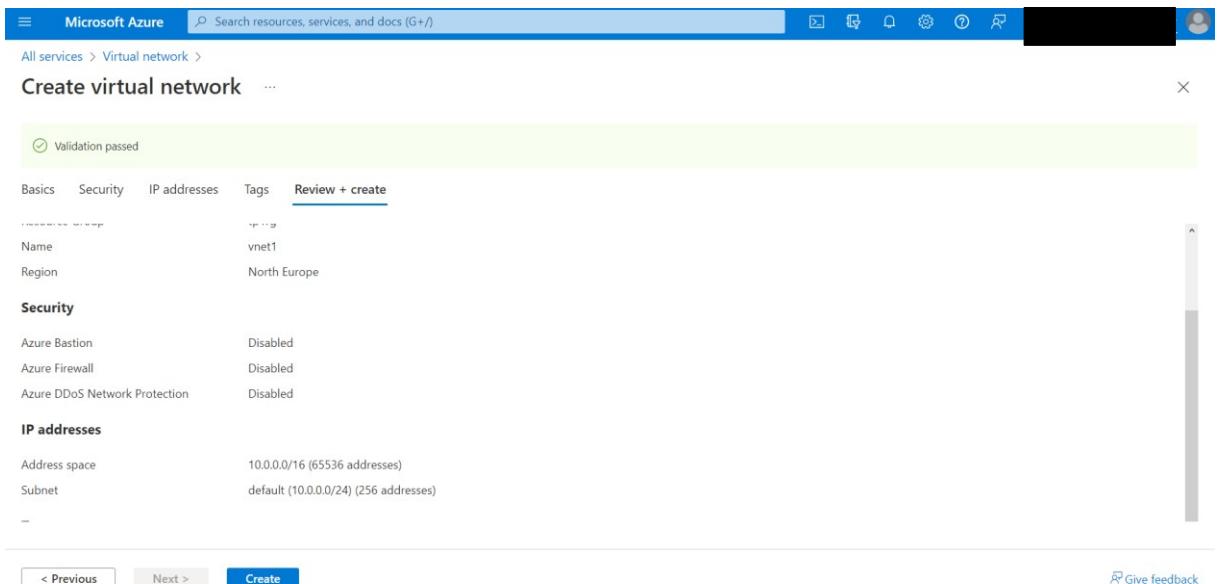
Security

Azure Bastion	Disabled
Azure Firewall	Disabled
Azure DDoS Network Protection	Disabled

IP addresses

Address space	10.0.0.0/16 (65536 addresses)
Subnet	default (10.0.0.0/24) (256 addresses)

< Previous Next > Create Give feedback



Microsoft Azure Search resources, services, and docs (G+/)

All services >

vnet1 | Overview

Deployment

Search Delete Cancel Redeploy Download Refresh

Deployment is in progress

Deployment name: vnet1
Subscription: Azure for Students
Resource group: tp1rg

Start time: 2/11/2023, 5:00:12 PM
Correlation ID: 95bd7e63-dca3-4f35-9da4-922863c36cc5

Deployment details

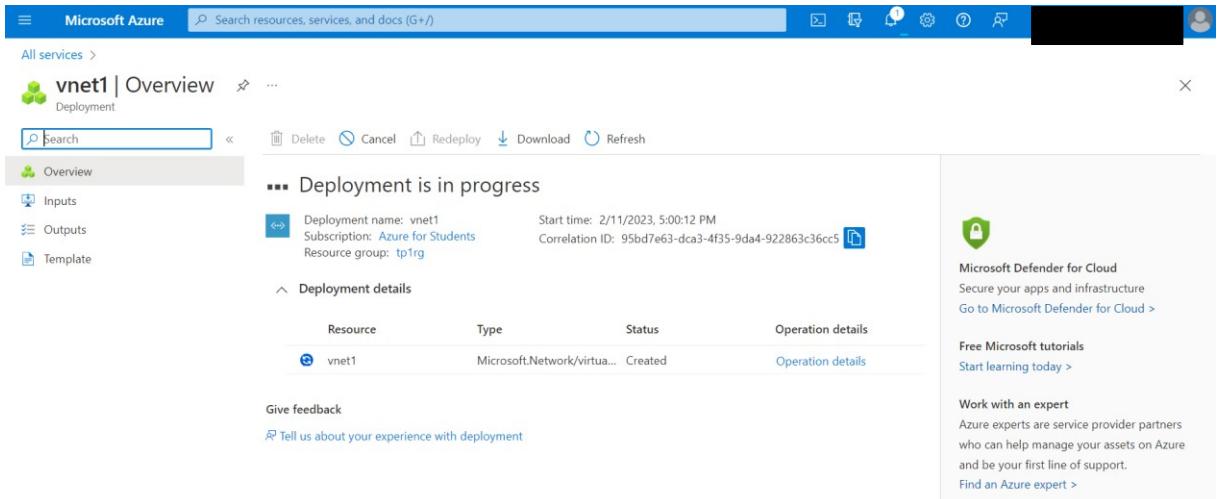
Resource	Type	Status	Operation details
vnet1	Microsoft.Network/virtua...	Created	Operation details

Give feedback Tell us about your experience with deployment

Microsoft Defender for Cloud
Secure your apps and infrastructure
[Go to Microsoft Defender for Cloud >](#)

Free Microsoft tutorials
Start learning today >

Work with an expert
Azure experts are service provider partners
who can help manage your assets on Azure
and be your first line of support.
[Find an Azure expert >](#)



2- Cration d'une machine virtuelle :

Microsoft Azure ...

Home > Virtual machines > Create a virtual machine ...

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

ⓘ This subscription may not be eligible to deploy VMs of certain sizes in certain regions.

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * Resource group * [Create new](#)

Instance details

Virtual machine name * ✓

Review + create < Previous Next : Disks > Give feedback

Microsoft Azure ...

Home > Virtual machines > Create a virtual machine ...

Region *

Availability options

Availability zone * ⓘ You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type

Image * [See all images](#) | [Configure VM generation](#)

VM architecture ⓘ Arm64 is not supported with the selected image.

Run with Azure Spot discount

Size *

Review + create < Previous Next : Disks > Give feedback

Microsoft Azure ...

Home > Virtual machines > Create a virtual machine ...

Administrator account

Username * ✓

Password * ✓

Confirm password * ✓

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports *

Select inbound ports *

⚠ This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Review + create < Previous Next : Disks > Give feedback

Microsoft Azure ≡ Cloud shell Help Feedback

Home > Virtual machines >

Create a virtual machine

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * None Allow selected ports

Select inbound ports *

⚠ This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Licensing
Save up to 49% with a license you already own using Azure Hybrid Benefit. [Learn more](#) ⓘ
Would you like to use an existing Windows Server license? *

Review Azure hybrid benefit compliance ⓘ

[Review + create](#) [< Previous](#) [Next : Disks >](#) [Give feedback](#)

Microsoft Azure ≡ Cloud shell Help Feedback

Home > Virtual machines >

Create a virtual machine

Validation passed

Basics Disks Networking Management Monitoring Advanced Tags [Review + create](#)

ⓘ Cost given below is an estimate and not the final price. Please use [Pricing calculator](#) for all your pricing needs.

PRODUCT DETAILS
1 X Standard D2s v3 by Microsoft **0.1990 USD/hr** Subscription credits apply ⓘ Pricing for other VM sizes

TERMS
By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not

[Create](#) [< Previous](#) [Next >](#) [Download a template for automation](#) [Give feedback](#)

Microsoft Azure ≡ Cloud shell Help Feedback

Home > Virtual machines >

Create a virtual machine

Validation passed

Basics

Subscription	Azure for Students
Resource group	tp1rg
Virtual machine name	vm1
Region	North Europe
Availability options	Availability zone
Availability zone	1
Security type	Standard
Image	Windows Server 2019 Datacenter - Gen2
VM architecture	x64
Size	Standard D2s v3 (2 vcpus, 8 GiB memory)
Username	mouhib
Public inbound ports	RDP
Already have a Windows license?	No
Azure Spot	No

[Create](#) [< Previous](#) [Next >](#) [Download a template for automation](#) [Give feedback](#)

Microsoft Azure

Home > Virtual machines >

Create a virtual machine

Validation passed

Disks

OS disk type	Premium SSD LRS
Use managed disks	Yes
Delete OS disk with VM	Enabled
Ephemeral OS disk	No

Networking

Virtual network	vnet1
Subnet	default (10.0.0.0/24)
Public IP	(new) vm1-ip
Accelerated networking	On
Place this virtual machine behind an existing load balancing solution?	No
Delete public IP and NIC when VM is deleted	Disabled

Create [< Previous](#) [Next >](#) [Download a template for automation](#) [Give feedback](#)

Microsoft Azure

Home > Virtual machines >

Create a virtual machine

Validation passed

Management

Microsoft Defender for Cloud	None
System assigned managed identity	Off
Login with Azure AD	Off
Auto-shutdown	Off
Enable hotpatch	Off
Patch orchestration options	OS-orchestrated patching: patches will be installed by OS

Monitoring

Alerts	Off
Boot diagnostics	On
Enable OS guest diagnostics	Off

Advanced

Extensions	None
VM applications	None

Create [< Previous](#) [Next >](#) [Download a template for automation](#) [Give feedback](#)

→ Le déploiement de la machine vm1 est réussi. Nous remarquons que les ressources (comme cette machine virtuelle) peuvent coûter de l'argent selon l'emplacement (la zone où la ressource se situe, pour notre cas on a choisi North Europe)

3- Connection au vm1 avec RDP :

Le protocole de bureau à distance (RDP) est un protocole de communication réseau sécurisé développé par Microsoft. Il permet aux administrateurs de réseau de diagnostiquer à distance les problèmes rencontrés par les utilisateurs individuels et donne aux utilisateurs un accès à distance à leur ordinateur de bureau physique.

Le RDP peut être utilisé par les employés travaillant à domicile ou en déplacement qui ont besoin d'accéder à leur ordinateur professionnel. Le RDP est également souvent utilisé par les techniciens de support qui doivent diagnostiquer et réparer le système d'un utilisateur à distance et par les administrateurs qui assurent la maintenance du système.

Pour utiliser une session de bureau à distance, un utilisateur ou un administrateur doit utiliser le logiciel client RDP pour se connecter au PC ou au serveur Windows distant qui exécute le logiciel serveur RDP. Une interface utilisateur graphique permet à l'utilisateur ou à l'administrateur distant d'ouvrir des applications et de modifier des fichiers comme s'il était assis devant son bureau.

Microsoft Azure Search resources, services, and docs (G+)

Home > vm1

Virtual machine

Search Connect Start Restart Stop Capture Delete Refresh Open in mobile CLI / PS Feedback

Overview Activity log Access control (IAM) Tags Diagnose and solve problems

Settings Networking Connect Windows Admin Center Disks Size Microsoft Defender for Cloud Advisor recommendations Extensions + applications Continuous delivery

vm1 virtual machine agent status is not ready. Troubleshoot the issue →

Essentials

Resource group (move) tp1rg Status Running Location North Europe (Zone 1) Subscription (move) Azure for Students Subscription ID 85030eba-08e4-4093-ab86-fa81b9f39a8b Availability zone 1 Tags (edit) Click here to add tags

Operating system Windows Size Standard D2s v3 (2 vcpus, 8 GiB memory) Public IP address 20.13.166.203 Virtual network/subnet vnet1/default DNS name Not configured

Properties Monitoring Capabilities (8) Recommendations Tutorials

JSON View

Microsoft Azure Search resources, services, and docs (G+)

Home > vm1

Virtual machine

Search Connect RDP SSH Bastion

Overview Activity log Access control (IAM) Tags Diagnose and solve problems

Settings Networking Connect Windows Admin Center Disks Size Microsoft Defender for Cloud Advisor recommendations Extensions + applications Continuous delivery

To improve security, enable just-in-time access on this VM. →

Connect with RDP

Suggested method for connecting To connect to your virtual machine via RDP, select an IP address, optionally change the port number, and download the RDP file.

IP address * Public IP address (20.13.166.203)

Port number * 3389

Download RDP File

Can't connect? Test your connection Troubleshoot RDP connectivity issues

Provide feedback

Microsoft Azure Search resources, services, and docs (G+)

Home > vm1

vm1 | Connect Virtual machine

Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Networking
- Connect
 - Windows Admin Center
 - Disk
 - Size
- Microsoft Defender for Cloud
- Advisor recommendations
- Extensions + applications
- Continuous delivery

To improve security, enable just-in-time access on this VM. → Connexion Bureau à distance

Connexion Bureau à distance

Impossible d'identifier l'éditeur de cette connexion à distance. Voulez-vous vraiment vous y connecter ?

Cette connexion distante peut endommager votre ordinateur local ou distant. Ne vous connectez pas, sauf si vous connaissez l'origine de cette connexion ou si vous l'avez déjà utilisée.

Éditeur : Serveur de publication inconnu
Type : Connexion Bureau à distance
Ordinateur distant : 20.13.166.203

Ne pas me redemander pour les connexions à cet ordinateur

Connexion Annuler

Download RDP File

Can't connect?
Test your connection
Troubleshoot RDP connectivity issues

Provide feedback

Microsoft Azure Search resources, services, and docs (G+)

Home > vm1

vm1 | Connect Virtual machine

Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Networking
- Connect
 - Windows Admin Center
 - Disk
 - Size
- Microsoft Defender for Cloud
- Advisor recommendations
- Extensions + applications
- Continuous delivery

To improve security, enable just-in-time access on this VM. →

RDP SSH Bastion

Connect with RDP

Suggested method for connecting

To connect to your virtual machine via RDP, select an IP address, optionally change the port number, and download the RDP file.

