

Fenwick Technical IT Engineer Main Task

Script to deploy a Windows IIS Server on Azure with the following specifications:

1. Pick an appropriate Windows Server image to support Hot patching.
2. Pick an appropriate size for a small IIS server (1-5 users, static website) with very low average CPU.
3. Deploy within the Australia East region.
4. Use an appropriate subnetting scheme for approximately 20 related machines.
5. Make sure the machine is secure with only secure public web access.
6. Create and apply an appropriate backup policy.

PowerShell script execution screenshots (PowerShell Script CLI & Azure Portal UI)

- **Resource group creation:**

```
PS C:\WINDOWS\system32> $resourceGroupName = "rG01"
$locationName = "australiaeast"
New-AzResourceGroup
-Name $resourceGroupName `
-Location $locationName

ResourceGroupName : rG01
Location           : australiaeast
ProvisioningState   : Succeeded
Tags               :
ResourceId          : /subscriptions/7dc6e92a-7ed0-4371-a292-ef866fa2cdda/resourceGroups/rG01
```

The screenshot shows the Azure Portal interface for the 'rG01' resource group. The left sidebar lists various resource categories like Deployments, Security, Policies, Properties, Locks, Cost Management, Monitoring, and Workbooks. The main area displays the 'Overview' tab for the resource group, showing its subscription ID, location (Australia East), and a list of resources. The resources list includes:

Name	Type	Location
rG01	Network interface	Australia East
rG01	Network security group	Australia East
pG01	Public IP address	Australia East
vau01	Recovery Services vault	Australia East
vM01	Virtual machine	Australia East
vM01_CoDisk_1_5kHf38w7b5d4345ac3dbf5a472b100	Disk	Australia East
vNet01	Virtual network	Australia East

- Virtual network creation:

```
PS C:\WINDOWS\system32> Get-AzVirtualNetwork
```

ResourceGroupName	Name	Location	ProvisioningState	EnableDdosProtection
rg01	vNet01	australiaeast	Succeeded	False

The screenshot shows the Microsoft Azure portal interface. On the left, the 'Virtual networks' section is expanded, showing a list of virtual networks with 'vNet01' selected. The main pane displays the 'Overview' tab for 'vNet01'. The 'Essentials' section shows the following details:

- Resource group (scope): rg01
- Location (scope): Australia East
- Subscription (scope): Azure subscription 1
- Subscription ID: 7d6f692a-7ed0-4371-a252-e1866a2cdda
- Address space: 10.0.0.0/24
- DNS servers: Azure provided DNS service
- Flow timeout: Configure
- BGP community string: Configure
- Virtual network ID: 23a7a9b6-3089-4361-890f-2c8a27fa5c57

Below the essentials, there are five capability cards, all marked as 'Not configured':

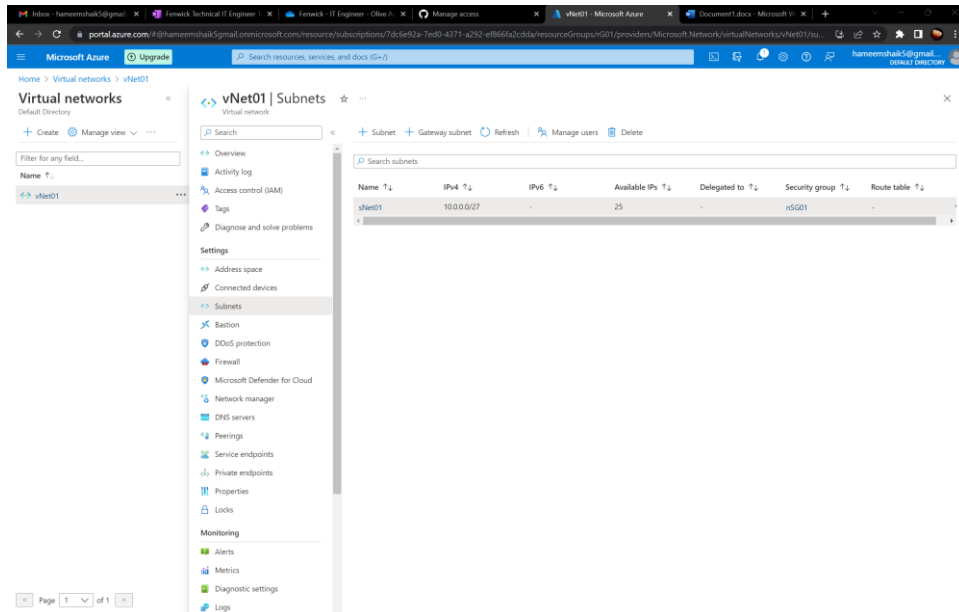
- DDoS protection: Configure additional protection from distributed denial of service attacks.
- Azure Firewall: Protect your network with a stateful L3-L7 firewall.
- Peering: Seamlessly connect two or more virtual networks.
- Microsoft Defender for Cloud: Strengthen the security posture of your environment.
- Private endpoints: Privately access Azure services without sending traffic across internet.

