Deploying Azure protected Geo-Redundant Solution having path-based routing.

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DESCRIPTION

Business Scenario

The Tyrell Crop wants to build a highly secured Globally distributed application. This application serves two types of content: images and dynamically rendered webpages. As their user base comes from across the globe this must be geographically redundant. The design demands that it should serve its users from the closest (lowest latency) location to them. For distinction, Tyrell Crop has decided that any URLs that match the pattern /images/* are served from a dedicated pool of VMs that are different from the rest of the web farm.

Design the Load Balancing architecture for Tyrell Crop.

For this sample do it in East US region, then you can select any other region and add those Application gateways on created Traffic manager.

Overview

The main tasks for this exercise are as follows:

1. Login to Azure Portal
2. Provision Application gateway
3. Add application gateways to the Traffic Manager endpoint.

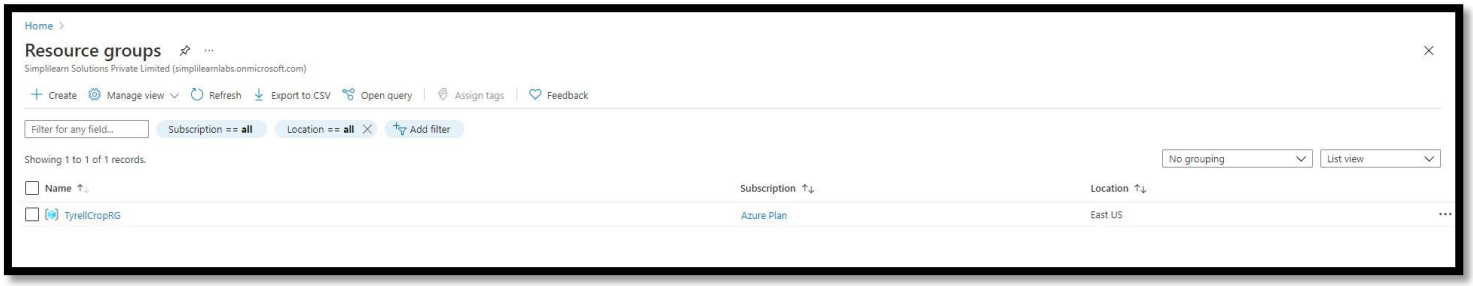
Solution:

Step 1: Configure Traffic Manager

1.1 Login to Azure portal

Creating a Resource Group

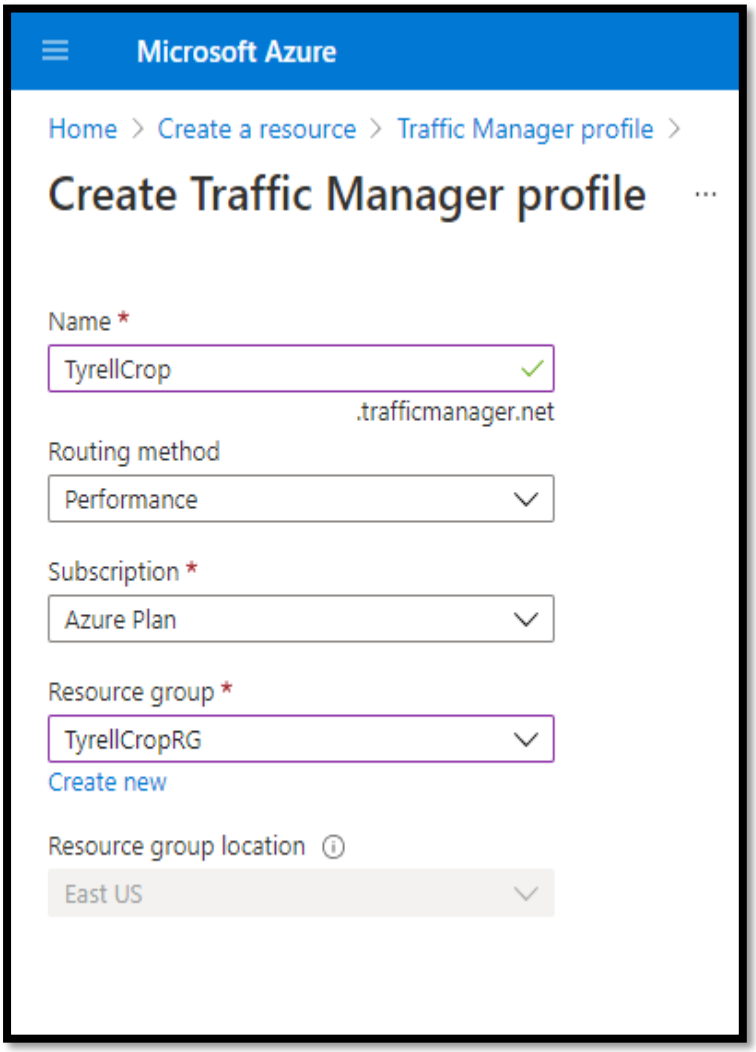
- **Resource group name: TyrellCropRG**
- **Resource group location: East US**



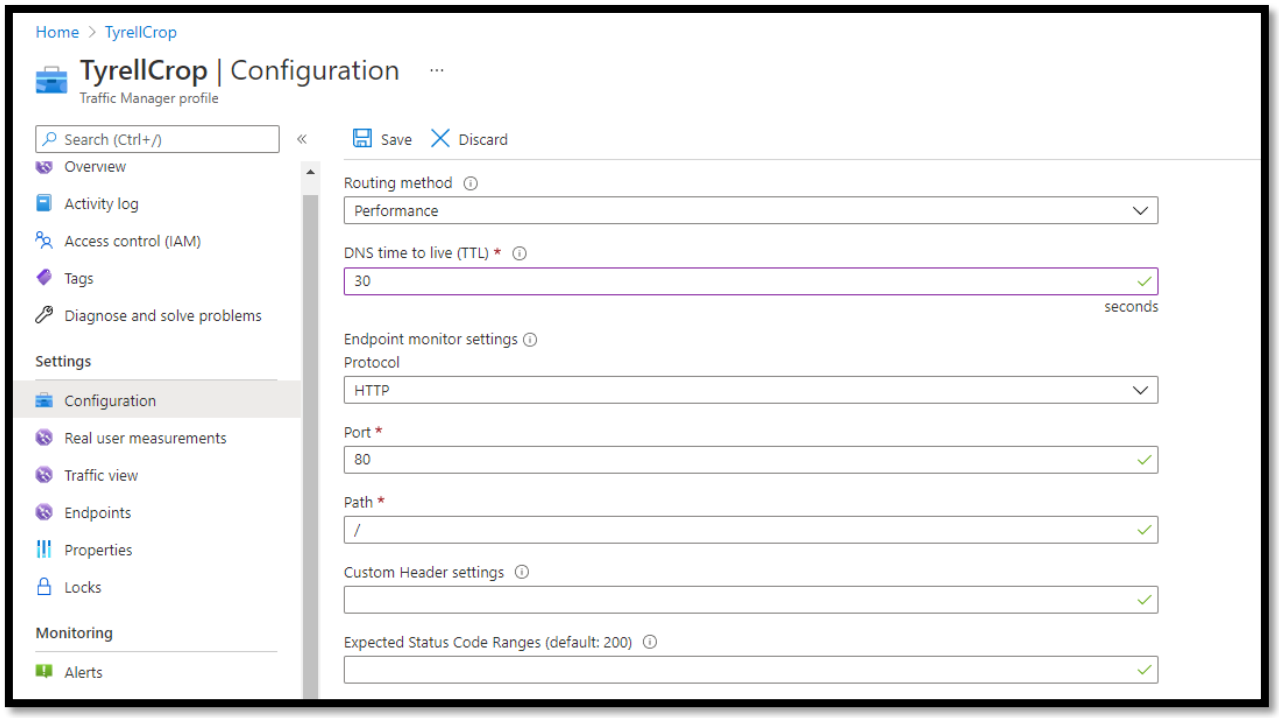
Creating a Traffic Manager profile

In the "Create Traffic Manager Profile " below are the enteries:

- **Name: TyrellCrop**
- **Routing method: Performance**
- **Resource group: TyrellCropRG**
- **Resource group Location: EastUS**



- **Then changing the Traffic Manager DNS TTL to 30 seconds (easier to validate a failover)**

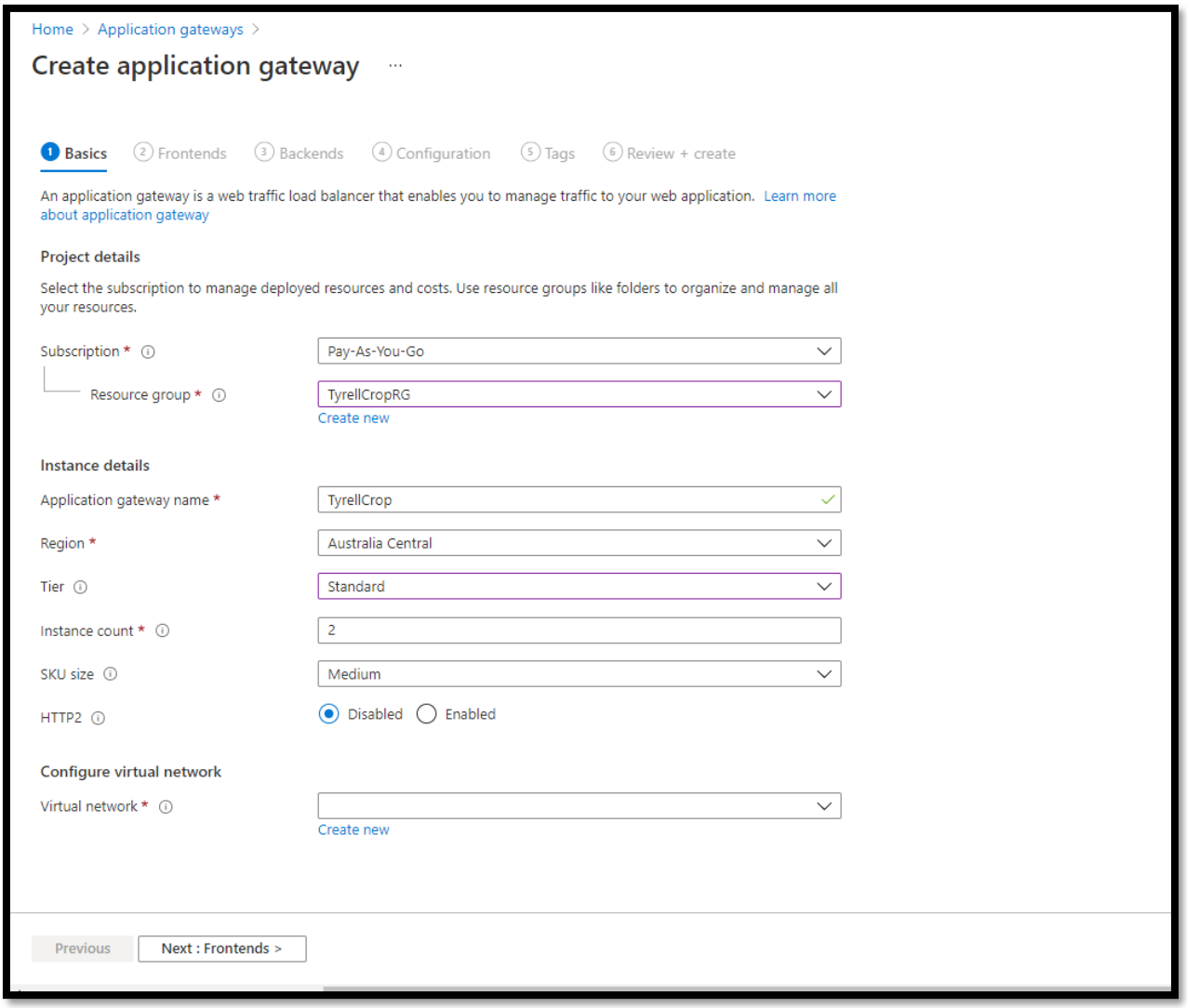


Step 2: Creating the application gateway

- **Create a resource > Networking > Application Gateway > Create**

- **In the Create Application Gateway blade basic values:**

  - **Name: TyrellCrop**
  - **SKU size: Performance**
  - **Instance count**
  - **Resource group: TyrellCropRG**
  - **Location: EastUS**