IP address * Public IP address (20.13.166.203)

Port number * 3389

Download RDP File

Can't connect?
Test your connection
Troubleshoot RDP connectivity issues

Provide feedback

Microsoft Azure Search resources, services, and docs (G+)

Home > vm1

vm1 | Connect Virtual machine

Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Networking
- Connect
 - Windows Admin Center
 - Disk
 - Size
- Microsoft Defender for Cloud
- Advisor recommendations
- Extensions + applications
- Continuous delivery

To improve security, enable just-in-time access on this VM. → Sécurité Windows

Entrer vos informations d'identification

Ces informations d'identification seront utilisées pour vous connecter à 20.13.166.203.

mouhib

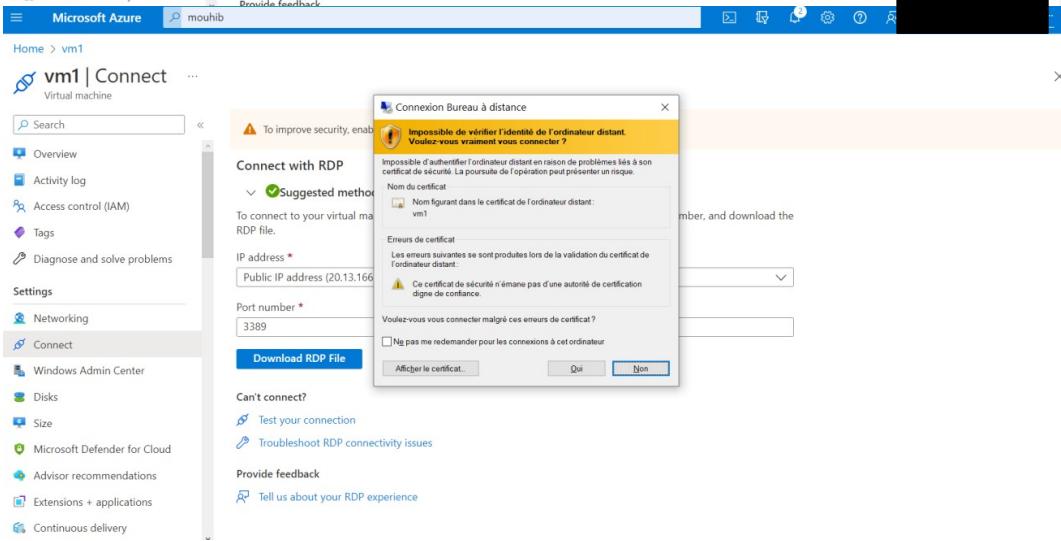
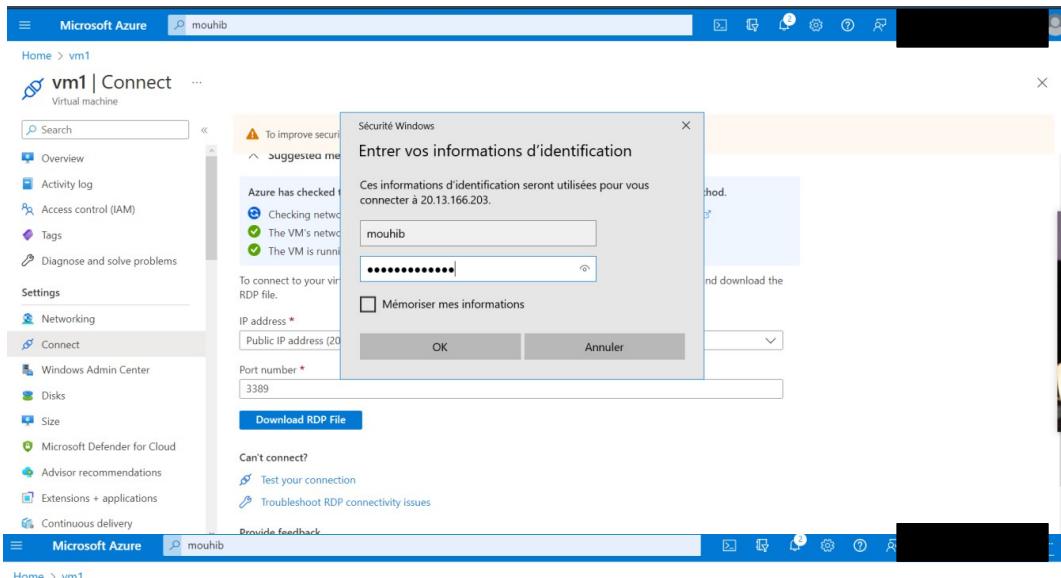
Mémoriser mes informations

OK Annuler

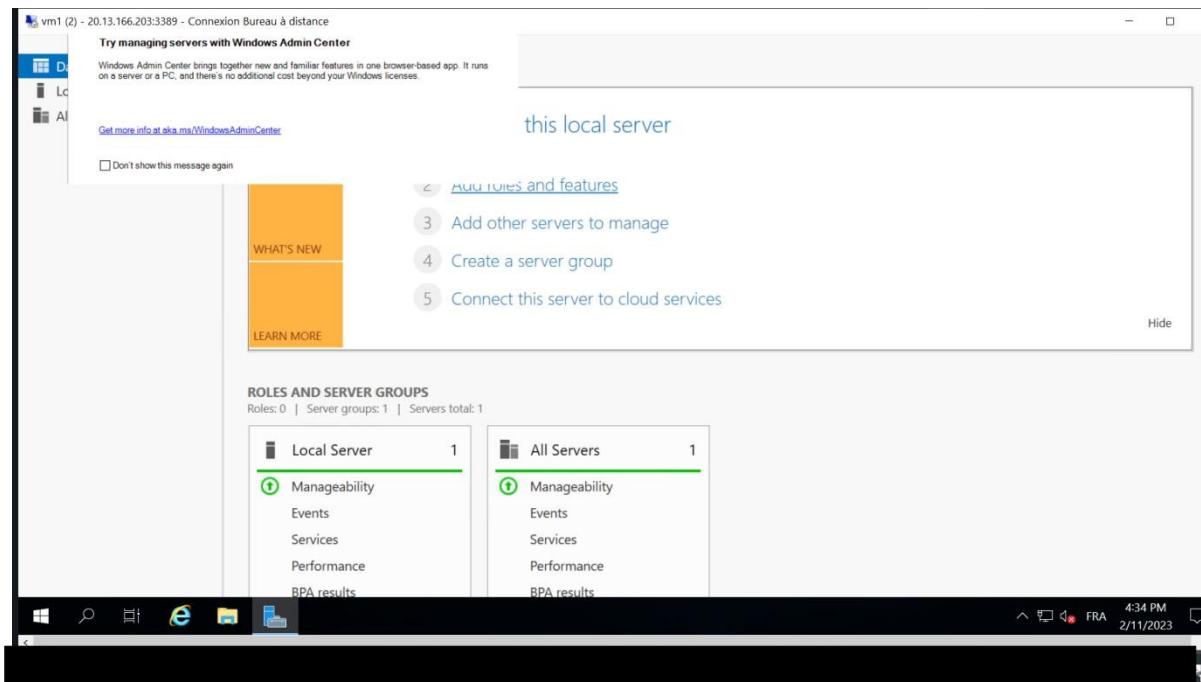
Download RDP File

Can't connect?
Test your connection
Troubleshoot RDP connectivity issues

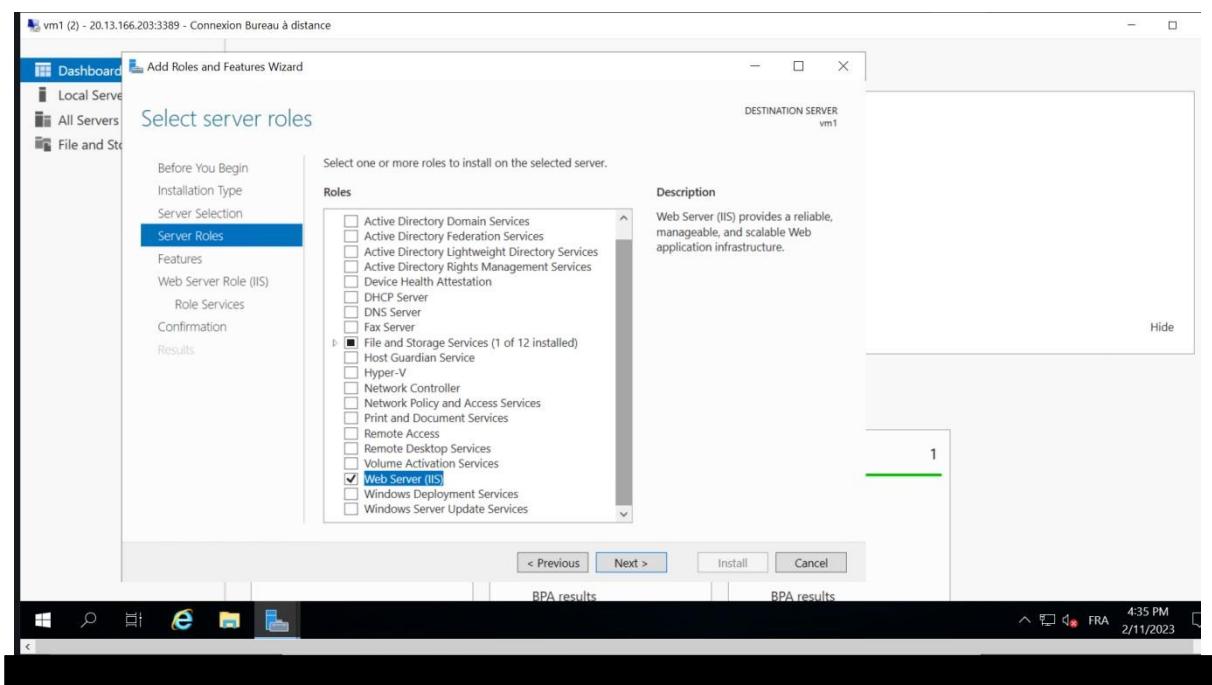
Provide feedback

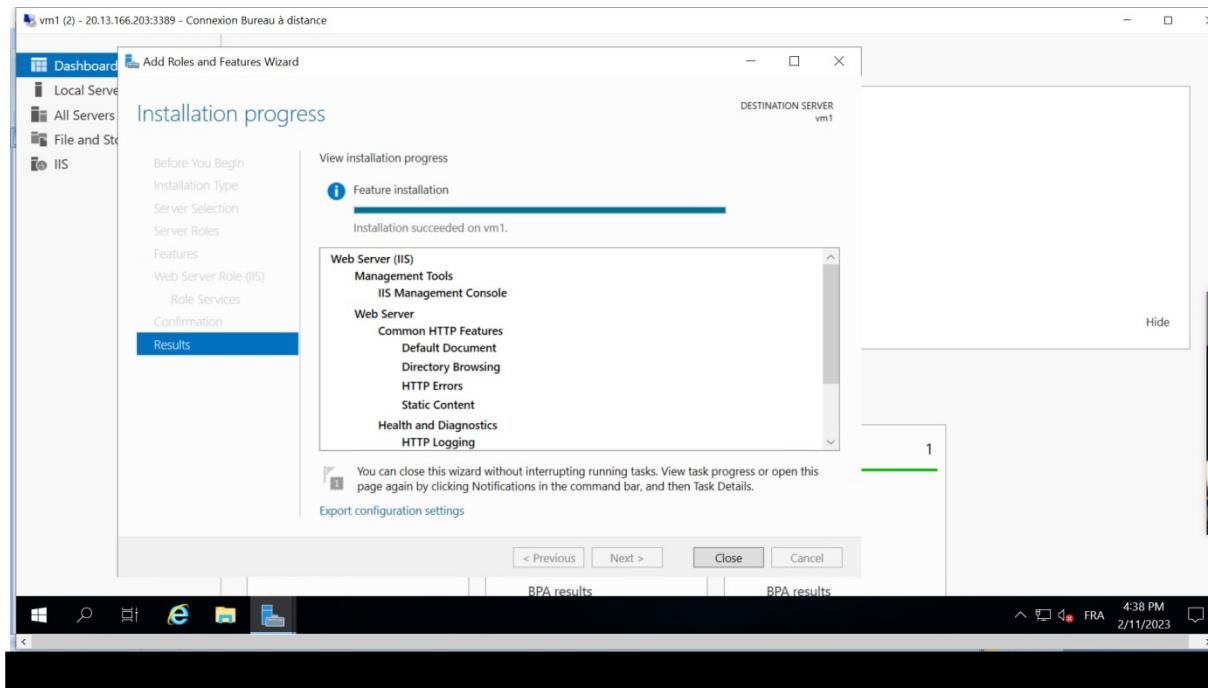


→ La connexion RDP s'est établie avec succès. On est face à une interface de Windows Server avec laquelle on peut ajouter et supprimer des rôles sur le serveur de notre VM.

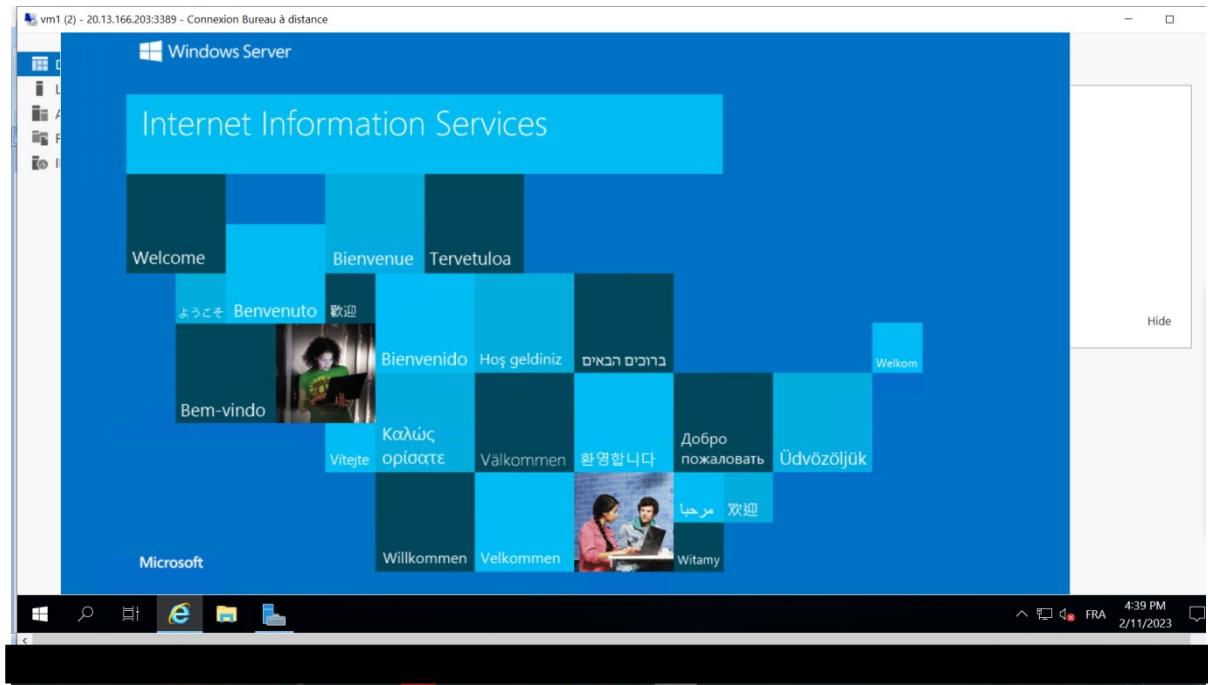


→ L'ajout d'un nouveau rôle :





4- La page web par défaut du « IIS » :



→ On a eu cette page web puisque par défaut dans le serveur « IIS » on a un fichier .html qui définit cette page statique, on peut le modifier pour ajouter du contenu pour cette page, ou on peut le changer totalement pour créer un site web complet avec plusieurs pages. Ceci est l'utilité d'avoir un « IIS » sur lequel on fait « host » d'une page web qui sera accessible par ceux appartenant au même réseau du serveur. On peut exporter cette page vers l'extérieur et elle sera accessible via internet, on fera cela dans ce TP.

