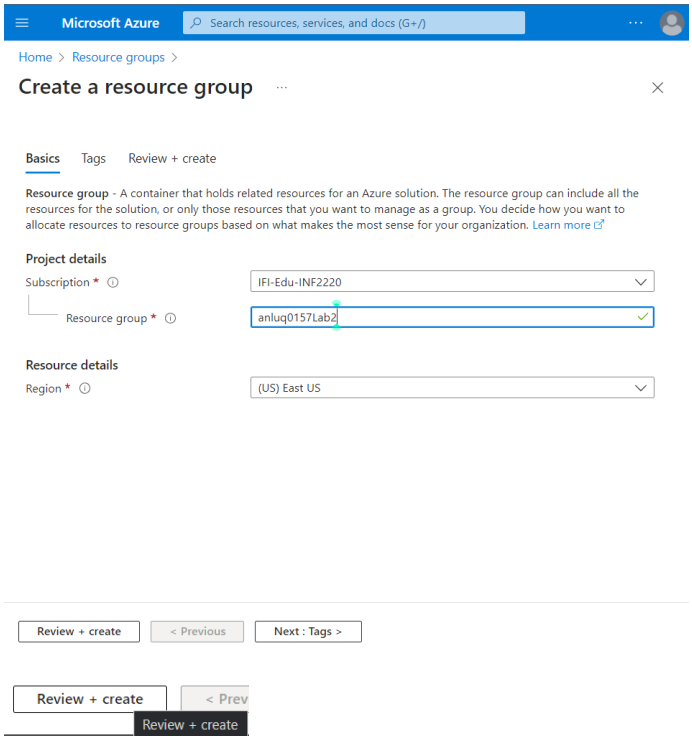
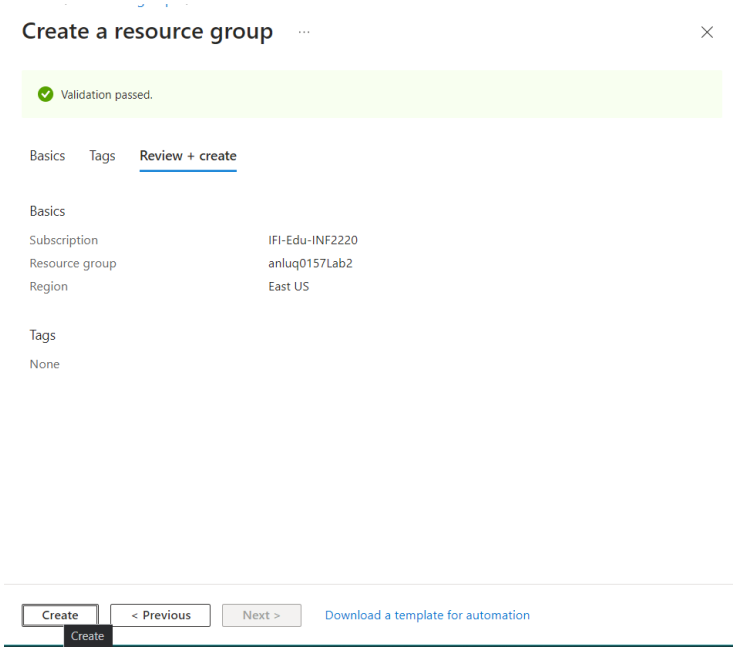
Antonio Manuel Luque Molina
Lab report 2 (Week 36)

Exercise

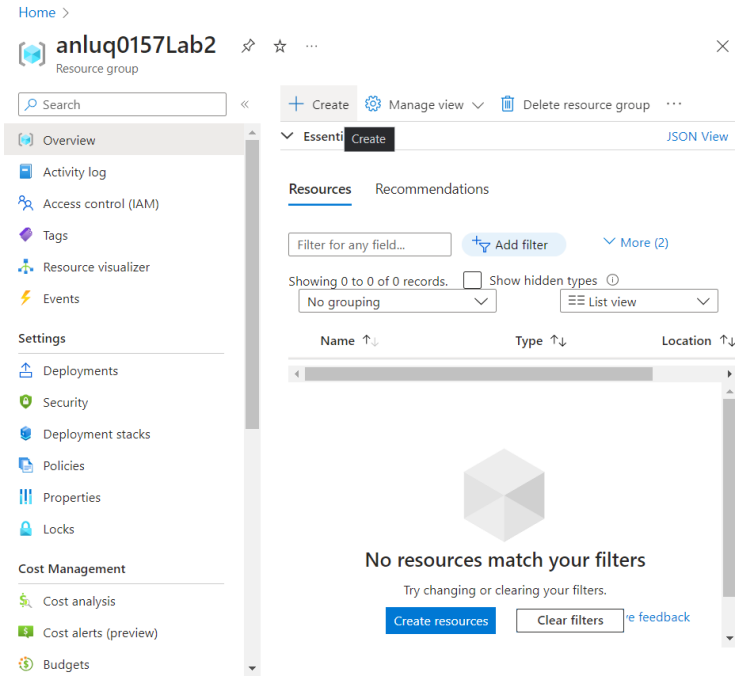
• Create 2 VMs in the same virtual network with the second VM without any port(public ip) open. Try to access this 2nd Virtual Machine.

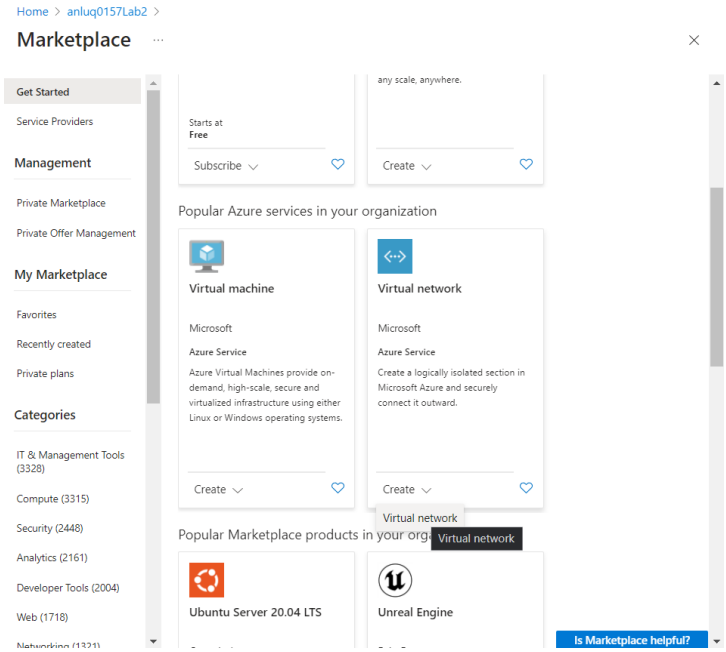
We start creating a resource group where we will put the virtual network and the two Virtual Machines:

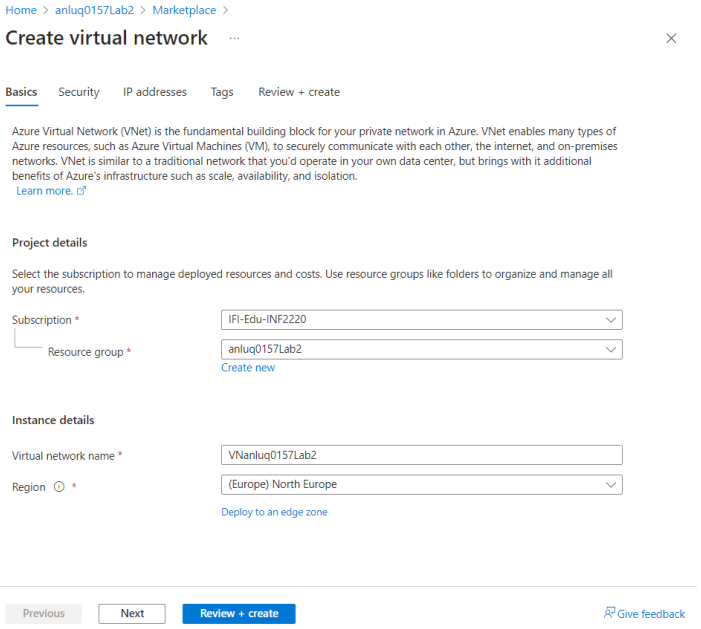


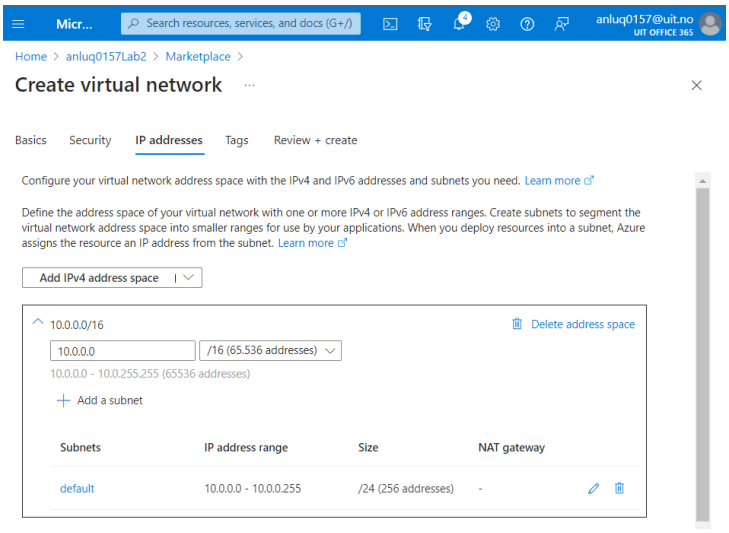


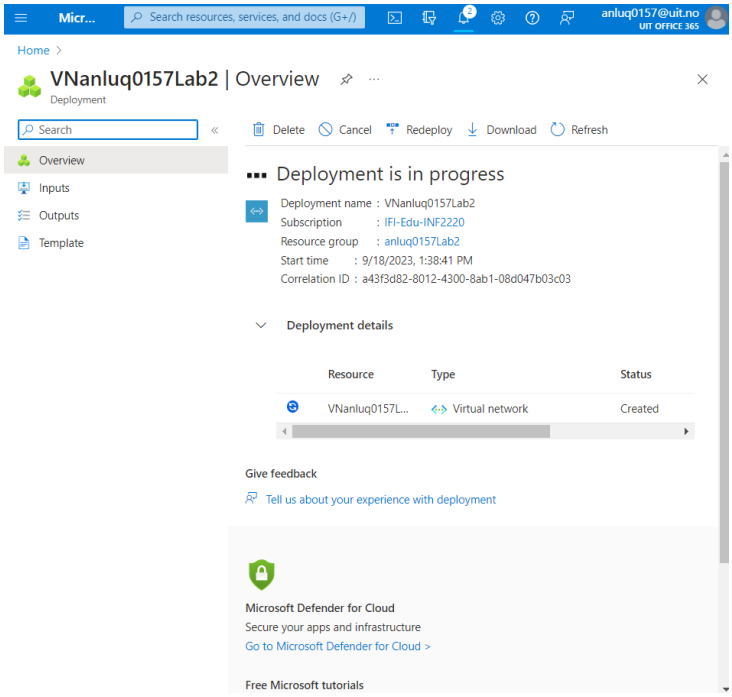
Once it is created we will create within this resource group the virtual network:



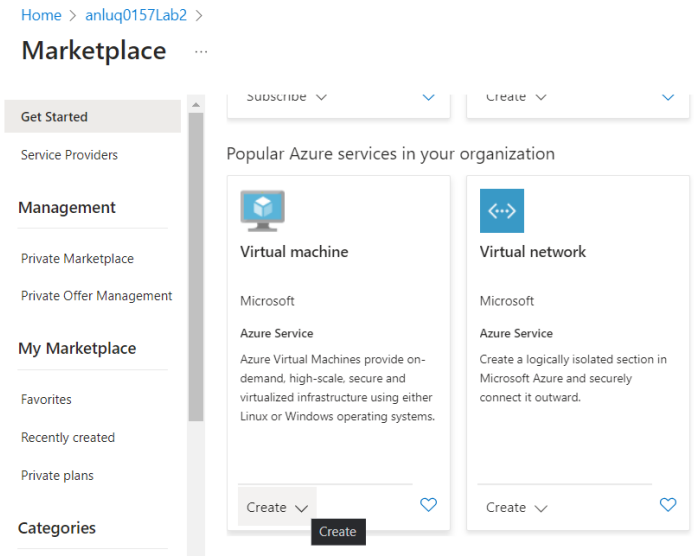

Home > anluq0157Lab2 >
Marketplace
Get Started
Service Providers
Management
Private Marketplace
Private Offer Management
My Marketplace
Favorites
Recently created
Private plans
Categories
IT & Management Tools (3328)
Compute (3315)
Security (2448)
Analytics (2161)
Developer Tools (2004)
Web (1718)
Starts at
Free
Subscribe
any scale, anywhere.
Create
Popular Azure services in your organization
Virtual machine
Microsoft
Azure Service
Azure Virtual Machines provide on-demand, high-scale, secure and virtualized infrastructure using either Linux or Windows operating systems.
Create
Virtual network
Microsoft
Azure Service
Create a logically isolated section in Microsoft Azure and securely connect it outward.
Create
Virtual network
Popular Marketplace products in your org
Virtual network
Ubuntu Server 20.04 LTS
Unreal Engine
Is Marketplace helpful?

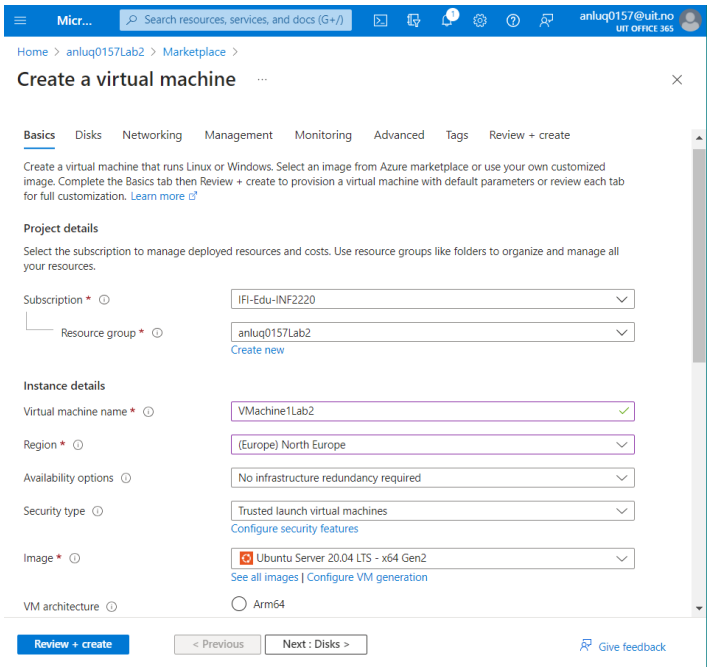

Home > anluq0157Lab2 > Marketplace >
Create virtual network
Basics
Security
IP addresses
Tags
Review + create
Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure. VNet enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other, the internet, and on-premises networks. VNet is similar to a traditional network that you'd operate in your own data center, but brings with it additional benefits of Azure's infrastructure such as scale, availability, and isolation.
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 *
IFI-Edu-INF2220
Resource group *
anluq0157Lab2
Create new
Instance details
Virtual network name *
VNanluq0157Lab2
Region *
(Europe) North Europe
Deploy to an edge zone
Previous
Next
Review + create
Give feedback

