

## Harjoitus 3: Virtuaalikoneet

### Tehtävä 1: Luo Virtuaalikone Azure portaalista

1. Avaa koneesi selaimesta [portal.azure.com](https://portal.azure.com) ja kirjaudu sisään. Klikkaa vasemmasta laidasta + **Create a Resource** -valintaa ja valitse Windows Server 2019 Datacenter. Anna seuraavat tiedot:

**Resource Group:** Valitse create new ja anna sille joku yksilöllinen nimi

**Virtual Machine Name:** Anna joku yksilöllinen nimi koneelle

**Region:** (Europe) North Europe

**Size:** Valitse Change size ja valitse listasta Standard B2ms

**Username:** Joku tunnus pääkäyttäjäksi

**Password:** Anna joku validi salasana, min. 12 merkkiä (älä unohda antamaasi salasanaa )  
Vahvista salasanasasi

Klikkaa **Next:Disks>**


Tarkista, että valinta on Premium SSD (locally-redundant storage). Ei luoda vielä datalevyjä.

Klikkaa **Next: Networking >**

Klikkaa **Review + Create**. Tarkista, että validointi meni läpi ja klikkaa **Create**. Odota, kunnes virtuaalikone on luotu.

Tarkista, että virtuaalikoneresurssiin ei ole liitetty ongelmailmoituksia. Avaa virtuaalikoneen blade klikkaamalla sitä ja mene valikossa alaspäin kohtaan **Help**. Valitse Resource Health ja tarkista, ettei hälyttäviä ilmoituksia ole.

# Create a virtual machine ...

 Changing Basic options may reset selections you have made. Review all options prior to creating the 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 \* ⓘ

Pay-As-You-Go

Resource group \* ⓘ

(New) ztan\_RG

[Create new](#)

### Instance details

Virtual machine name \* ⓘ

ztanVM

Region \* ⓘ


(Europe) North Europe

Availability options ⓘ

Availability zone

Availability zone \* ⓘ

Zones 1

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

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Availability zone \* ⓘ

Zones 1

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Security type ⓘ

Standard

Image \* ⓘ

 Windows Server 2019 Datacenter - Gen2

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

VM architecture ⓘ

☐ Arm64

☒ x64

 Arm64 is not supported with the selected image.

Run with Azure Spot discount ⓘ

☐

# 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 for the selected VM size Standard\_DS1\_v2 in North Europe.

### Data disks for ztanVM


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 |
|-----|------|------------|-----------|--------------|----------------|
|-----|------|------------|-----------|--------------|----------------|

# 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 DS1 v2

by Microsoft

[Terms of use](#) | [Privacy policy](#)


Subscription credits apply ⓘ

**0.1160 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 provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

 **You have set RDP port(s) open to the internet.** This is only recommended for testing. If you want to change this setting, go back to Basics tab.

## Basics

|                                 |                                          |
|---------------------------------|------------------------------------------|
| Subscription                    | Pay-As-You-Go                            |
| Resource group                  | (new) ztan_RG                            |
| Virtual machine name            | ztanVM                                   |
| Region                          | North Europe                             |
| Availability options            | Availability zone                        |
| Availability zone               | 1                                        |
| Security type                   | Standard                                 |
| Image                           | Windows Server 2019 Datacenter - Gen2    |
| VM architecture                 | x64                                      |
| Size                            | Standard DS1 v2 (1 vcpu, 3.5 GiB memory) |
| Username                        | ztan                                     |
| Public inbound ports            | RDP                                      |
| Already have a Windows license? | No                                       |
| Azure Spot                      | No                                       |

## Disks

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

## Networking

|                                                                        |                             |
|------------------------------------------------------------------------|-----------------------------|
| Virtual network                                                        | (new) ztan_RG-vnet          |
| Subnet                                                                 | (new) default (10.4.0.0/24) |
| Public IP                                                              | (new) ztanVM-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                    |

## 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 |
| Cloud init                 | No   |
| User data                  | No   |
| Disk controller type       | SCSI |
| Proximity placement group  | None |
| Capacity reservation group | None |



