

Benjamin Tisinger

IST 615 – Lab #4 Azure Part 2

2/24/2024

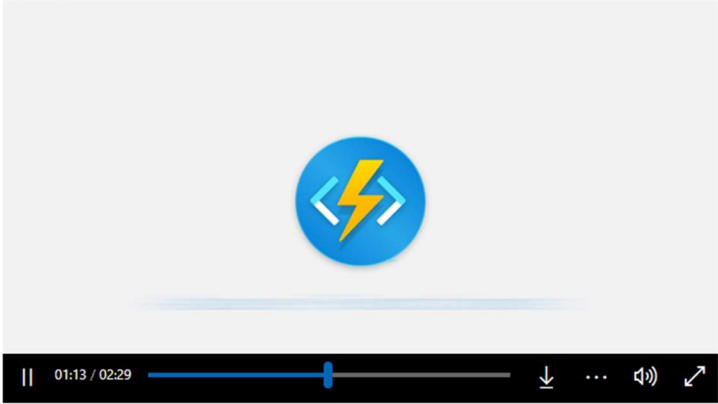
What is Microsoft Azure:

< Previous Unit 2 of 9 Next >

What is Microsoft Azure

4 minutes

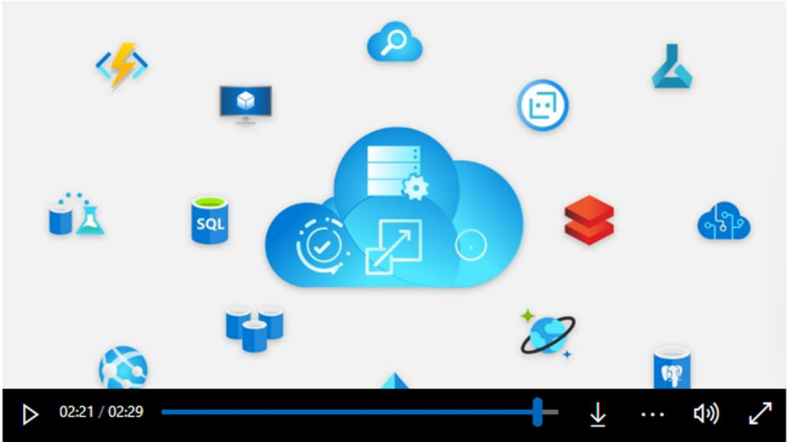
100 XP



01:13 / 02:29

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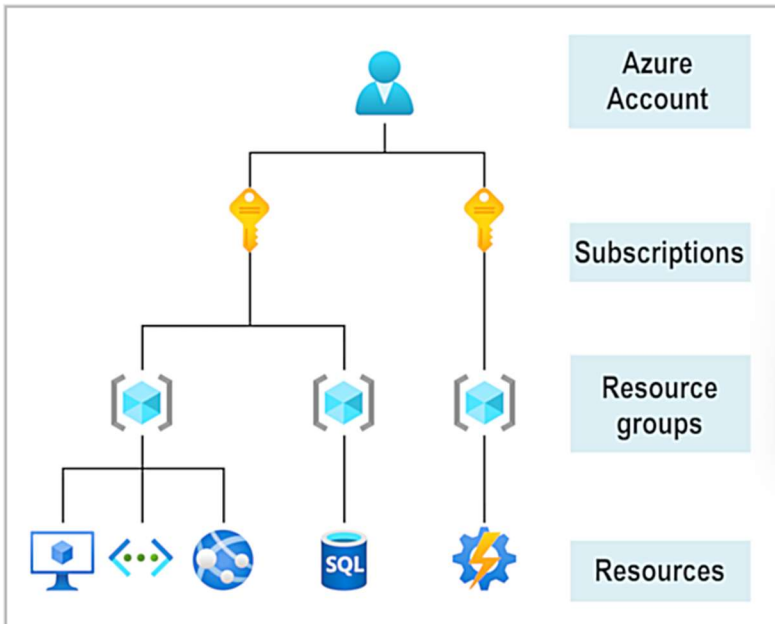
4 minutes



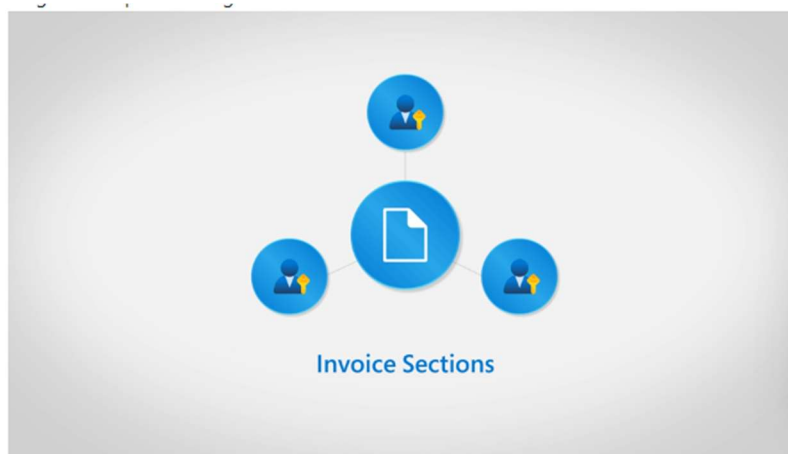
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Getting Started with Azure Accounts:



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```



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```

Exercise – Explore the Learn Sandbox:

```
PowerShell Copy
Get-date
```

Most Azure specific commands will start with the letters az. The Get-date command you just ran is a PowerShell specific command. Let's try an Azure command to check what version of the CLI you're using right now.

```
PowerShell Copy
az version
```

Task 2: Use the BASH CLI

If you're more familiar with BASH, you can use BASH command instead by shifting to the BASH CLI.

