

Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa
Student ID: 101590287

Term: Spring 2025

Case Project:

Complete the following 6 labs

Task01	AZ-900T00-A	Implement an Azure Load Balancer	Challenge Labs supporting Module 2: Core Azure Services, AZ300.2-007
Task02	AZ-900T00-A	Manage Azure Resource Deployment by Using an Azure Resource Manager Template	Challenge Labs supporting Module 2: Core Azure Services, AZ900-001
Task03	AZ-900T00-A	Run Commands by Using Azure Cloud Shell	Challenge Labs supporting Module 2: Core Azure Services, AZ900-003
Task04	AZ-900T00-A	Configure a Route Table Using the Azure Portal	Challenge Labs supporting Module 2: Core Azure Services, IaaS-004
Task05	AZ-900T00-A	Install and Configure Microsoft Entra ID Connect	Challenge Labs Module 3: All Access Pass, AZ300.3-001
Task06	AZ-900T00-A	Azure Cost Management	Challenge Labs supporting Module 4: Azure Pricing and Support, AZ900-015

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Paste your screenshots here

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### TASK 1: IMPLEMENT AN AZURE LOAD BALANCER. Challenge Labs supporting Module 2: Core Azure Services, AZ300.2-007

#### CREATE A LOAD BALANCER

A: Sign in to Azure Portal using given credentials

The screenshot shows the Microsoft Azure portal interface. At the top, there's a navigation bar with links for Home, Help, and Copilot. The main content area is titled "Azure services" and features a grid of service icons: Create a resource, Quickstart Center, Azure AI services, Kubernetes services, Virtual machines, App Services, Storage accounts, SQL databases, and Azure Cosmos DB. Below this is a "Resources" section with tabs for Recent and Favorite, showing a message: "No resources have been viewed recently". A "View all resources" button is present. On the left, a sidebar displays the user's name, Worlanyo Akpatsa, and student number, 101590287. At the bottom, there's a "Navigate" button.

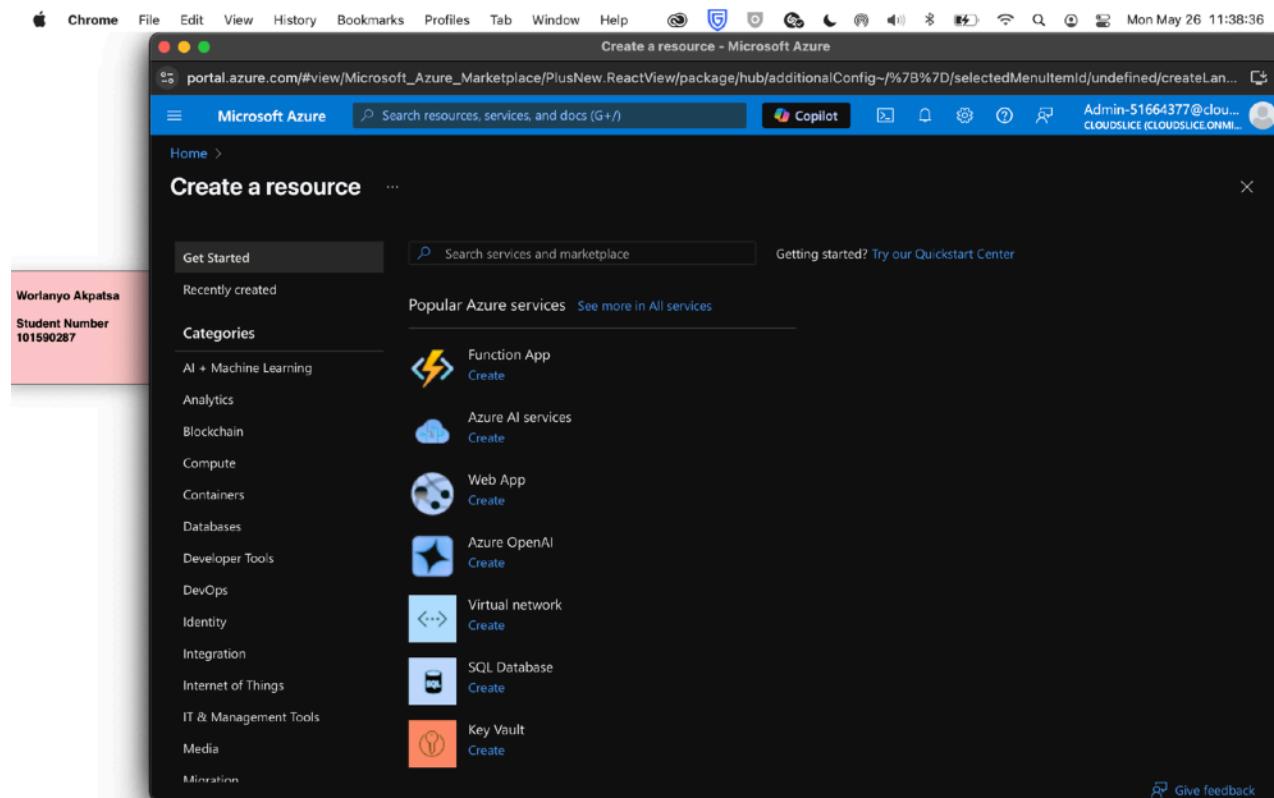
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B: On the Azure portal home page, in Azure services, select Create a resource. It takes you to this page.