CreateVm-MicrosoftWindowsServer.WindowsServer-201-20221205150020 | Overview

Search

Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

### Deployment is in progress

Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe... Start time: 12/5/2022, 3:02:22 PM  
Subscription: Pay-As-You-Go Correlation ID: 777b8055-4cbb-4043-b52e-25583f6f4f89  
Resource group: ztan\_RG

#### Deployment details

| Resource          | Type                                    | Status  | Operation details                 |
|-------------------|-----------------------------------------|---------|-----------------------------------|
| ztan-server       | Microsoft.Compute/virtualMachines       | Created | <a href="#">Operation details</a> |
| ztan-server433_z1 | Microsoft.Network/networkInterfaces     | Created | <a href="#">Operation details</a> |
| ztan_RG-vnet      | Microsoft.Network/virtualNetworks       | OK      | <a href="#">Operation details</a> |
| ztan-server-nsg   | Microsoft.Network/networkSecurityGroups | OK      | <a href="#">Operation details</a> |
| ztan-server-ip    | Microsoft.Network/publicIPAddresses     | OK      | <a href="#">Operation details</a> |

Give feedback

Tell us about your experience with deployment

## Tehtävä 2: Toiminnallisuuden tarkistus

1. Kun asennus on valmis, avaa virtuaalikoneesi blade klikkaamalla **Go to resource**. Mene osioon Settings ja sen alta avaa Networking. Huomaa, että virtuaalikoneellasi on jo valmiina julkinen IP (**NIC Public IP**), jota tarvitaan koneeseen yhteyden saamiseksi ulkopuolelta.

ztan-server | Networking

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

ztan-server433\_z1

IP configuration  
ipconfig1 (Primary)

Network interface: ztan-server433\_z1  
Virtual network/subnet: ztan\_RG-vnet/default  
NIC Public IP: 20.107.177.209  
NIC Private IP: 10.5.0.4  
Accelerated networking: Enabled

Effective security rules Troubleshoot VM connection issues Topology

Inbound port rules Outbound port rules Application security groups Load balancing

Network security group ztan-server-nsg (attached to network interface: ztan-server433\_z1)  
Impacts 0 subnets, 1 network interfaces

| Priority | Name                          | Port | Protocol | Source            | Destination    | Action |
|----------|-------------------------------|------|----------|-------------------|----------------|--------|
| 300      | RDP                           | 3389 | TCP      | Any               | Any            | Allow  |
| 65000    | AllowVnetInBound              | Any  | Any      | VirtualNetwork    | VirtualNetwork | Allow  |
| 65001    | AllowAzureLoadBalancerInBound | Any  | Any      | AzureLoadBalancer | Any            | Allow  |
| 65500    | DenyAllInBound                | Any  | Any      | Any               | Any            | Deny   |

2. Mene takaisin Overview -kohtaan ja valitse bladen ylävalikosta Connect ja valitse avautuvasta vlikosta RDP. Klikkaa "Download RDP file" ja tallenna se haluamaasi paikkaan. Oletustallennuspaikka on jälleen oma Downloads -kansiosi.

ztan-server | Connect

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. →

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 (20.107.177.209)