Enter bash to switch to the BASH CLI.

```
PowerShell Copy
bash
```

```
Azure Cloud Shell
PS /home/benjamin> bash
@Azure:~$
```

```
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

MOTD: SqlServer has been updated to Version 22!

VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
PS /home/benjamin> get-date

Sunday, February 25, 2024 10:16:38 PM

PS /home/benjamin> az version
{
  "azure-cli": "2.57.0",
  "azure-cli-core": "2.57.0",
  "azure-cli-telemetry": "1.1.0",
  "extensions": {
    "ai-examples": "0.2.5",
    "ml": "2.22.0",
    "ssh": "2.0.2"
  }
}
PS /home/benjamin>
```

auto-completion should start to work. If auto-completion isn't working, erase what you've entered, wait a bit longer, and try again.

```
Azure Cloud Shell
@Azure:~$ az interactive
This command is in preview and under development. Reference and support levels: https://aka.ms/CLI_refstatus
az> az resource list --resource-group account
account
acr
acs
ad
advisor
afd
ai-examples
aks
ams
apis

#[cmd] : use commands outside the application
[cmd] + [param] + "??[query]": Inject jmespath query from previous command
"??[query]": jmespath query of the previous command
[cmd] :: [num] : do a step by step tutorial of example
$ : get the exit code of the previous command
%X[cmd] : set a scope, and scopes can be chained with spaces
%X .. : go back a scope
Loading... Hit [enter] to refresh
```

```
Azure Cloud Shell
PS /home/benjamin> az interactive
This command is in preview and under development. Reference and support levels: https://aka.ms/CLI_refstatus
Installing the Interactive extension...
Default enabled including preview versions for extension installation now. Disabled in May 2024. Use '--allow-preview true' to enable it specifically if needed. Use '--allow-preview false' to install stable version only.
The installed extension 'interactive' is in preview.

Do you agree to sending telemetry (yes/no)? Default answer is yes: yes

A new Recommender is added which can make the completion ability more intelligent and provide the scenario completion.
!
If you want to disable this feature, you can use 'az config set interactive.enable_recommender=False' to disable it.

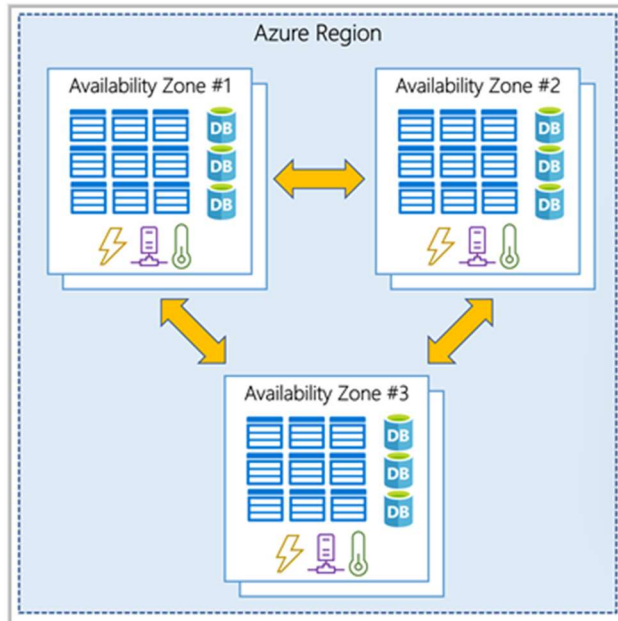
A command preload mechanism was added to prevent lagging and command run errors.
You can skip preloading in a single pass by CTRL+C or turn it off by setting 'az config set interactive.enable_preloading=False'

Loading command table... Expected time around 1 minute.
az> az help

Group
az

Subgroups:
account : Manage Azure subscription information.
acr : Manage private registries with Azure Container Registries.
ad : Manage Azure Active Directory Graph entities needed for Role Based Access Control.
advisor : Manage Azure Advisor.
```