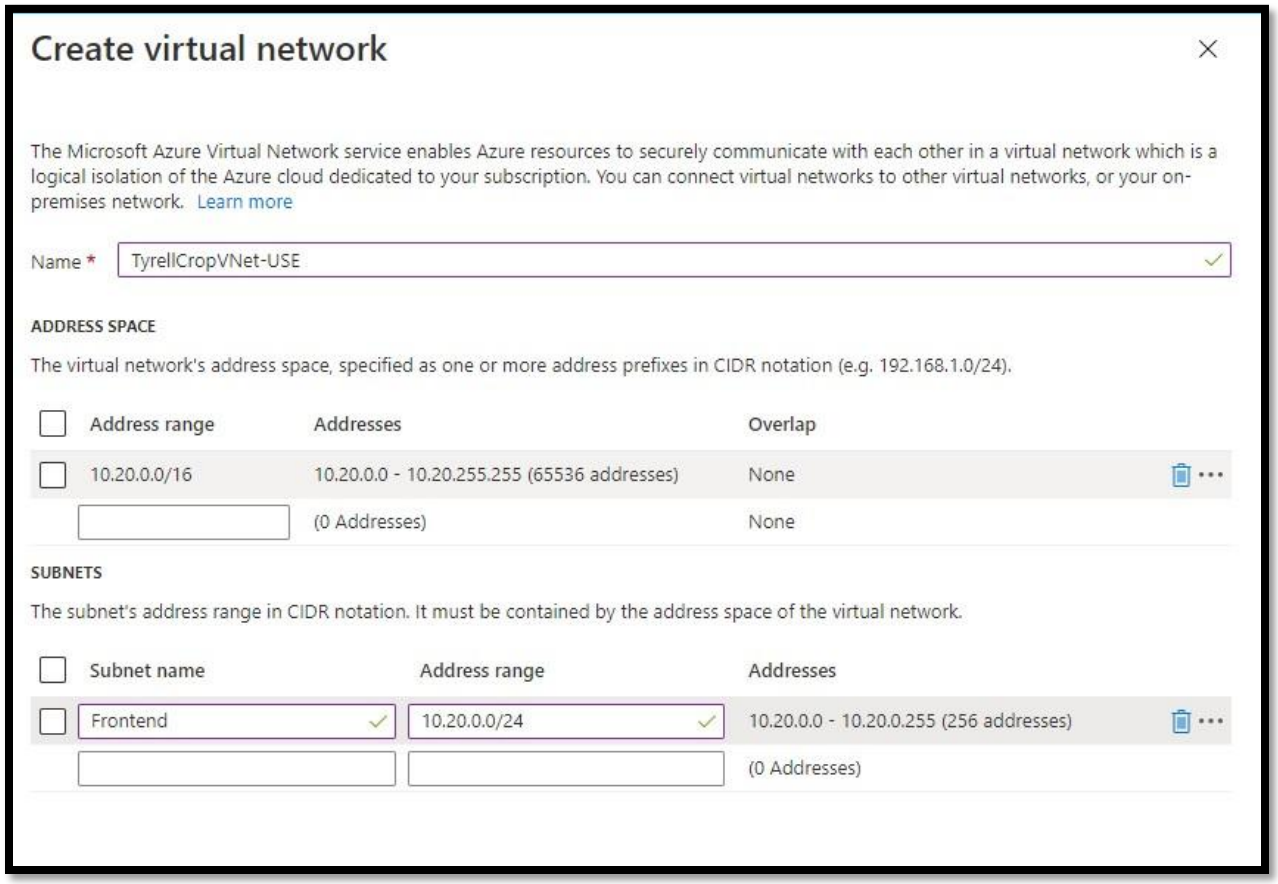


- **On the Settings page, under Subnet configuration, Creating virtual network.**

  - **Name: TyrellCropVNet-USE**
  - **Address: 10.20.0.0/16**
  - **Subnet Name: Frontend**
  - **Subnet address range: 10.20.0.0/24**

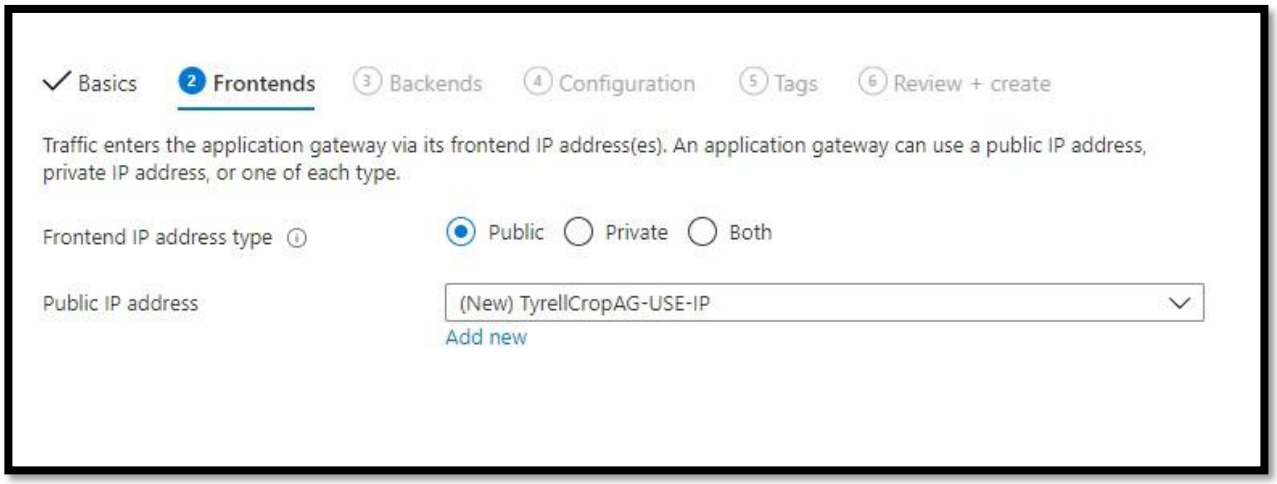
- **On the Settings page, below are the value**

  - **IP Address Type: Public**
  - **Public IP address: create new->TyrellCropAG-USE-IP**
  - **DNS Name:TyrellCrop**



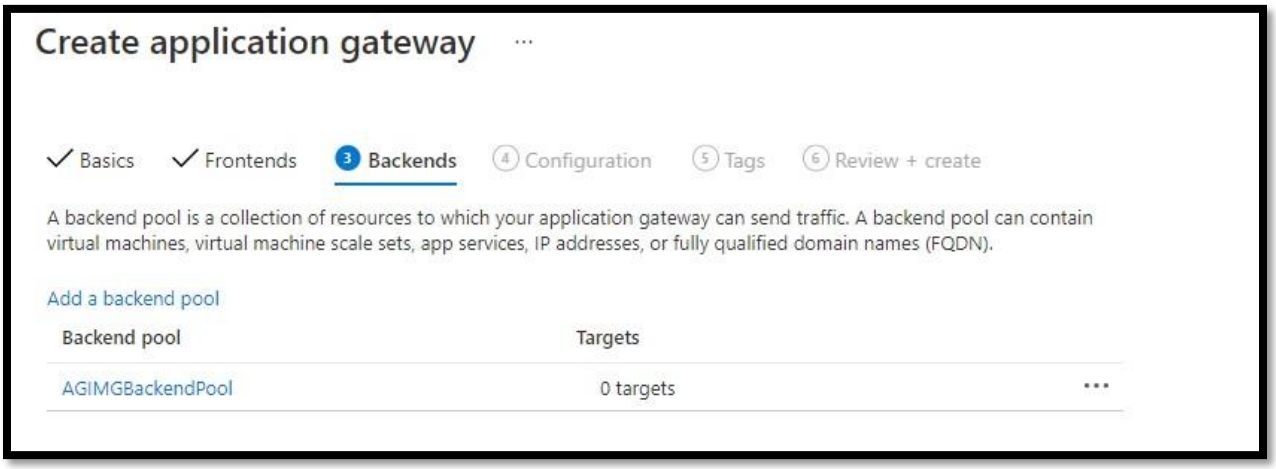
- **On the Settings page**

  - **IP Address Type: Public**
  - **Public IP address: create new->TyrellCropAG-USE-IP**
  - **DNS Name:TyrellCrop**



Backend Pool Values:

- **From resource group-** TyrellCropRG**, went to the instance of the application gateway-** TyrellCropAG-USE
- **Then** Backend pools**. A default pool was automatically created with the application gateway-** appGatewayBackendPool**.**
- **Enter a name of** AGIMG*BackendPool*



Configuration details values entered:

Create backend listener

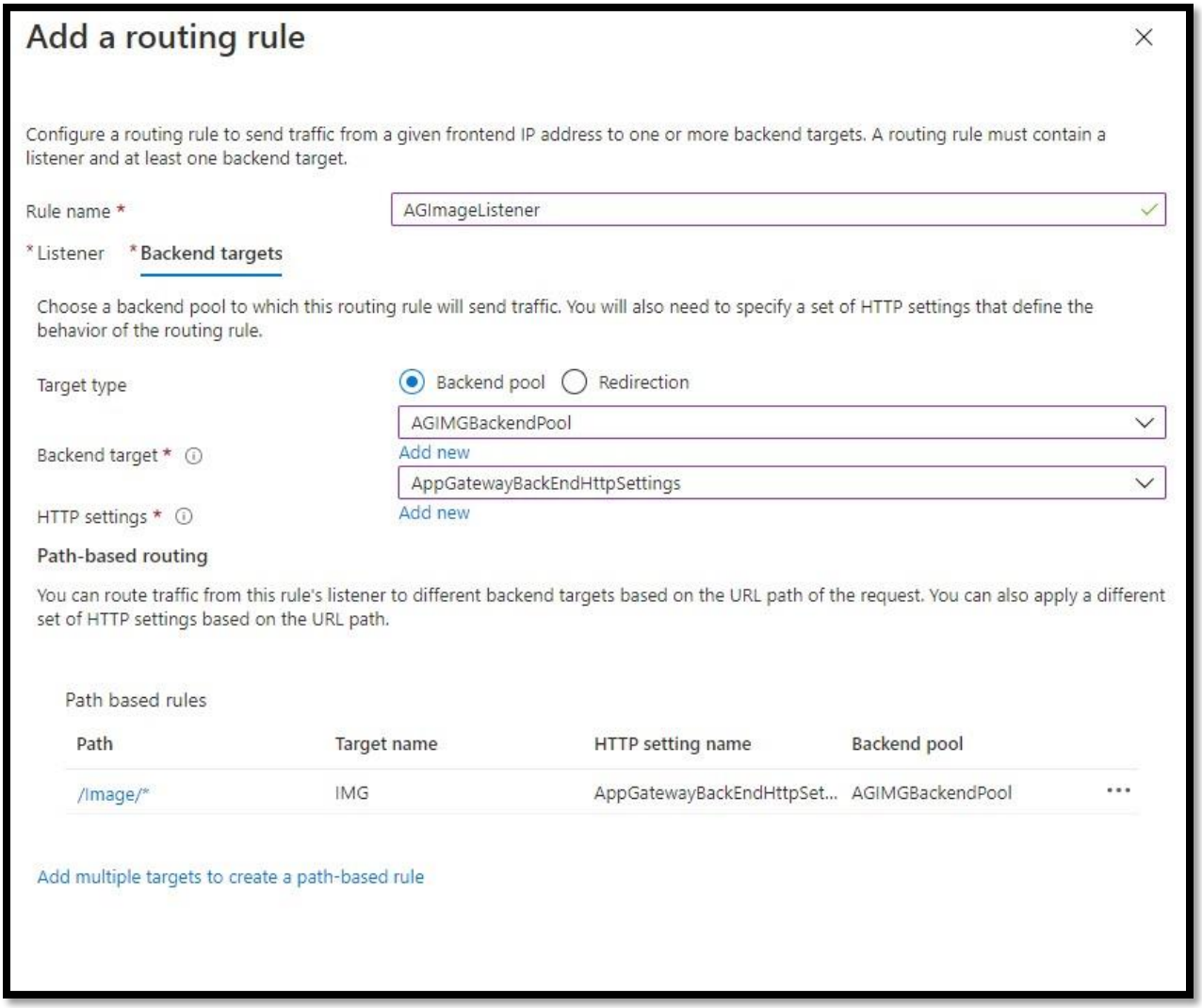
- **From resource group-** TyrellCropRG**, went to the instance of the application gateway-** TyrellCropAG-USE
- **Entered** *AGImageListener* **for the name,** *IMGPort* **for the name of the frontend port, and then** *8080* **as the port for the listener.**

Createing backend Pool

- **From resource group-** TyrellCropRG**, went to the instance of the application gateway-** TyrellCropAG-USE
- Backend pools**. A default pool was automatically created with the application gateway-** appGatewayBackendPool**.**
- **Name** AGIMG*BackendPool*

Create a path-based routing rule

- **Configure URL routing for application gateways**
- **From resource group-** TyrellCropRG**, went to the instance of the application gateway-** TyrellCropAG-USE
- **Under** Settings **of the application gateway, select** Rules**, and then the** Path based **button to add a rule.**



- **Basic settings:**

- **Name: AGIMGPR**
- **Listener: AGImageListener**
- **Default backend pool: AGIMGBackEndPool**
- **Default HTTP settings: AppGatewayBackEndHttpSettings**

- **Path-based rules:**

- Name**: IMG**
- Paths**: /Image/***
- Backend Pool**: AGIMGBackEndPool**
- **HTTP Setting: AppGatewayBackEndHttpSettings**

Home I gateways I

Create application gateway

Validation passed

Basics Frontends Backends Configuration Tags Review + create

Basics

Subsc	Pay-As-You—Go
Resourcegroup	TyrellCropRG
Name	TyrellCrop
Region	East US
Tier	Standard
Instance count	2
SKU size	Stan dard Medium
HTTP2	Disabled
Virtual network	(new) TyrellCropVNet-USE
Subnet	(new) Frontend {1Ci.20.0.0/24a
Subnet addressspace	10.20.0.0/24

FrDntends

Pu blic in d dress name	TyrellCropAG-USE-ip
SKU	Basix
Assignment	D'y namic

Tags

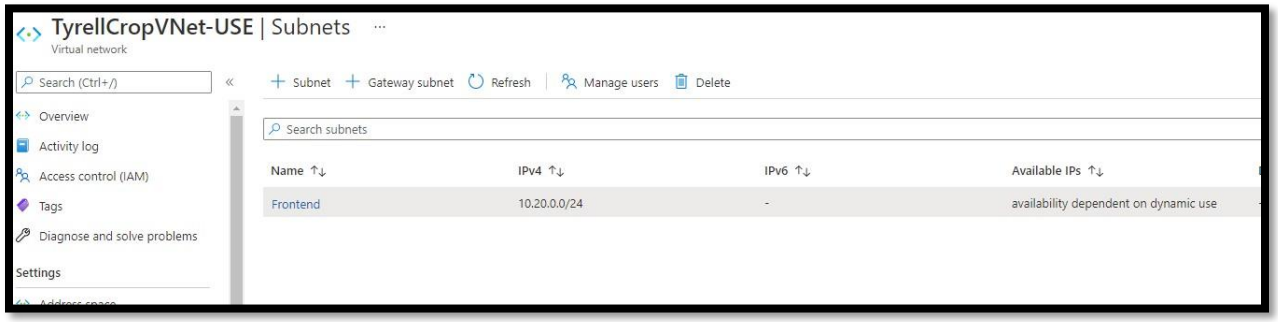
|uone

Create evi u Next Downloa d a template for a utomation

Add a subnet

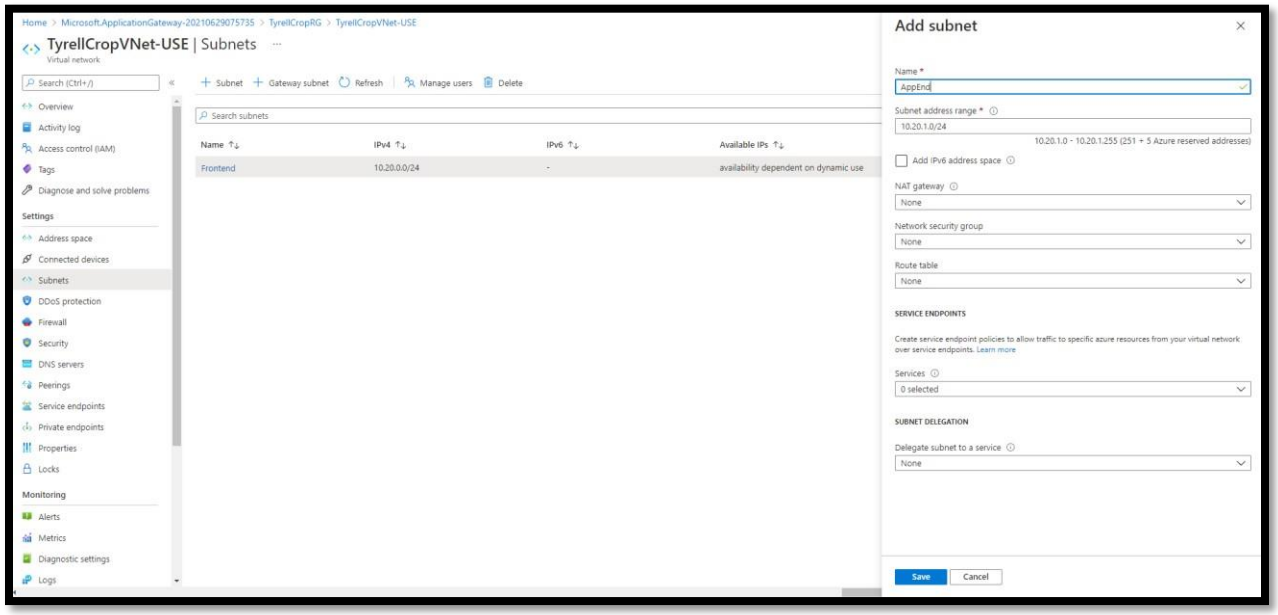
- From resource group- TyrellCropRG, go to the Vistual Network- TyrellCropVnet-USE

- Click Subnets, and then click Subnet



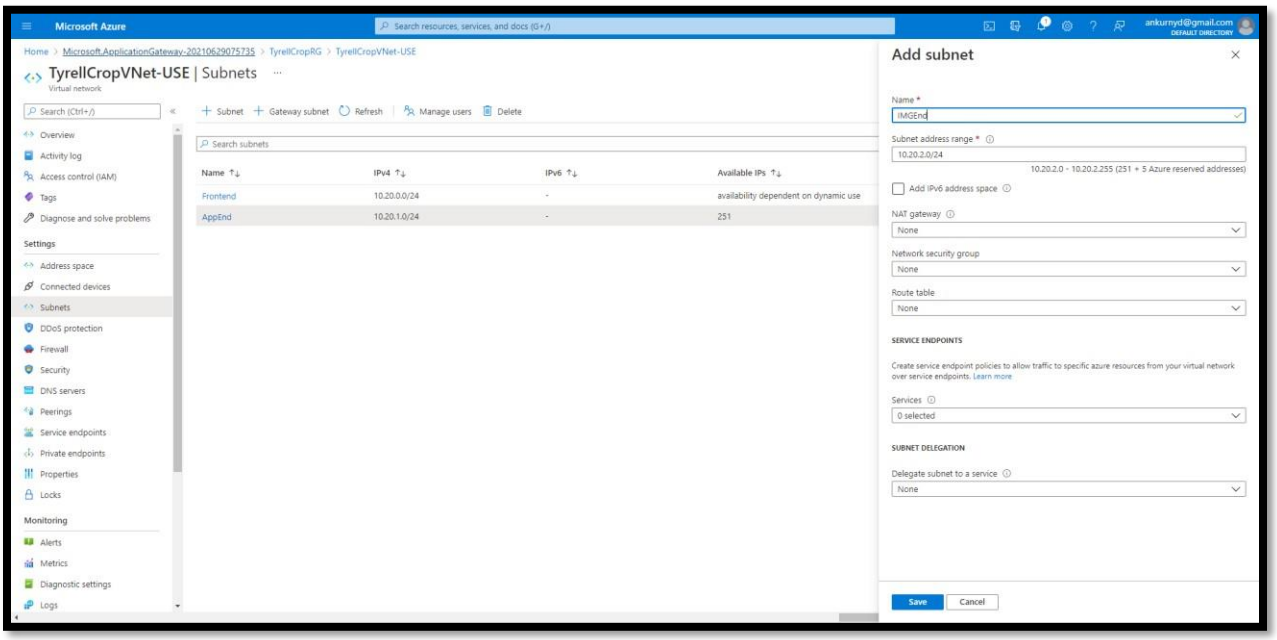
Values Provided:

- Name:AppEnd
- Address Space:10.20.1.0/24



- **Provided this Value-**

- **Name:IMGEnd**
- **Address Space:10.20.2.0/24**



Created Availability Set

- **From the Create a Resource blade, Searched for Availability Set and Create.**
- **Name: TyrellApp-AS**
- **Resource Group: TyrellCropRG**
- **Location:East US (*with 2 fault domains and 5 update domains)**

Home Availability sets

Create availability set

Basics Advanced Tags Review + create

An Availability Set is a logical grouping capability for isolating VM resources from each other when they're deployed. Azure makes sure that the VMs you place within an Availability Set run across multiple physical servers, compute raclcs, storage units, and neMDrk S\bitches. If a hardware or software failure happens, only a subset of your VMs are impacted and HDMI overall solution stays operational. Availability Sets are essential for building reliable cloud solutiDDS.
Learn more about availability sets.