Port number \*  
3389

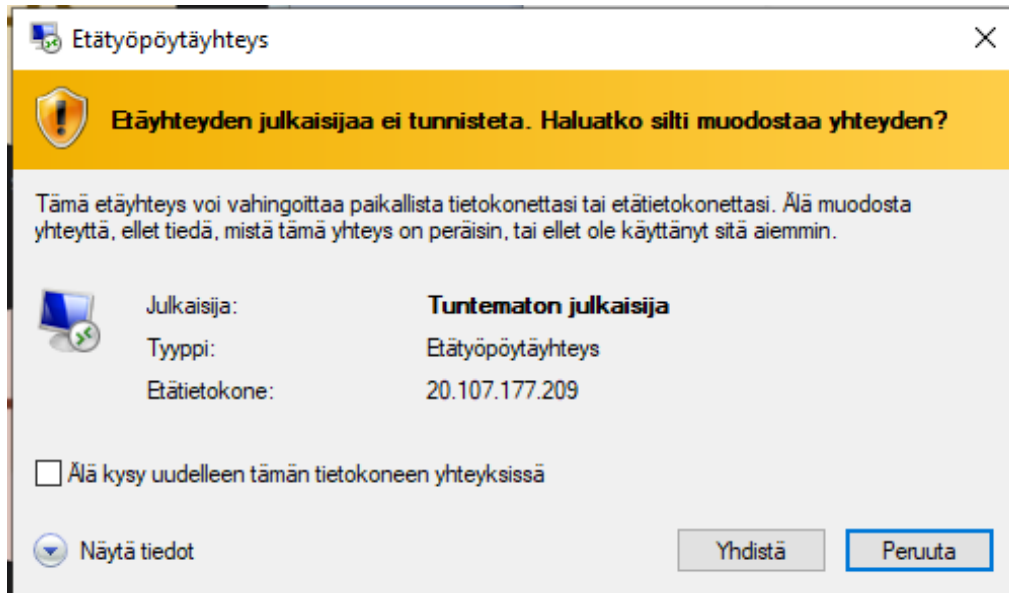
Download RDP File

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

Provide feedback  
Tell us about your RDP experience



3. Avaa tiedosto ja kuittaa ilmoitus klikkaamalla **Connect**. Anna virtuaalikoneeseen määrittelemäsi käyttäjätunnus ja salasana. Kuittaa ilmoitus varmenteista valitsemalla "Yes". Salli verkkonäkyvyys.



Yhdistä -> jälkeen vaihda account/tunnus, että kirjaa sinne se mikä tunnus luotiin azure:ssa eli ztan opiframe34Root

### Tehtävä 3: Datalevyjen määrittely

1. Luo datalevyt ja liitä ne virtuaalikoneeseesi. Avaa portaalista virtuaalikoneesi asetus blade ja mene kohtaan **Disks**. Klikkaa **+Create and attach new disk**. Anna seuraavat arvot asetuksiin HUOM! Levyn pitää olla kooltaan yli 10 GB:

Disk Name: Datadisk1

Size: Change size, uusi koko Standard SSD 15 GiB

Klikkaa uudelleen **+Create and attach new disk**.

2. Luo toinen datalevy seuraavilla asetuksilla:

Disk Name: Datadisk2

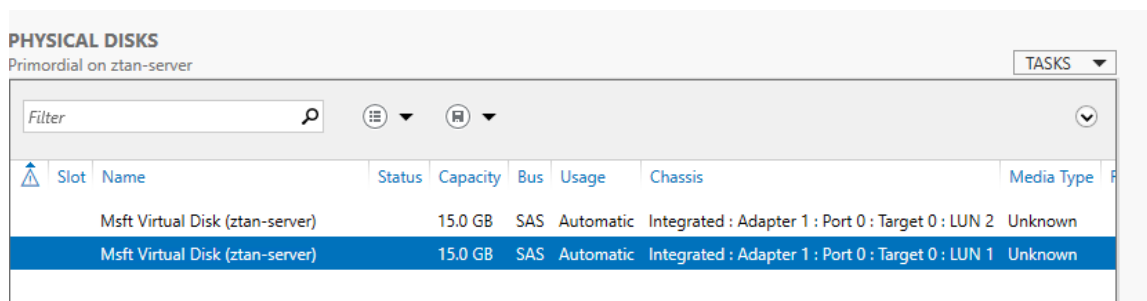
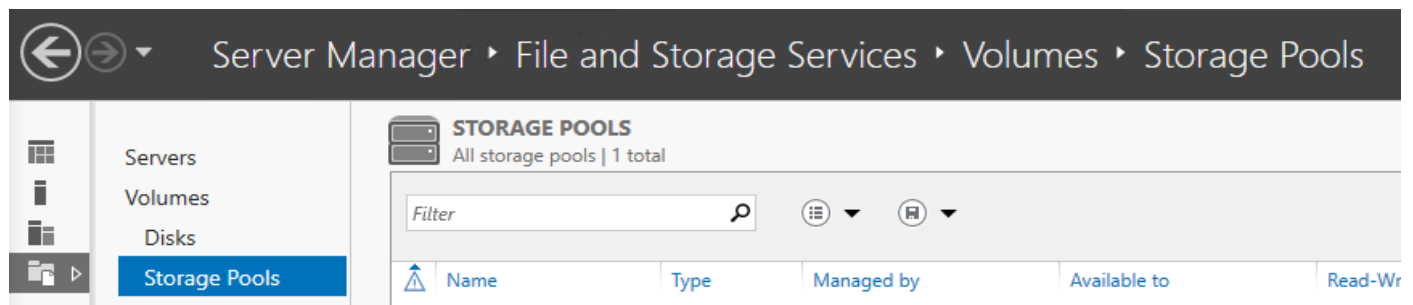
Size: Change size, uusi koko Standard SSD 15 GiB