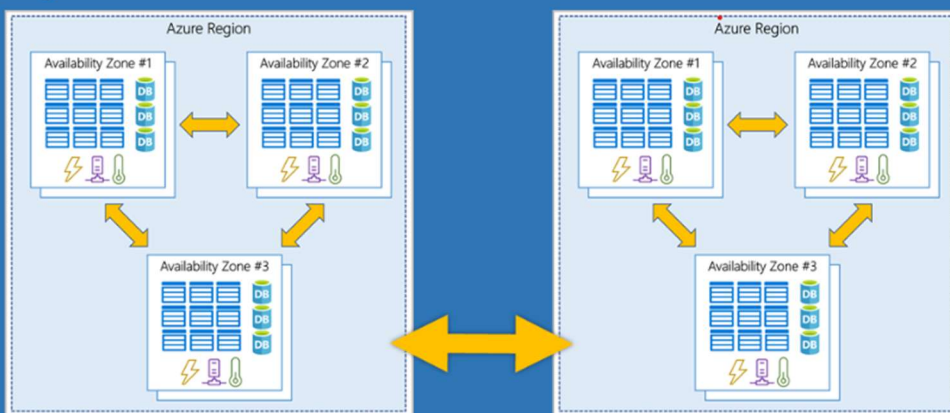
Describe Azure Physical Infrastructure:



```
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```

Geography

Region Pair

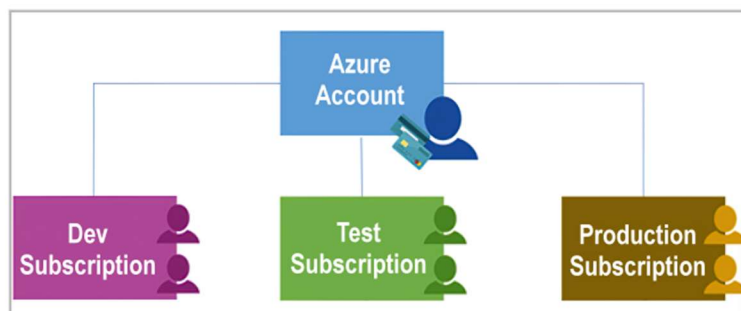


```
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```

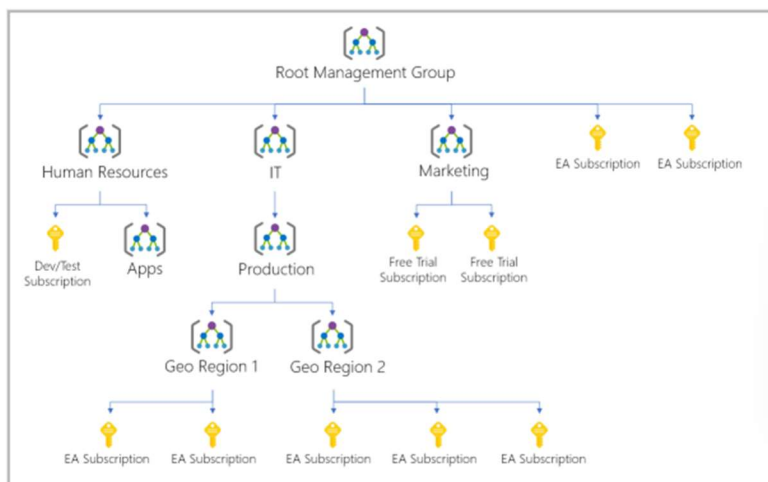
Describe Azure Management Infrastructure:



```
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```



```
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```



```
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```

Create an Azure Resource:

The screenshot shows the Azure Portal interface for a deployment named 'CreateVm-OpenLogic.CentOS-8_2-gen2-20240225173122'. The deployment is in progress. The left sidebar shows the 'Overview' tab selected. The main area displays the deployment details, including the deployment name, subscription, resource group, start time, and correlation ID. Below this is a table of resources created during the deployment.

Resource	Type	Status	Operation details
Ben	Microsoft.Compute/virtualMachines	Created	Operation details
ben439	Microsoft.Network/networkInterfaces	Created	Operation details
Ben-vnet	Microsoft.Network/virtualNetworks	OK	Operation details
Ben-ip	Microsoft.Network/publicIPAddresses	OK	Operation details
Ben-nsg	Microsoft.Network/networkSecurityGroups	OK	Operation details

Below the table, there is a 'Give feedback' link and a 'Tell us about your experience with deployment' link. A small terminal window is overlaid on the bottom right, showing the command 'bttising@syr.edu IST 615'.

Describe Azure Virtual Machine:

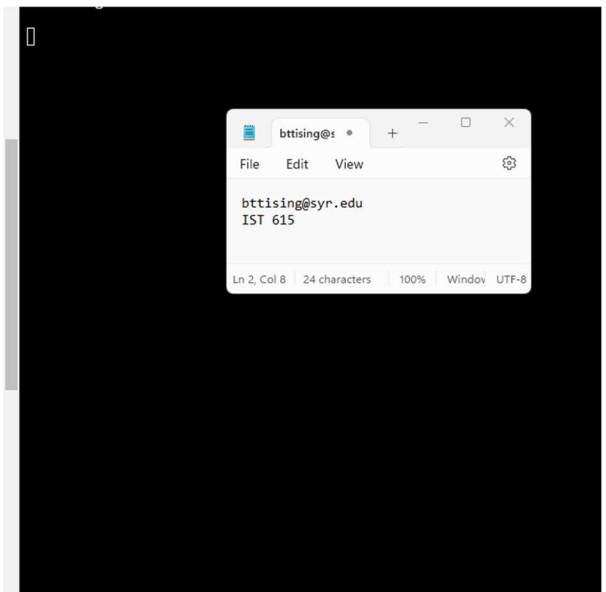
1. From Cloud Shell, run the following `az vm create` command to create a Linux VM:

```
Azure CLI Copy
az vm create \
  --resource-group "learn-53911825-1608-4f06-917f-fd81be8d6de7" \
  --name my-vm \
  --public-ip-sku Standard \
  --image Ubuntu2204 \
  --admin-username azureuser \
  --generate-ssh-keys
```

Your VM will take a few moments to come up. You named the VM `my-vm`. You use this name to refer to the VM in later steps.

2. Run the following `az vm extension set` command to configure Nginx on your VM:

```
Azure CLI Copy
az vm extension set \
  --resource-group "learn-53911825-1608-4f06-917f-fd81be8d6de7" \
  --vm-name my-vm \
  --name customScript \
  --publisher Microsoft.Azure.Extensions \
  --version 2.1 \
  --settings '{"fileUri":["https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/m..."]}' \
  --protected-settings '{"commandToExecute": "./configure-nginx.sh"}'
```



Describe Application Hosting:

Describe application hosting options

3 minutes

If you need to host your application on Azure, you might initially turn to a virtual machine (VM) or containers. Both VMs and containers provide excellent hosting solutions. VMs give you maximum control of the hosting environment and allow you to configure it exactly how you want. VMs also may be the most familiar hosting method if you're new to the cloud. Containers, with the ability to isolate and individually manage different aspects of the hosting solution, can also be a robust and compelling option.

There are other hosting options that you can use with Azure, including Azure App Service.

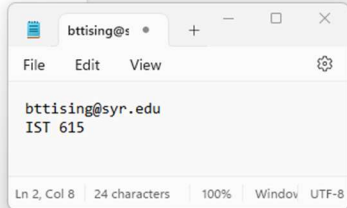
Azure App Service

App Service enables you to build and host web apps, background jobs, mobile back-ends, and RESTful APIs in the programming language of your choice without managing infrastructure. It offers automatic scaling and high availability. App Service supports Windows and Linux. It enables automated deployments from GitHub, Azure DevOps, or any Git repo to support a continuous deployment model.

Azure App Service is a robust hosting option that you can use to host your apps in Azure. Azure App Service lets you focus on building and maintaining your app, and Azure focuses on keeping the environment up and running.

Azure App Service is an HTTP-based service for hosting web applications, REST APIs, and mobile back ends. It supports multiple languages, including .NET, .NET Core, Java, Ruby, Node.js, PHP, or Python. It also supports both Windows and Linux environments.

✓ 100 XP



Configure Network Access:

1. Run the following `az vm list-ip-addresses` command to get your VM's IP address and store the result as a Bash variable:

```
Azure CLI
Copy

IPADDRESS=$(az vm list-ip-addresses \
  --resource-group "learn-53911825-1608-4f06-917f-fd81be8d6de7" \
  --name my-vm \
  --query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" \
  --output tsv)
```

2. Run the following `curl` command to download the home page:

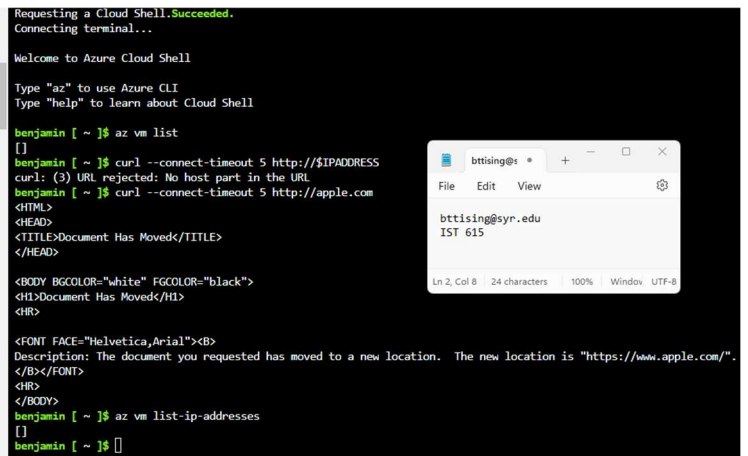
```
Bash
Copy