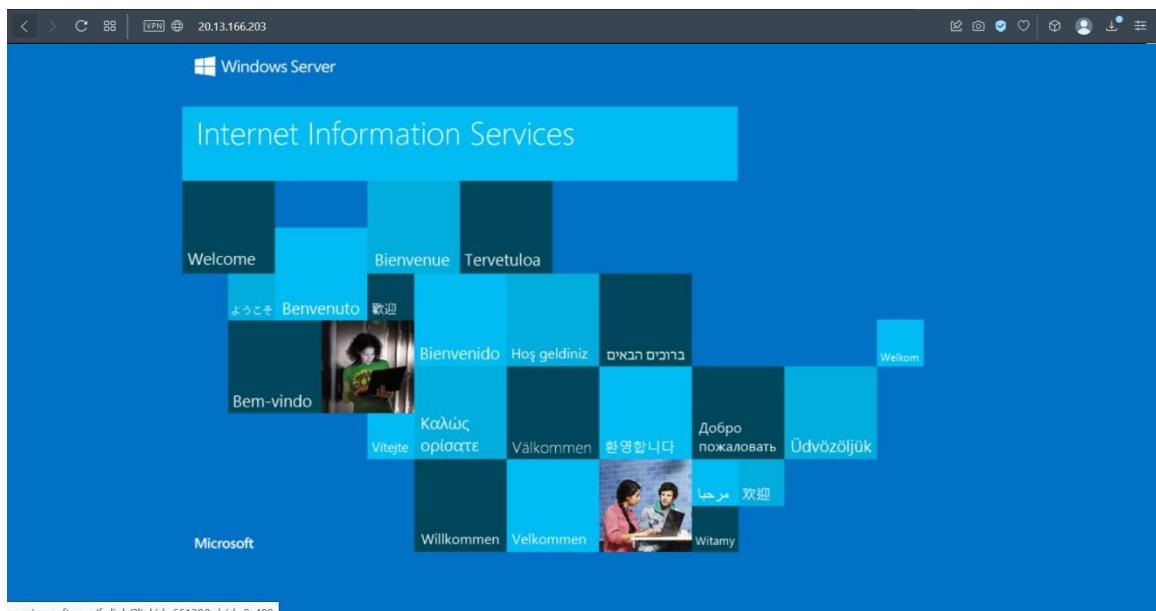
5- L'ajout d'une “inbound port rule” au “Network Security Group NSG” :

On utilise un groupe de sécurité réseau Azure (Network Security Group NSG) pour filtrer le trafic réseau entre les ressources Azure dans un réseau virtuel Azure. Un groupe de sécurité réseau (NSG) contient des règles de sécurité qui autorisent ou refusent le trafic réseau entrant vers, ou le trafic réseau sortant depuis, plusieurs types de

ressources Azure. Pour chaque règle (security rule, comme l'inbound port rule ajoutée dans cette question), on doit spécifier la source et la destination, le port et le protocole.

The screenshot shows the Microsoft Azure portal interface for a virtual machine named 'vm1'. On the left, there's a sidebar with various settings like Overview, Activity log, and Networking. The main area shows the 'Networking' tab for the VM. A modal window titled 'Add inbound security rule' is open, allowing configuration of an inbound port rule. The 'Source' dropdown is set to 'Any'. The 'Source port ranges' field contains a single asterisk (*). The 'Destination' dropdown is also set to 'Any'. The 'Service' dropdown is set to 'HTTP'. The 'Destination port ranges' field contains the value '80'. Under 'Protocol', the 'TCP' option is selected. The 'Action' dropdown is set to 'Allow'. At the bottom of the modal, there are 'Add' and 'Cancel' buttons, along with a 'Give feedback' link.

6- La page web est accessible depuis le navigateur avec l'adresse IP publique :



7- La configuration DNS :

Microsoft Azure

Home > vm1 > vm1-ip

vm1-ip | Configuration

Public IP address

Search

Save Discard Refresh

IP address assignment: Static

IP address: 20.13.166.203

Idle timeout (minutes): 4

DNS name label (optional): mouhib

.northeurope.cloudapp.azure.com

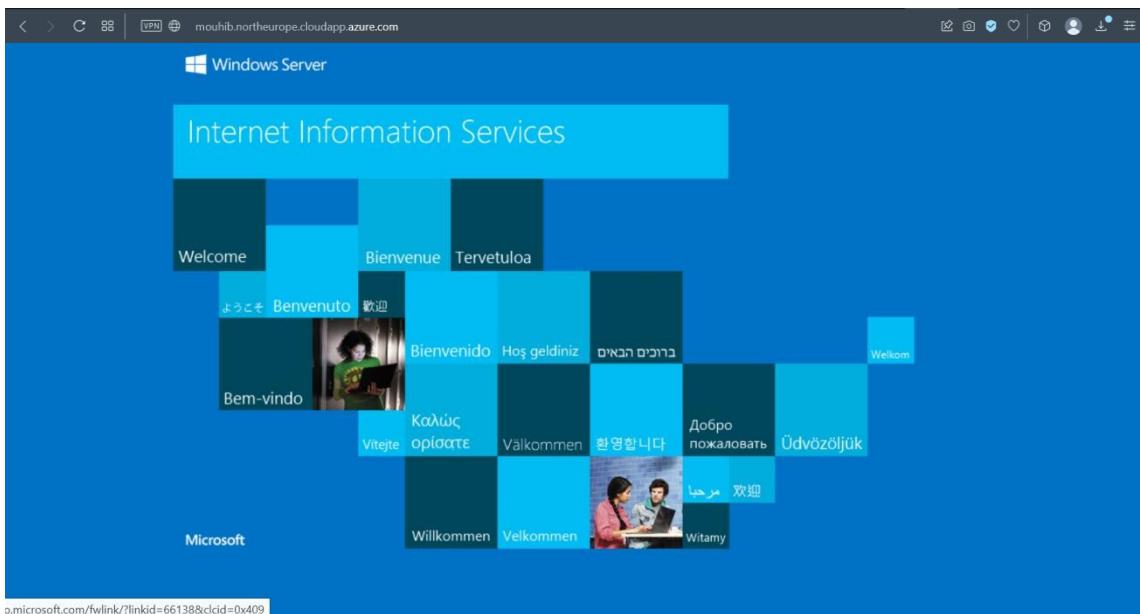
You can use the IP address as your 'A' DNS record or DNS label as your 'CNAME' record. [Learn more about adding a custom domain to this IP address](#)

Alias record sets

Create an alias record in Azure DNS. [Learn more](#)

+ Create alias record

Subscription	DNS zone	Name	Type	TTL
No results.				



8- Crédation d'un subnet :

Un sous-réseau (subnet) est une plage d'adresses IP dans le réseau virtuel. On peut diviser un réseau virtuel en plusieurs sous-réseaux pour des raisons d'organisation et de sécurité. Chaque NIC (Network Interface) d'une VM est connecté à un sous-réseau dans un réseau virtuel. Les cartes réseau connectées à des sous-réseaux (identiques ou différents) dans un réseau virtuel peuvent communiquer entre elles sans configuration supplémentaire.

Une interface réseau (NIC) est l'interconnexion entre une machine virtuelle et un réseau virtuel. Une machine virtuelle doit avoir au moins une NIC. Elle peut avoir plus d'une NIC, en fonction de la taille de la VM créée.

vnet1 | Subnets

Virtual network

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

- Address space
- Connected devices
- Subnets**
- Bastion
- DDoS protection
- Firewall
- Microsoft Defender for Cloud
- Network manager
- DNS servers

+ Subnet + Gateway subnet Refresh Manage users

Search subnets

Name ↑↓	IPv4 ↑↓	IPv6 ↑↓	Available IPs ↑↓	Delegated to ↑↓	Security group ↑↓	Route table ↑↓
default	10.0.0.0/24	-	25	-	-	-
SubnetA	10.0.1.0/24	-	251	-	-	-

Name *

SubnetA

Subnet address range *

10.0.1.0/24

10.0.1.0 - 10.0.1.255 (251 + 5 Azure reserved addresses)

Add IPv6 address space

NAT gateway

None

Network security group

None

Route table

None

SERVICE ENDPOINTS

Create service endpoint policies to allow traffic to specific Azure resources from your virtual network over service endpoints. [Learn more](#)

Save Cancel

Successfully added subnet

Successfully added subnet 'SubnetA' to virtual network 'vnet1'.

All services > vnet1 | Overview > vnet1

vnet1 | Subnets

Virtual network

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

- Address space
- Connected devices
- Subnets**
- Bastion
- DDoS protection
- Firewall
- Microsoft Defender for Cloud
- Network manager
- DNS servers

+ Subnet + Gateway subnet Refresh Manage users Delete

Search subnets

Name ↑↓	IPv4 ↑↓	IPv6 ↑↓	Available IPs ↑↓	Delegated to ↑↓	Security group ↑↓	Route table ↑↓
default	10.0.0.0/24	-	250	-	-	-
SubnetA	10.0.1.0/24	-	251	-	-	-

9- Création d'une deuxième machine virtuelle :

Voulez-vous que le gestionnaire des mots de passe enregistre le mot de passe pour "https://portal.azure.com" ?

Microsoft Azure Search resources, services, and docs (G+) Enregistrer Jamais

Home > Virtual machines > Create a virtual machine ...

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network * vnet1 Create new

Subnet * SubnetA (10.0.1.0/24) Manage subnet configuration

Public IP (new) vm2-ip Create new

NIC network security group None Basic Advanced

Public inbound ports * None Allow selected ports

Select inbound ports * RDP (3389)

Review + create < Previous Next : Management > Give feedback

Microsoft Azure Search resources, services, and docs (G+) Home > Virtual machines > Create a virtual machine ...

Validation passed

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Cost given below is an estimate and not the final price. Please use [Pricing calculator](#) for all your pricing needs.

PRODUCT DETAILS

1 X Standard D2s v3 by Microsoft Subscription credits apply 0.1990 USD/hr Pricing for other VM sizes

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not

Create < Previous Next > Download a template for automation Give feedback

Microsoft Azure Search resources, services, and docs (G+) Home > Virtual machines > Create a virtual machine ...

Validation passed

Basics

Subscription	Azure for Students
Resource group	tp1rg
Virtual machine name	vm2
Region	North Europe
Availability options	Availability zone
Availability zone	1
Security type	Standard
Image	Windows Server 2019 Datacenter - Gen2
VM architecture	x64
Size	Standard D2s v3 (2 vcpus, 8 GiB memory)
Username	mouhib2
Public inbound ports	RDP
Already have a Windows license?	No
Azure Spot	No

Create < Previous Next > Download a template for automation Give feedback

Microsoft Azure Search resources, services, and docs (G+/)

Home > Virtual machines > Create a virtual machine ...

Validation passed

Disks

OS disk type	Premium SSD LRS
Use managed disks	Yes
Delete OS disk with VM	Enabled
Ephemeral OS disk	No

Networking

Virtual network	vnet1
Subnet	SubnetA (10.0.1.0/24) (new) vm2-ip
Public IP	On
Accelerated networking	On
Place this virtual machine behind an existing load balancing solution?	No
Delete public IP and NIC when VM is deleted	Disabled

Create < Previous Next > Download a template for automation Give feedback

Microsoft Azure Search resources, services, and docs (G+/)

Home > Virtual machines > Create a virtual machine ...

Validation passed

Management

Microsoft Defender for Cloud	None
System assigned managed identity	Off
Login with Azure AD	Off
Auto-shutdown	Off
Enable hotpatch	Off
Patch orchestration options	OS-orchestrated patching: patches will be installed by OS

Monitoring

Alerts	Off
Boot diagnostics	On
Enable OS guest diagnostics	Off

Advanced

Extensions	None
------------	------

Create < Previous Next > Download a template for automation Give feedback

Microsoft Azure Search resources, services, and docs (G+/)

Home > Virtual machines >

Create a virtual machine

Validation passed

Patch orchestration options: OS-orchestrated patching: patches will be installed by OS

Monitoring

Alerts	Off
Boot diagnostics	On
Enable OS guest diagnostics	Off

Advanced

Extensions	None
VM applications	None
Cloud init	No
User data	No
Disk controller type	SCSI
Proximity placement group	None
Capacity reservation group	None

Next steps

Create < Previous Next > Download a template for automation Give feedback

Microsoft Azure Search resources, services, and docs (G+/)

Home >

CreateVm-MicrosoftWindowsServer.WindowsServer-201-20230211181218 | Overview

Deployment

Search Delete Cancel Redeploy Download Refresh

Overview

Your deployment is complete

Deployment name: CreateVm-MicrosoftWindowsServer.Windows... Start time: 2/11/2023, 6:14:35 PM
Subscription: Azure for Students Correlation ID: e6de93ea-00f0-4315-b309-d
Resource group: tp1rg

Deployment details

Next steps

Setup auto-shutdown Recommended
Monitor VM health, performance and network dependencies Recommended
Run a script inside the virtual machine Recommended

Go to resource **Create another VM**

Give feedback Tell us about your experience with deployment

Deployment succeeded
Deployment 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20230211181218' to resource group 'tp1rg' was successful.

Cost Management
Get notified to stay within your budget and prevent unexpected charges on your bill.
Set up cost alerts >

Microsoft Defender for Cloud
Secure your apps and infrastructure
Go to Microsoft Defender for Cloud >

Free Microsoft tutorials
Start learning today >

Work with an expert
Azure experts are service provider partners

https://portal.azure.com/?Microsoft_Azure_Education_correlationId=26d4284c8bd849fda998b5295c250348&Microsoft_Azure_Education_newA4E=true&Microsoft_Azure_asoSubGuid=85030eba-08e4-4093-ab86-fa81b9f...

10- On se connecte à la nouvelle machine :

Microsoft Azure Search resources, services, and docs (G+)

Home > CreateVm-MicrosoftWindowsServer.WindowsServer-201-20230211181218 | Overview > vm2

vm2 | Connect Virtual machine

Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Networking
- Connect
- Windows Admin Center
- Disks
- Size
- Microsoft Defender for Cloud
- Advisor recommendations
- Extensions + applications
- Continuous delivery

To improve security, enable just-in-time access on this VM... →

Connexion Bureau à distance

Impossible d'identifier l'éditeur de cette connexion à distance. Voulez-vous vraiment vous y connecter ?

Cette connexion distante peut endommager votre ordinateur local ou distant. Ne vous connectez pas, sauf si vous connaissez l'origine de cette connexion ou si vous l'avez déjà utilisée.