Project details

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

Subscription * O — Pay-As-You-GD

Resource group • — TyrellCropRG
Create new

Instance details

Name ^ — TyrelApp-AS

Region * ⓘ — (US) East US

Fault domains — 2

Update dDmains — 5

Use managed disks O — N (Classic)

Review + create < Previous denNe t : ed

Microsoft Azure

Howe Availability sets

Create availability set

o Validation pasEed

Basics Advanced Tags Review + create

Basics

Subscription	Pay-As-You-Go
Resource group	TyrellCropRG
Region	East US
Name	TyrellApp-AS
Fault domain count	2
Update domaincount	5
Use managed disks	Yes (Aligned)

Advanced

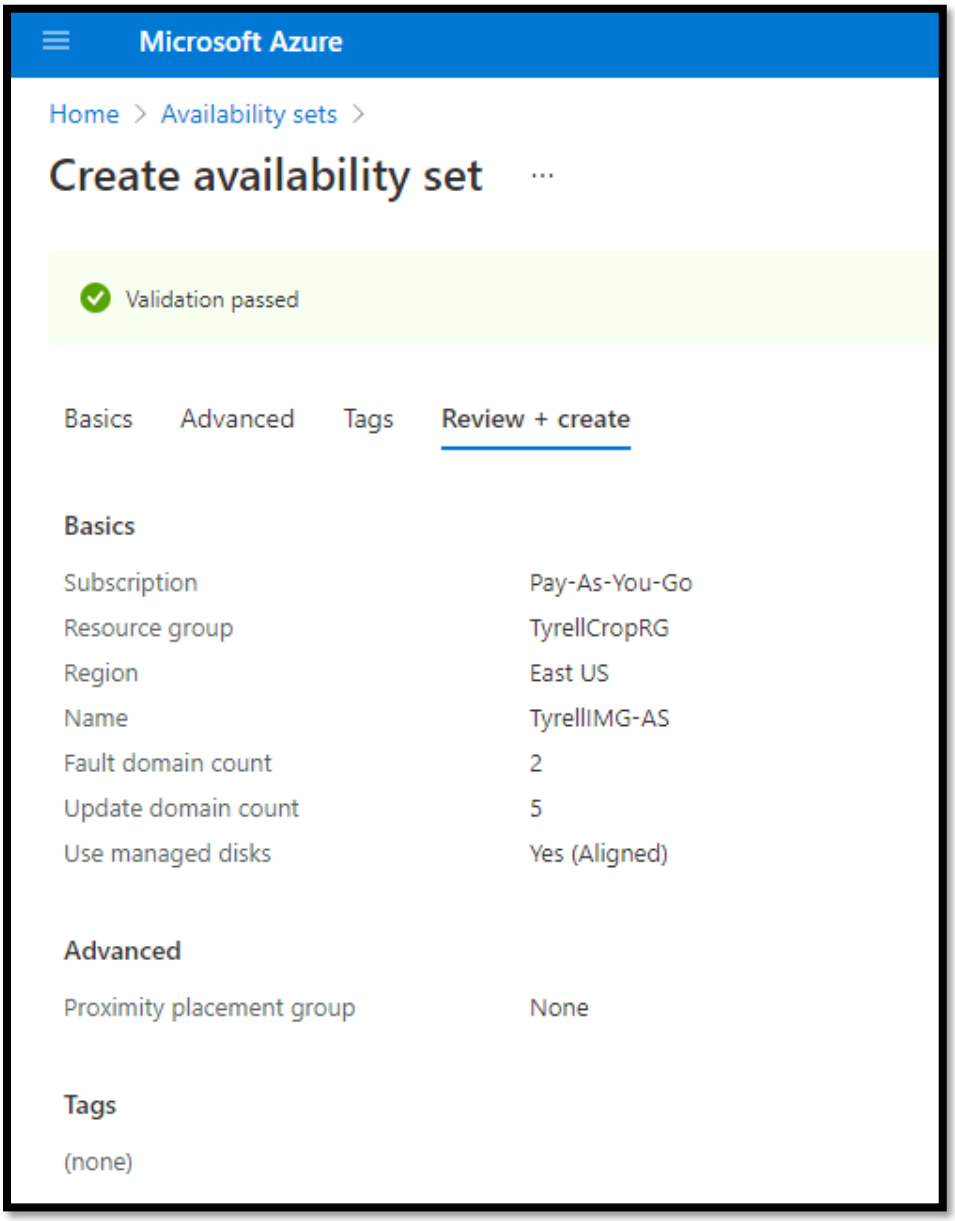
Proximityplacement group	None

Tags

(none)

Create Pro s Nekt DC \<'iJloacl a template fcr autcmaticn

- **From the Create a Resource blade, Searched for Availability Set and Created another Availability Set.**
- **Name: TyrellIMG-AS**
- **Resource Group: TyrellCropRG**
- **Location:East US (*with 2 fault domains and 5 update domains)**

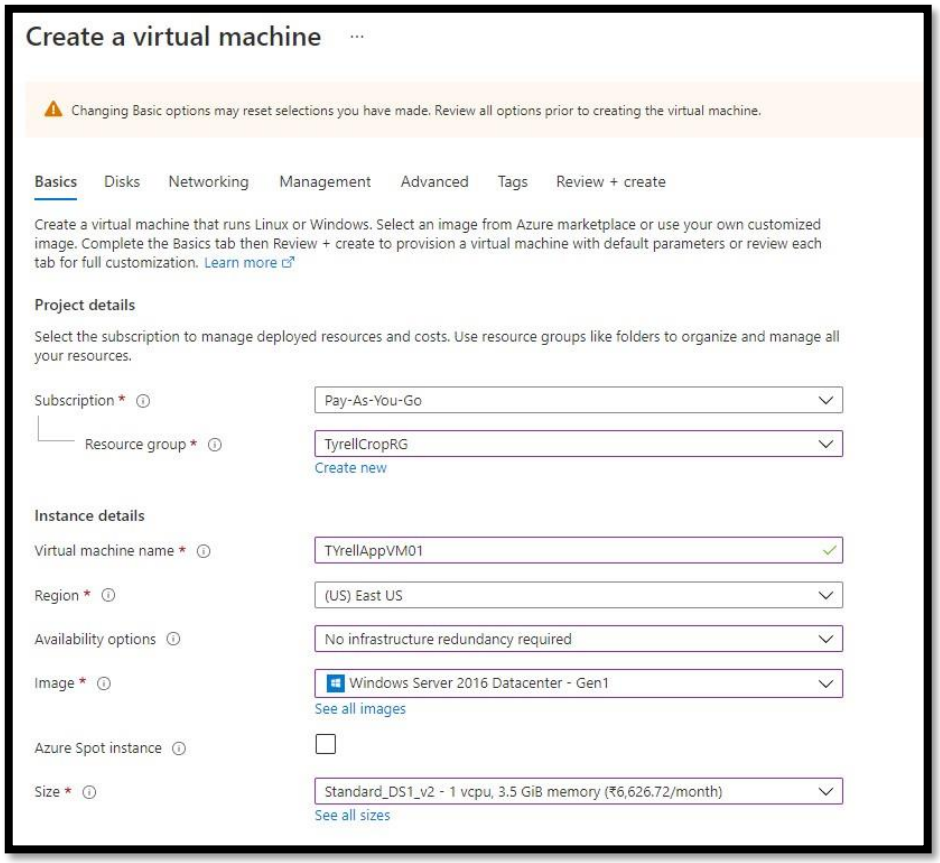


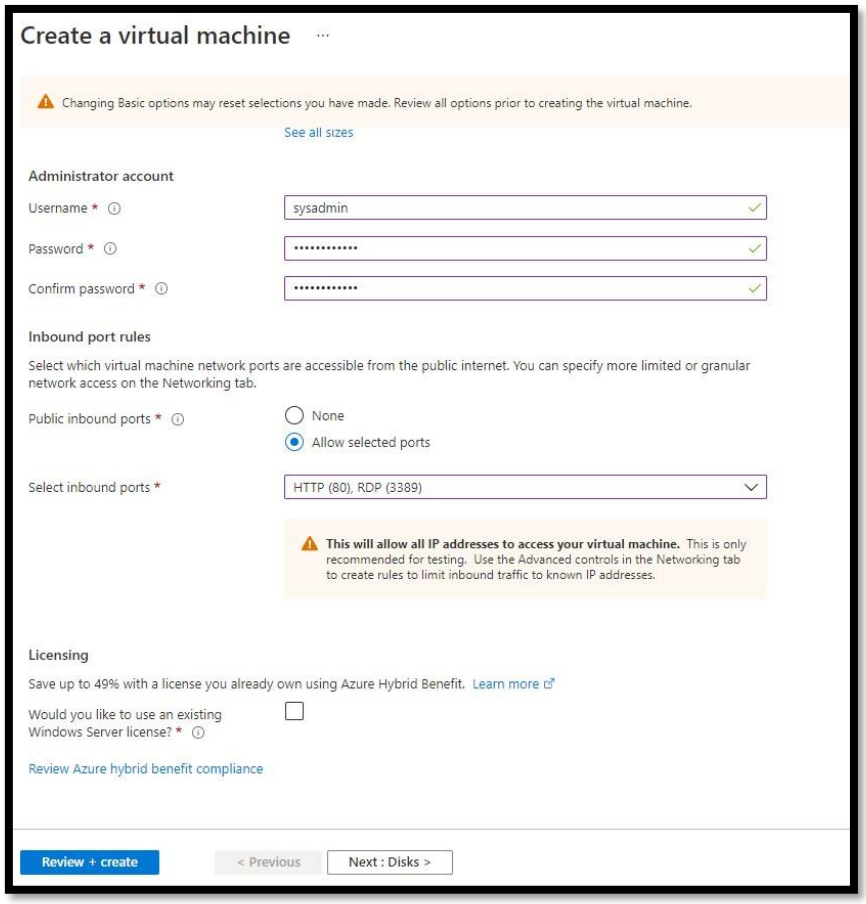
Add VM's – For Application

- **From the** Create a Resource **blade, On Compute and selected** Windows Server 2016 Datacenter**.**