curl --connect-timeout 5 http://$IPADDRESS
```

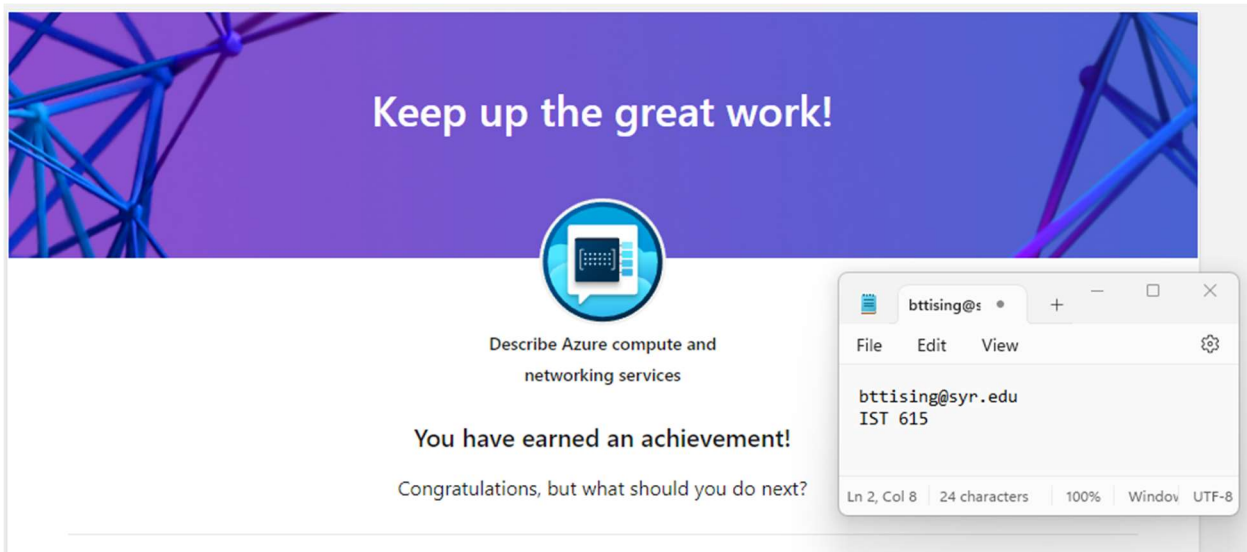
The `--connect-timeout` argument specifies to allow up to five seconds for the connection to occur. After five seconds, you see an error message that states that the connection timed out:

```
Output
Copy


curl: (28) Connection timed out after 5001 milliseconds
```



Achievement:



Keep up the great work!

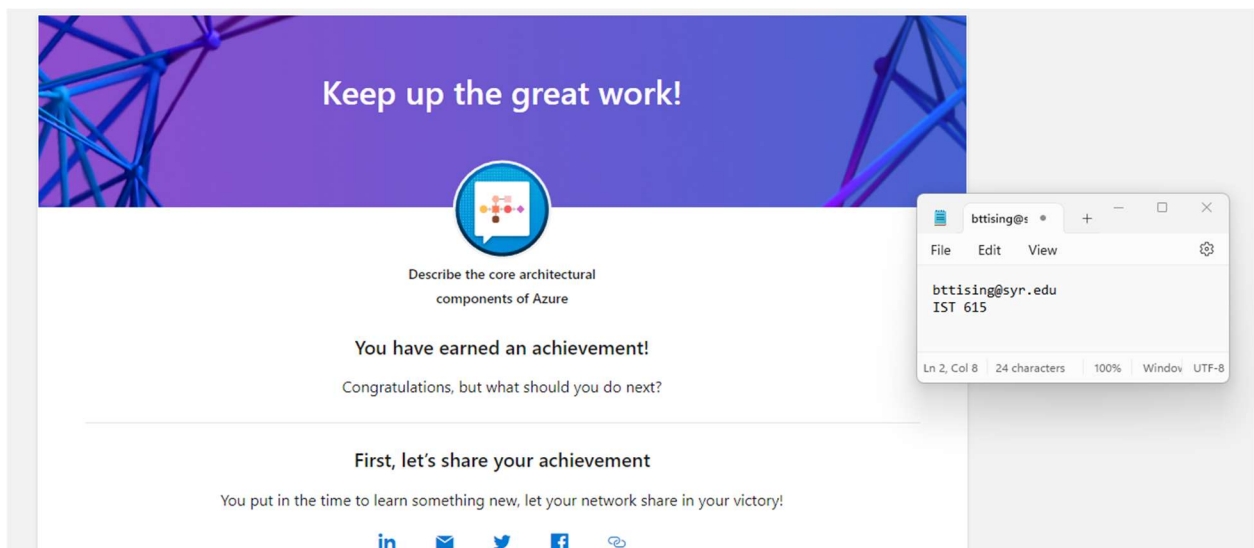


Describe Azure compute and networking services


You have earned an achievement!

Congratulations, but what should you do next?

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Keep up the great work!



Describe the core architectural components of Azure

You have earned an achievement!

Congratulations, but what should you do next?

First, let's share your achievement

You put in the time to learn something new, let your network share in your victory!

[in](#) [✉](#) [t](#) [f](#) [🔗](#)

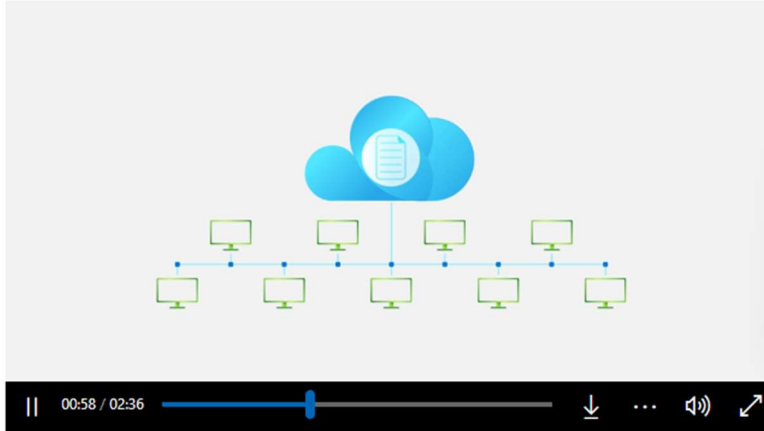
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Describe Azure Storage Services:

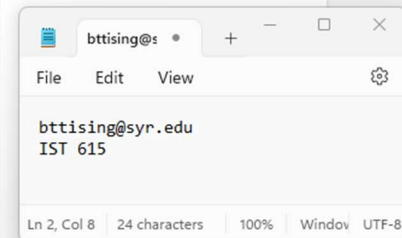
Describe Azure storage accounts

5 minutes

The following video introduces the different services that should be available with Azure Storage.



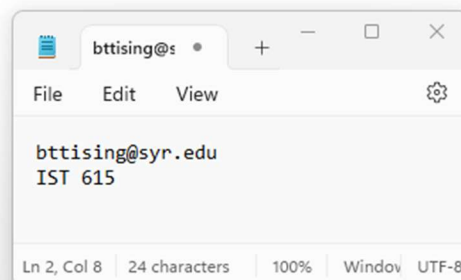
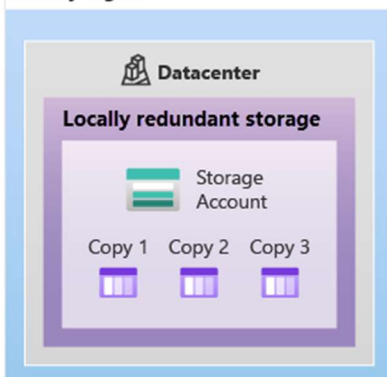
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Locally redundant storage

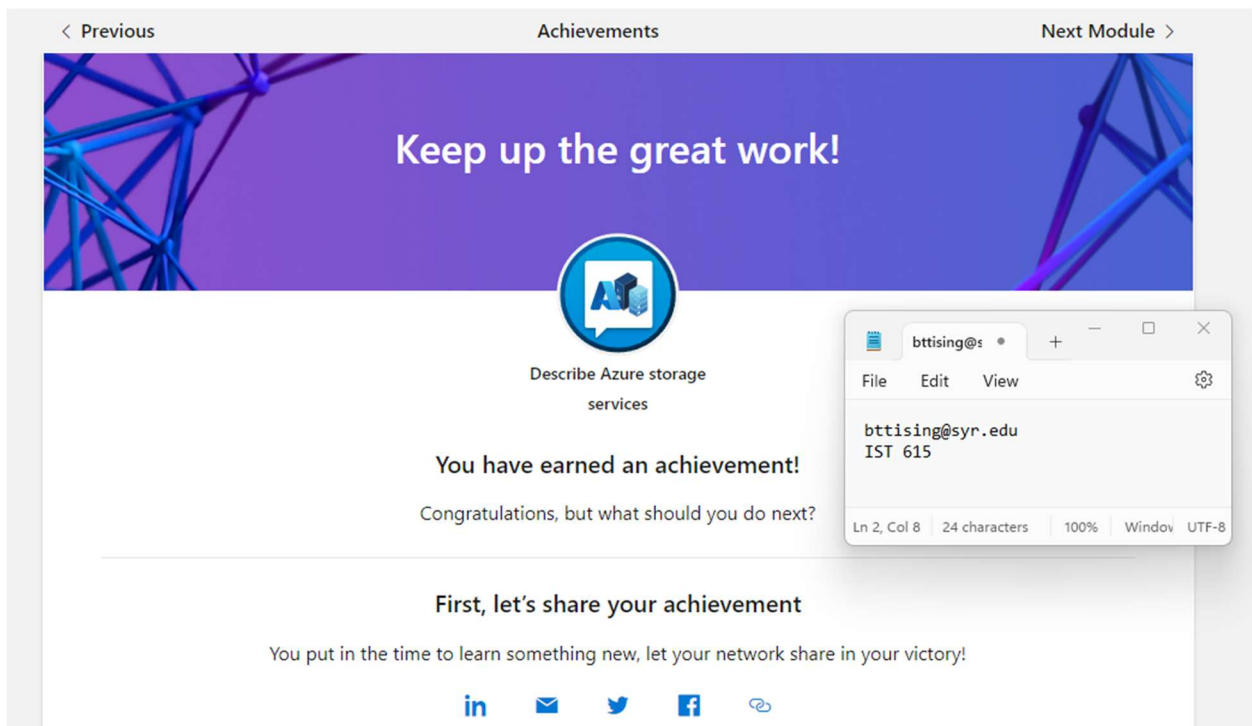
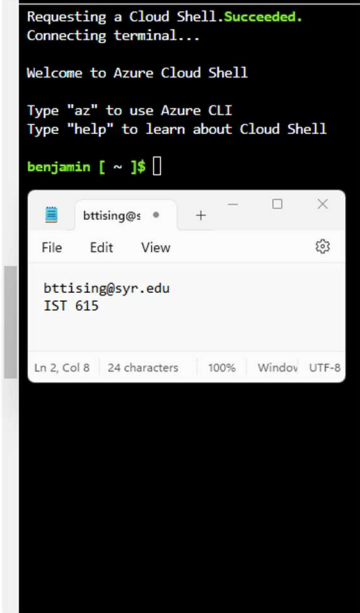
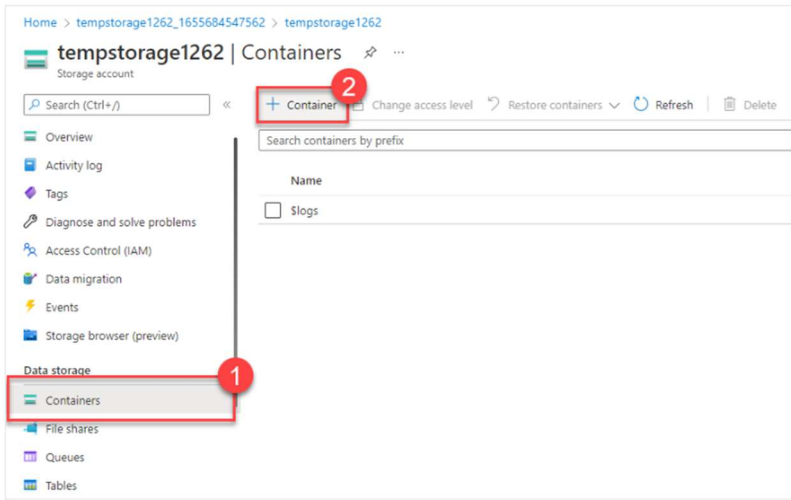