Éditeur : Serveur de publication inconnu
Type : Connexion Bureau à distance
Ordinateur distant : 20.13.162.241

Ne pas me redemander pour les connexions à cet ordinateur

Afficher détails

Connexion Annuler

Download RDP File

Can't connect?

- Test your connection
- Troubleshoot RDP connectivity issues

Provide feedback

- Tell us about your RDP experience

Microsoft Azure Search resources, services, and docs (G+)

Home > CreateVm-MicrosoftWindowsServer.WindowsServer-201-20230211181218 | Overview > vm2

vm2 | Connect Virtual machine

Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Networking
- Connect
- Windows Admin Center
- Disks
- Size
- Microsoft Defender for Cloud
- Advisor recommendations
- Extensions + applications
- Continuous delivery

To improve security, enable just-in-time access on this VM... →

Connexion Bureau à distance

Impossible de vérifier l'identité de l'ordinateur distant. Voulez-vous vraiment vous connecter ?

Impossible d'authentifier l'ordinateur distant en raison de problèmes liés à son certificat de sécurité. La poursuite de l'opération peut présenter un risque.

Nom du certificat

Non figurant dans le certificat de l'ordinateur distant : vm2

Erreurs de certificat

Les erreurs suivantes se sont produites lors de la validation du certificat de l'ordinateur distant:

Ce certificat de sécurité n'émane pas d'une autorité de certification digne de confiance.

Voulez-vous vous connecter malgré ces erreurs de certificat ?

Ne pas me redemander pour les connexions à cet ordinateur

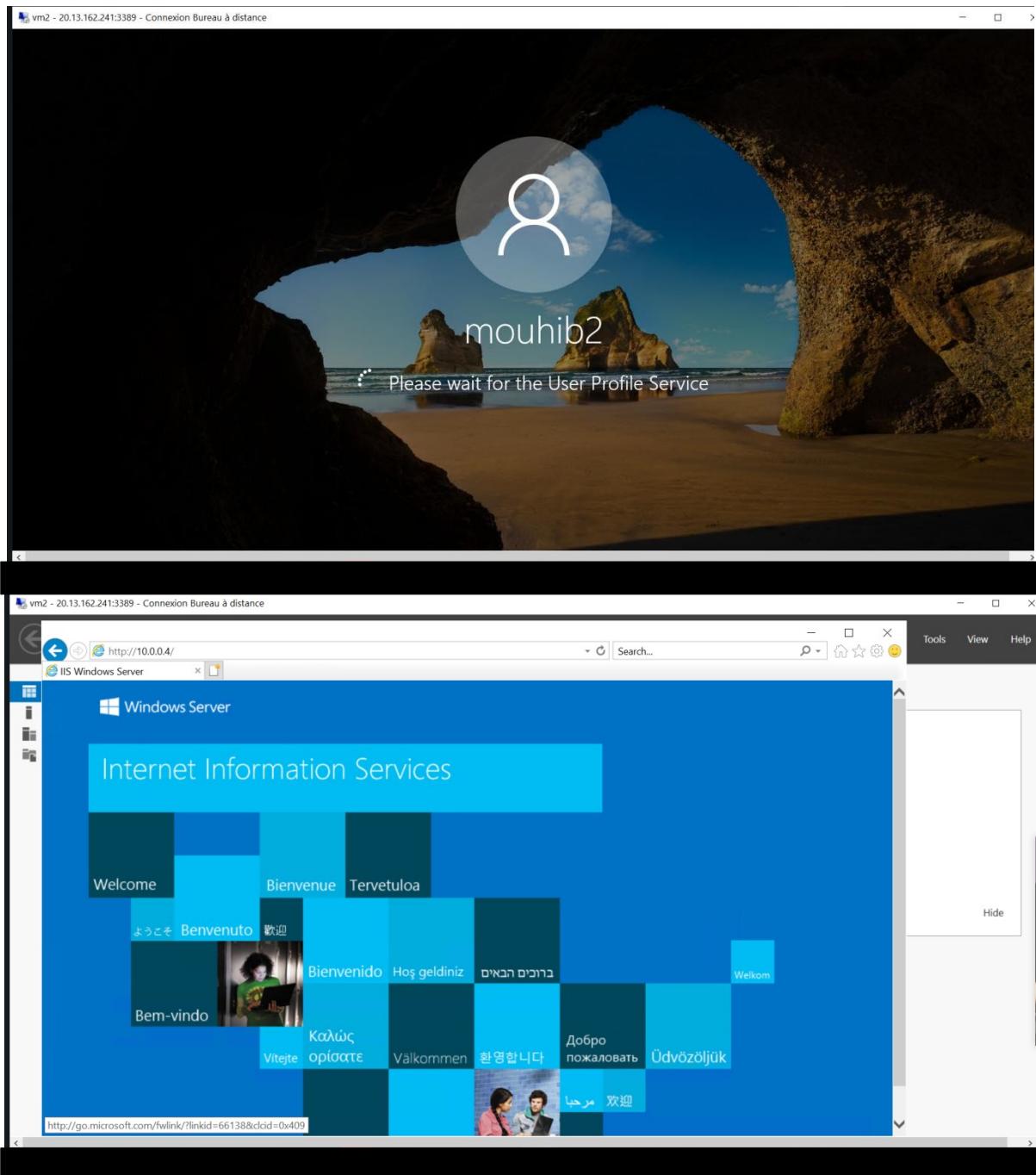
Afficher le certificat... Oui Non

Can't connect?

- Test your connection
- Troubleshoot RDP connectivity issues

Provide feedback

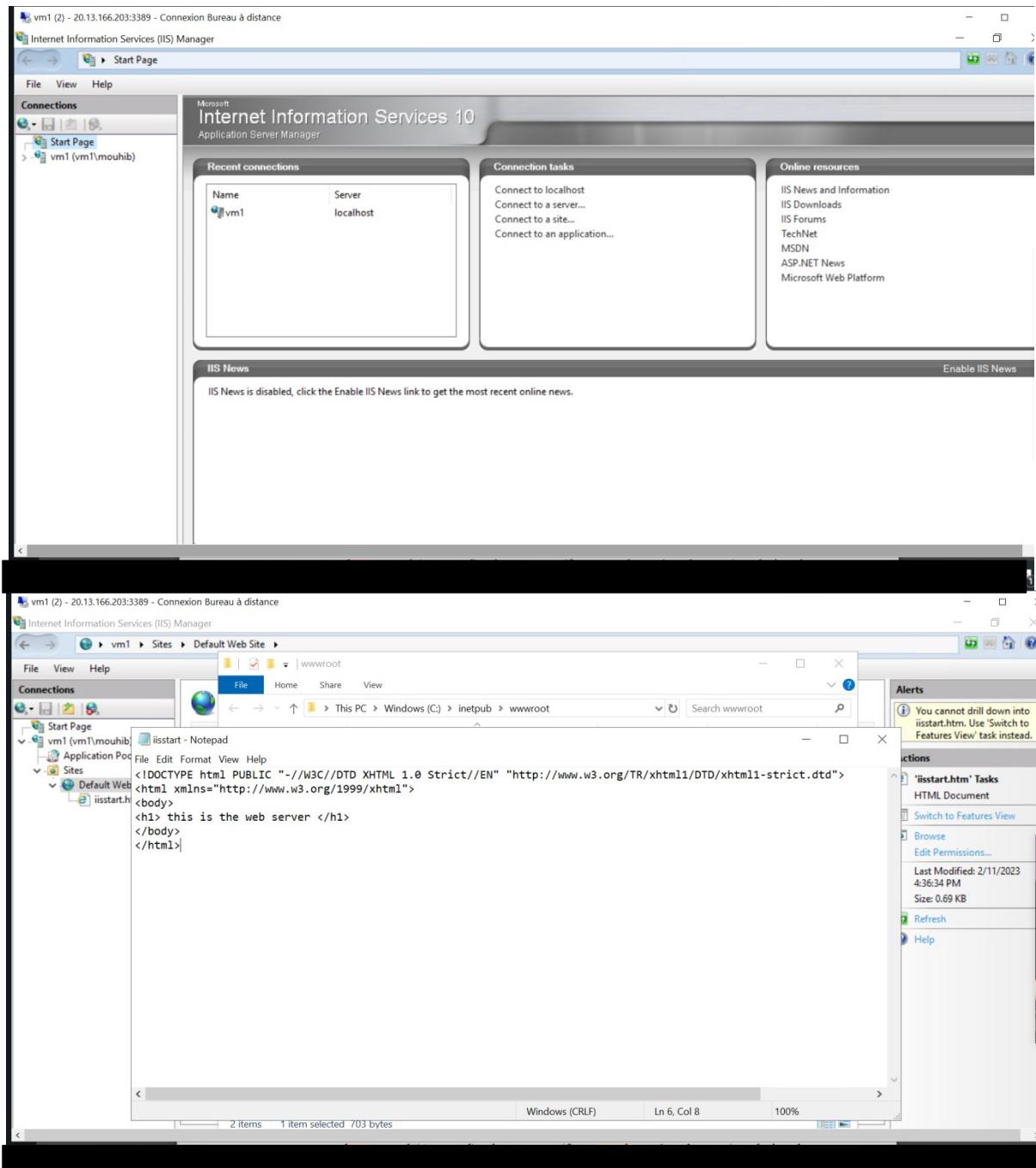
- Tell us about your RDP experience

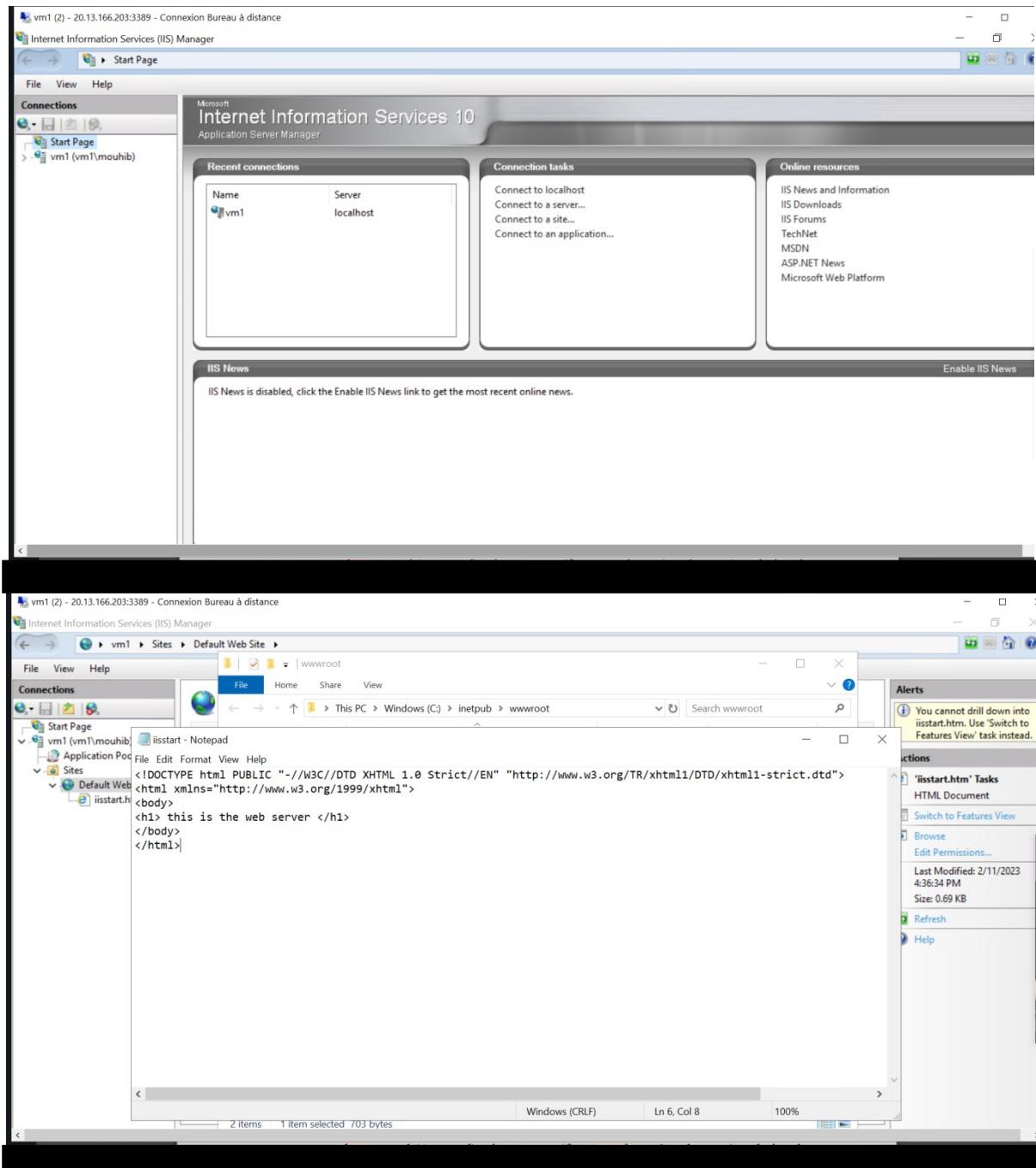


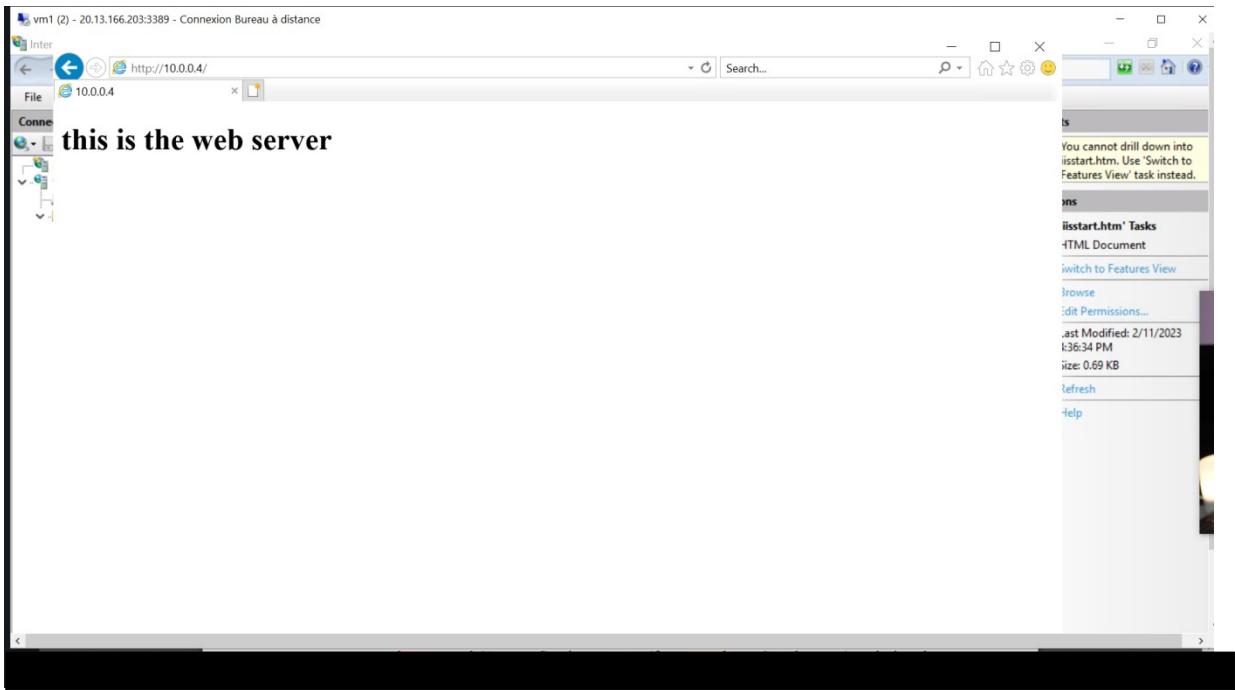
→ Nous pouvons avoir une communication directe entre vm1 et vm2 car ils font partie du même réseau virtuel (grâce au subnet défini).