Basic:

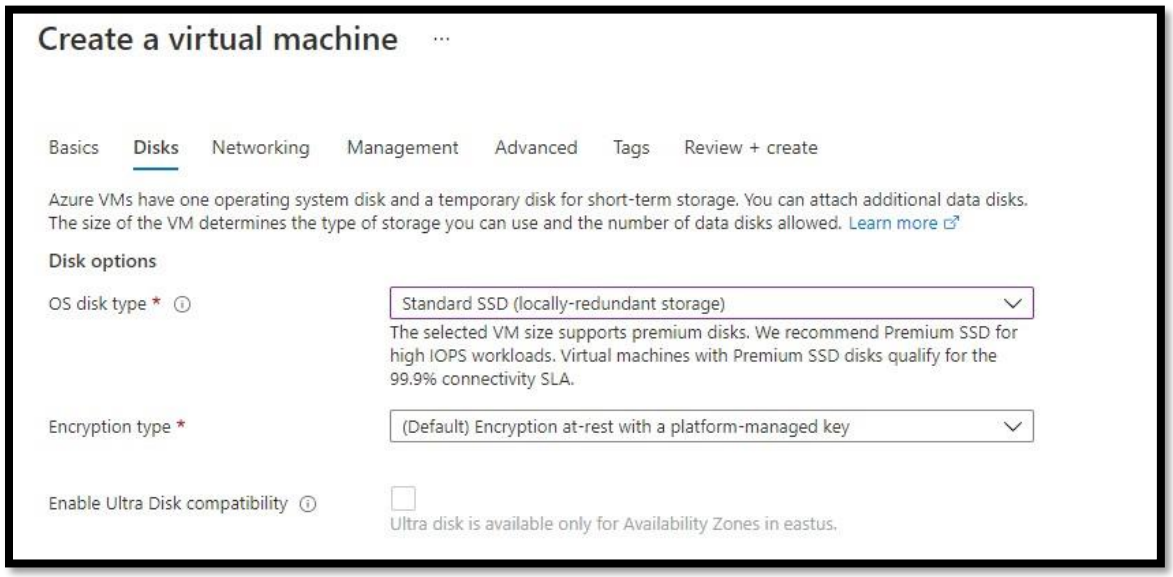
- **Resource group: TyrellCropRG**
- **Virtual machine name: TYrellAppVM01**
- **Region: east us**
- **Availability options: Availability set ->TyrellApp-AS**
- **Image: Windows Server 2016 Datacenter**
- **Size: Standard DS1 v2**
- **Username: sysadmin**
- **Password: Wow01qwerty!**
- **Public inbound ports: Allow Selected Ports**
- **Selected Inbound ports:http,rdp**
- **Already have a Windows license? No**





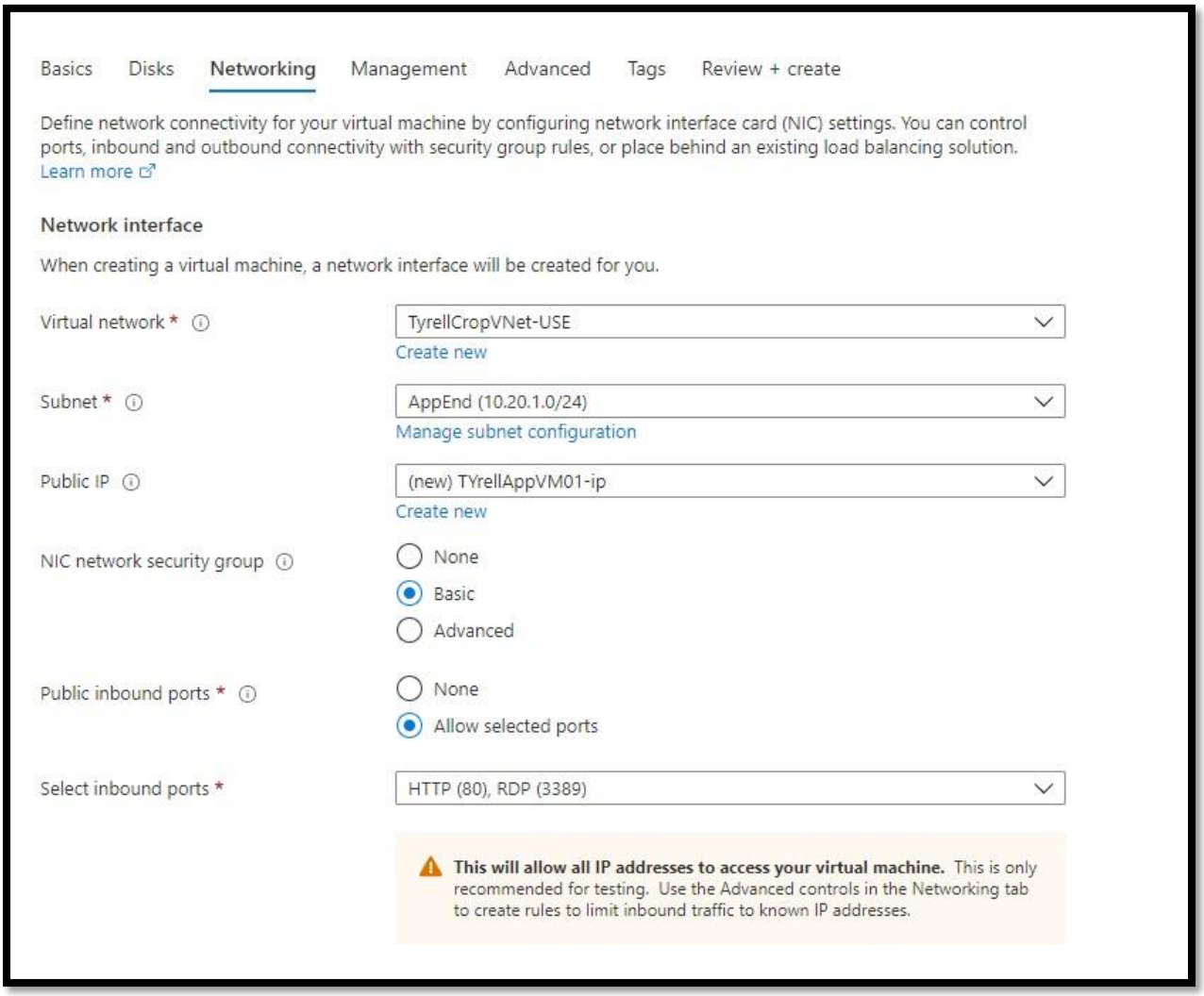
Disk:

a. **OS disk type:** Standard HDD



Networking:

- **Virtual network: TyrellCropVNet-USE**
- **Subnet name:** AppEnd
- **Public IP:** TYrellAppVM01-ip
- **NIC Network security group:** Basic
- **Public inbound ports:** Allow Selected Ports
- **Selected Inbound ports**:http,rdp
- **Accelerated networking:** Off
- Load balancing: No



Create a virtual machine

Validation passed

Basics

Subscription	Pay-As-You-GD
Resource group	TyrellCropRG
Virtual machine name	TYreIIAppVMO 1
Region	East US
Availability options	No infrastructure redundancy required
Image	Windows Server 2016 Datacenter -Gen1
Size	Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
Username	sysadmin
Public inbound ports	RDP, HTTP
Already have a Windows licensed	No
Azure Spot	No

Disks

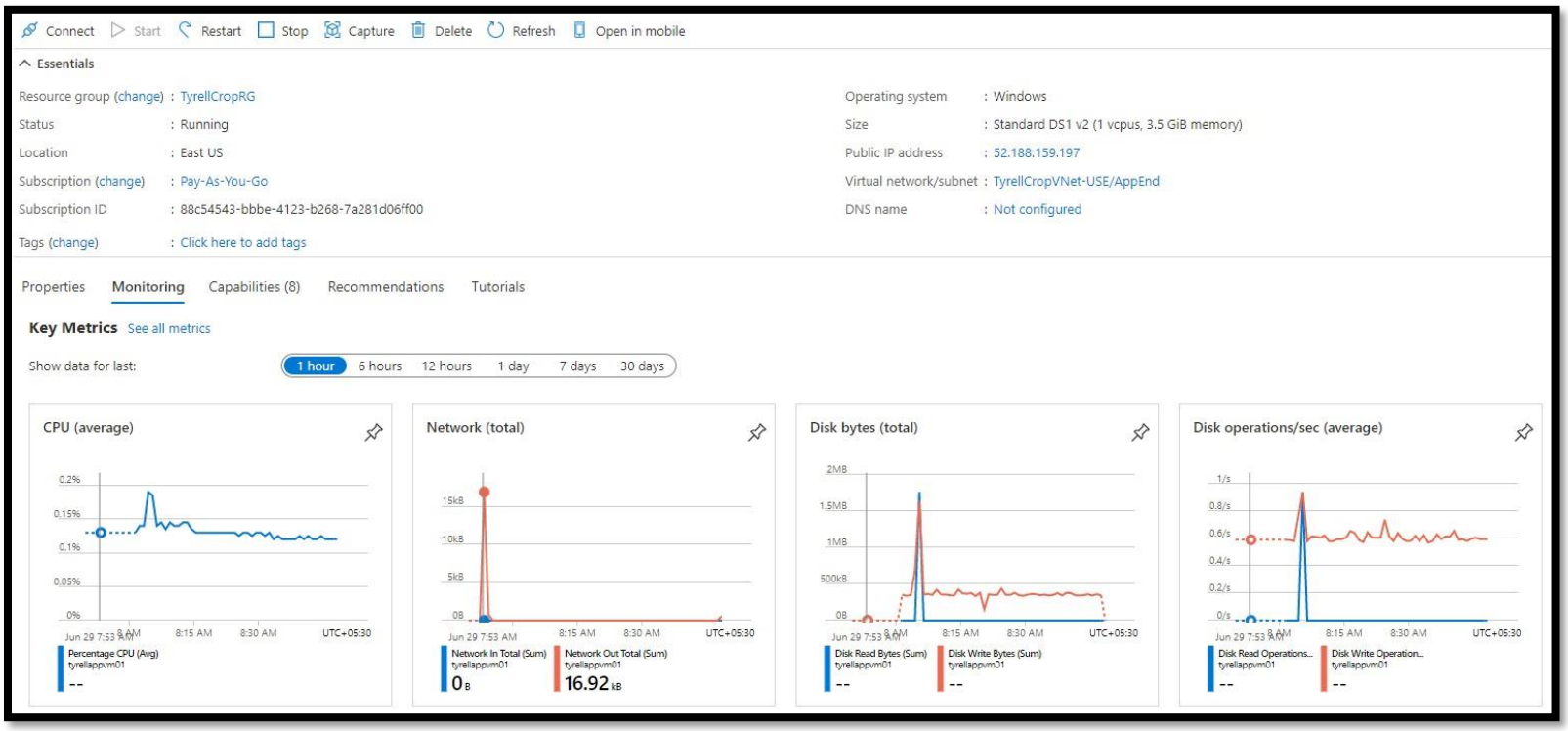
OS disk type	Standard SSD LRS
Use managed disks	Yes
Ephemeral OS disk	No

Networking

Virtual network	TyrellCropVNet-USE
Subnet	AppEnd (10.20.1.0/24)
Public IP	(new) TYreIIAppVM01-ip
Accelerated networking	Ofi
Place this virtual machine behind an existing load balancing solution?	NO

Management

Create bus Next Download a template for automation



Add VM's – For Images

- **From the** Create a Resource **blade, click on Compute and select** Windows Server 2016 Datacenter**.**
- **Use the** Create a virtual machine **blade to deploy a virtual machine with the following settings:**

Basic:

- **Resource group: TyrellCropRG**
- **Virtual machine name: TyrellIMGVM01**
- **Region: east us**
- **Availability options: Availability set ->TyrellIMG-AS**
- **Image: Windows Server 2016 Datacenter**
- **Size: Standard DS1 v2**
- **Username: sysadmin**
- **Password: Pa55w.rd!234**
- **Public inbound ports: Allow Selected Ports**
- **Selected Inbound ports: http,rdp**
- **Already have a Windows license? No**

Create a virtual machine

Changing Basic optk+ns may reset selections you have made. Review all options prior to creating the virtual machine.