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### C: In the Azure Marketplace, search for and select load balancer

This screenshot shows the Azure Marketplace search results for 'load balancer'. The search bar at the top has 'load balancer' entered. Below the search bar, there are filters: 'Pricing : All', 'Operating System : All', 'Publisher Type : All', and a checked checkbox for 'Azure services only'. There is also a dropdown for 'Product Type : All' and 'Publisher name : All'. A message box says 'New! Get AI-generated suggestions for load balancer' with a 'View suggestions' button. The results section shows four items:

- Load Balancer** (Microsoft): A load balancer that distributes incoming traffic among healthy virtual machine instances.
- ZEVENET Load Balancer** (Zevenet SL): Application delivery through high availability, security, load balancing and high performance.
- Caddy Load Balancer** (Cloud Infrastructure Services): Caddy Load Balancer solution integrates a simple, secure and flexible tool for managing web traffic across multiple backend servers.
- VMware Avi Load Balancer** (Avi Networks): Enterprise-grade ADC platform including load balancer, SSL/TLS, WAF for Microsoft Azure.

The left sidebar shows the user's profile: 'Worlanyo Akpatsa' and 'Student Number 101590287'. It also includes sections for 'Get Started', 'Service Providers', 'Management', 'Private Marketplace', 'Private Offer Management', 'My Marketplace' (Favorites, My solutions, Recently created, Private plans), and 'Categories' (Networking [80], Security [77], Compute [67]).

This screenshot shows the Azure Marketplace product page for the Microsoft Load Balancer. The top navigation bar shows 'Load Balancer - Microsoft Azure'. The main title is 'Load Balancer' with a 'Create' button. Below the title, it says 'Microsoft | Azure Service' and '4.6 (136 ratings)'. A dropdown menu for 'Plan' is set to 'Load Balancer' with a 'Create' button next to it. The page has tabs for 'Overview', 'Plans', 'Usage Information + Support', and 'Ratings + Reviews'. The 'Overview' tab is selected. The content area describes the Azure load balancer as a layer 4 load balancer that distributes incoming traffic among healthy virtual machine instances. It mentions the use of a hash-based distribution algorithm and supports Network Address Translation (NAT) to route traffic between public and private IP addresses. It also lists configuration options like load balancing incoming traffic across virtual machines and forwarding traffic to specific virtual machines using NAT rules. At the bottom, there is a 'More products from Microsoft' section with a 'See All' link and a 'Give feedback' button.

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### D: Select create on load balancer page. Takes you to the create a load balancer page

The screenshot shows a Chrome browser window displaying the Microsoft Azure portal at [portal.azure.com/#create/Microsoft.LoadBalancer-ARM](https://portal.azure.com/#create/Microsoft.LoadBalancer-ARM). The title bar indicates it's a Microsoft Azure page. The address bar shows the URL. The top navigation bar includes links for Home, Create a resource, Marketplace, Load Balancer, and other Azure services. A Copilot button is visible in the top right. On the left, there's a sidebar with the user's name, Worlanyo Akpatsa, and Student Number, 101590287. The main content area is titled 'Create load balancer'. It has tabs for Basics, Frontend IP configuration, Backend pools, Inbound rules, Outbound rules, Tags, and Review + create. The Basics tab is selected. The 'Project details' section contains fields for Subscription (set to 'Challenge Labs 08'), Resource group (with a dropdown menu and a 'Create new' link), and Instance details (Name, Region set to 'East US', SKU set to 'Standard (Distribute traffic to backend resources)', and Type set to 'Internal'). At the bottom, there are buttons for 'Review + create', '< Previous', 'Next : Frontend IP configuration >', 'Download a template for automation', and 'Give feedback'.

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### E: Select Resource group

The screenshot shows the Microsoft Azure portal interface for creating a load balancer. The top navigation bar includes 'File', 'Edit', 'View', 'History', 'Bookmarks', 'Profiles', 'Tab', 'Window', 'Help', and a Copilot button. The URL in the address bar is 'portal.azure.com/#create/Microsoft.LoadBalancer-ARM'. The main content area is titled 'Create load balancer'.

**Basics** tab is selected. The sidebar on the left displays the user's name 'Worlanyo Akpatsa' and student number '101590287'. The main content area contains the following information:

- Project details:**
  - Subscription: Challenge Labs 08
  - Resource group: AZ300-RG0d51664377
- Instance details:**
  - Name: (empty input field)
  - Region: East US
  - SKU: Standard (Distribute traffic to backend resources) (selected)
  - Type: Public (selected)

At the bottom of the form, there are buttons for 'Review + create', '< Previous', 'Next : Frontend IP configuration >', 'Download a template for automation', and 'Give feedback'.

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### F: Filling in instance details as specified in lab instructions

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Student Number  
101590287

Create load balancer - Microsoft Azure

portal.azure.com/#create/Microsoft.LoadBalancer-ARM

Microsoft Azure Search resources, services, and docs (G+)

Copilot Admin-51664377@clou... CLOUDSLICE (CLOUDSLICE ONML...)