11- Modification de la page web initiale :

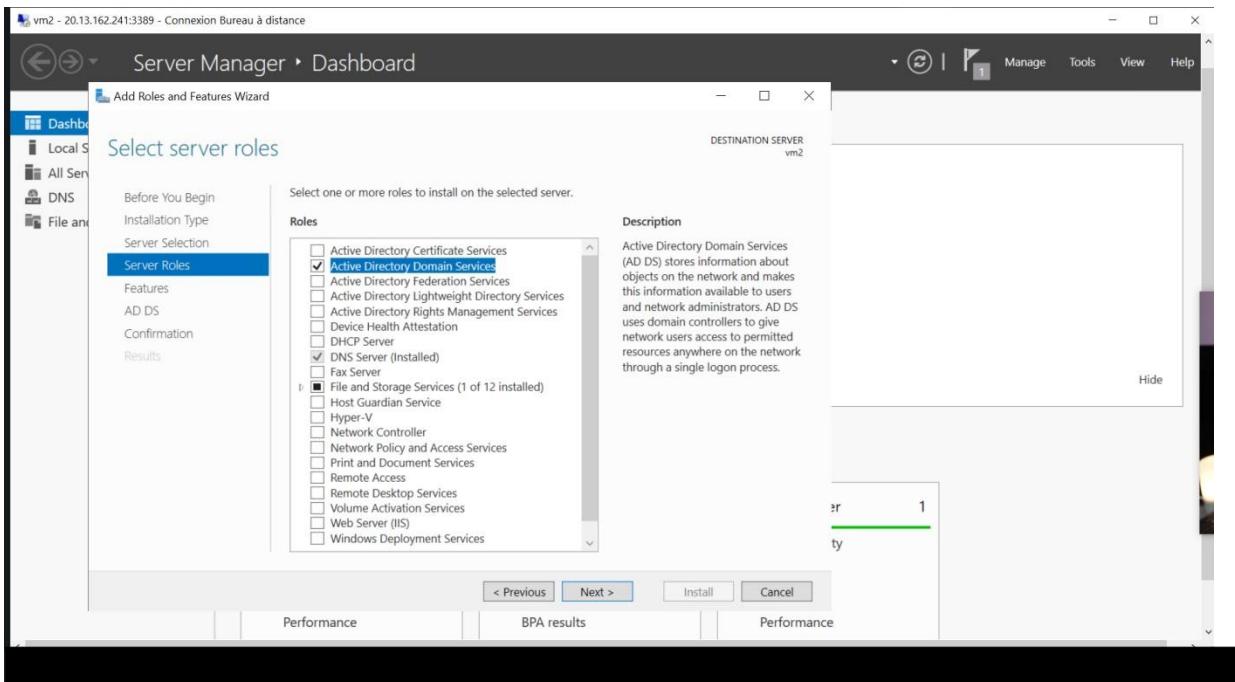
On peut manipuler la page web initiale en configurant le fichier de cette page qui existe sur l'interface de « IIS ».



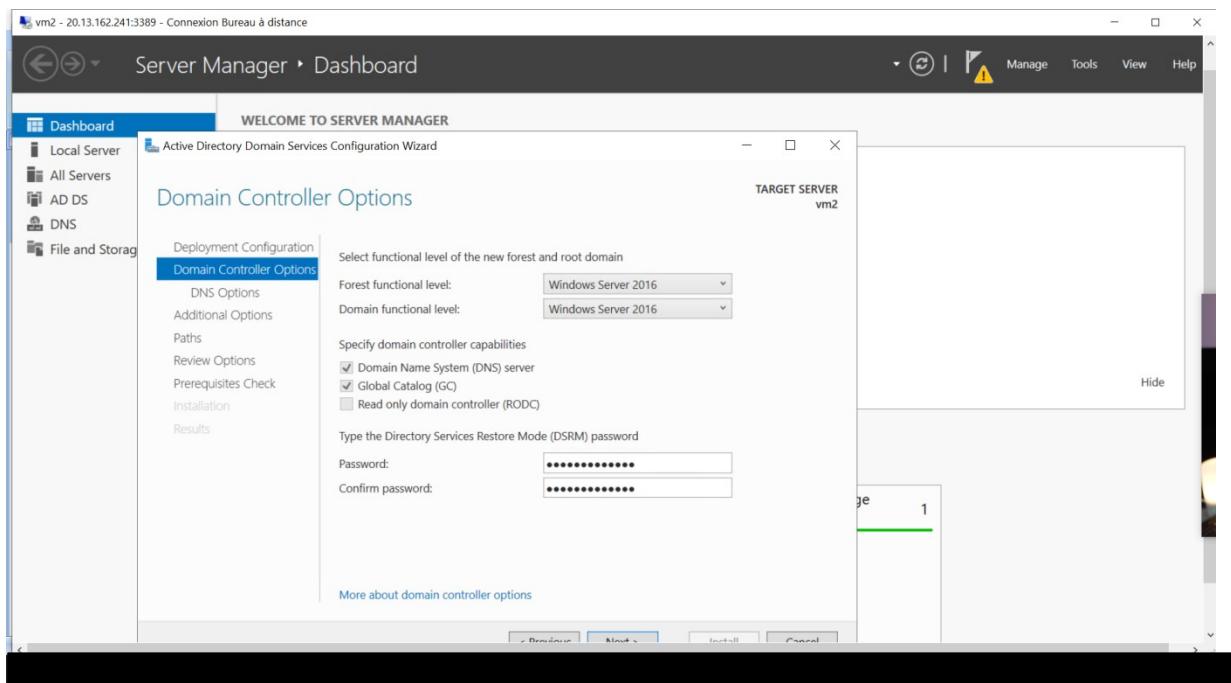
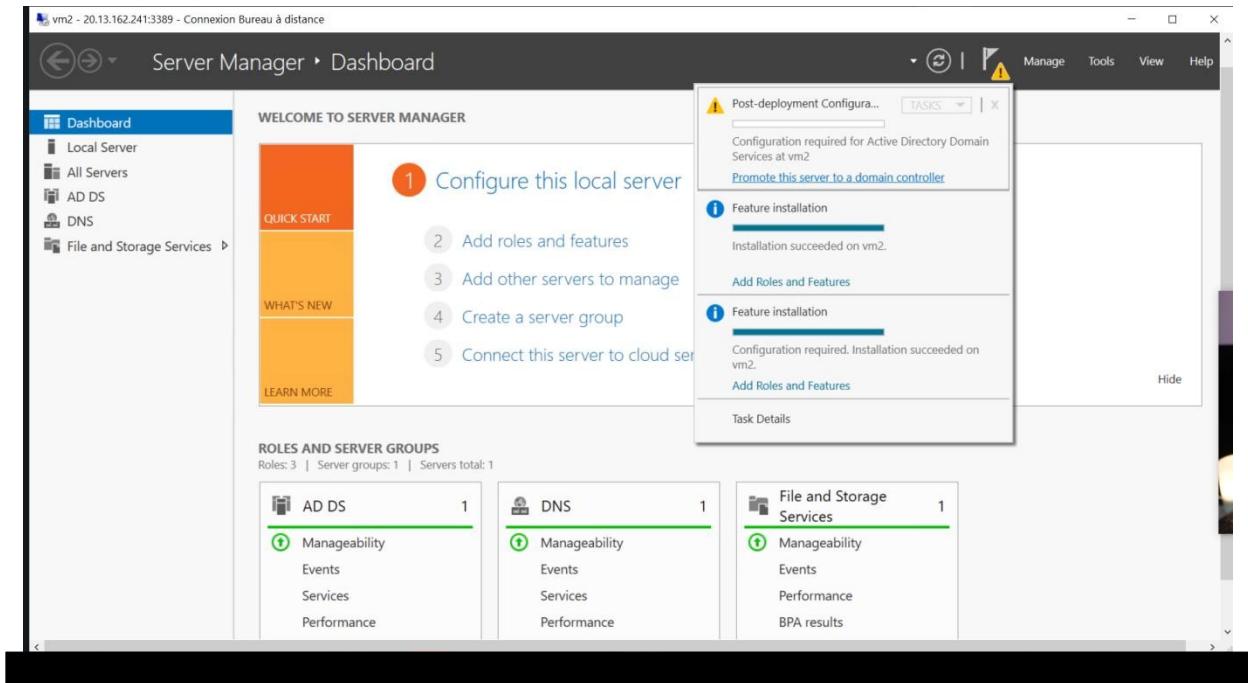




12- L'installation du DNS server (en utilisant AD DS) :

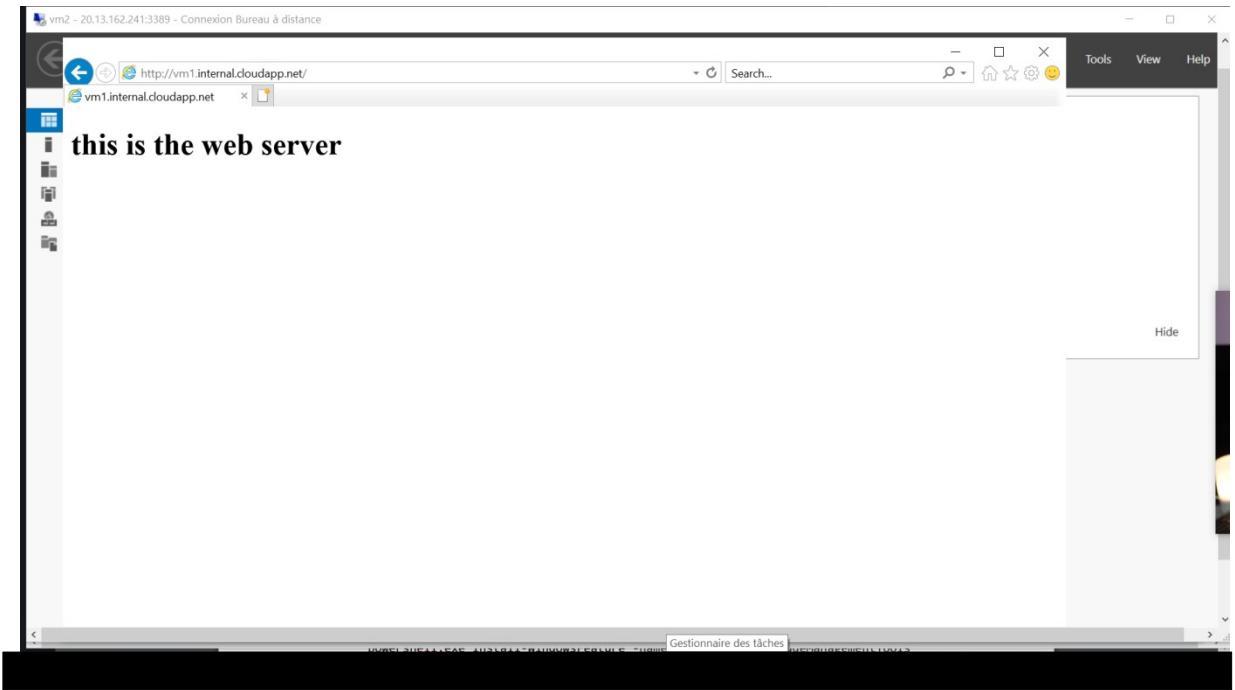


13- Configuration d'AD DS :



14- On accède à la page web en utilisant le DNS donné par Azure :

En effet, Azure DNS est un service d'hébergement (hosting) pour les domaines DNS qui fournit une résolution de noms en utilisant l'infrastructure Microsoft Azure. En hébergeant les domaines dans Azure, on peut gérer les enregistrements DNS en utilisant les mêmes informations d'identification, API, outils et facturation que les autres services Azure.



15- Pour utiliser le domaine privé qu'on a créé :

L'adresse privée de la machine vm2 sera utilisée pour indiquer que cette machine se comportera comme un serveur DNS privé.

The screenshot shows the Azure portal interface for managing a virtual network named 'vnet1'. In the left sidebar, under 'All resources', several resources are listed, including 'vm1', 'vm1-ip', 'vm1-nsg', 'vm1314_z1', 'vm1_disk1_b333c109c9c94ef2ada3ff...', 'vm2', 'vm2-ip', 'vm2-nsg', 'vm2728_z1', and 'vm2_disk1_fbff217700e34c89a74338f...'. The main pane displays the 'DNS servers' settings for 'vnet1'. It shows a warning message: 'Virtual machines within this virtual network must be restarted to utilize the updated DNS server settings.' Under 'DNS servers', the 'Custom' option is selected, and the 'IP Address' is set to '10.0.1.4'. A 'Save' button is visible at the bottom.

This screenshot is identical to the one above, but it includes a success message in the top right corner: 'Saved virtual network' and 'Successfully saved DNS settings for virtual network 'vnet1''. The rest of the interface and resource list are the same.