Basics Disks Networking Management 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

Project details

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

Subscription * @ — Pay-As-You-Go (88c34A3-bbbe-4123-bZ68-7a281d06ff00)

Resource group * — TyrellCropRG
Create new

Instance details

Virtual machine name * @ — Tyrelll MGVMO1

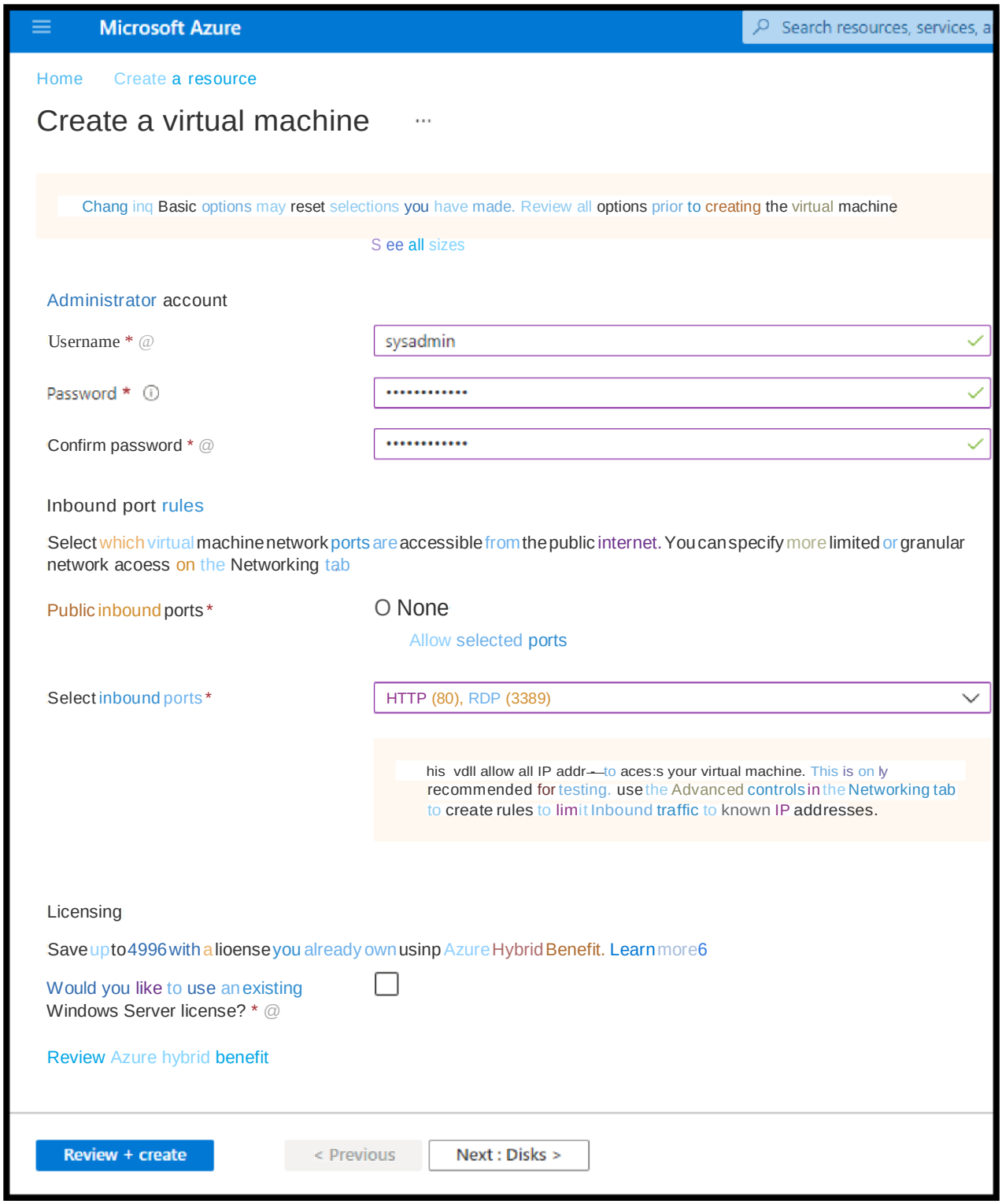
Region ^ O• — (US) East US

Availability options O• — No infrastructure redundancy required

lma9e * — Windows Server 2O1d Datacenter - Gen1
See all images

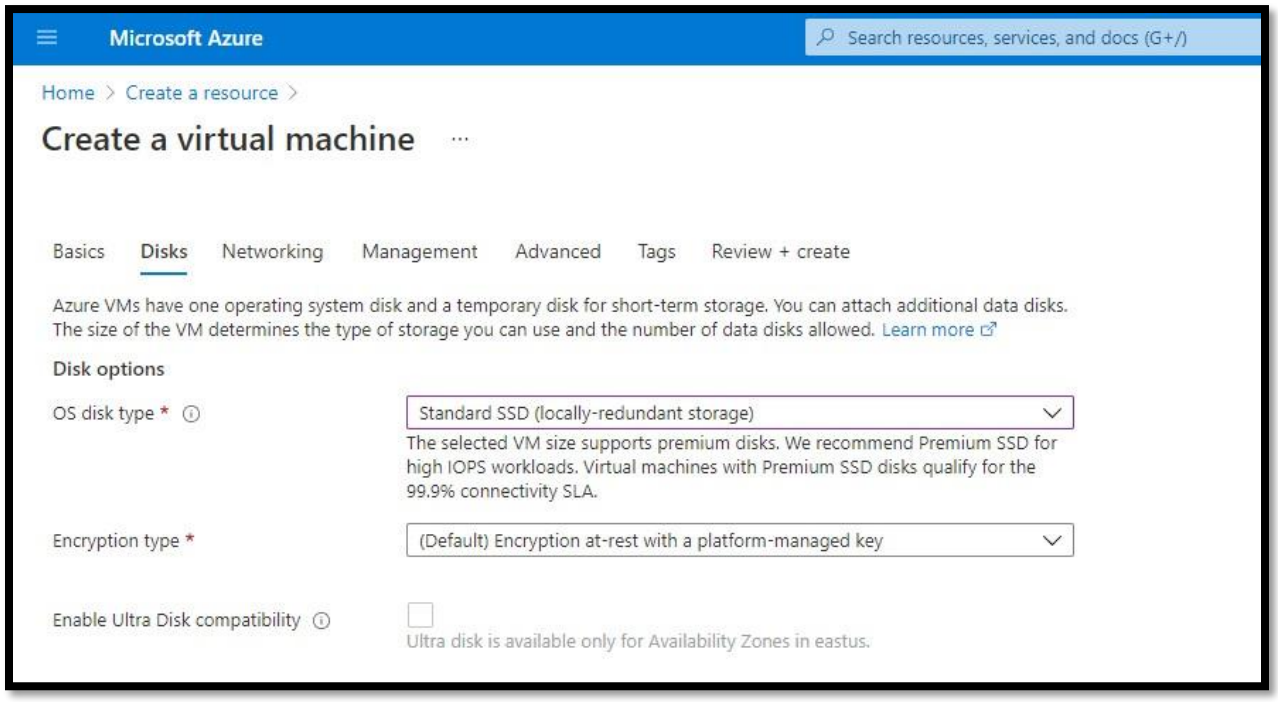
Azure Spot instance @ — ☐

Size* @ — Standard_D51_v2 - 1 vcpu, 3.5 GiB memory (T6,626.72/month)
See all sizes


Microsoft Azure
Search resources, services, a
Home
Create a resource
Create a virtual machine
...
Chang inq Basic options may reset selections you have made. Review all options prior to creating the virtual machine
S ee all sizes
Administrator account
Username * @
sysadmin
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 acoess on the Networking tab
Public inbound ports *
O None
Allow selected ports
Select inbound ports *
HTTP (80), RDP (3389)
his vdll allow all IP addr-—to aces:s your virtual machine. This is on ly 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 4996 with a lioense you already own usinp Azure Hybrid Benefit. Learn more6
Would you like to use an existing Windows Server license? * @
Review Azure hybrid benefit
Review + create
< Previous
Next : Disks >