Klikkaa ylävalikosta **Save**.

| + Create and attach a new disk |                           | 🔗 Attach existing disks |            |          |                     |              |                               |
|--------------------------------|---------------------------|-------------------------|------------|----------|---------------------|--------------|-------------------------------|
| LUN ⓘ                          | Disk name                 | Storage type            | Size (GiB) | Max IOPS | Max throughput (... | Encryption ⓘ | Host caching ⓘ                |
| 1                              | <a href="#">Datadisk1</a> | Standard SSD LRS        | 15         | 500      | 60                  | SSE with PMK | Read-only ▼ <a href="#">✕</a> |
| 2                              | <a href="#">Datadisk2</a> | Standard SSD LRS        | 15         | 500      | 60                  | SSE with PMK | Read-only ▼ <a href="#">✕</a> |

## Tehtävä 4: Luo virtuaalikoneessa kahden levyn Storage Pool

1. Mene virtuaalikoneeseen ja avaa Server Manager työkalu ja klikkaa File and Storage Services. Klikkaa Storage Pools. Varmisa, että Primordial pool on valittuna.



2. Valitse **Tasks** -valikosta **New Storage Pool**. Klikkaa avautuvasta Wizardista **Next**. Anna poolille nimeksi StoragePool1 ja klikkaa **Next**.

3. Valitse Select Physical Disks -ikkunasta molemmat levyt, klikkaa **Next** ja seuraavaksi klikkaa **Create**. Kun Pool on valmis, klikkaa **Close**. Valitse StoragePool1 ja tarkista, että levyt näkyvät **Physical Disks** -ruudussa.

New Storage Pool Wizard

Before You Begin

Storage Pool Name

Physical Disks

Confirmation

Results

On select storage subsystems you can additionally allocate disks as hot spares that can replace failed disks.

Physical disks:

| <input checked="" type="checkbox"/> | Slot | Name               | Capacity | Bus | RPM | Model        | Allocation | Chassis                                    |
|-------------------------------------|------|--------------------|----------|-----|-----|--------------|------------|--------------------------------------------|
| <input checked="" type="checkbox"/> |      | Msft Virtual Di... | 15.0 GB  | SAS |     | Virtual Disk | Automatic  | Integrated : Adapter 1 : Port 0 : Target 0 |
| <input checked="" type="checkbox"/> |      | Msft Virtual Di... | 15.0 GB  | SAS |     | Virtual Disk | Automatic  | Integrated : Adapter 1 : Port 0 : Target 0 |

Confirm that the following are the correct settings, and then click Create.

STORAGE POOL LOCATION

Server:

ztan-server

Cluster role:

Not Clustered

Storage subsystem:

Windows Storage

STORAGE POOL PROPERTIES

Name:

StoragePool1

Capacity:

30.0 GB

PHYSICAL DISKS

Msft Virtual Disk (ztan-server)

Automatic

Msft Virtual Disk (ztan-server)