Home > Create a resource > Marketplace > Load Balancer >

Create load balancer ...

accessible via public IP addresses, or internal where it is only accessible from a virtual network. Azure load balancers also support Network Address Translation (NAT) to route traffic between public and private IP addresses. [Learn more.](#)

**Project details**

Subscription \* Challenge Labs 08

Resource group \* AZ300-RG0d51664377

Create new

**Instance details**

Name \* MyLoadBalancer

Region \* East US

SKU \* Standard (Distribute traffic to backend resources)

Gateway (Direct traffic to network virtual appliances)

Type \* Public

Internal

Tier \* Regional

Global

Review + create < Previous Next : Frontend IP configuration > Download a template for automation Give feedback

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### G: Adding frontend IP configuration

The screenshot shows a Microsoft Azure portal window titled "Create load balancer - Microsoft Azure". The URL in the address bar is "portal.azure.com/#create/Microsoft.LoadBalancer-ARM". The page header includes the Microsoft Azure logo, a search bar, and user information: "Admin-51664377@clou... CLOUDSLICE (CLOUDSLICEONML...)".

The main content area is titled "Create load balancer" and shows the "Frontend IP configuration" step. The navigation tabs at the top of the form include "Basics", "Frontend IP configuration" (which is selected), "Backend pools", "Inbound rules", "Outbound rules", "Tags", and "Review + create".

A pink sidebar on the left displays the student information: "Worlanyo Akpatsa" and "Student Number 101590287".

The "Frontend IP configuration" section contains a note: "A frontend IP configuration is an IP address used for inbound and/or outbound communication as defined within load balancing, inbound NAT, and outbound rules." Below this is a button labeled "+ Add a frontend IP configuration".

The "Name" field is empty, and the "IP address" field is also empty. A placeholder text "Add a frontend IP to get started" is visible below the input fields.

At the bottom of the form, there are buttons for "Review + create", "< Previous", "Next : Backend pools >", "Download a template for automation", and "Give feedback".

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### H: Name for frontend IP configuration

The screenshot shows a Microsoft Azure portal page titled 'Add frontend IP configuration - Microsoft Azure'. The URL is 'portal.azure.com/#create/Microsoft.LoadBalancer-ARM'. The page is part of a 'Create load balancer' wizard, currently on the 'Frontend IP configuration' step. A sidebar on the left displays the user's name, 'Worlanyo Akpatsa', and student number, '101590287'. The main form has the following fields:

- Name**: LB-FIP51664377
- IP version**: IPv4 (selected)
- IP type**: IP address (selected)
- Public IP address**: Select public IP address (dropdown menu)
- Gateway Load balancer**: None (dropdown menu)

At the bottom, there are buttons for 'Review + create', '< Previous', 'Next : Backend pools >', 'Download a template', 'Save', and 'Cancel'.

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### I: Adding a new public IP address

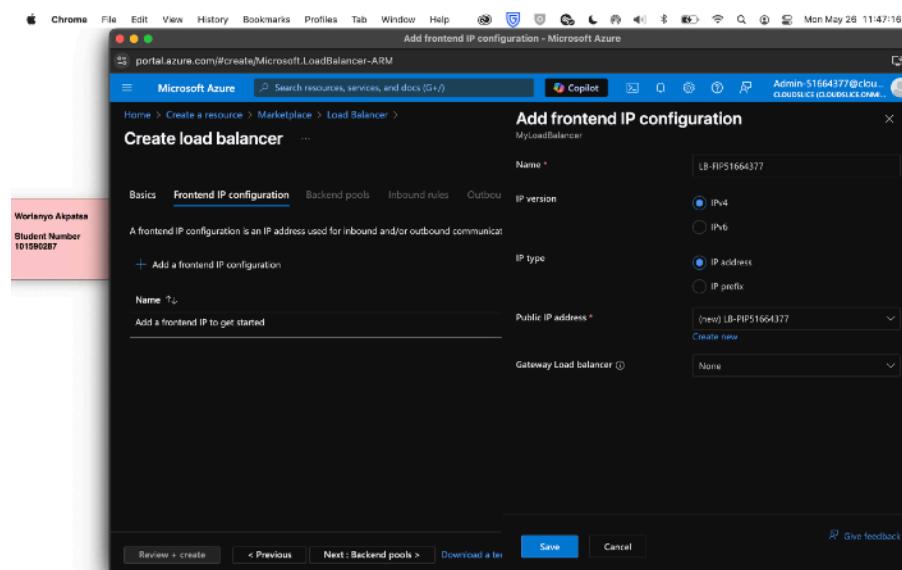
The screenshot shows a Microsoft Azure portal window titled 'Add frontend IP configuration - Microsoft Azure'. The URL is 'portal.azure.com/#create/Microsoft.LoadBalancer-ARM'. The page is titled 'Create load balancer' and is currently on the 'Frontend IP configuration' tab. A sidebar on the left displays the user's name 'Worlanyo Akpatsa' and student number '101590287'. The main form is titled 'Add frontend IP configuration' and has a sub-section 'Add a public IP address'. The 'Name' field is set to 'LB-PIP51664377'. Under 'IP version', 'IPv4' is selected. Under 'IP type', 'IP address' is selected. In the 'Add a public IP address' section, the 'Name' field is also set to 'LB-PIP51664377', 'SKU' is 'Standard', and 'Tier' is 'Regional'. The 'Assignment' section shows 'Static' selected. The 'Availability zone' dropdown is set to 'Zone-redundant'. The 'Routing preference' dropdown is set to 'Microsoft network'. At the bottom of the form are buttons for 'Review + create', '< Previous', 'Next : Backend pools >', 'Download a template', 'Save', and 'Cancel'.