The left sidebar includes navigation options like 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, Peerings, Service endpoints, Private endpoints), Properties, Locks, Monitoring (Alerts, Metrics, Diagnostic settings), and Logs.

- Subnet creation:

```
PS C:\WINDOWS\system32> $subnetName = "sNet01"
Get-AzVirtualNetworkSubnetConfig -Name $subnetName -VirtualNetwork $vNet01 <# Shows the created subnet #>
```

AddressPrefix	Name	NetworkSecurityGroup	Name	RouteTable	Name	NatGateway	Name	ProvisioningState	PrivateEndpointNetworkPolicies
{10.0.0.0/27}	sNet01								Disabled



- Public IP address creation:

```
PS C:\WINDOWS\system32> Get-AzPublicIpAddress <# Shows all available public IP addresses. #>
```

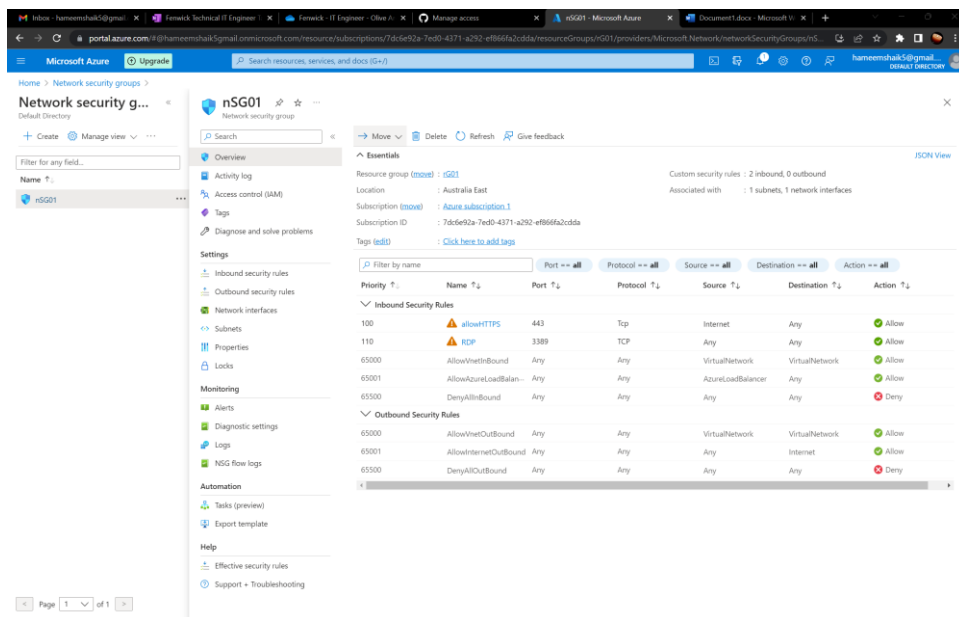
ResourceGroupName	Name	Location	PublicIpAllocationMethod	IpAddress	PublicIpAddressVersion	IdleTimeoutInMinutes	ProvisioningState
rg01	pip01	australiaeast	Static	68.218.42.62	IPv4	4	Succeeded

The screenshot displays the Microsoft Azure portal interface. The top navigation bar shows the user is logged in as 'hamseemshah5@gmail.com'. The main content area is titled 'Public IP addresses' and shows a list of public IP addresses. The selected IP address is 'pip01', which is highlighted in the list. The details for 'pip01' are shown on the right, including its location (Australia East), IP address (68.218.42.62), and provisioning state (Succeeded). Below the details, there are sections for 'Use public IP addresses for public connections to Azure resources', 'Associate to a resource', 'Configure a public IP address', and 'Protect IP address'.