Automatic

**STORAGE POOLS**  
All storage pools | 1 total

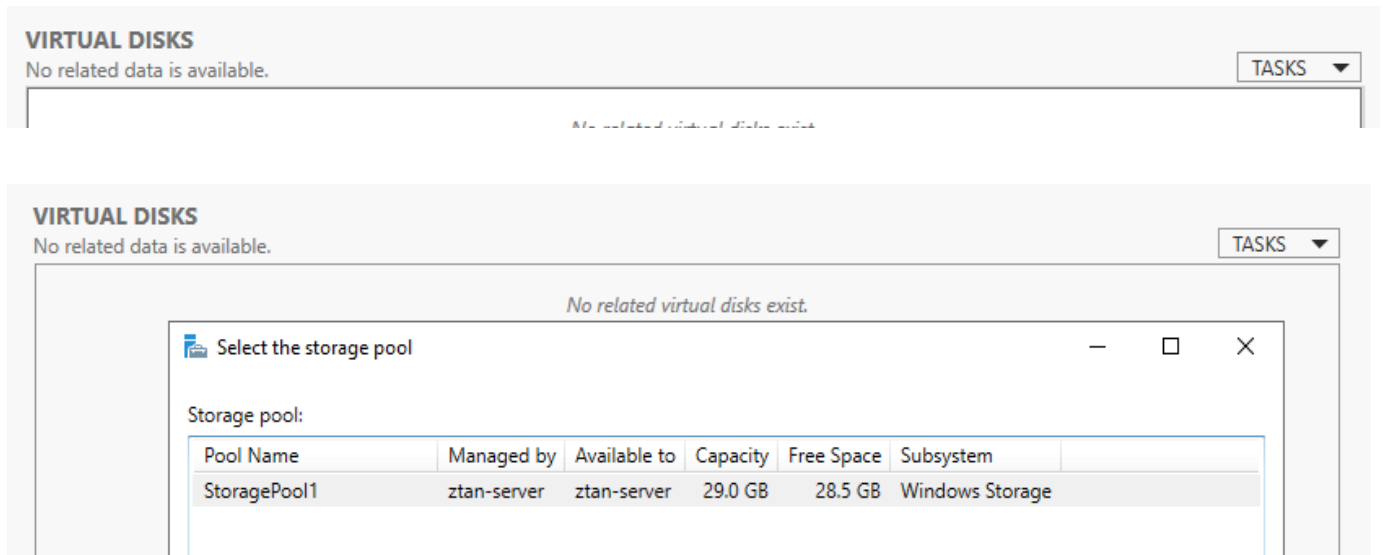
Filter

⌵

⌵

| ⚠ | Name                | Type         | Managed by  | Available to | Read-Write Server | Capacity | Free Space | Percent Allocated | Status |
|---|---------------------|--------------|-------------|--------------|-------------------|----------|------------|-------------------|--------|
| ⌵ | Windows Storage (1) |              |             |              |                   |          |            |                   |        |
|   | StoragePool1        | Storage Pool | ztan-server | ztan-server  | ztan-server       | 29.0 GB  | 28.5 GB    | <div></div>       |        |

4. Valitse **Storage Pools** -ruudusta StoragePool1 ja avaa **Virtual Disks** -ruudusta **Tasks** -valikko. Valitse **New Virtual Disk** ja valitse StoragePool1 avautuvasta ikkunasta ja klikkaa **OK**.



5. Klikkaa avautuvasta Wizardista **Next** ja anna virtuaalilevylle nimeksi VirtualDisk1 ja klikkaa **Next**. Uudesta ruudusta klikkaa **Next**.
6. Valitse **Storage Layout** -ikkunasta **Simple** ja klikkaa **Next**.
7. Valitse **Provisioning Type** -ikkunasta **Fixed** ja klikkaa **Next**.
8. Määrittele virtuaalilevyn kooksi Maximum Size ja klikkaa **Next**. Sen jälkeen klikkaa **Create**.

## Confirm selections

Before You Begin

Virtual Disk Name

Enclosure Awareness

Storage Layout

Provisioning

Size

**Confirmation**

Results

Confirm that the following are the correct settings, and then click Create.