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
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### J: Saving frontend IP configuration



Worlanyo Akpatsa  
Student Number  
101590287

Add frontend IP configuration - Microsoft Azure

Home > Create a resource > Marketplace > Load Balancer >

Create load balancer ...

Add frontend IP configuration

My load balancer

Name \* LB-FIPS1664377

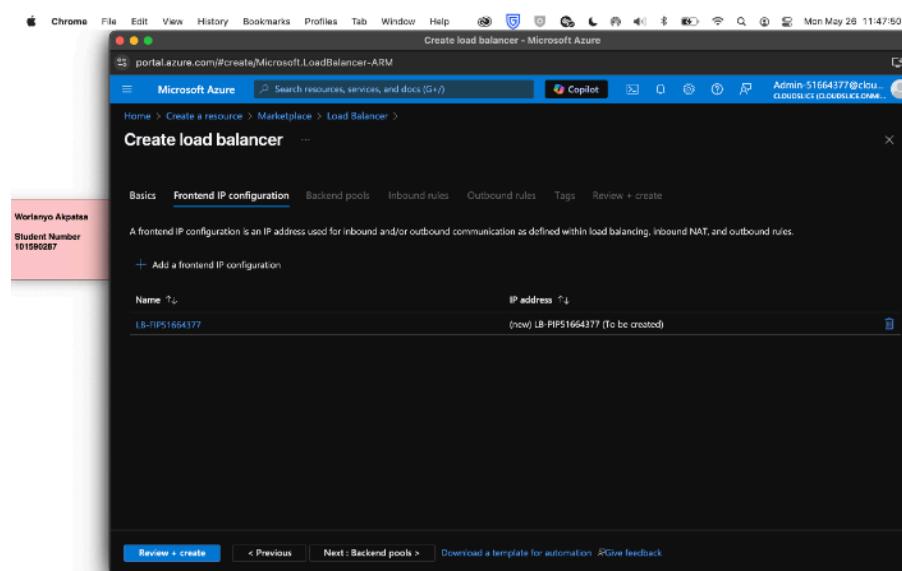
IP version IPv4

IP type IP address

Public IP address \* (new) LB-FIPS1664377

Gateway Load Balancer Name

Review + create < Previous Next : Backend pools > Download a template for automation Save Cancel Give feedback



Worlanyo Akpatsa  
Student Number  
101590287

Create load balancer - Microsoft Azure

Home > Create a resource > Marketplace > Load Balancer >

Create load balancer ...

Frontend IP configuration Backend pools Inbound rules Outbound rules Tags Review + create

A frontend IP configuration is an IP address used for inbound and/or outbound communication as defined within load balancing, inbound NAT, and outbound rules.

+ Add a frontend IP configuration

Name LB-FIPS1664377

IP address (new) LB-FIPS1664377 (to be created)

Review + create < Previous Next : Backend pools > Download a template for automation Give feedback

## Microsoft Azure I – Azure Administrator

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## K: Review & Create

The screenshot shows the Microsoft Azure portal interface for creating a load balancer. The URL in the address bar is `portal.azure.com/#create/Microsoft.LoadBalancer-ARM`. The page title is "Create load balancer - Microsoft Azure". The navigation bar includes "Microsoft Azure", a search bar, and user information "Admin-51664377@clou... CLOUDSLICE (CLOUDSLICEONMICROSOFT.COM)".

The main content area shows the "Create load balancer" wizard. The "Validation passed" message is displayed in a green box. The "Basics" tab is selected, showing the following configuration:

|                |                    |
|----------------|--------------------|
| Subscription   | Challenge Labs 08  |
| Resource group | AZ300-RGid51664377 |
| Name           | MyLoadBalancer     |
| Region         | East US            |
| SKU            | Standard           |
| Tier           | Regional           |
| Type           | Public             |

The "Frontend IP configuration" section shows:

|                                      |                |
|--------------------------------------|----------------|
| Frontend IP configuration name       | LB-FIPS1664377 |
| Frontend IP configuration IP address | To be created  |

The "Backend pools" section shows:

|      |
|------|
| None |
|------|

At the bottom of the wizard, there are buttons for "Create", "< Previous", "Next >", "Download a template for automation", and "Give feedback".