Locally redundant storage (LRS) replicates your data three times within a single data center in the primary region. LRS provides at least 11 nines of durability (99.999999999%) of objects over a given year.

Primary region



In this section, you'll create a Blob container and upload a picture.

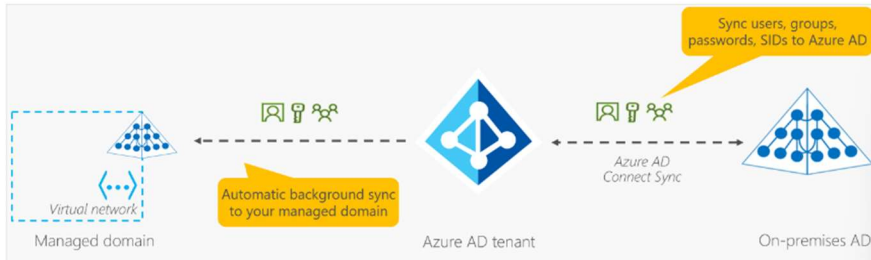
1. Under **Data storage**, select **Containers**.



Describe the Core Architecture Components of Azure:

Is information synchronized?

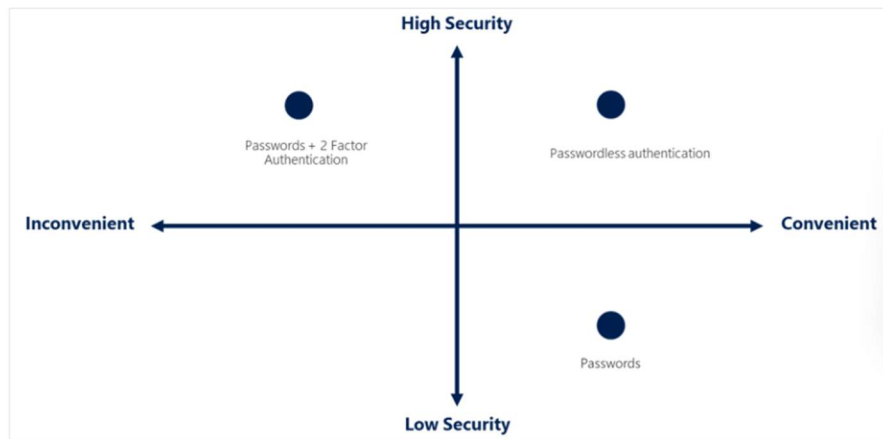
A managed domain is configured to perform a one-way synchronization from Microsoft Entra ID to Microsoft Entra Domain Services. You can create resources directly in the managed domain, but they aren't synchronized back to Microsoft Entra ID. In a hybrid environment with an on-premises AD DS environment, Microsoft Entra Connect synchronizes identity information with Microsoft Entra ID, which is then synchronized to the managed domain.



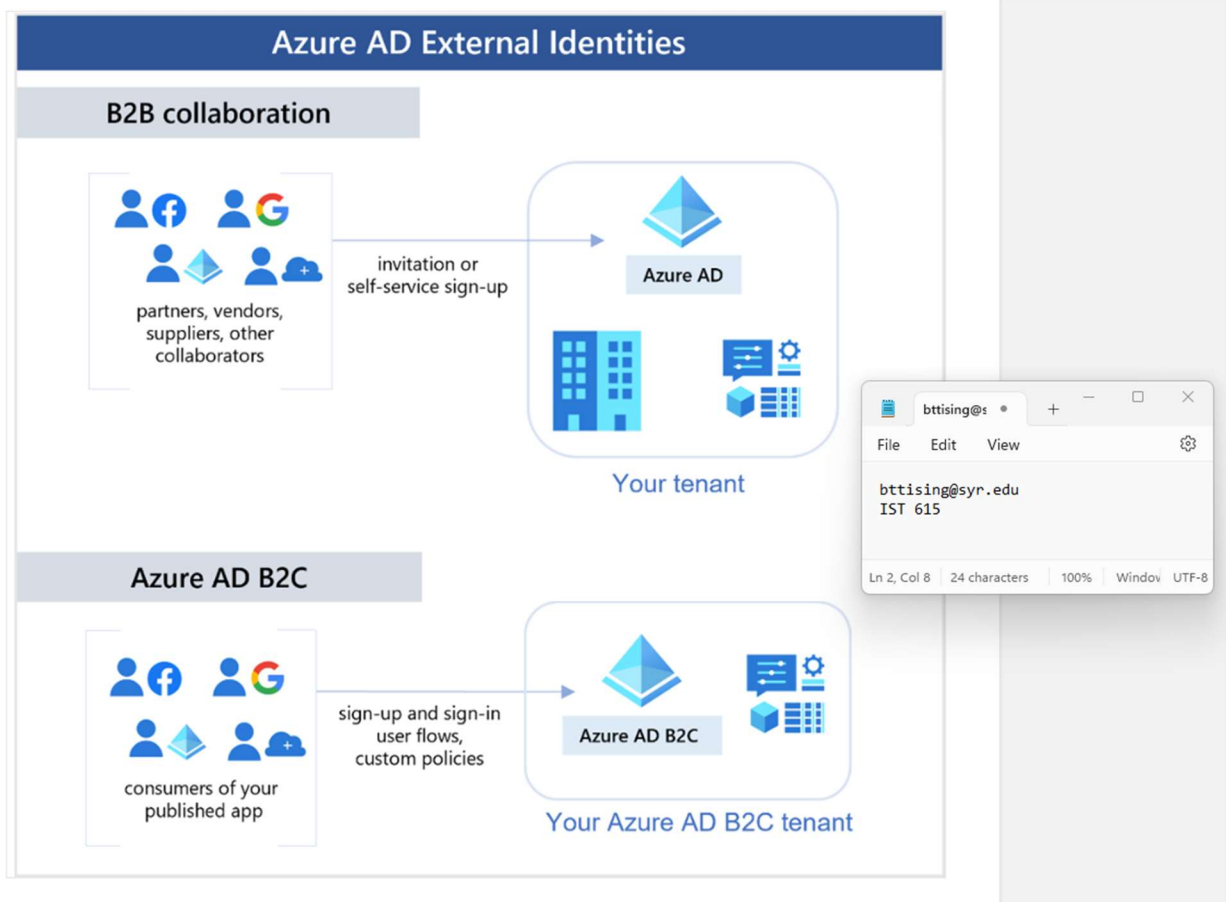
Applications, services, and VMs in Azure that connect to the managed domain can then use common Microsoft Entra Domain Services features such as domain join, group policy, LDAP, and Kerberos/NTLM authentication.

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```