**VIRTUAL DISK LOCATION**

Server: ztan-server

Subsystem: Windows Storage

Storage pool name: StoragePool1

Status: OK

Free space: 28.5 GB

**VIRTUAL DISK PROPERTIES**

Name: VirtualDisk1

Storage tiers: Disabled

Storage layout: Simple

Provisioning type: Fixed

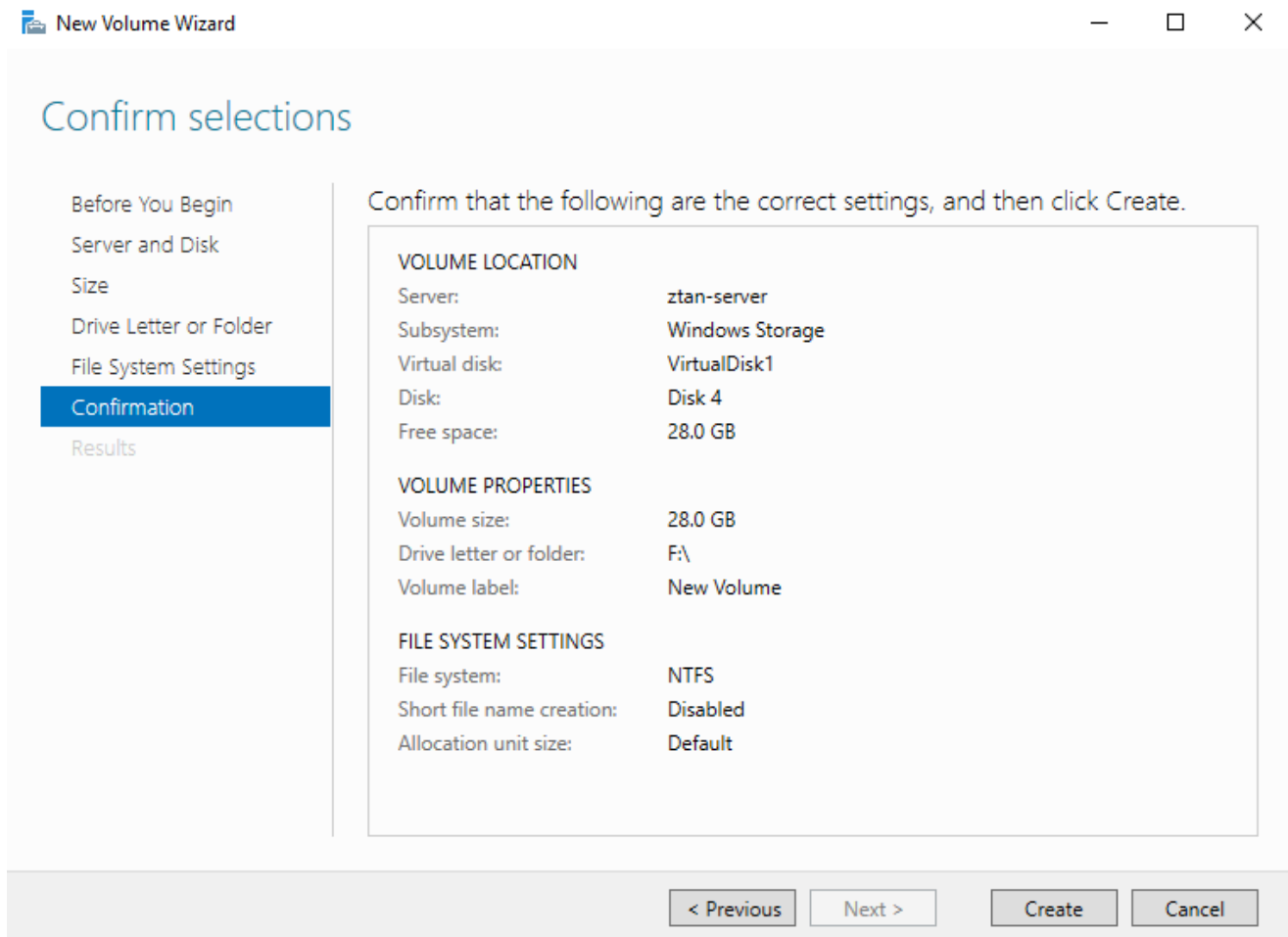
Total requested size: 28.0 GB

Enclosure awareness: None

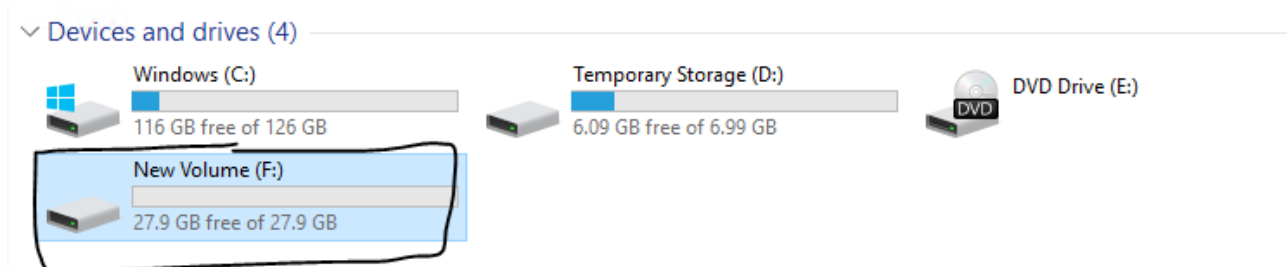
9. Tämän jälkeen avautuu uusi Wizard, jonka tarkoituksena on luoda virtuaalilevystä käyttökelpoinen levy virtuaalikoneeseen. Klikkaa **Next** ja valitse ainoa näkyvissä oleva levy. Klikkaa **Next**.
10. Hyväksy partition oletuskoko klikkaamalla **Next**.