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### L: Load Balancer Created

The screenshot shows the Microsoft Azure portal interface. The title bar indicates the URL is `portal.azure.com/#view/Microsoft.LoadBalancerExtension/DeploymentDetailsBlade#/overview;id=%2fsubscriptions%2f86474fb5-eef-432f-94ec-861410d81d1d%2fresourceGroups%2fAZ300-RGload51664377%2floadBalancers%2fMicrosoft.LoadBalancer-20250526114107`. The main content area displays the 'Overview' blade for a deployment named 'Microsoft.LoadBalancer-20250526114107'. A green checkmark icon indicates the deployment is complete. Deployment details include:

- Deployment name: Microsoft.LoadBalancer-20250526114107
- Subscription: Challenge-Labs-01
- Resource group: AZ300-RGload51664377
- Start time: 5/26/2025, 11:52:34 AM
- Correlation ID: 1259738-9204-4238-b6a0-4ff635264e4

Below the deployment details, there are sections for 'Deployment details' and 'Next steps'. A prominent blue button labeled 'Go to resource' is centered at the bottom of the blade. The sidebar on the left shows the user's profile (Worlanyo Akpatsa, Student Number 101590287) and navigation links like Overview, Inputs, Outputs, and Template.

The screenshot shows the Microsoft Azure portal interface. The title bar indicates the URL is `portal.azure.com/#@cloudscape.onmicrosoft.com/resource/subscriptions/6474fb5-eef-432f-94ec-861410d81d1d/resourcegroups/AZ300-RGload51664377/providers/Microsoft.Network/loadBalancers/MyLoadBalancer`. The main content area displays the 'Overview' blade for a load balancer named 'MyLoadBalancer'. The blade includes the following information:

- Resource group: `(new)` AZ300-RGload51664377
- Location: East US
- Subscription: (new) Challenge-Labs-01
- Subscription ID: 6474fb5-eef-432f-94ec-861410d81d1d
- SKU: Standard
- Tags: (edit) Add tags

The 'Essentials' section provides details about the load balancer configuration:

| Backend pool        | None |
|---------------------|------|
| Load balancing rule | None |
| Health probe        | None |
| Inbound NAT rules   | None |
| Outbound rules      | None |

Below the essentials, a section titled 'Configure high availability and scalability for your applications' is present, along with a note about creating highly-available and scalable applications using built-in load balancing for cloud services and virtual machines.

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M: VMs running so I am moving to next task

| Name | Subscription       | Resource Group | Location | Status  | Operating sys |
|------|--------------------|----------------|----------|---------|---------------|
| VMT  | Challenge Labs ... | AZ300-RGdev5   | East US  | Running | Windows       |
| VMP  | Challenge Labs ... | AZ300-RGdev5   | East US  | Running | Windows       |
| VMB  | Challenge Labs ... | AZ300-RGdev5   | East US  | Running | Windows       |

Check your work

- ✓ Verify that you have created a load balancer named MyLoadBalancer  
Congratulations! You have created a load balancer named MyLoadBalancer.
- ✓ Verify that you have configured a load balancer named MyLoadBalancer  
Congratulations! You have configured a load balancer.

## Microsoft Azure I – Azure Administrator

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# CREATE LOAD BALANCER RESOURCES

## CREATE BACKEND POOL

**A: Open load balancer page and under settings in the left pane, select backend pools**

MyLoadBalancer - Microsoft Azure

portal.azure.com/#@cloudslice.onmicrosoft.com/resource/subscriptions/6474fb5-eeef-432f-94ec-861410d81d1d/resourceGroups/AZ300-RGload51664377/p...

Home > MyLoadBalancer Load balancer

Worlanyo Akpatsa Student Number 101590287

Overview

Backend pool None

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Settings

Frontend IP configuration

Backend pools

Health probes

Load balancing rules

Inbound NAT rules

Outbound rules

Properties

Locks

Monitoring

Configure high availability and scalability for your applications

Create highly-available and scalable applications in minutes by using built-in load balancing for cloud services and virtual machines. Azure Load Balancer supports TCP/UDP-based protocols and protocols used for real-time voice and video messaging applications. [Learn more](#)