→ Redémarrage nécessaire des 2 machines :

The screenshot shows two separate Windows Server Manager sessions. Both sessions are on the 'Dashboard' page. The left session shows the 'Server Manager' ribbon and the 'WELCOME TO SERVER MANAGER' screen. The right session also shows the same screen. Below the dashboard, both sessions display a PowerShell command prompt. The command is:

```
powershell.exe Install-WindowsFeature -name Web-Server -IncludeManagementTools
powershell.exe Remove-Item -Path 'C:\inetpub\wwwroot\iisstart.htm'
powershell.exe Add-Content -Path 'C:\inetpub\wwwroot\iisstart.htm' -Value
"$env:computername"
```

The text below the command indicates: 'The default web page of the second virtual machine vm2 display the "vm2" message'

At the bottom of the image, there is a note: '19. Change now the default web page of the second virtual machine vm2, it must now

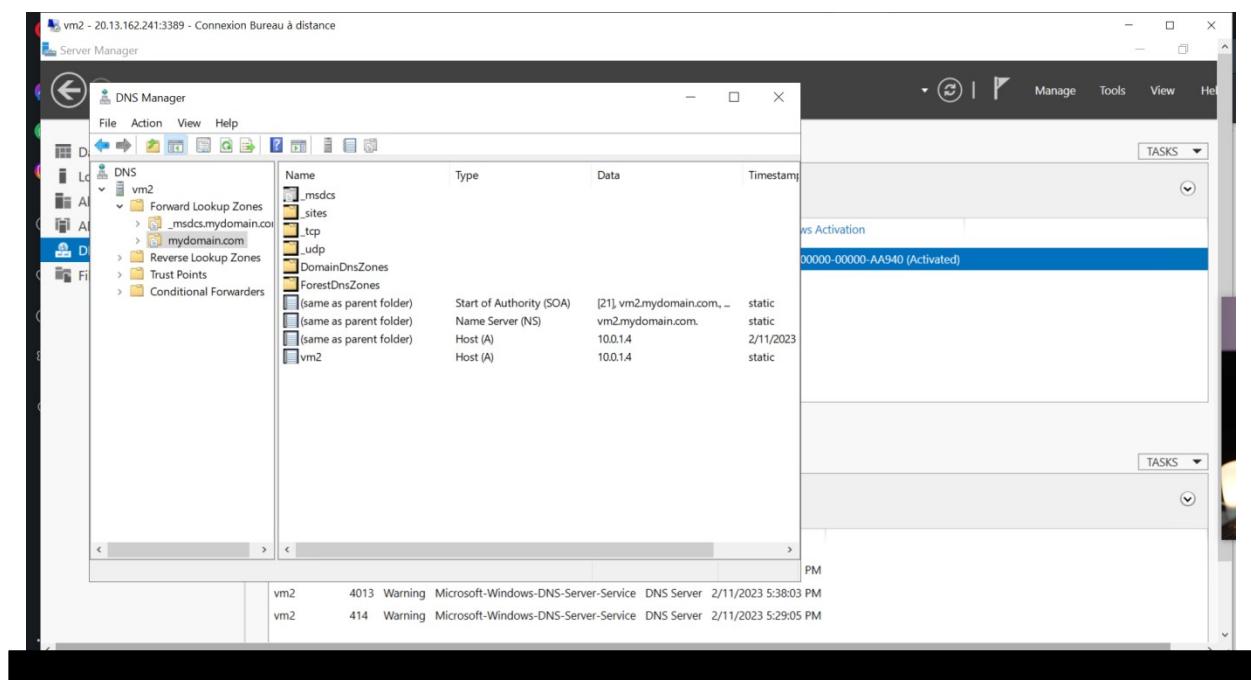
16- Configurations du DNS server de la machine vm2 :

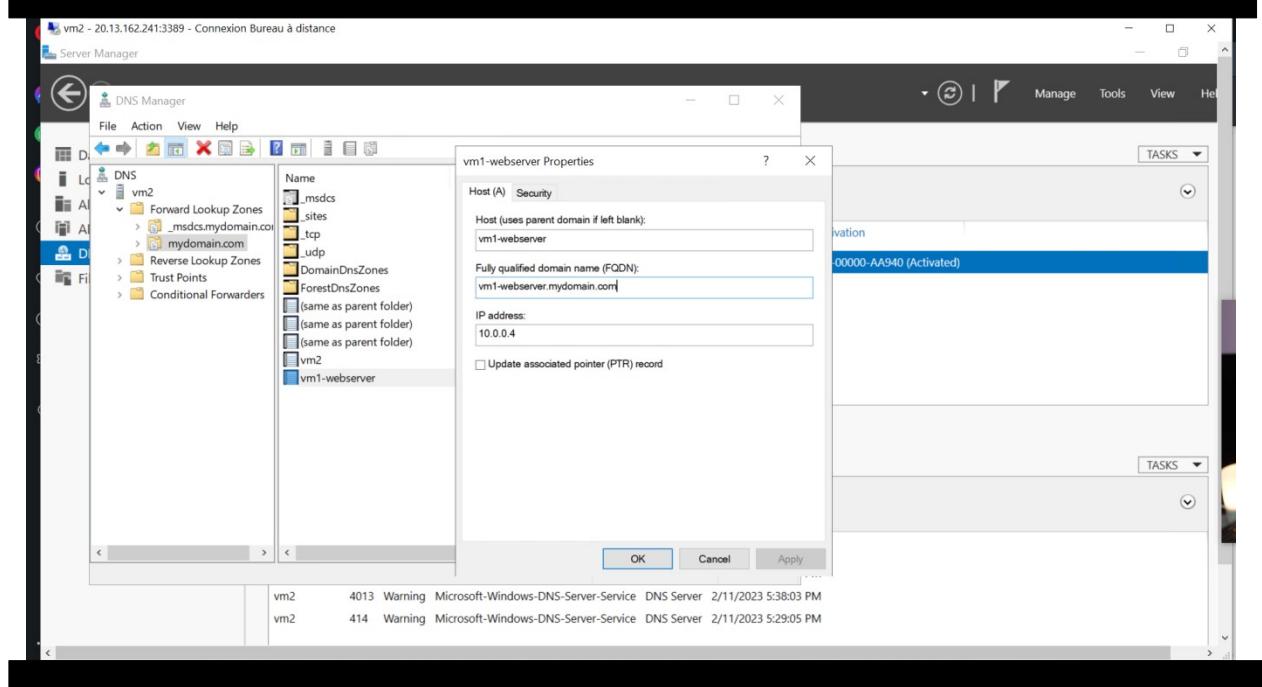
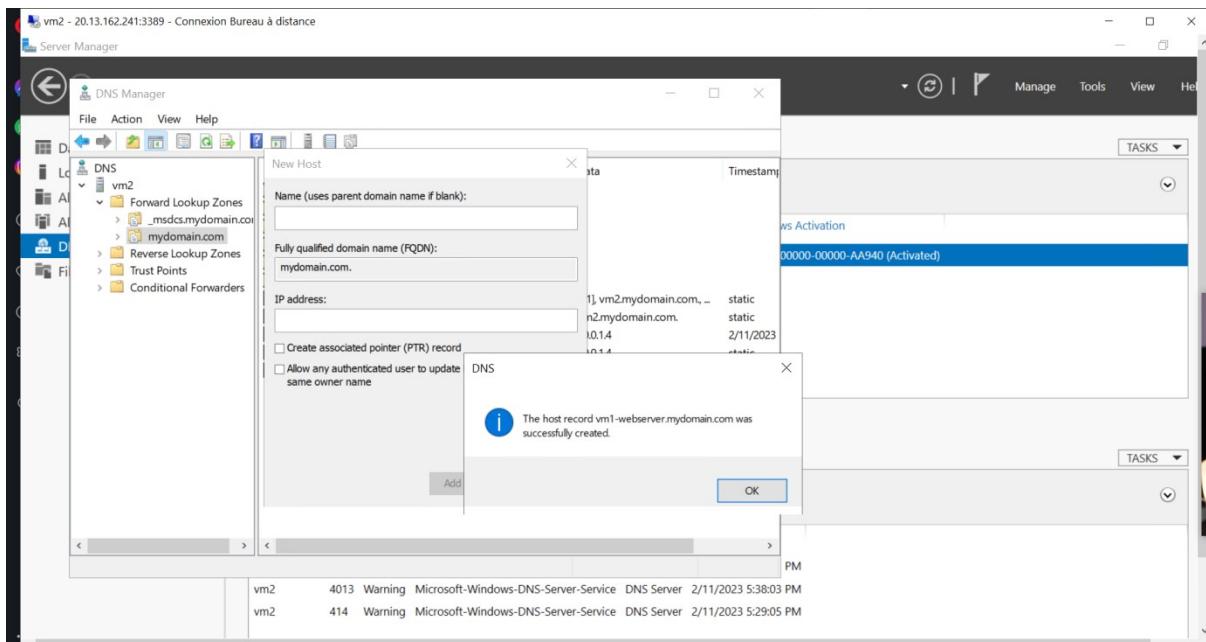
Il existe deux grandes catégories de ‘zone de consultation’ ou « lookup zones » :

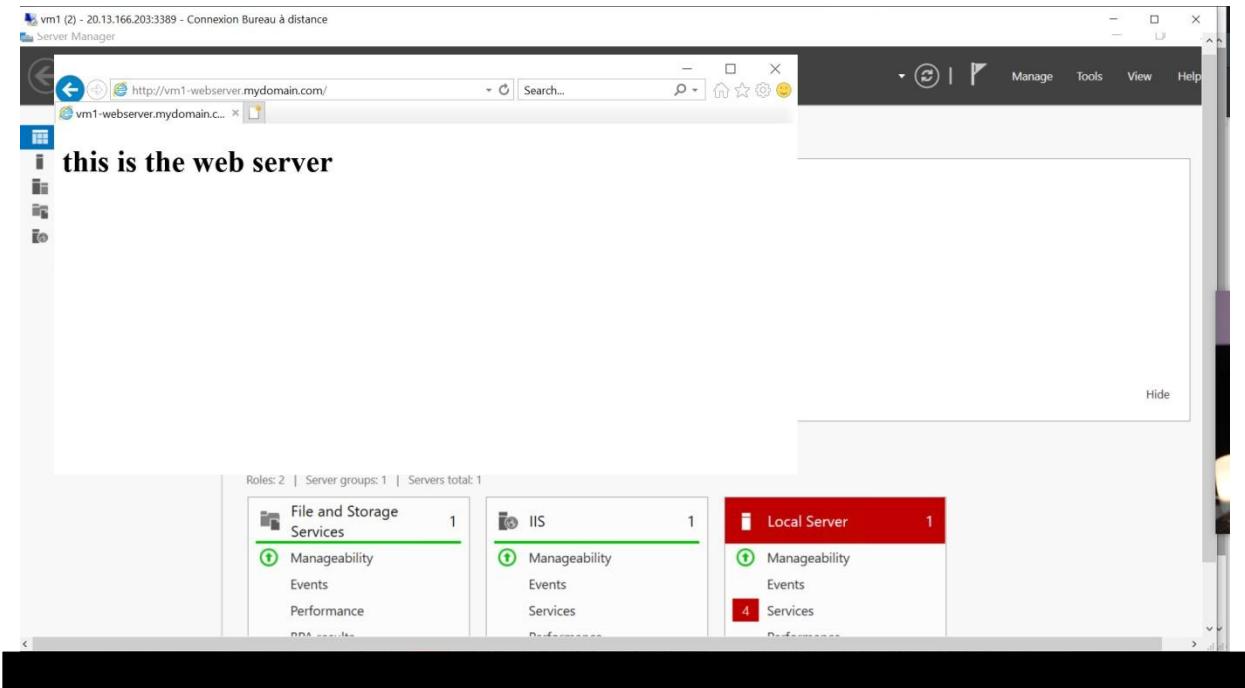
- les zones de consultation directe (forward lookup zone) et les zones de consultation inverse (reverse lookup zone).
- Les zones de consultation directe (forward lookup zone) sont utilisées pour faire correspondre un nom d'hôte à une adresse IP.
- Les zones de consultation inversée (reverse lookup zone) sont utilisées pour faire correspondre les adresses IP aux noms d'hôtes.

*- DNS A record : Il est également connu sous le nom d'enregistrement d'hôte ou d'hôte DNS, est un enregistrement du fichier de zone DNS de votre domaine qui établit la connexion entre votre domaine et son adresse IP correspondante.

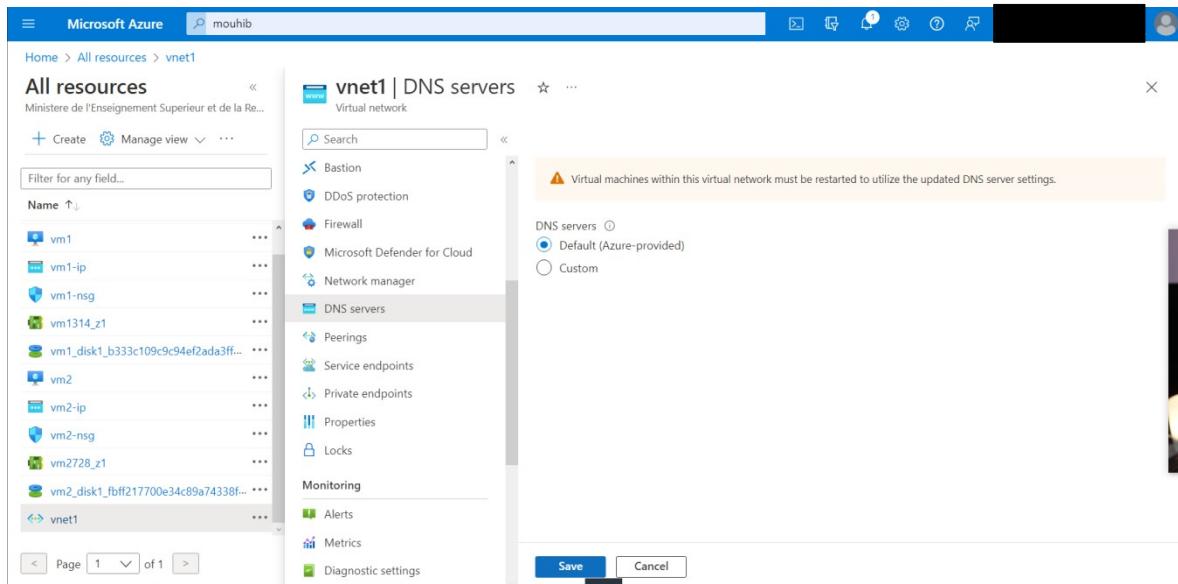
*- domain (dans notre cas www.domain.com) : est une chaîne de caractère qui représente un site web, utilisé pour faire référence à ce web qui est constitué auparavant d'une adresse IP. Cela rendra plus facile à mémoriser les adresses de ces sites.







17- DNS server default (Azure-provided) :



18- L'ajout d'une extension qui exécute une partie d'un script powershell :

Home > vm2 | Extensions + applications

Extensions VM Applications

+ Add Refresh Feedback

Search to filter items...

Name	Type	Version	Status	Automatic upgrade status
Custom Script Extension	Custom Script	1.0.0	Enabled	Not applicable

Install an Extension

custom

Custom Script Extension

Microsoft Corp.

Custom Script handler extension for Windows

Load more

Custom Script Extension

Publisher: Microsoft Corp.