The following diagram shows the security level compared to the convenience. Notice Passwordless authentication is high security and high convenience while passwords on their own are low security but high convenience.



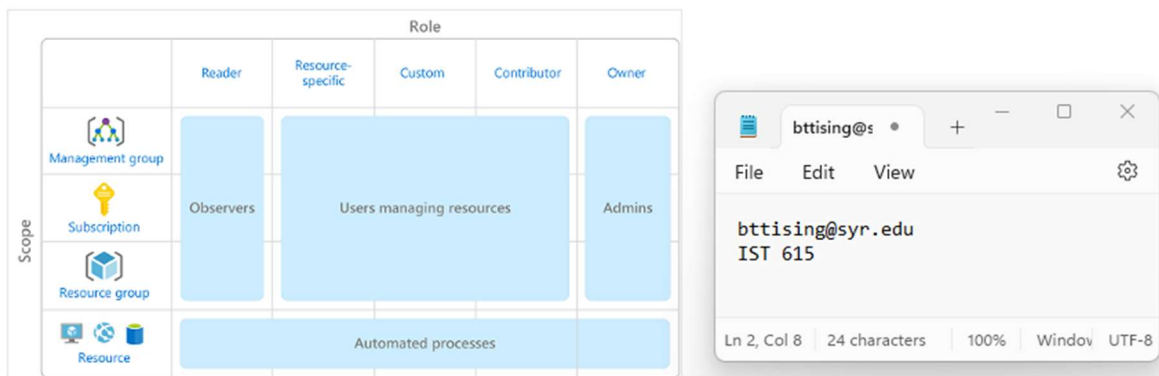
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```



How is role-based access control applied to resources?

Role-based access control is applied to a scope, which is a resource or set of resources that this access applies to.

The following diagram shows the relationship between roles and scopes. A management group, subscription, or resource group might be given the role of owner, so they have increased control and authority. An observer, who isn't expected to make any updates, might be given a role of Reader for the same scope, enabling them to review or observe the management group, subscription, or resource group.



Keep up the great work!



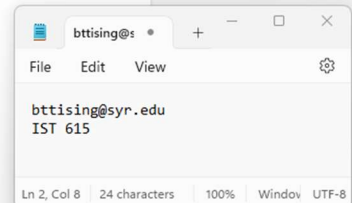
Microsoft Azure Fundamentals:
Describe Azure architecture
and services



Describe Azure identity, access,
and security

You have earned 2 achievements!

Congratulations, but what should you do next?



Layers of defense-in-depth

You can visualize defense-in-depth as a set of layers, with the data to be secured at the center and all the other layers functioning to protect that central data layer.