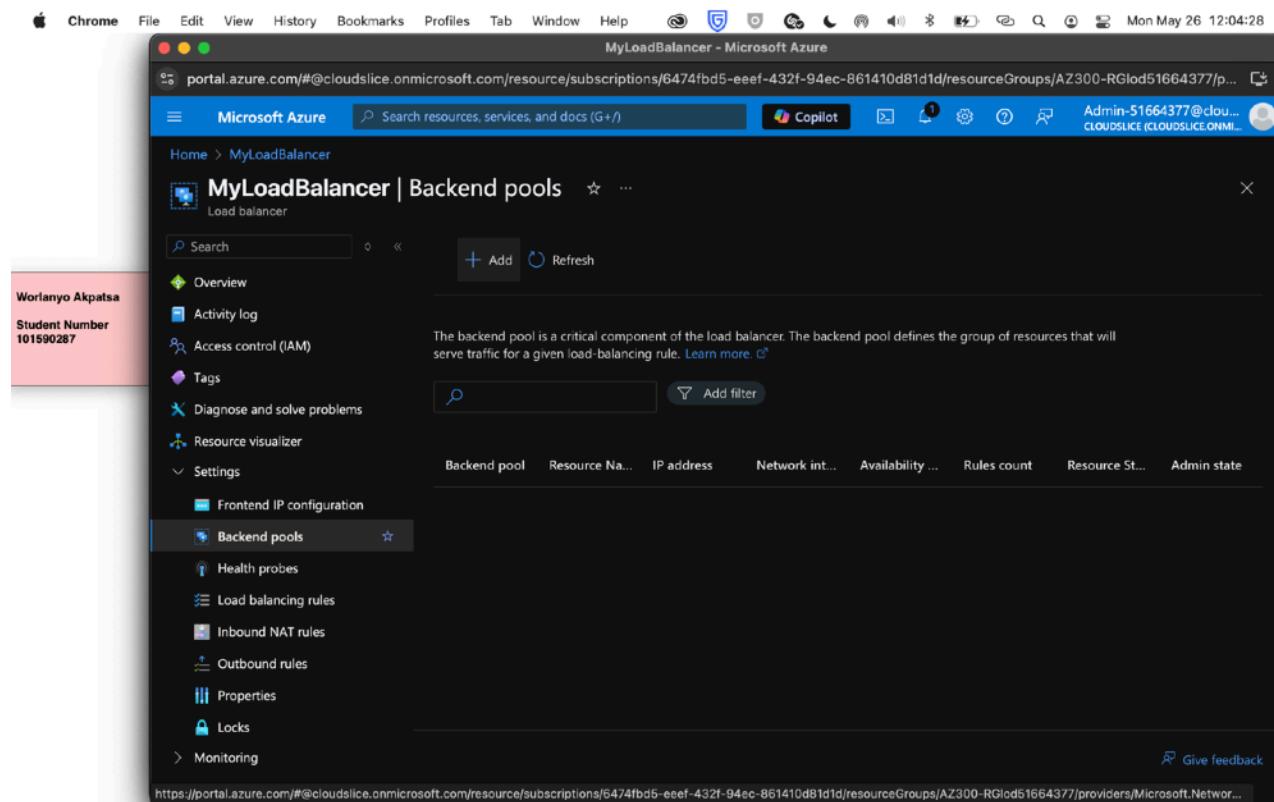
https://portal.azure.com/#@cloudslice.onmicrosoft.com/resource...

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### B: On backend pools page, select add



The screenshot shows the Microsoft Azure portal interface for managing a load balancer named 'MyLoadBalancer'. The left sidebar displays the user's profile (Worlanyo Akpatsa, Student Number 101590287) and navigation links for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Resource visualizer, Settings (selected), Frontend IP configuration, Backend pools (selected), Health probes, Load balancing rules, Inbound NAT rules, Outbound rules, Properties, Locks, and Monitoring. The main content area is titled 'MyLoadBalancer | Backend pools' and contains a table with columns: Backend pool, Resource Na..., IP address, Network int..., Availability ..., Rules count, Resource St..., and Admin state. A search bar and an 'Add' button are located at the top of the main content area. A tooltip for the 'Backend pool' column explains that it is a critical component defining the group of resources serving traffic. The URL in the browser is https://portal.azure.com/#@cloudslice.onmicrosoft.com/resource/subscriptions/6474fb5-eef-432f-94ec-861410d81d1d/resourceGroups/AZ300-RGlod51664377/providers/Microsoft.Network/loadBalancers/MyLoadBalancer/backendPools.

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### C: Fill in backend pool name and select virtual network

The screenshot shows the Microsoft Azure portal interface for adding a backend pool. The top navigation bar includes 'File', 'Edit', 'View', 'History', 'Bookmarks', 'Profiles', 'Tab', 'Window', 'Help', and the date 'Mon May 26 12:05:16'. The main title is 'Add backend pool - Microsoft Azure'. The URL in the address bar is 'portal.azure.com/#view/Microsoft\_Azure\_Network/RegionalLBBackendPoolManage.ReactView/loadBalancerId%2Fsubscriptions%2F6474fb5-eef-432f-94e...'. The user is signed in as 'Admin-51664377@clou...' with a 'CLOUDSLICE (CLOUDSLICEONMICROSOFT)' profile. The page title is 'Add backend pool' with a '... More options' link. The breadcrumb navigation shows 'Home > MyLoadBalancer | Backend pools > Add backend pool'. A sidebar on the left displays the student information: 'Worlanyo Akpatsa' and 'Student Number 101590287'. The main form fields are: 'Name \*' (set to 'MyBackendPool'), 'Virtual network' (dropdown menu showing 'MyVNet (AZ300-RGload51664377)'), 'Backend Pool Configuration' (radio buttons for 'NIC' (selected) and 'IP address'). Below this is the 'IP configurations' section, which includes a table header with columns: 'Resource Name', 'Resource group', 'Type', 'IP configuration', 'IP Addr...', and 'Available...'. At the bottom of the form are 'Save' and 'Cancel' buttons, along with a 'Give feedback' link.

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### D: Under IP Configurations, select add. It takes you to this page

The screenshot shows a Microsoft Azure portal window titled "Add IP configurations to backend pool". The URL in the address bar is "portal.azure.com/#view/Microsoft\_Azure\_Network/RegionalLBBackendPoolManage.ReactView/loadBalancerId/%2Fsubscriptions%2F6474fb5-eeef-432f-94e...". The top navigation bar includes "File", "Edit", "View", "History", "Bookmarks", "Profiles", "Tab", "Window", "Help", "Copilot", and user information "Admin-51664377@clou... CLOUDSLICE (CLOUDSLICE.ONM...)".