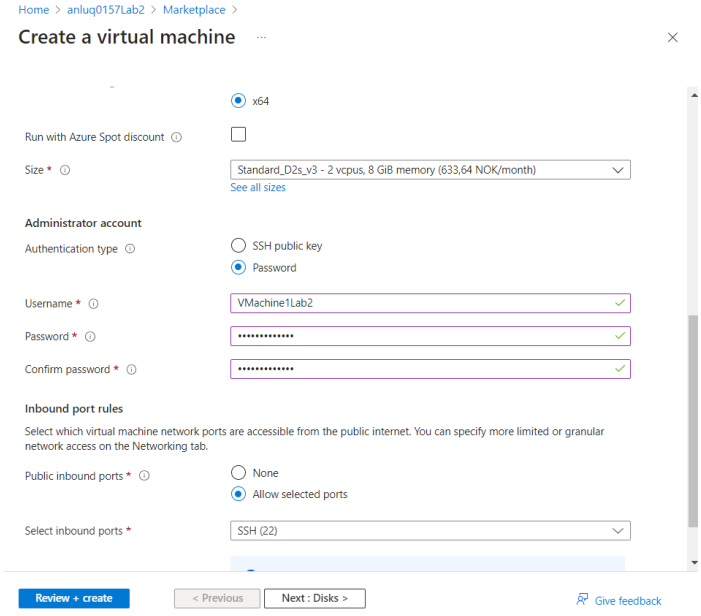

Micr...
Search resources, services, and docs (G+/)
anluq0157@uit.no
UIT OFFICE 365
Home > anluq0157Lab2 > Marketplace >
Create virtual network
Basics
Security
IP addresses
Tags
Review + create
Configure your virtual network address space with the IPv4 and IPv6 addresses and subnets you need. Learn more
Define the address space of your virtual network with one or more IPv4 or IPv6 address ranges. Create subnets to segment the virtual network address space into smaller ranges for use by your applications. When you deploy resources into a subnet, Azure assigns the resource an IP address from the subnet. Learn more
Add IPv4 address space
10.0.0.0/16
Delete address space
10.0.0.0
/16 (65,536 addresses)
10.0.0.0 - 10.0.255.255 (65536 addresses)
Add a subnet
Subnets
IP address range
Size
NAT gateway
default
10.0.0.0 - 10.0.0.255
/24 (256 addresses)
-

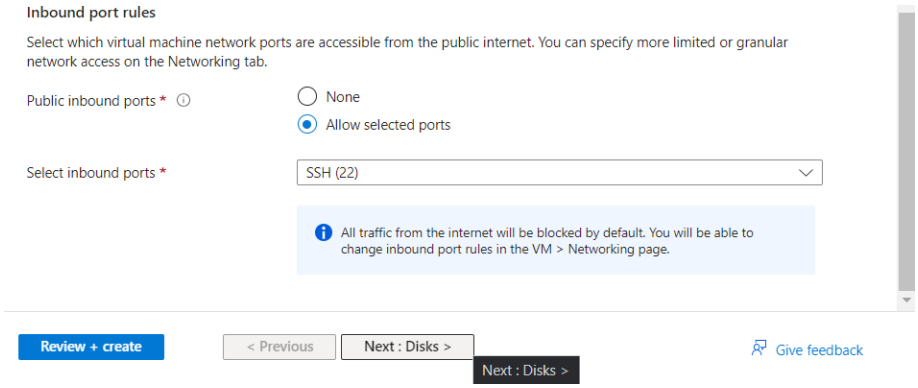


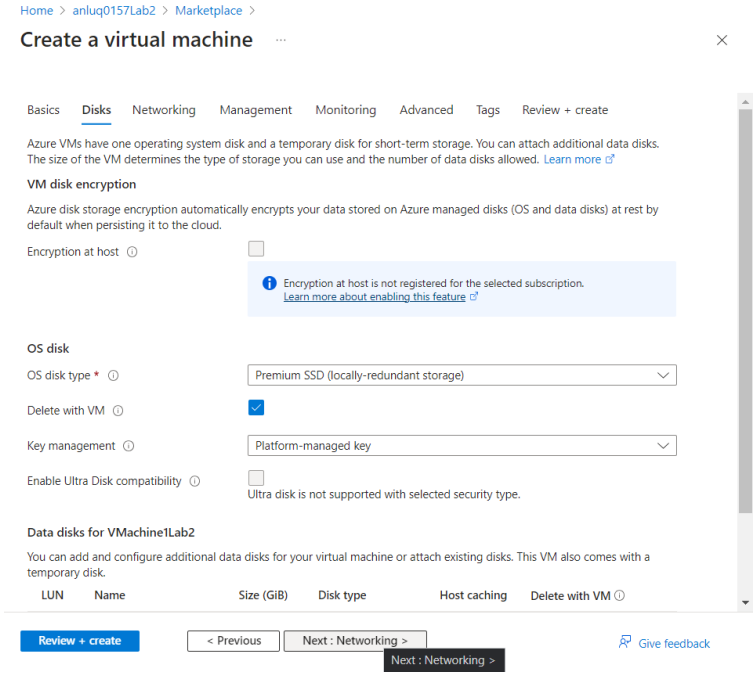
Once the virtual network is created we will create the first virtual machine with this network and a public IP:

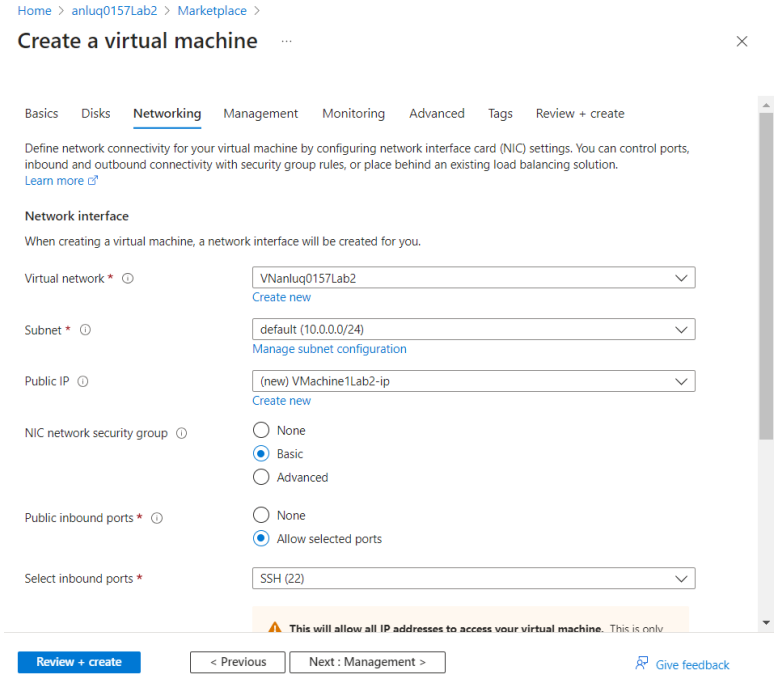


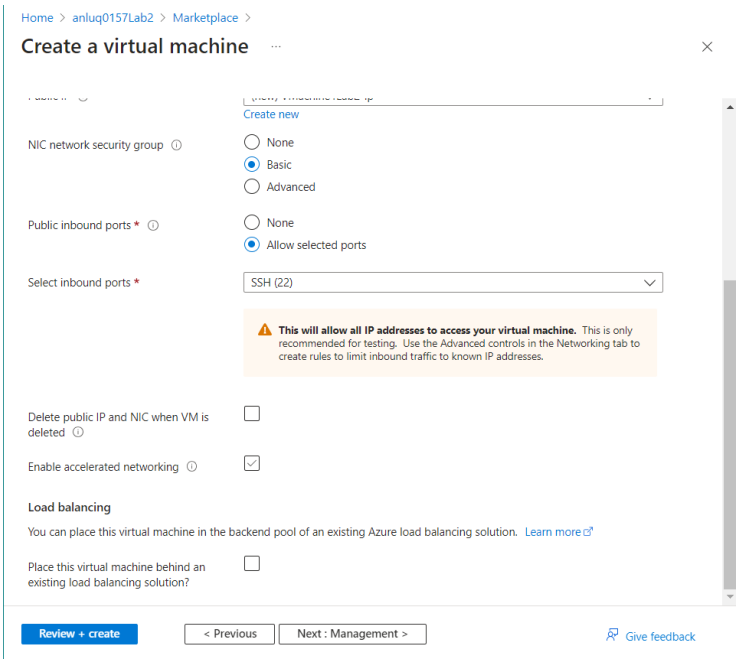

Micr...
Search resources, services, and docs (G+/)
anluq0157@uit.no
UIT OFFICE 365
Home > anluq0157Lab2 > Marketplace >
Create a virtual machine
Basics Disks Networking Management Monitoring Advanced Tags Review + create
Create a virtual machine that runs Linux or Windows. Select an image from Azure 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
Project details
Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.
Subscription * IFI-Edu-INF2220
Resource group * anluq0157Lab2
Create new
Instance details
Virtual machine name * VMachine1Lab2
Region * (Europe) North Europe
Availability options No infrastructure redundancy required
Security type Trusted launch virtual machines
Configure security features
Image * Ubuntu Server 20.04 LTS - x64 Gen2
See all images | Configure VM generation
VM architecture Arm64
Review + create
< Previous
Next : Disks >
Give feedback

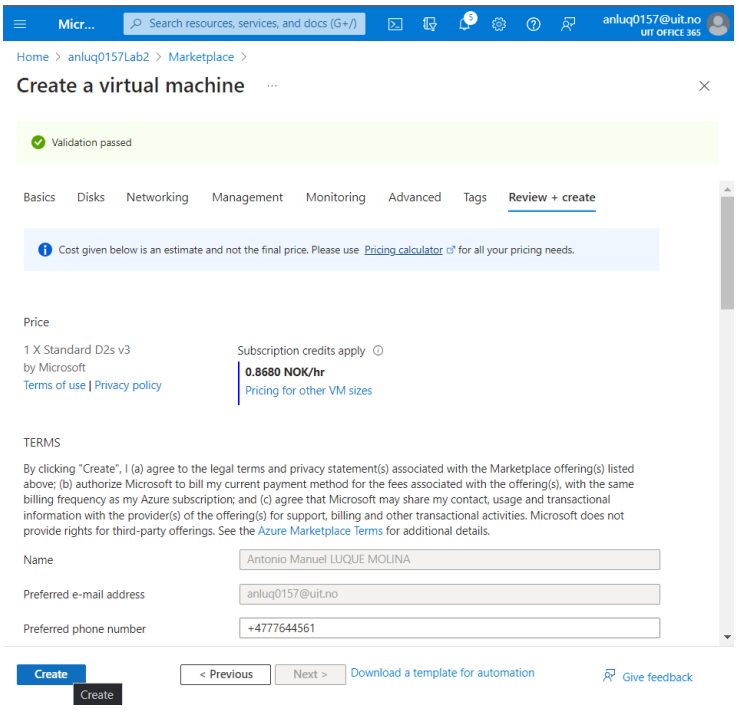

Home > anluq0157Lab2 > Marketplace >
Create a virtual machine
x64
Run with Azure Spot discount
Size * Standard_D2s_v3 - 2 vcpus, 8 GiB memory (633,64 NOK/month)
See all sizes
Administrator account
Authentication type SSH public key
Password
Username * VMachine1Lab2
Password *
Confirm password *
Inbound 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 * None
Allow selected ports
Select inbound ports * SSH (22)
Review + create
< Previous
Next : Disks >
Give feedback

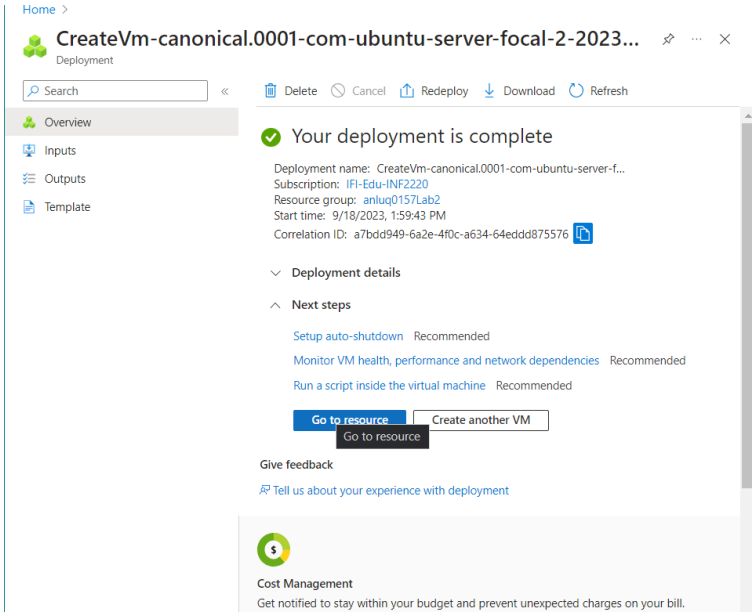

Inbound port rules
Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.
Public inbound ports * None
Allow selected ports
Select inbound ports * SSH (22)
All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.
Review + create
< Previous
Next : Disks >
Give feedback
Next : Disks >


Home > anluq0157Lab2 > Marketplace >
Create a virtual machine
Basics Disks Networking Management Monitoring Advanced Tags Review + create
Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. Learn more
VM disk encryption
Azure disk storage encryption automatically encrypts your data stored on Azure managed disks (OS and data disks) at rest by default when persisting it to the cloud.
Encryption at host
Encryption at host is not registered for the selected subscription.
Learn more about enabling this feature
OS disk
OS disk type *
Premium SSD (locally-redundant storage)
Delete with VM
Key management
Platform-managed key
Enable Ultra Disk compatibility
Ultra disk is not supported with selected security type.
Data disks for VMachine1Lab2
You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.
LUN Name Size (GiB) Disk type Host caching Delete with VM
Review + create
< Previous
Next : Networking >
Next : Networking >
Give feedback