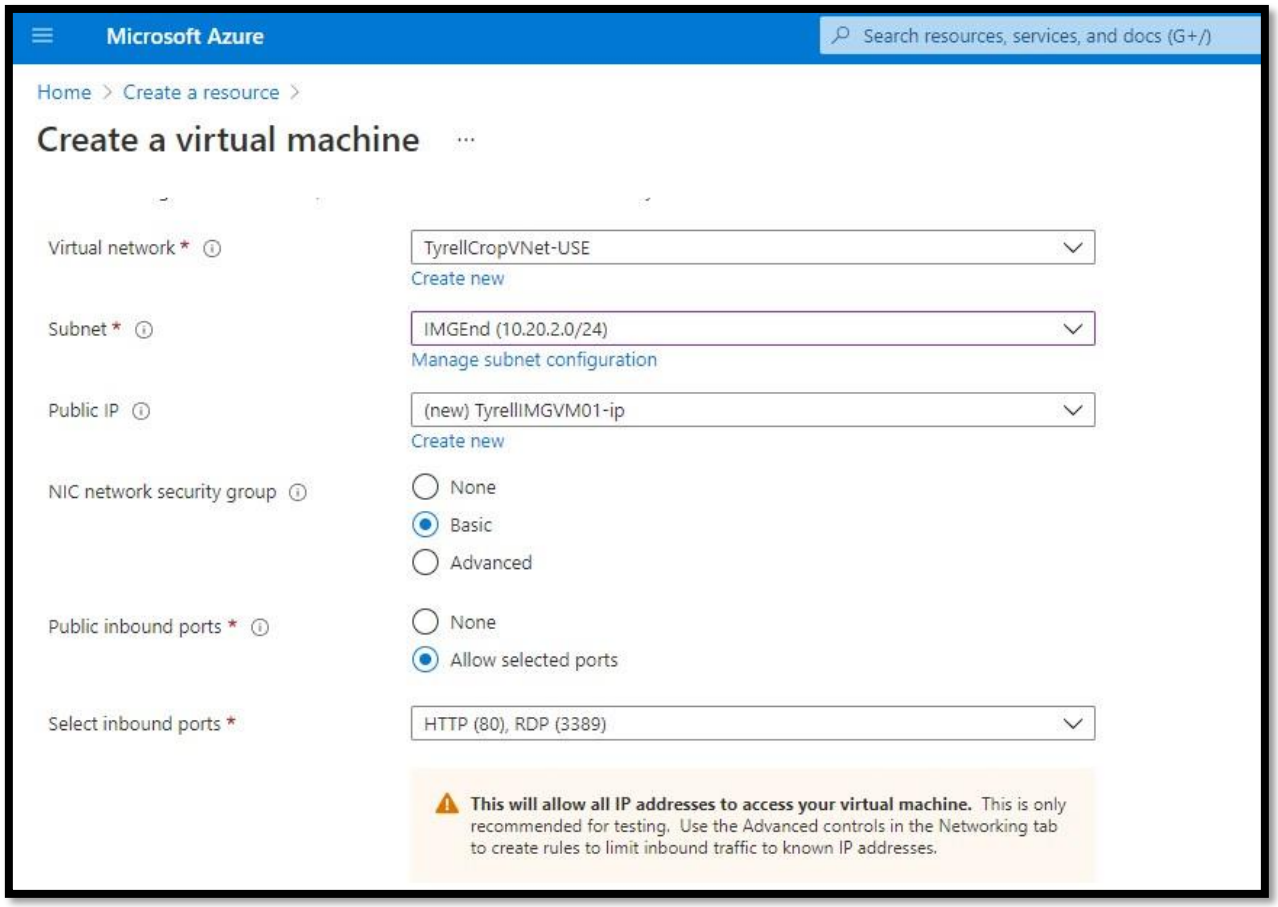
Disk:

a. **OS disk type:** Standard HDD



Networking:

- **Virtual network: TyrellCropVNet-USE**
- **Subnet name: IMGNet**
- **Public IP: TYrellIMGVM01-ip**
- **NIC Network security group: Basic**
- **Public inbound ports: Allow Selected Ports**
- **Selected Inbound ports:http,rdp**
- **Accelerated networking: Off**
- **Load balancing: No**



Management:

- **Boot diagnostics: Off**
- **OS guest diagnostics: Off**
- **System assigned managed identity: Off**
- **Enable auto-shutdown: Off**
- **Enable Backup: Off**

Create a virtual machine

Basics Disks Networking Management Advanced Tags Review + create

Configure monitoring and m ana gement options for your VM.

Azure Securi Center

Azure Security Center provides unified security management and advanced threat protection across hybrid cloud workloads.
Learn more

@ Your subscription is protected by Azure Securiy Center basic plan.

Monitoring

Boot diagnostics

0 Enable with managed storage account (recommended)

Enable with custom storage account

Disable

Enable OS guest diagnostics @ ☐

Identity

System assigned managed identity @

Azure AD

Login with Azure AD @

this image does not support Login with Azure AD.

Microsoft Azure

Home Create a resource

Create a virtual machine

Validation passed

Basics

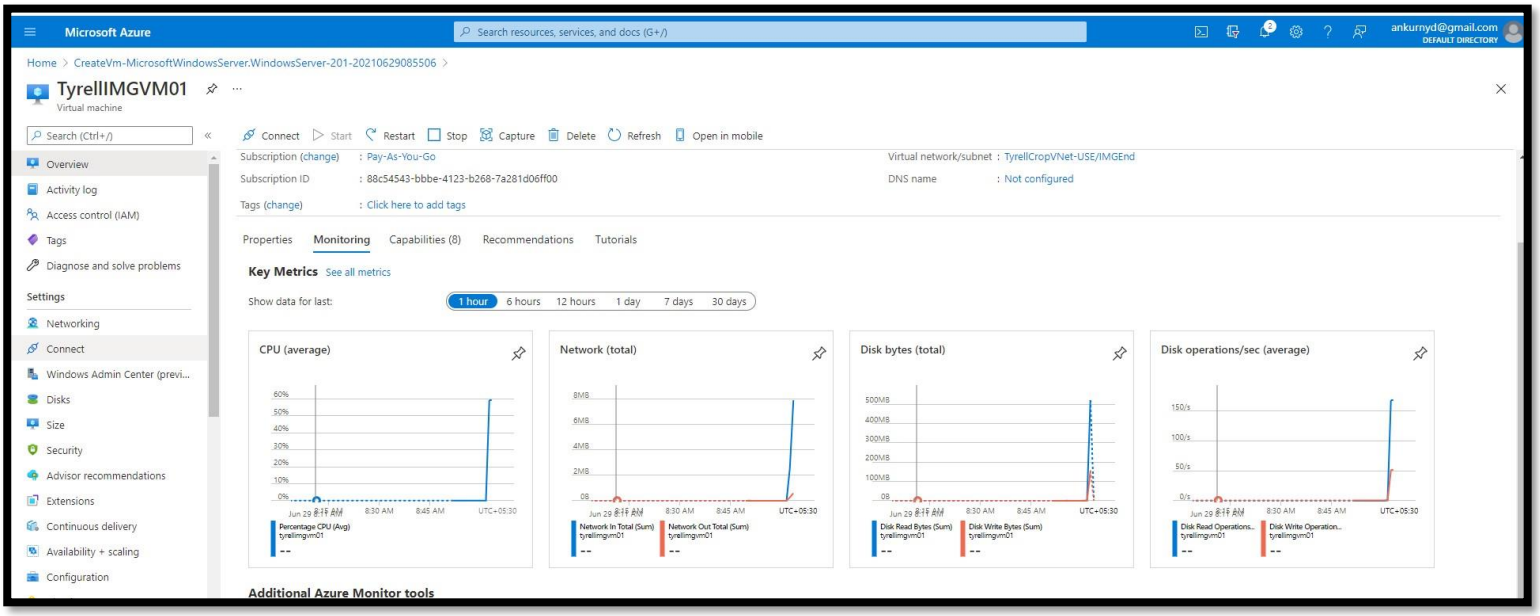
Subscription	Pay-As-You-Go
Resource group	TyrellCropRG
Virtual machine name	Tyrelll MGVM01
Region	East US
Availability options	No infrastructure redundancy required
Image	Windows Server 201d Datacenter - Gen1
Size	Standard DSI v2 (1 vcpu, 3.5 GiB memory
Username	sysadmin
Public inbound ports	RDP, HTTP
Already have a Windows license*	No
Azure Spot	No

Disks

OS disk type	Standard SSD LRS
Use managed disks	Yes
Ephemeral OS disk	No

Networking

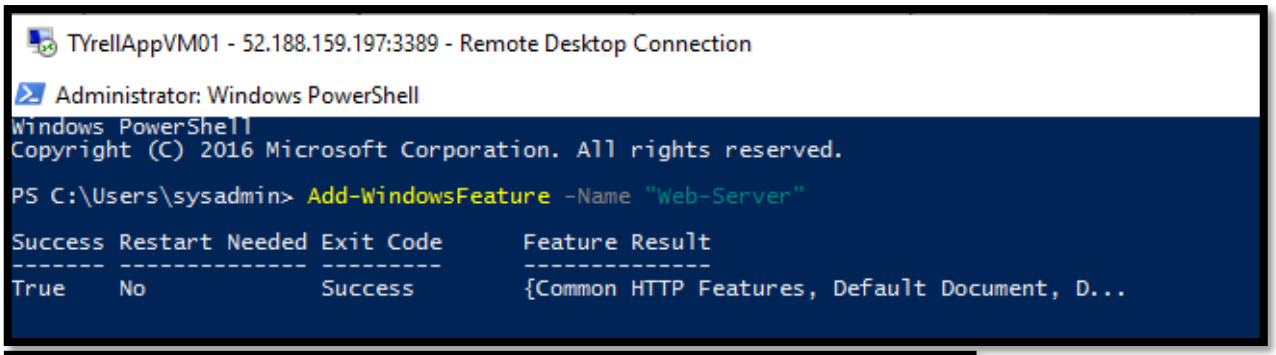
virtual network	TyrellCropVNet-USE
Subnet	IMGEnd (10.TO.2.0/24)
Public IN	(new) TyreIIIMGVM01-ip
Accelerated networking	*OF*
Place this virtual machine behind an existing load balancing solution?	No

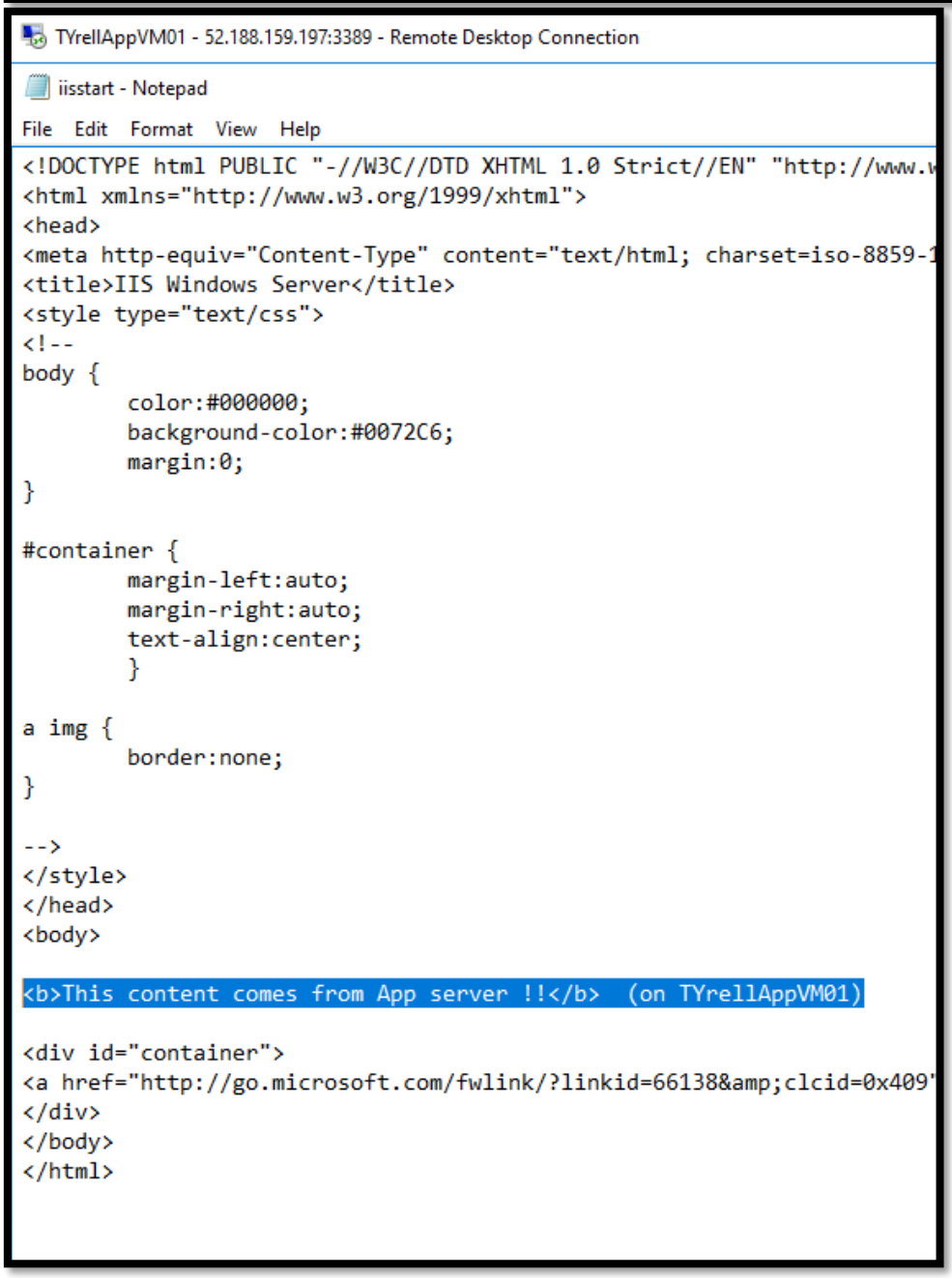


Adding IIS role to the Windows Servers.