The main content area has a heading "Add IP configurations to backend pool". It displays a table of IP configurations associated with virtual machines and virtual machine scale sets. The table includes columns for Name, Resource ID, Resource Type, Type, IP configuration name, IP Address, Availability, and Tags. A filter bar at the top of the table allows filtering by name, location (set to "eastus"), virtual network ("MyVNet"), and adding a filter.

On the left side, there is a sidebar with the user's name "Worlanyo Akpatsa" and student number "101590287". Below the sidebar, there are sections for "IP configurations" and "Virtual machines". The "Virtual machines" section shows three entries: VM1, VM2, and VM3, all under the same resource group "AZ300-R...".

At the bottom of the page, there are "Add" and "Cancel" buttons.

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### E: Choosing all three VMs on the Add IP Configurations to backend pool page. After, select add

The screenshot shows the Microsoft Azure portal interface for managing a load balancer's backend pool. The title bar indicates the page is 'Add IP configurations to backend pool - Microsoft Azure'. The main content area is titled 'Add IP configurations to backend pool'. A sidebar on the left shows the user's name (Worlanyo Akpatsa) and student number (101590287). The main table lists three virtual machines (VM1, VM2, VM3) under the heading 'Virtual machine (3)'. Each row has a checkbox next to it, which is checked for all three entries. The table includes columns for Resource ID, Resource Name, Type, IP configuration, IP Address, Availability, and Tags. At the bottom of the table, there are 'Add' and 'Cancel' buttons.

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### F: Review configurations and then select save

The screenshot shows the Microsoft Azure portal interface for adding a backend pool. The top navigation bar includes 'Chrome', 'File', 'Edit', 'View', 'History', 'Bookmarks', 'Profiles', 'Tab', 'Window', 'Help', and various icons. The URL is 'portal.azure.com/#view/Microsoft\_Azure\_Network/RegionalLBBackendPoolManage.ReactView/loadBalancerId/%2Fsubscriptions%2F6474fb5-eef-432f-94e...'. The user is signed in as 'Admin-51664377@cloud...', with a 'CLOUDSLICE (CLOUDSLICEONMICROSOFT)' profile.

The main content area shows the 'Add backend pool' page for a load balancer named 'MyLoadBalancer'. The 'Name' field is set to 'MyBackendPool'. Under 'Virtual network', 'MyVNet (AZ300-RGId51664377)' is selected. Under 'Backend Pool Configuration', 'NIC' is chosen. Below this, the 'IP configurations' section lists three virtual machines (VM1, VM2, VM3) associated with the load balancer. The table has columns for Resource Name, Resource group, Type, IP configuration, IP Addr..., and Availability. Each row shows 'VM1', 'AZ300-RGId51664377', 'Virtual machine', 'ipconfig1', '10.0.0.4', and '-' respectively. Similar entries are shown for VM2 and VM3.

At the bottom of the page are 'Save', 'Cancel', and 'Give feedback' buttons.

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### G: Confirmation of Backend pools added

The screenshot shows the Microsoft Azure portal interface for managing a load balancer. The left sidebar shows the user's name (Worlanyo Akpatsa) and student number (101590287). The main content area is titled "MyLoadBalancer | Backend pools". It displays a table with three rows, each representing a backend pool. The columns are: Backend pool, Resource Name, IP address, Network interface, Availability, Rules count, Resource State, and Admin state. The data is as follows:

| Backend pool      | Resource Name | IP address | Network interface | Availability | Rules count | Resource State | Admin state |
|-------------------|---------------|------------|-------------------|--------------|-------------|----------------|-------------|
| MyBackendPool (3) | VM2           | 10.0.0.5   | myVMNic2          | -            | 0           | Running        | None        |
|                   | VM1           | 10.0.0.4   | myVMNic1          | -            | 0           | Running        | None        |
|                   | VM3           | 10.0.0.6   | myVMNic3          | -            | 0           | Running        | None        |

A deployment message at the top right indicates "Deployment succeeded" for the "RegionalLoadBalancerBackendPoolCreateOrUpdate-20250526120856-7" to resource group "AZ300-RGload51664377" for successful.

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## CREATE AN HTTP HEALTH PROBE IN MYLOADBALANCER

**A: On load balancer page, in left pane under settings, select health**

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'File', 'Edit', 'View', 'History', 'Bookmarks', 'Profiles', 'Tab', 'Window', 'Help', and a Copilot button. The URL in the address bar is 'portal.azure.com/#@cloudslice.onmicrosoft.com/resource/subscriptions/6474fb5-eeef-432f-94ec-861410d81d1d/resourceGroups/AZ300-RGlod51664377/providers/Microsoft.Network/loadBalancers/MyLoadBalancer/healthProbes'. The top right corner shows the user 'Admin-51664377@cloudslice.onmicrosoft.com' and the group 'CLOUDSLICE (CLOUDSLICE.ONMICROSOFT.COM)'. The main content area is titled 'MyLoadBalancer | Health probes'. On the left, there's a sidebar with a red header bar containing 'Worlanyo Akpatsa' and 'Student Number 101590287'. Below the sidebar, the left pane shows a navigation tree under 'Settings': Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Resource visualizer, Health probes (which is selected and highlighted in blue), Load balancing rules, Inbound NAT rules, Outbound rules, Properties, Locks, and Monitoring. The right pane displays a search bar with 'Type to start filtering ...' and a message 'No results.'