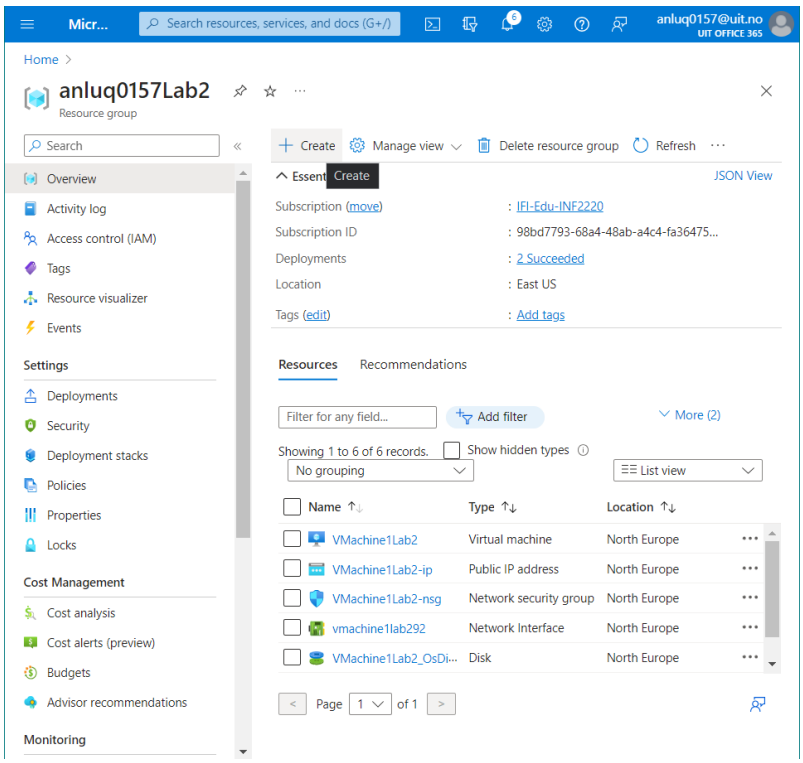

Home > anluq0157Lab2 > Marketplace >
Create a virtual machine
Basics Disks Networking Management Monitoring Advanced Tags Review + create
Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution.
Learn more
Network interface
When creating a virtual machine, a network interface will be created for you.
Virtual network *
VNanluq0157Lab2
Create new
Subnet *
default (10.0.0.0/24)
Manage subnet configuration
Public IP
(new) VMachine1Lab2-ip
Create new
NIC network security group
None
Basic
Advanced
Public inbound ports *
None
Allow selected ports
Select inbound ports *
SSH (22)
This will allow all IP addresses to access your virtual machine. This is only
Review + create
< Previous
Next : Management >
Give feedback

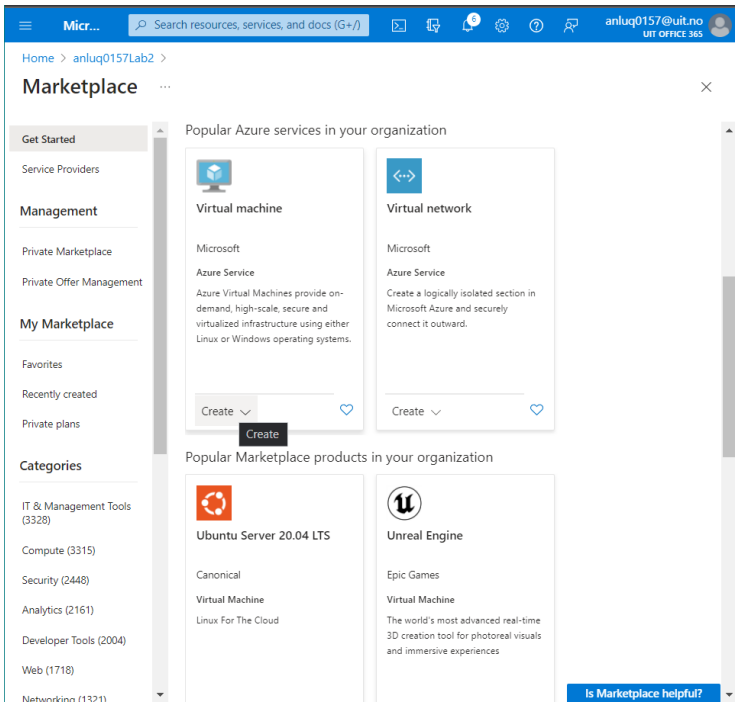

Home > anluq0157Lab2 > Marketplace >
Create a virtual machine
Create new
NIC network security group
None
Basic
Advanced
Public inbound ports *
None
Allow selected ports
Select inbound ports *
SSH (22)
This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.
Delete public IP and NIC when VM is deleted
Enable accelerated networking
Load balancing
You can place this virtual machine in the backend pool of an existing Azure load balancing solution. Learn more
Place this virtual machine behind an existing load balancing solution?
Review + create
< Previous
Next : Management >
Give feedback

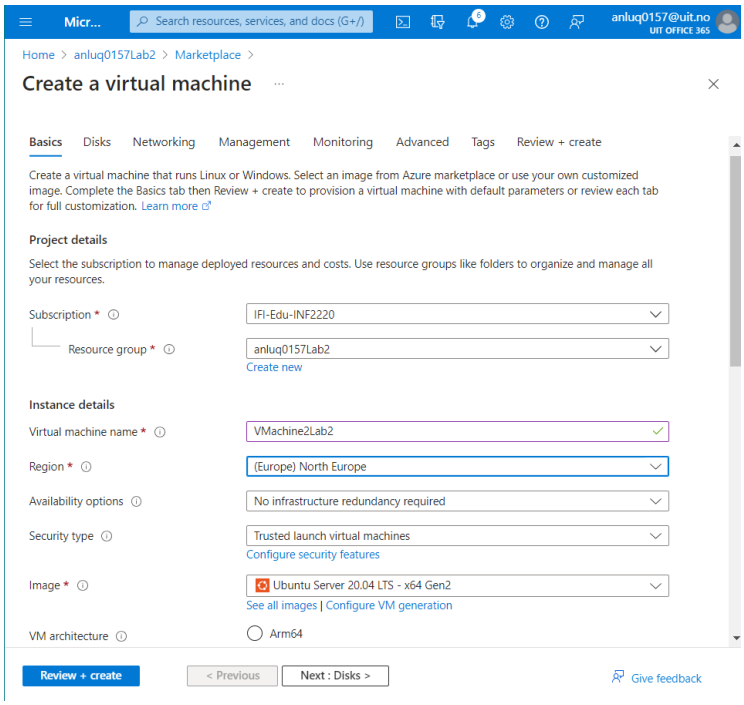

Micr...
Search resources, services, and docs (G+/)
anluq0157@uit.no
UIT OFFICE 365
Home > anluq0157Lab2 > Marketplace >
Create a virtual machine
Validation passed
Basics
Disks
Networking
Management
Monitoring
Advanced
Tags
Review + create
Cost given below is an estimate and not the final price. Please use Pricing calculator for all your pricing needs.
Price
1 X Standard D2s v3
by Microsoft
Terms of use | Privacy policy
Subscription credits apply
0.8680 NOK/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 provide rights for third-party offerings. See the Azure Marketplace Terms for additional details.
Name
Antonio Manuel LUQUE MOLINA
Preferred e-mail address
anluq0157@uit.no
Preferred phone number
+4777644561
Create
Create
< Previous
Next >
Download a template for automation
Give feedback