11. Hyväksy levyasematunnukseksi F: klikkaamalla **Next**.

12. Anna partition nimeksi VirtualDisk1 ja klikkaa **Next**. Klikkaa yhteenvetoikkunasta **Create**. Kun operaatio on valmis, klikkaa **Close**.



13. Tarkista, että File Explorerissa näkyy F: -asemana VirtualDisk1. (Tarkista oma tietokone)








Sulje virtuaalikoeysteys ja mene portaalin Resource Groups -näkömään ja poista tässä harjoituksessa luomasi resurssiryhmä seuraavasti:



Avaa oma resurssiryhmäsi klikkaamalla sitä resurssiryhmien listasta. (oma resurssi eli ztan\_RG)


## Resource groups ...








Default Directory (OpiframeTrainer1outlook.onmicrosoft.com)

 Create  Manage view   Refresh  Export

Filter for any field... Subscription equals **all**

 **0** Unsecure resources  **0** Recommendations

☐ Name 

|                          |                                                                                                                   |
|--------------------------|-------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> |  asdf_rg                         |
| <input type="checkbox"/> |  cloud-shell-storage-west europe |
| <input type="checkbox"/> |  JERG                            |
| <input type="checkbox"/> |  NetworkWatcherRG                |
| <input type="checkbox"/> |  Sami_RG                        |
| <input type="checkbox"/> |  Test_Larisa                   |
| <input type="checkbox"/> |  ztan_RG                       |

Kaksois klikkaa omaa resurssia, koska jotta siinä avautuu se mini ikkuna

Valitse ylävalikosta "Delete resource group"

## Resource groups

Default Directory (OpiframeTrainer1outlook.onmic...

+ Create ⚙️ Manage view ▾ ...

Filter for any field...

Name ↑↓

- asdf\_rg ...
- cloud-shell-storage-west europe ...
- JERG ...
- NetworkWatcherRG ...
- Sami\_RG ...
- Test\_Larisa ...
- ztan\_RG ...

## ztan\_RG

Resource group

Search

Overview

- Activity log
- Access control (IAM)
- Tags
- Resource visualizer
- Events
- Settings
- Deployments
- Security
- Policies
- Properties

+ Create ⚙️ Manage view ▾

Delete resource group

Essentials

Subscription (move) : [Pay-As-You-Go](#)

Subscription ID : 7b45e463-55ea-4258-a5ef-e11e05b3c4c2

Tags (edit) : [Click here to add tags](#)

Resources Recommendations

Filter for any field... Type equals all × Location

Showing 1 to 8 of 8 records. ☐ Show hidden types ⓘ

☐ Name ↑↓

☐ datadisk1

☐ datadisk2

Anna "Type the resource group name" ruutuun resurssiryhmäsi nimi.

eli oma luonneen resurssi nimi (ztan\_RG)

## Are you sure you want to delete "ztan\_R..."



Warning! Deleting the "ztan\_RG" resource group is irreversible. The action you're about to take can't be undone. Going further will delete this resource group and all the resources in it permanently.

☐ Apply force delete for selected Virtual machines and Virtual machine scale sets ⓘ

TYPE THE RESOURCE GROUP NAME:

ztan\_RG ✓

AFFECTED RESOURCES

There are 10 resources in this resource group that will be deleted.

## Notifications



[More events in the activity log →](#)

[Dismiss all](#)

### Deleting resource group ztan\_RG

Running

Deleting resource group ztan\_RG

a few seconds ago

poistamisessa se menee vähä hetki ja tarvittaess päivitä sivusto & F5

### Deleted resource group ztan\_RG



Deleted resource group ztan\_RG

3 minutes ago

Klikkaa Delete-painiketta.