- Network security group creation:

```
New-AzNetworkSecurityGroup
-Name $NetworkSecurityGroupName
-ResourceGroupName $ResourceGroupName
-Location $Location

ResourceGroupName Name Location ProvisioningState
-----
rg01 nsg01 australiaeast Succeeded
```



- **Associating network security group: nSG01 to the subnet: sNet01:**

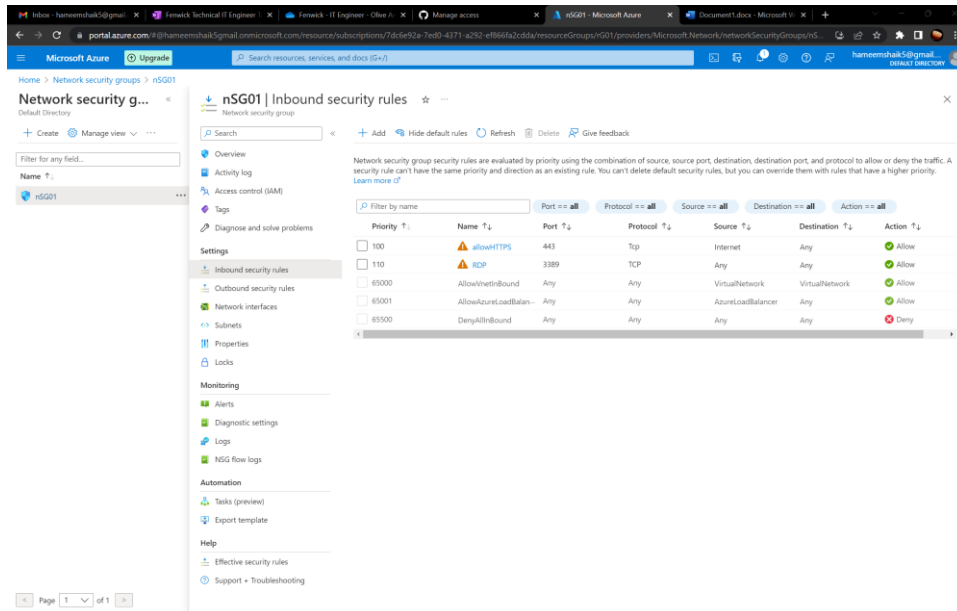
The screenshot shows the Microsoft Azure portal interface. The left sidebar contains the navigation menu with options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings (Inbound security rules, Outbound security rules, Network interfaces, Subnets, Properties, Locks), Monitoring (Alerts, Diagnostic settings, Logs, NSG flow logs), Automation (Tasks (preview), Export template), and Help (Effective security rules, Support + Troubleshooting). The main content area is titled 'nSG01 | Subnets' and includes a search bar and an 'Associate' button. Below this is a table listing subnets.

Name	Address range	Virtual network
sNet01	10.0.0.0/27	vNet01

- Adding a rule to the network security group:

```
PS C:\WINDOWS\system32> Get-AzNetworkSecurityRuleConfig -NetworkSecurityGroup $nsg01 <# Shows all available network security rules #>

Protocol Name      Access Priority Direction ProvisioningState
-----
Tcp        allowHTTPS Allow 100      Inbound
```



- Create a virtual network interface:

PS C:\WINDOWS\system32> get-AZNetworkInterface -f shows all available network interfaces. -f>

ResourceGroupName	Name	Location	MacAddress	Primary	EnableAcceleratedNetworking	EnableIPForwarding	DisableTcpStateTracking	ProvisioningState	VnetEncryptionSupported	AuxiliaryMode
rg01	nic01	australiaeast	00-22-48-93-1F-58	True	False	False	False	Succeeded	False	
rg01	vm01	australiaeast						Succeeded	False	

The screenshot displays the Azure portal interface for a Network Interface (NIC) named 'nic01'. The left sidebar shows the 'Network interfaces' section with a search bar and a list of interfaces. The main pane shows the 'Overview' tab for 'nic01', which includes details such as Resource group (rg01), Location (Australia East), Subscription (Azure subscription 1), and Subscription ID (76d6f02a-7ed0-4371-a292-ef866fa2cdda). It also shows IP configurations, DNS servers, and network security group settings. The bottom of the page shows a pagination bar indicating 'Page 1 of 1'.