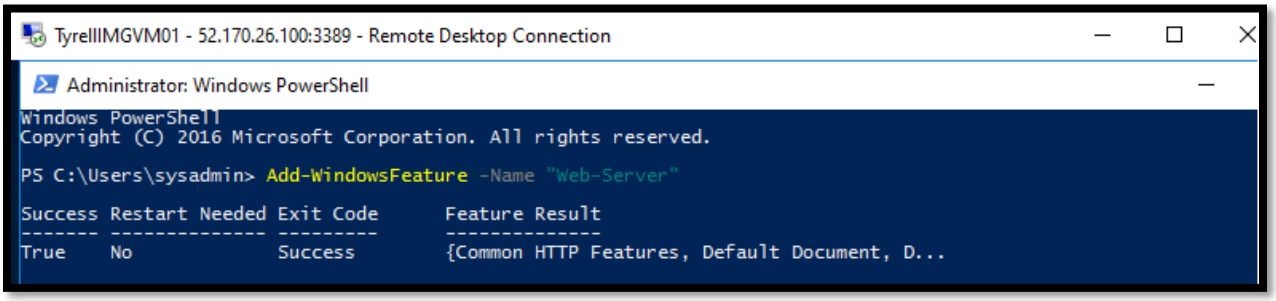
- **After each virtual machine is provisioned logged in using remote desktop by clicking the Connect button on the virtual machine configuration blade and logging in with the administrative credentials.**
- **Once inside the VM, opended the PowerShell.**
- **In the PowerShell console executed this command:** Add-WindowsFeature -Name "Web-Server"
- **Once IIS has completed installation opened the file at C:\InetPub\wwwroot\iisstart.htm in notepad on each server.**
- **Inside the <body> tag insert-**
- **This content comes from Appserver!! (on TYrellAppVM01)**
- **This content comes from IMG server !! (on TYrellIMGVM01)**
- **Repeated the steps in both virtual machines to install IIS.**

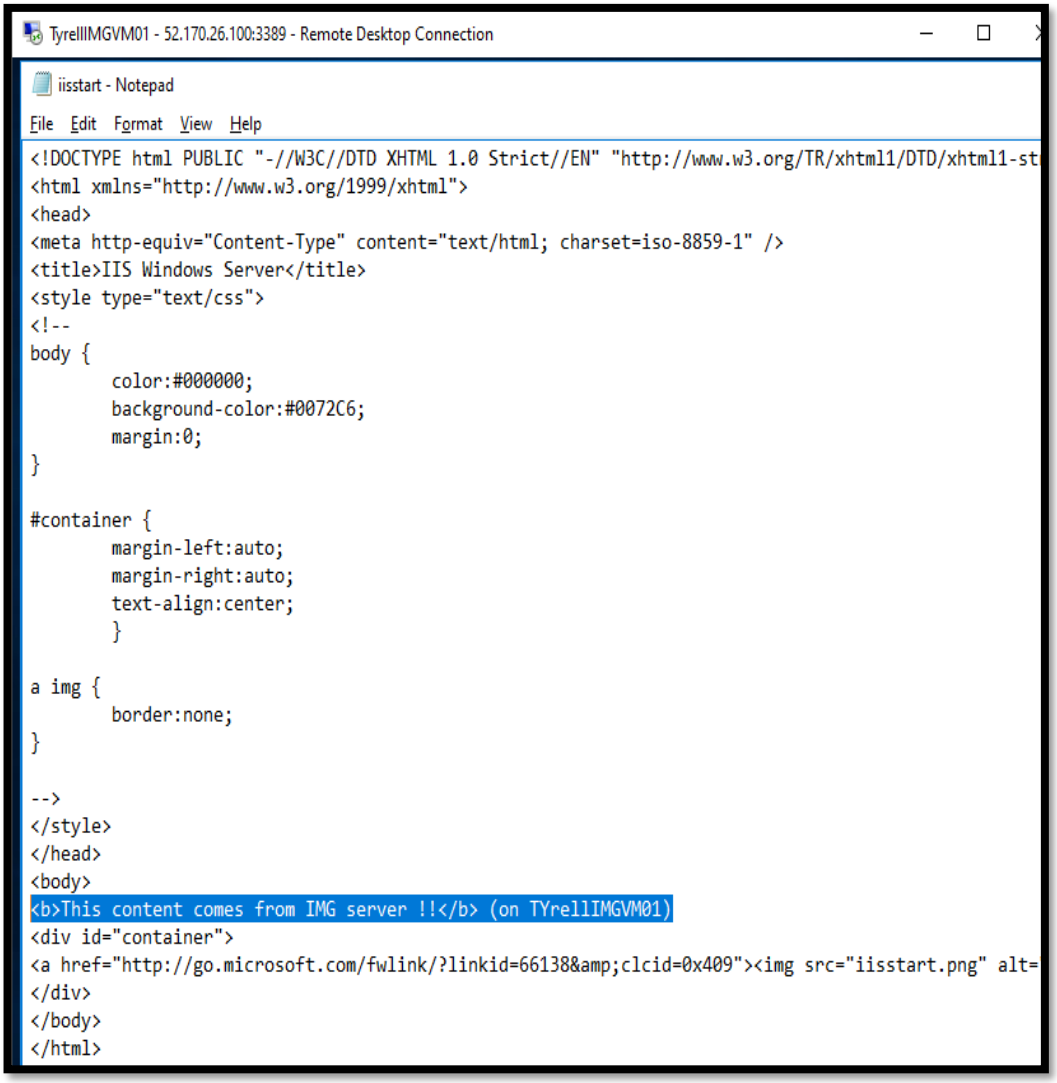
TyrellAppVM01 – Adding IIS role



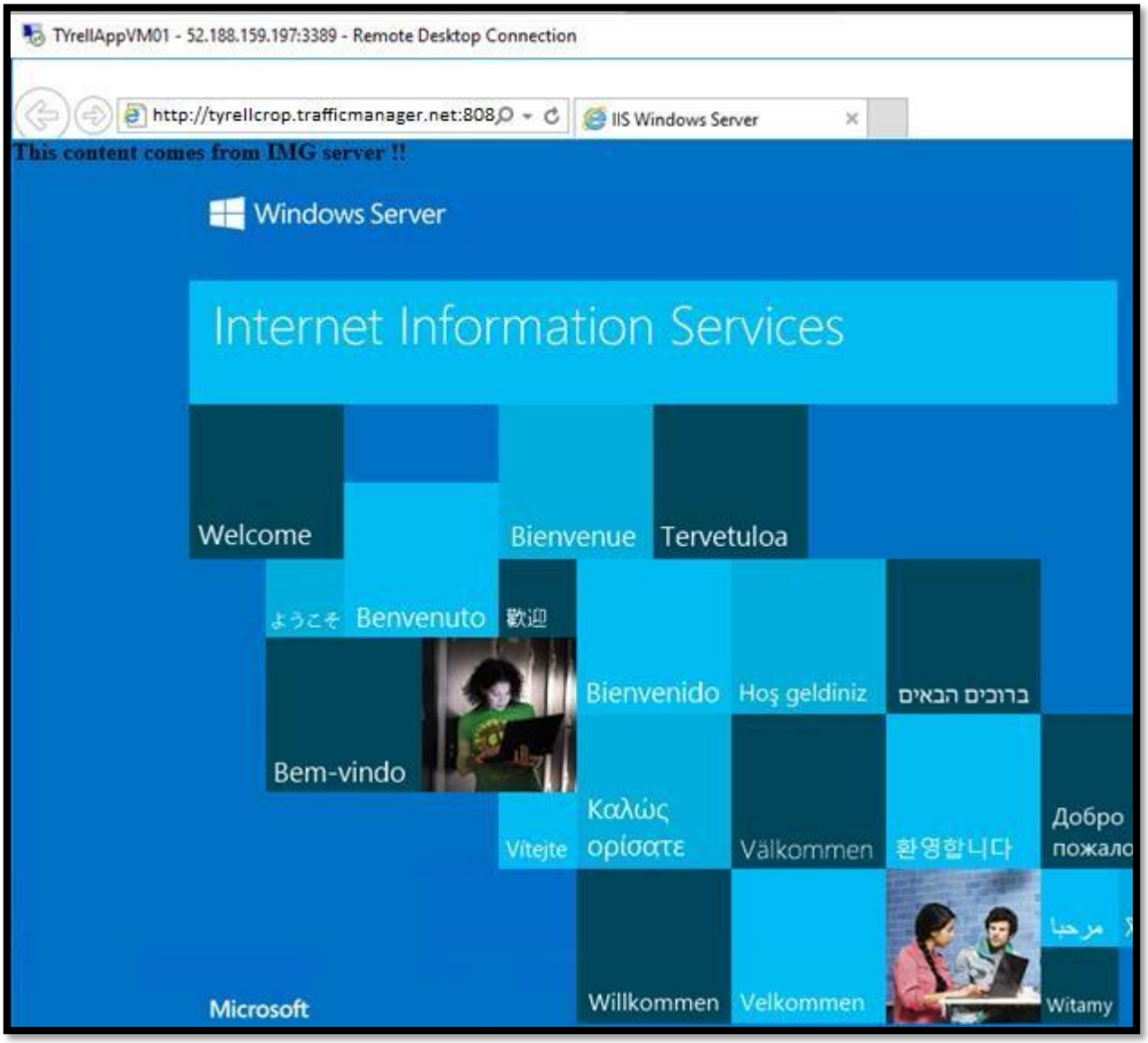


TYrellIMGVM01 – Adding IIS Role





Test Successful at VM01



Test Successful at IMGM01