Overview

Custom Script Extension is a tool that can be used to automatically launch and execute VM customization tasks post configuration. When this Extension is added to a Virtual Machine, it can download Powershell scripts and files from Azure storage and launch a Powershell script on the VM which in turn can download additional software components. Custom Script Extension tasks can also be automated using the Azure Powershell cmdlets.

Next

→ Avant d'installer l'extension du script, il faut faire un compte de « storage » dans lequel on va « uploader » le fichier contenant les commandes powershell à exécuter. (Donc il faut créer Storage account puis containers).

Microsoft Azure

Home > vm2 | Extensions + applications > Install an Extension > Configure Custom Script Extension Extension > Storage accounts >

Storage accounts

+ Storage account Refresh

Search storage accounts Show classic storage accounts

Name No storage account found.

Create storage account

Name * .core.windows.net

Account kind Storage (general purpose v1)

Performance Standard Premium

Replication Locally-redundant storage (LRS)

Location *

Resource group * Create new

Minimum TLS version Version 1.2

OK

Microsoft Azure

Home > vm2 | Extensions + applications > Install an Extension > Configure Custom Script Extension Extension >

Storage accounts

+ Storage account Refresh

Search storage accounts Show classic storage accounts

Name	Type	Resource Group	Location
storagemouhib		tp1rg	North Europe

Deployment succeeded
Deployment 'Microsoft.StorageAccount-20230211215228' to resource group 'tp1rg' was successful.

Go to resource Go to resource group

Microsoft Azure

Home > vm2 | Extensions + applications > Install an Extension > Configure Custom Script Extension Extension > Storage accounts >

Storage accounts

+ Storage account Refresh

Search storage accounts Show classic storage accounts

Name

Containers

+ Container Refresh

Search containers by prefix

Name	Last modified	Public access level
You don't have any containers yet. Click '+ Container' to get started.		

New container

Name *

Public access level Private (no anonymous access) Advanced

Create Give feedback

Microsoft Azure Search resources, services, and docs (G+/)

Home > vm2 | Extensions + applications > Install an Extension > Configure Custom Script Extension Extension > Storage containers

Container

Upload Refresh

Authentication method: Access key (Switch to Azure AD User Account)

Location: containers

Search blobs by prefix (case-sensitive)

Add filter

Name	Modified	Access tier
install_IIS.ps1	2/11/2023, 9:55:45 PM	

Upload blob

Successfully uploaded blob(s)
Successfully uploaded 1 blob(s).

Drag and drop files here
or
Browse for files

Overwrite if files already exist

Advanced

Upload

Give feedback

Current uploads

install_IIS.ps1 244 B / 244 B

Dismiss: Completed All

Microsoft Azure Search resources, services, and docs (G+/)

Home >

Microsoft.CustomScriptExtension-20230211214956 | Overview

Deployment

Search Delete Cancel Redeploy Download Refresh

Overview Inputs Outputs Template

Your deployment is complete

Deployment name: Microsoft.CustomScriptExtension-20... Start time: 2/11/2023, 9:56:34 PM

Subscription: Azure for Students Correlation ID: ea636bd1-b2c8-4ca5-bd43-38aaa235

Resource group: tp1rg

Deployment details

Next steps Go to resource

Deployment succeeded Deployment 'Microsoft.CustomScriptExtension-20230211214956' to resource group 'tp1rg' was successful.

Pin to dashboard Go to resource group

Cost Management Get notified to stay within your budget and prevent unexpected charges on your bill. Set up cost alerts >

Microsoft Defender for Cloud Secure your apps and infrastructure Go to Microsoft Defender for Cloud >

Free Microsoft tutorials Start learning today >

Work with an expert Azure experts are service provider partners who can help manage your assets on Azure

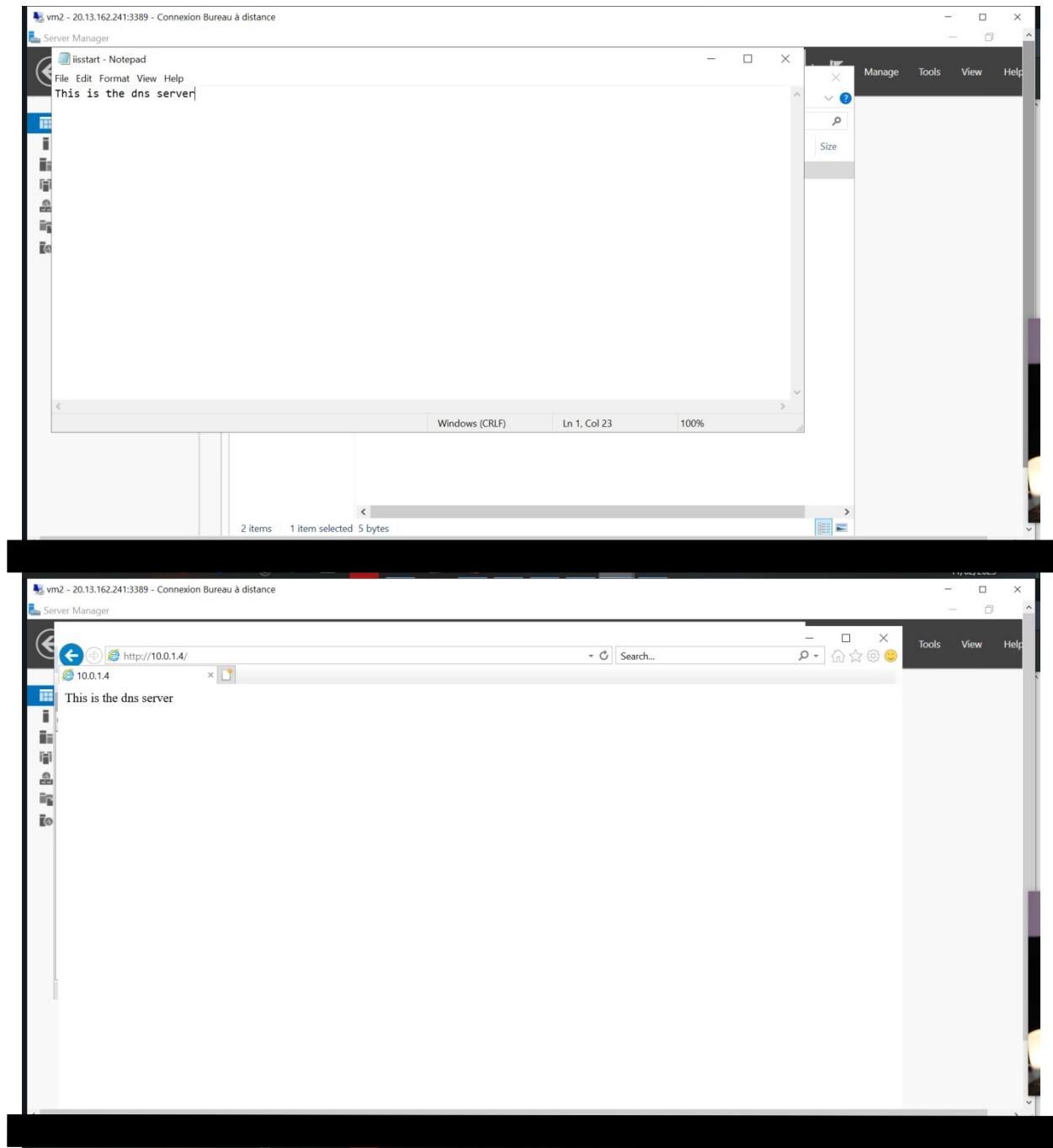
The screenshot shows the Server Manager dashboard with the Active Directory Domain Services Configuration Wizard open. The wizard is at the 'Installation' step, specifically the 'Deployment Configuration' sub-step. The target server is 'vm2'. A progress bar indicates the process is starting. A warning message states: 'Windows Server 2019 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.' A link to Microsoft's Knowledge Base article 942564 is provided for more information.

The screenshot also shows a browser window displaying the IP address 10.0.1.4, and a Bloc-notes window titled 'tp1 (1).pdf' containing PowerShell commands to install IIS features.

```
powershell.exe Install-WindowsFeature -name Web-Server -IncludeManagementTools  
powershell.exe Remove-Item -Path 'C:\inetpub\wwwroot\iisstart.htm'  
powershell.exe Add-Content -Path 'C:\inetpub\wwwroot\iisstart.htm' -Value "$env:computername"
```

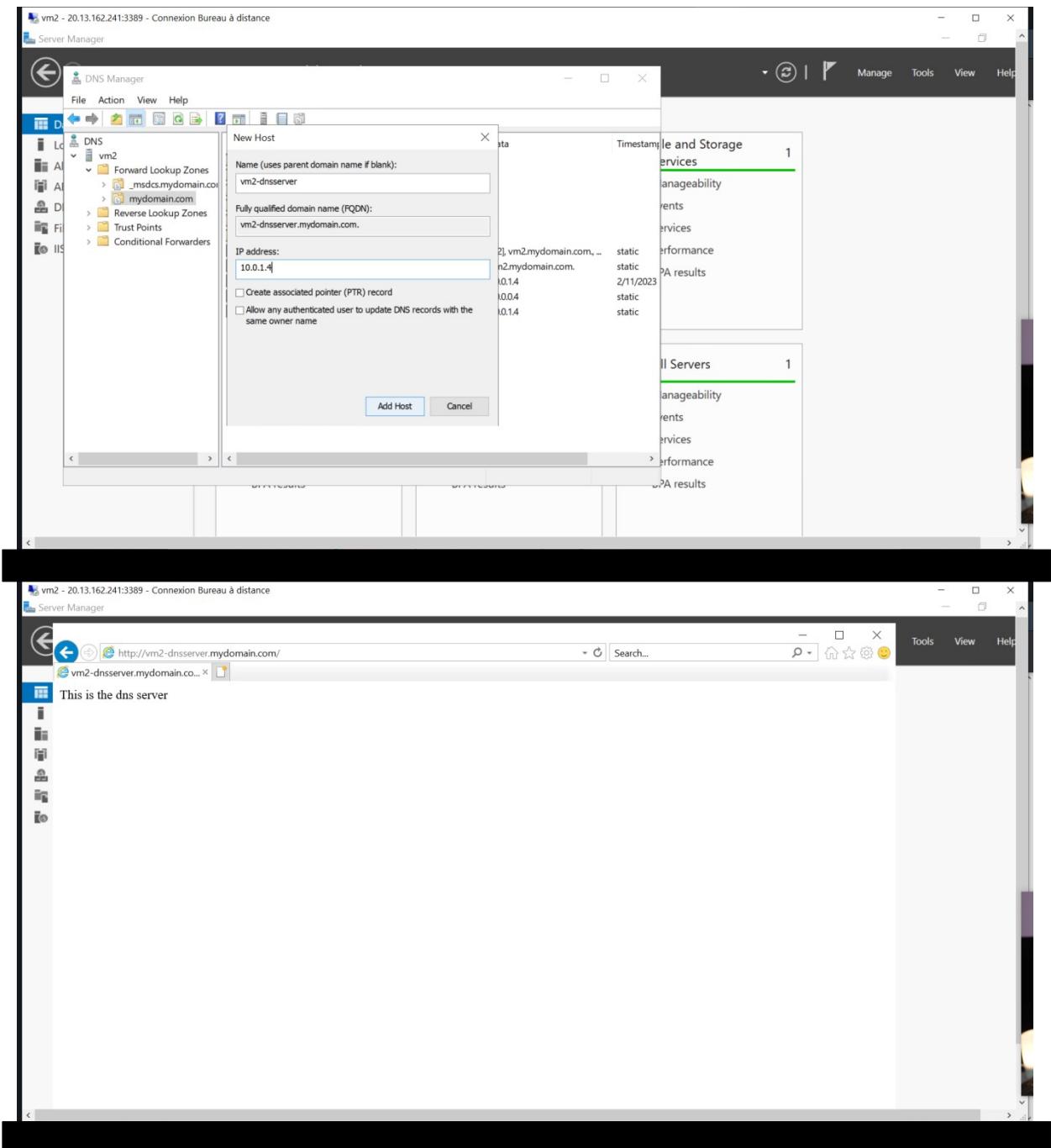
→ Ce script a fait l'installation du serveur « IIS » d'une façon automatisée avec powershell et a supprimé le fichier de la configuration initiale (de la homepage initiale) puis il a créé une autre page contenant la variable d'environnement « computername » qui signifie le nom de la machine qui héberge la page web (la machine ayant le serveur IIS).

19- Changement de la page web par défaut de la seconde machine :

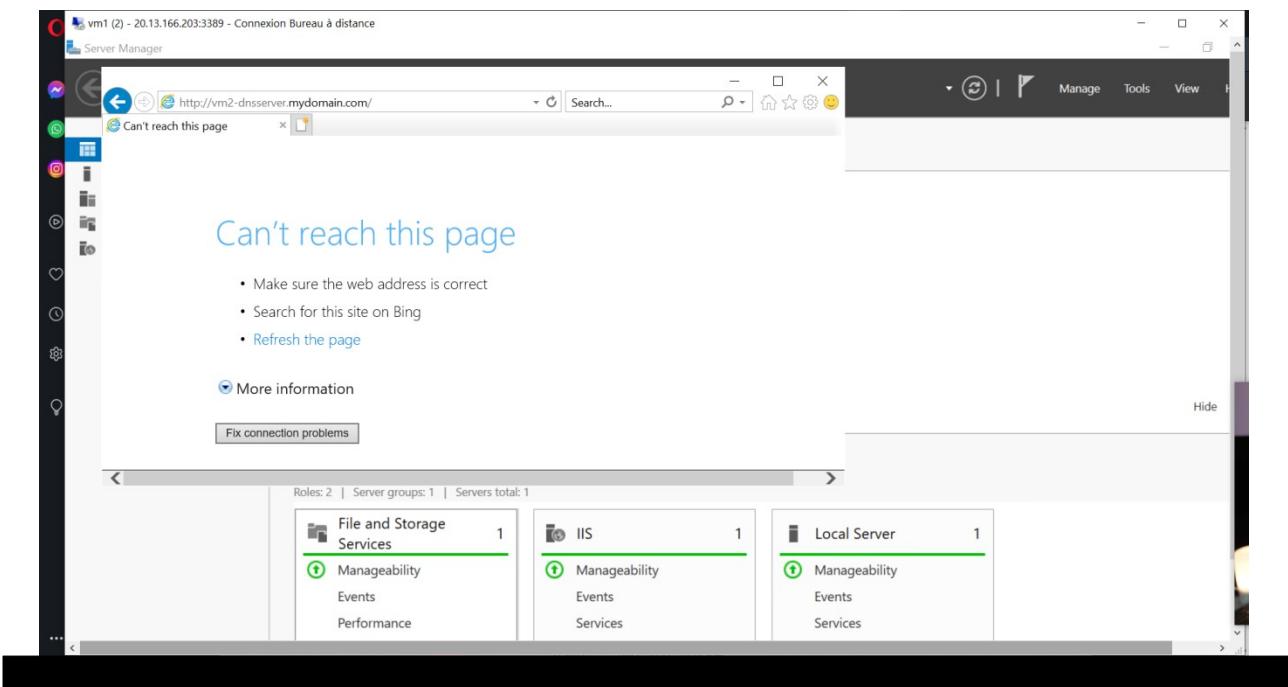


20- Création d'un autre record pour vm2 :

- Fully Qualified Domain Name (FQDN) : Un nom de domaine pleinement qualifié (FQDN) est le nom de domaine complet d'un ordinateur spécifique, ou hôte, sur l'internet. Le FQDN se compose de deux parties : le nom d'hôte et le nom de domaine.