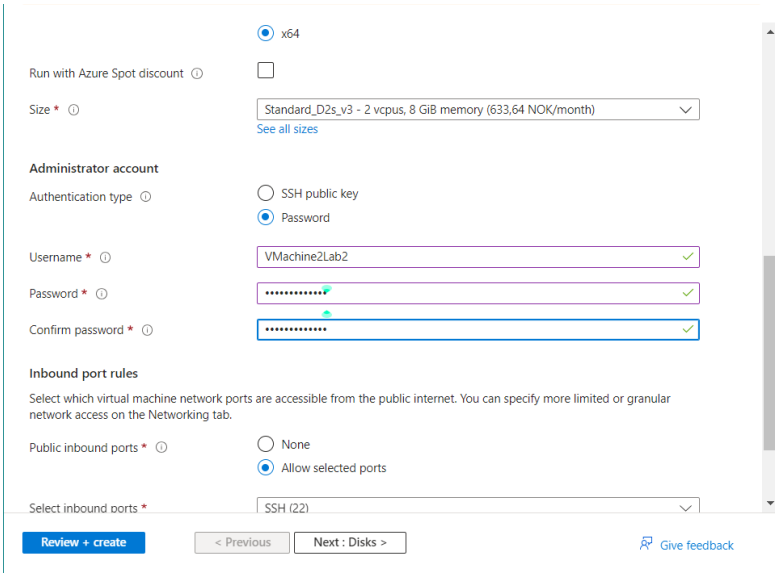


Now the first virtual machine is created, let's go for the second one:

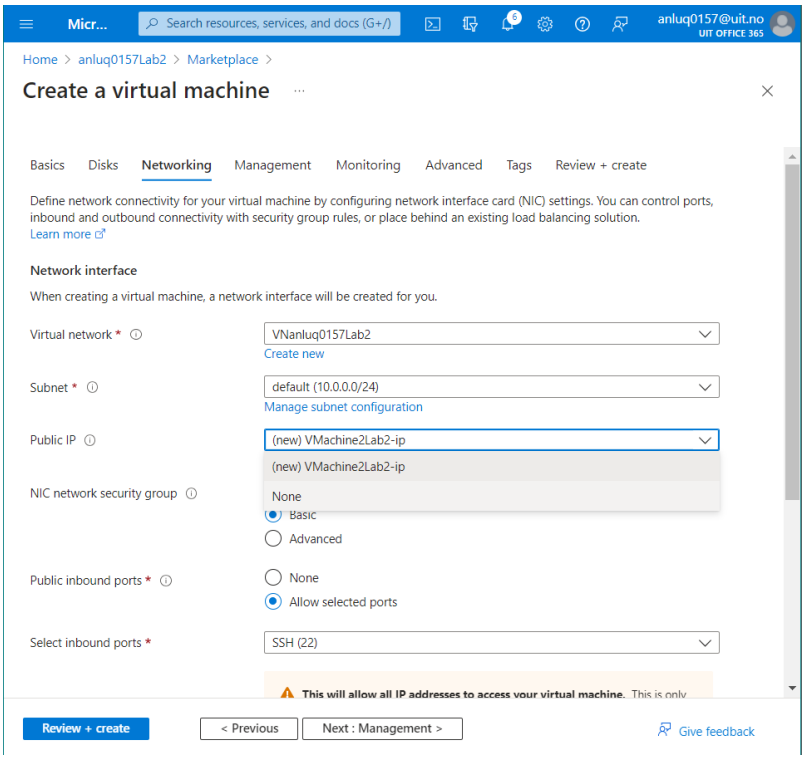


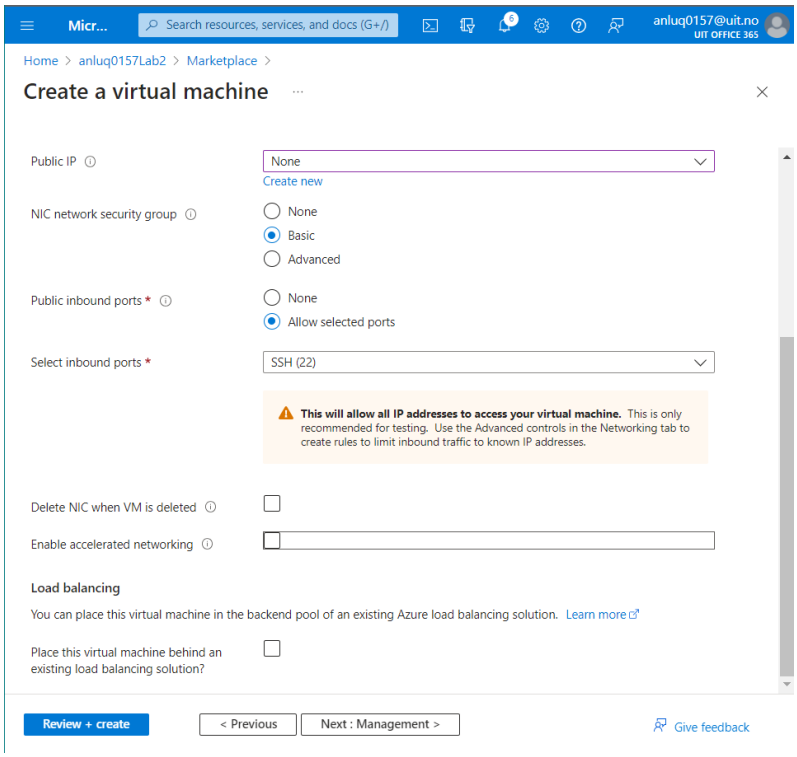

Micr...
Search resources, services, and docs (G+/)
anluq0157@uit.no
UIT OFFICE 365
Home > anluq0157Lab2 >
Marketplace
Get Started
Service Providers
Management
Private Marketplace
Private Offer Management
My Marketplace
Favorites
Recently created
Private plans
Categories
IT & Management Tools (3328)
Compute (3315)
Security (2448)
Analytics (2161)
Developer Tools (2004)
Web (1718)
Popular Azure services in your organization
Virtual machine
Microsoft
Azure Service
Azure Virtual Machines provide on-demand, high-scale, secure and virtualized infrastructure using either Linux or Windows operating systems.
Create
Create
Virtual network
Microsoft
Azure Service
Create a logically isolated section in Microsoft Azure and securely connect it outward.
Create
Popular Marketplace products in your organization
Ubuntu Server 20.04 LTS
Canonical
Virtual Machine
Linux For The Cloud
Unreal Engine
Epic Games
Virtual Machine
The world's most advanced real-time 3D creation tool for photoreal visuals and immersive experiences
Is Marketplace helpful?