- Virtual machine creation:

```
PS C:\WINDOWS\system32> Get-AzVM
```

ResourceGroupName	Name	Location	VmSize	OsType	NIC	ProvisioningState	Zone
RG01	VM01	australiaeast	Standard_D2s_v3	Windows	VM01	Succeeded	

```
PS C:\WINDOWS\system32> $PSVersionTable.PSVersion
```

Major	Minor	Build	Revision
5	1	22621	1778

The screenshot displays the Microsoft Azure portal interface. On the left, the 'Virtual machines' section is active, showing a list with 'VM01'. The main pane shows the 'Overview' tab for VM01. The 'Essentials' section provides a summary of the VM's configuration, including its resource group (RG01), location (Australia East), and subscription. The 'Properties' section lists detailed specifications such as the operating system (Windows Server 2019 Datacenter), image publisher (MicrosoftWindowsServer), and hardware configuration (x64 architecture, 2 vCPUs, 8 GB RAM). The 'Networking' section shows the public IP address (68.218.42.62) and the virtual network (vNet01/Net01). The 'Disks' section indicates the OS disk is attached and encrypted.

- Backup process:

```
PS C:\WINDOWS\system32> Get-AzRecoveryServicesVault

Name       : vault01
ID         : /subscriptions/7dc6e92a-7ed0-4371-a292-ef866fa2cdda/resourceGroups/rG01/providers/Microsoft.RecoveryServices/vaults/vault01
Type       : Microsoft.RecoveryServices/vaults
Location   : australiaeast
ResourceGroupName : rG01
SubscriptionId : 7dc6e92a-7ed0-4371-a292-ef866fa2cdda
Properties : Microsoft.Azure.Commands.RecoveryServices.ARSVaultProperties
Identity   :
```

```
PS C:\WINDOWS\system32> $backupPolicy01 = Get-AzRecoveryServicesBackupProtectionPolicy -Name "DefaultPolicy"
PS C:\WINDOWS\system32> $resourceGroupName = "rG01"
$locationName = "australiaeast" <# 3. Deploy within the Australia East region. #>
$virtualNetworkName = "vNet01"
$subnetName = "subnet01"
$publicIPName = "pip01"
$publicIPAllocationMethod = "Static"
$networkSecurityGroupName = "nsg01"
$ruleName = "allowHTTPS"
$networkInterfaceCardName = "NIC01"
$vmImage = "MicrosoftWindowsServer:WindowsServer:2019-datacenter-smalldisk:latest" <# 1. Appropriate Windows Server image which supports Hotpatching. #>
$vmName = "vm01"
Enable-AzRecoveryServicesBackupProtection -Policy $backupPolicy01 -Name $vmName -ResourceGroupName $resourceGroupName

WorkloadName Operation Status StartTime EndTime
-----
vm01 ConfigureBackup Completed 26/06/2023 8:11:25 AM 26/06/2023 8:12:26 AM
```

WorkloadName	Operation	Status	StartTime	EndTime
vm01	ConfigureBackup	Completed	26/06/2023 8:11:25 AM	26/06/2023 8:12:26 AM

```
PS C:\WINDOWS\system32> Backup-AzRecoveryServicesBackupItem -Item $item

WorkloadName Operation Status StartTime EndTime JobID
-----
vm01 Backup InProgress 26/06/2023 8:20:59 AM 26/06/2023 8:20:59 AM 0f536bce-175a-423d-bd62-28369ea5fd6b
```

```
PS C:\WINDOWS\system32> Get-AzRecoveryServicesBackupJob

WorkloadName Operation Status StartTime EndTime JobID
-----
vm01 Backup InProgress 26/06/2023 8:20:59 AM 26/06/2023 8:20:59 AM 0f536bce-175a-423d-bd62-28369ea5fd6b
vm01 ConfigureBackup Completed 26/06/2023 8:11:25 AM 26/06/2023 8:12:26 AM b3403b43-c891-46b8-a79b-29cd52fd272c
```