21- Connection au nouveau FQDN à partir de vm1 :



22- Création d'une Private DNS zone :

Si on utilise des zones DNS privées, on peut donc utiliser nos propres noms de domaine personnalisés plutôt que les noms fournis par Azure disponibles aujourd'hui. Les enregistrements contenus dans une zone DNS privée ne peuvent pas être résolus depuis Internet. La résolution DNS par rapport à une zone DNS privée fonctionne uniquement à partir des réseaux virtuels qui y sont liés.

contoso.com and then create DNS records like www.contoso.com in this zone. You can then link the zone to one or more virtual networks. [Learn more](#).

Project details
Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *: Azure for Students
Resource group *: tptrg

Instance details
Name *: mydomain.com
Resource group location: North Europe

Note: You can link virtual networks to this Private DNS zone after zone has been created.

Review + create | **Previous** | **Next : Tags >** | Download a template for automation

The screenshot shows the 'Create Private DNS zone' wizard in the Microsoft Azure portal. The 'Validation passed' step has been completed. The 'Review + create' tab is selected. Under 'Basics', the subscription is set to 'Azure for Students', the resource group is 'tp1rg', the location is 'northeurope', and the name is 'mydomain.com'. Under 'Tags', there are none. At the bottom, there are 'Create', 'Previous', 'Next', and 'Download a template for automation' buttons.

The screenshot shows the 'NoMarketplace-20230211222623 | Overview' page. It indicates that the deployment is complete. Deployment details include the name 'NoMarketplace-2023021122...', subscription 'Azure for Students', and resource group 'tp1rg'. The start time was 2/11/2023, 10:27:01 PM. A Correlation ID is also provided. There are sections for 'Deployment details' and 'Next steps', with a 'Go to resource' button. On the right, there are promotional cards for 'Cost Management', 'Microsoft Defender for Cloud', 'Free Microsoft tutorials', and 'Work with an expert'.

23- Crédation d'un Virtual Network Link :

Après avoir créé une zone DNS privée dans Azure, on doit y associer un réseau virtuel. Une fois lié, les VM hébergées dans ce réseau virtuel peuvent accéder à la zone DNS privée. Chaque zone DNS privée possède une collection de ressources enfants de liaison de réseau virtuel. Chacune de ces ressources représente une connexion à un réseau virtuel. Un réseau virtuel peut être lié à une zone DNS privée en tant que réseau virtuel d'enregistrement ou de résolution.

Microsoft Azure Search resources, services, and docs (G+)

Home > NoMarketplace-20230211222623 | Overview > mydomain.com | Virtual network links >

Add virtual network link

mydomain.com

Link name * ✓

Virtual network details

Only virtual networks with Resource Manager deployment model are supported for linking with Private DNS zones.
Virtual networks with Classic deployment model are not supported.

I know the resource ID of virtual network ⓘ

Subscription * ⓘ

Virtual network * ⓘ

Configuration

Enable auto registration ⓘ

OK

Microsoft Azure Search resources, services, and docs (G+)

Home > NoMarketplace-20230211222623 | Overview >

mydomain.com

Private DNS zone

Search Record set Move Delete zone Refresh

Overview Activity log Access control (IAM) Tags Diagnose and solve problems

Settings Virtual network links Properties Locks

Monitoring Alerts Metrics

Automation Tasks (preview)

Essentials

Resource group (move) : tp1rg
Subscription (move) : Azure for Students
Subscription ID : 85030eba-08e4-4093-ab86-fa81b9f39a8b
Tags (edit) : Click here to add tags

You can search for record sets that have been loaded on this page. If you don't see what you're looking for, you can try scrolling to allow more record sets to load.

Name	Type	TTL	Value	Auto registered
@	SOA	3600	Email: azureprivatedns-host.microsoft.com Host: azureprivatedns.net Refresh: 3600 Retry: 300 Expire: 2419200 Minimum TTL: 10 Serial number: 1	False
vm1	A	10	10.0.0.4	True
vm2	A	10	10.0.1.4	True

Microsoft Azure Search resources, services, and docs (G+)

Home > NoMarketplace-20230211222623 | Overview >

mydomain.com

Private DNS zone

Search Record set Move Delete zone Refresh

Overview Activity log Access control (IAM) Tags Diagnose and solve problems

Settings Virtual network links Properties Locks

Monitoring Alerts Metrics

Automation Tasks (preview)

Essentials

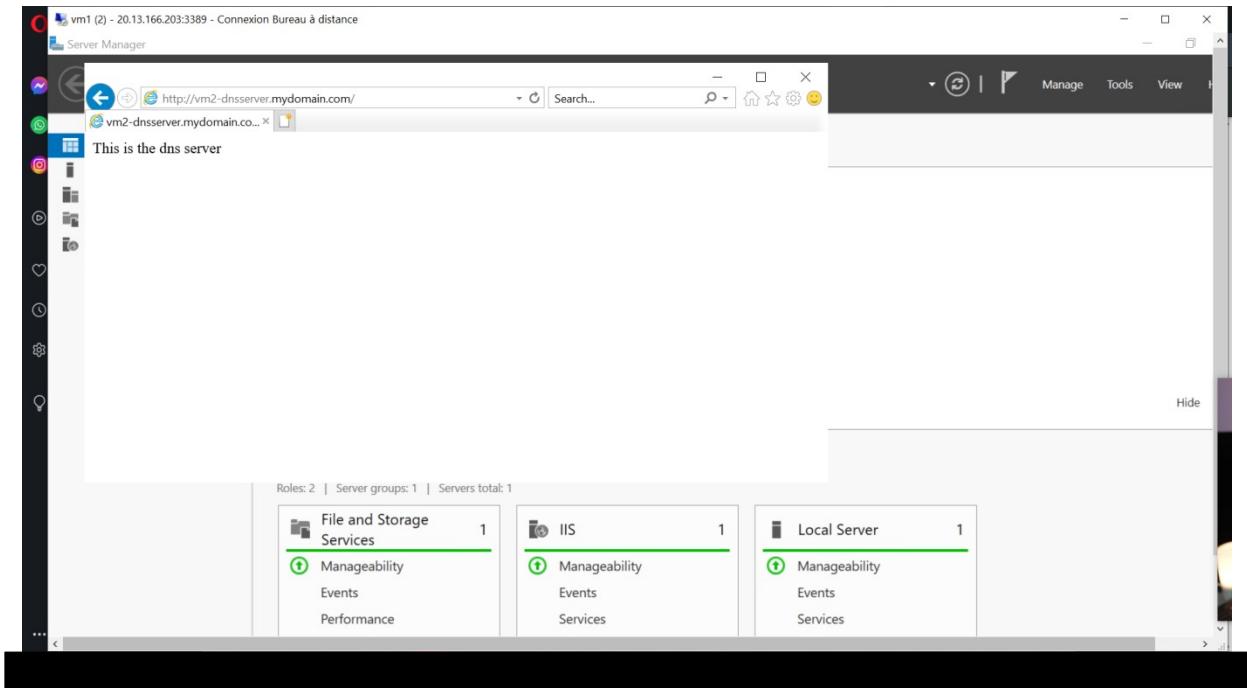
Resource group (move) : tp1rg
Subscription (move) : Azure for Students
Subscription ID : 85030eba-08e4-4093-ab86-fa81b9f39a8b
Tags (edit) : Click here to add tags

You can search for record sets that have been loaded on this page. If you don't see what you're looking for, you can try scrolling to allow more record sets to load.

Name	Type	TTL	Value	Auto registered
@	SOA	3600	Email: azureprivatedns-host.microsoft.com Host: azureprivatedns.net Refresh: 3600 Retry: 300 Expire: 2419200 Minimum TTL: 10 Serial number: 1	False
vm1	A	10	10.0.0.4	True
vm2	A	10	10.0.1.4	True
vm2-dnsserver	A	3600	10.0.1.4	False

Create record set Successfully created record set 'vm2-dnsserver'

24- Connection à la vm1 :



25- Scaling du stockage de la vm1 :

On doit faire export template, deploy et puis edit template. Cela nous permet de modifier l'ARM template (Azure ressource manager template) constituée de plusieurs lignes JSON contenant des spécifications détaillées sur la machine vm. Ces templates nous permettent de faire des déploiements plus rapides (tout simplement en modifiant le code des templates) et nous permettent aussi d'avoir des environnements similaires si on travaille dans une équipe dans le cadre d'un projet et on veut préserver l'agilité dans le processus du travail.

The screenshot shows the Microsoft Azure portal's 'Edit template' interface for a VM named 'vm1'. The title bar says 'Microsoft Azure' and 'Edit template ...'. Below the title, it says 'Edit your Azure Resource Manager template'. There are buttons for '+ Add resource', 'Quickstart template', 'Load file', and 'Download'. The main area is a code editor displaying a JSON ARM template. The code defines a 'dataDisk' section with two disk entries, each with properties like 'lun', 'name', 'diskSizeGB', 'caching', and 'createOption'. The code is numbered from 55 to 75. At the bottom of the code editor, there are 'Save' and 'Discard' buttons.

```

55 },
56 "deleteOption": "Delete",
57 "diskSizeGB": 127
58 },
59 "dataDisks": [
60   {
61     "lun": 0,
62     "name": "vm1-datadisk0",
63     "diskSizeGB": "1024",
64     "caching": "ReadOnly",
65     "createOption": "Empty"
66   },
67   {
68     "lun": 1,
69     "name": "vm1-datadisk1",
70     "diskSizeGB": "1024",
71     "caching": "ReadOnly",
72     "createOption": "Empty"
73   }
74 ],
75 "osProfile": {

```

Custom deployment

Deploy from a custom template

Subscription * **Azure for Students**

Resource group * **tp1rg**

Instance details

Region * **(Europe) North Europe**

Virtual Machines_vm1_name **vm1**

Disk paths:

- Disk1: /subscriptions/85030eba-08e4-4093-ab86-fa81b9f39a8b/resourceGroups/tp1rg/providers/Microsoft.Compute/disks/vm1
- Disk2: /subscriptions/85030eba-08e4-4093-ab86-fa81b9f39a8b/resourceGroups/tp1rg/providers/Microsoft.Compute/disks/vm1-disk1
- Network Interface: /subscriptions/85030eba-08e4-4093-ab86-fa81b9f39a8b/resourceGroups/tp1rg/providers/Microsoft.Network/networkInterfaces/vm1-nic

Review + create < Previous Next : Review + create >

Custom deployment

Validation Passed

Neither subscription credits nor monetary commitment funds may be used to purchase non-Microsoft offerings. These purchases are billed separately.

If any Microsoft products are included in a Marketplace offering (e.g. Windows Server or SQL Server), such products are licensed by Microsoft and not by any third party.

Basics

Subscription **Azure for Students**

Resource group **tp1rg**

Region **North Europe**

Virtual Machines_vm1_name **vm1**

Disk paths:

- Disk1: /subscriptions/85030eba-08e4-4093-ab86-fa81b9f39a8b/resourceGroups/tp1rg/providers/Microsoft.Compute/disks/vm1
- Disk2: /subscriptions/85030eba-08e4-4093-ab86-fa81b9f39a8b/resourceGroups/tp1rg/providers/Microsoft.Compute/disks/vm1-disk1
- Network Interface: /subscriptions/85030eba-08e4-4093-ab86-fa81b9f39a8b/resourceGroups/tp1rg/providers/Microsoft.Network/networkInterfaces/vm1-nic

Create < Previous Next Pare-feu Windows Defender

→ Après le déploiement les 2 disques sont créés :

Resource groups

Ministère de l'Enseignement Supérieur et de la Recherche

tp1rg

Overview

Essentials

Resources

Name	Type	Location
mydomain.com	Private DNS zone	Global
storagemouhib	Storage account	North Europe
vm1	Virtual machine	North Europe
vm1-disk0	Disk	North Europe
vm1-disk1	Disk	North Europe
vm1-ip	Public IP address	North Europe

26- Créeation du disque Z en fusionnant les 2 disques créés dans la question précédente :

The screenshot shows the Azure portal interface for a virtual machine named "vm1". The left sidebar lists various management options like Updates, Inventory, and Run command. The "Run command" option is selected. In the main pane, there's a "Run PowerShell Script" section with a list of PowerShell cmdlets. One cmdlet, "RunPowerShellScript", is highlighted. The script content is as follows:

```
1 New-StoragePool -FriendlyName storagepool1 -StorageSubsystemFriendlyName "Windows Storage*" -PhysicalDisks (Get-PhysicalDisk -CanPool $true)
2 New-VirtualDisk -StoragePoolFriendlyName storagepool1 -FriendlyName virtualdisk1 -Size 2048GB -ResiliencySettingName Simple -ProvisioningType Fixed
3 Initialize-Disk -VirtualDisk (Get-VirtualDisk -FriendlyName virtualdisk1)
4 New-Partition -DiskNumber 4 -UseMaximumSize -DriveLetter Z
5 New-Partition -DiskNumber 4 -UseMaximumSize -DriveLetter Z
```

A "Run" button is visible at the bottom of the script editor.

This screenshot shows the execution results of the PowerShell script. The status bar indicates "Script execution complete". The output window displays the PowerShell commands and their results. The output text includes:

```
1 New-StoragePool -FriendlyName storagepool1 -StorageSubsystemFriendlyName "Windows Storage*" -PhysicalDisks (Get-PhysicalDisk -CanPool $true)
2 New-VirtualDisk -StoragePoolFriendlyName storagepool1 -FriendlyName virtualdisk1 -Size 2048GB -ResiliencySettingName Simple -ProvisioningType Fixed
3 Initialize-Disk -VirtualDisk (Get-VirtualDisk -FriendlyName virtualdisk1)
4 New-Partition -DiskNumber 4 -UseMaximumSize -DriveLetter Z
5
```

Below this, the "Output" section shows error messages indicating that the "Initialize-Disk" command failed because the virtual disk was not found. The error details mention "CategoryInfo : ObjectNotFound" and "FullyQualifiedErrorId : CmdletInvocationQuery_NotFound_FriendlyName,Get-VirtualDisk".