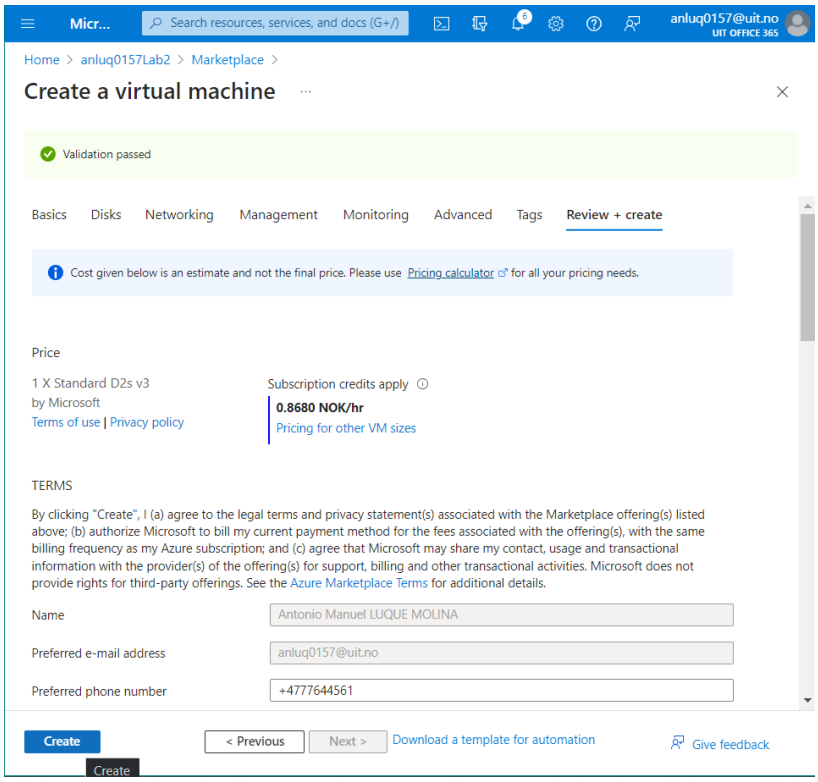

Micr...
Search resources, services, and docs (G+/)
anluq0157@uit.no
UIT OFFICE 365
Home > anluq0157Lab2 > Marketplace >
Create a virtual machine
Basics
Disks
Networking
Management
Monitoring
Advanced
Tags
Review + create
Create a virtual machine that runs Linux or Windows. Select an image from Azure 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
Project details
Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.
Subscription *
IFI-Edu-INF2220
Resource group *
anluq0157Lab2
Create new
Instance details
Virtual machine name *
VMachine2Lab2
Region *
(Europe) North Europe
Availability options
No infrastructure redundancy required
Security type
Trusted launch virtual machines
Configure security features
Image *
Ubuntu Server 20.04 LTS - x64 Gen2
See all images | Configure VM generation
VM architecture
Arm64
Review + create
< Previous
Next : Disks >
Give feedback

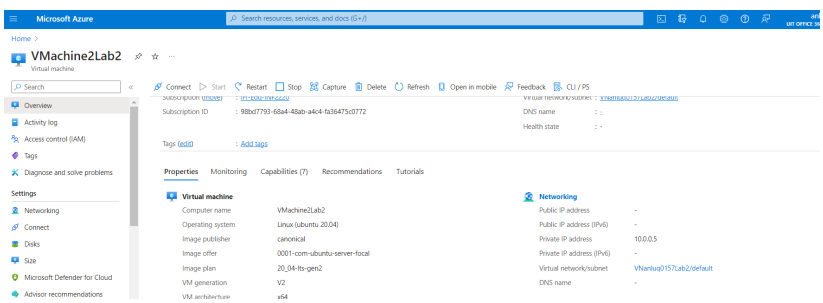


In Public IP we select None:

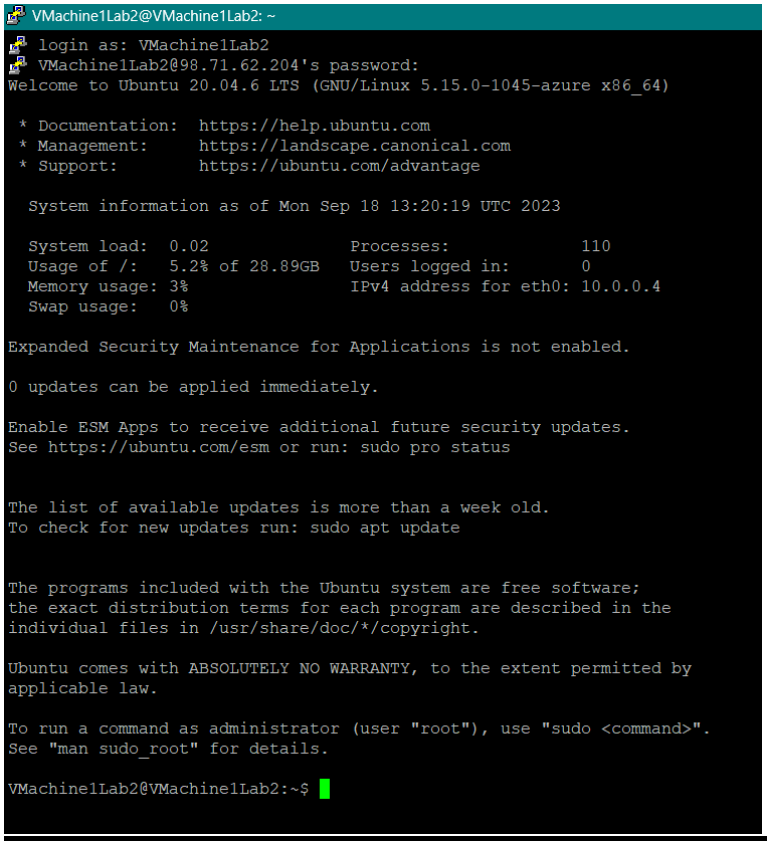


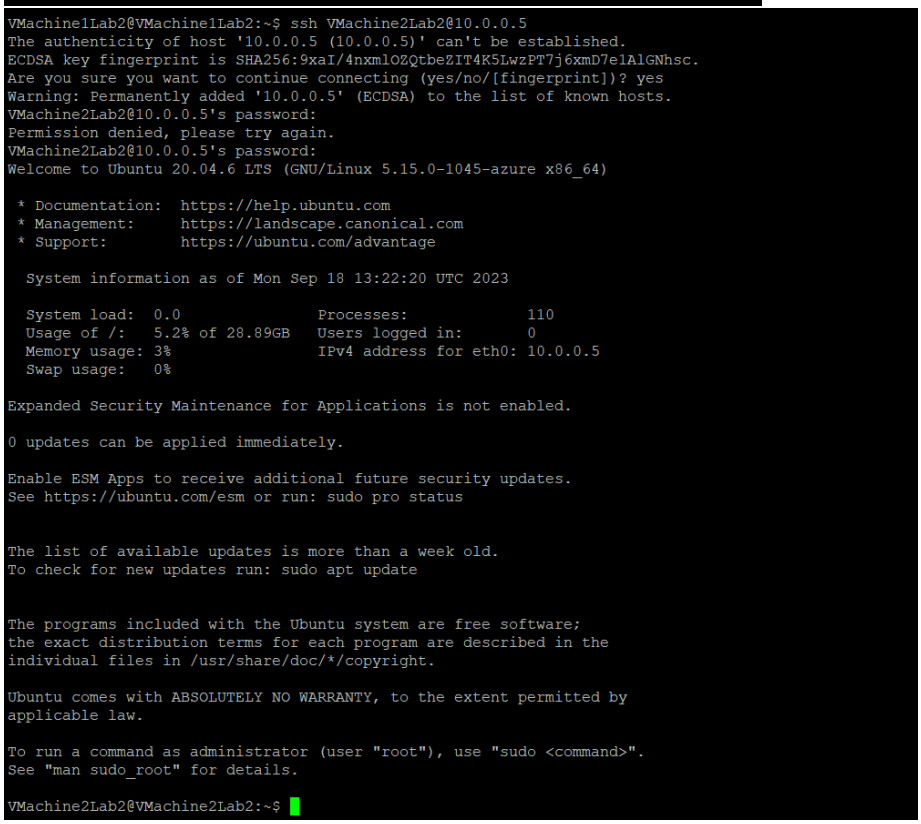

Micr...
Search resources, services, and docs (G+/)
anluq0157@uit.no
UIT OFFICE 365
Home > anluq0157Lab2 > Marketplace >
Create a virtual machine
Public IP
None
Create new
NIC network security group
None
Basic
Advanced
Public inbound ports *
None
Allow selected ports
Select inbound ports *
SSH (22)
This 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.
Delete NIC when VM is deleted
Enable accelerated networking
Load balancing
You can place this virtual machine in the backend pool of an existing Azure load balancing solution. Learn more
Place this virtual machine behind an existing load balancing solution?
Review + create
< Previous
Next : Management >
Give feedback


Micr...
Search resources, services, and docs (G+/)
anluq0157@uit.no
UIT OFFICE 365
Home > anluq0157Lab2 > Marketplace >
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.
Price
1 X Standard D2s v3
by Microsoft
Terms of use | Privacy policy
Subscription credits apply
0.8680 NOK/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 provide rights for third-party offerings. See the Azure Marketplace Terms for additional details.
Name
Antonio Manuel LUQUE MOLINA
Preferred e-mail address
anluq0157@uit.no
Preferred phone number
+4777644561
Create
< Previous
Next >
Download a template for automation
Give feedback


Microsoft Azure
VMachine2Lab2
Virtual machine
Connect
Start
Restart
Stop
Capture
Delete
Refresh
Open in mobile
Feedback
CLI / PS
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Networking
Connect
Disks
Size
Microsoft Defender for Cloud
Advisor recommendations
Subscription ID : 98bd7793-68a4-48ab-a4c4-fa36475c0772
DNS name :
Health state : -
Tags (edit) : Add tags
Properties
Monitoring
Capabilities (7)
Recommendations
Tutorials
Virtual machine
Computer name VMachine2Lab2
Operating system Linux (ubuntu 20.04)
Image publisher canonical
Image offer 0001-com-ubuntu-server-focal
Image plan 20_04-lts-gen2
VM generation V2
Networking
Public IP address -
Public IP address (IPv6) -
Private IP address 10.0.0.5
Private IP address (IPv6) -
Virtual network/subnet VNanluq0157Lab2/default
DNS name -

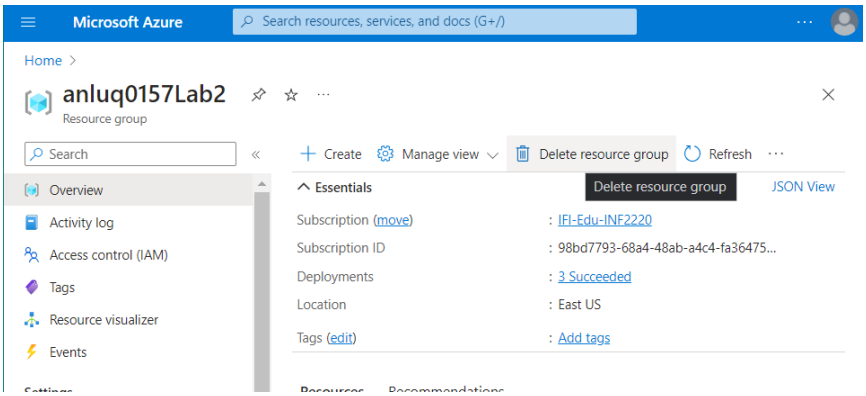
To access the second virtual machine, as it does not have a public IP, we will first have to access the first virtual machine and then execute SSH with the name and private address of the second virtual machine as shown below:

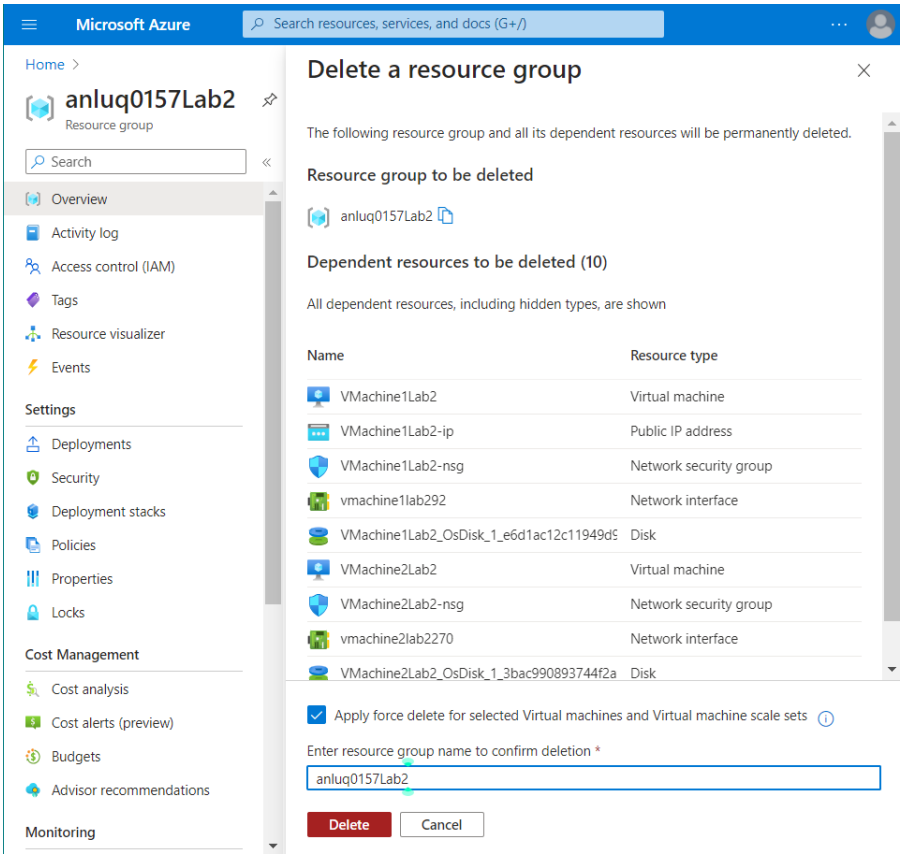




Here we can see that we have gained access and can now do what we need to do.

Now that we have met our objectives, we will delete the entire resource group so as not to accumulate unnecessary expenses:





Now regarding this questions:

- What is an Azure Virtual Network?
- How to create Azure VNet?
- How to provision a VM using the created VNet?
- What is the need of private IP address?

I will give an answer:

- Azure Virtual Network is a network in the Microsoft Azure cloud that allows you to securely connect and isolate Azure resources, like virtual machines (VMs), from the internet and other VNets. It provides a private network space, enabling communication between Azure resources

within the same VNet or across different VNets, while allowing control over network security and routing.

●In order to create an Azure VNet:

- In Azure Portal, go to "Create a resource" or if you have a resource group go there.

- Search for "Virtual network" and click "Create."

- Fill in details like name, address space, and subnets (if this is necessary).

- Configure DNS settings, security, and other options (if this is necessary).

- Click "Create" to create the VNet.

●Provisioning a VM using the created VNet:

- When creating a VM in Azure, during the setup process:

- Choose the existing VNet you created earlier.

- Select a subnet (could be the default one or other that you create) within that VNet for the VM.

- This VM will be part of the VNet and can communicate with other resources in the same VNet.

●Need for Private IP Address:

- Private IP addresses are essential for:

- Security: They keep resources hidden from the public internet.

- Isolation: They help isolate resources within a private network (VNet), reducing exposure to external threats.

- Internal Communication: Private IPs enable Azure resources to communicate with each other within a VNet or across peered VNets while keeping traffic within the Azure backbone.

- Compliance: They help meet regulatory and compliance requirements by keeping sensitive data on private networks.