**probes**

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---

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Student ID: 101590287

Term: Spring 2025

**B: Select add to add new health probe. This takes you to add health probe page**

The screenshot shows a Microsoft Azure portal window titled 'Add health probe - Microsoft Azure'. The URL in the address bar is 'portal.azure.com/#view/Microsoft\_Azure\_Network/HealthProbeManage.ReactView/loadBalancerId/%2Fsubscriptions%2F6474fb5-eef-432f-94ec-861410d...'. The page header includes the Microsoft Azure logo, a search bar, and a Copilot button. On the left, there's a sidebar with the user's name 'Worlanyo Akpatsa' and student number '101590287'. The main content area is titled 'Add health probe' and shows fields for 'Name \*' (Health Probe Name), 'Protocol \*' (TCP), 'Port \*' (80), 'Interval (seconds) \*' (5), and 'Used by \*' (Not used). At the bottom are 'Save' and 'Cancel' buttons.

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Student ID: 101590287

Term: Spring 2025

**C: Filling in Health Probe details as specified in lab instructions. (name, protocol(HTTP), port(80), interval(15)). Select save after**

Worlanyo Akpatsa  
Student Number  
101590287

Name \* MyHealthProbe

Protocol \* HTTP

Port \* 80

Path \* /

Interval (seconds) \* 15

Used by \* Not used

Save Cancel Give feedback

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Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

### D: Health Probe Added.

The screenshot shows a Microsoft Azure portal page titled "MyLoadBalancer | Health probes". A success message at the top right states "Successfully saved probe 'MyHealthProbe'." On the left, a sidebar for "Worlanyo Akpatsa" displays their student number, 101590287. The main content area shows a table of existing health probes:

| Name          | Protocol | Port | Path | Used By |
|---------------|----------|------|------|---------|
| MyHealthProbe | Http     | 80   | /    | -       |

A "Search" bar and "Add" button are visible above the table. The "Health probes" item in the sidebar is currently selected. The URL in the browser's address bar is <https://portal.azure.com/#@cloudslice.onmicrosoft.com/resource/subscriptions/6474fb5-eeef-432f-94ec-861410d81d1d/resourceGroups/AZ300-RGlod51664377/p...>.

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

### CREATE A LOAD BALANCING RULE

**A: On left pane in load balancer page, under settings, select load balancing rules and click add. This takes you to the add load balancing rules page**

The screenshot shows the Microsoft Azure portal interface for managing a load balancer named 'MyLoadBalancer'. The left sidebar has a navigation menu with items like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Resource visualizer, Settings (which is expanded to show Frontend IP configuration, Backend pools, Health probes, Load balancing rules, Inbound NAT rules, Outbound rules, Properties, and Locks), Monitoring, and Give feedback. The 'Load balancing rules' item under Settings is currently selected and highlighted with a blue border. The main content area displays a table with the following columns: Name, Protocol, Backend pool, Health probe, and Health status. A message at the top of the table area states: 'A load balancer rule is used to define how incoming traffic is distributed to the all the instances within the backend pool. A load-balancing rule maps a given frontend IP configuration and port to multiple backend IP addresses and ports. An example would be a rule created on port 80 to load balance web traffic. Learn more.' Below the table, it says 'No results.'

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Student ID: 101590287

Term: Spring 2025

**B: Filling in info as specified in lab instructions. (Name, frontend IP, port, backend port and health probe). Select save when done**

Worlanyo Akpatsa  
Student Number  
101590287

Add load balancing rule

Name: MyHTTPRule

IP version: IPv4

Frontend IP address: 10-IPS1664377 (135.237.116.225)

Backend pool: MyBackendPool

Protocol: TCP

Port: 80

Backend port: 80

Save Cancel

Worlanyo Akpatsa  
Student Number  
101590287

Add load balancing rule

Backend port: 80

Health probe: MyHealthProbe (HTTP 80)

Session persistence: None

Idle timeout (minutes): 4

Enable TCP Reset:

Enable Floating IP:

Outbound source network address translation (SNAT):  (Recommended) Use outbound rules to provide backend pool members access to the internet.  Use default port allocation to provide backend pool members with a minimal set of SNAT ports. This is not recommended because it can cause SNAT port exhaustion.

Save Cancel

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Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

### C: Rule Created

The screenshot shows the Microsoft Azure portal interface for managing a load balancer named "MyLoadBalancer". The left sidebar displays the user's name, Worlanyo Akpatsa, and student number, 101590287. The main content area shows the "Load balancing rules" section, which lists a single rule: "MyHTTPRule". The rule details are as follows:

| Name       | Protocol | Backend pool  | Health probe  | Health status                |
|------------|----------|---------------|---------------|------------------------------|
| MyHTTPRule | TCP/80   | MyBackendPool | MyHealthProbe | <a href="#">View details</a> |

A success message at the top right indicates: "Successfully saved load balancer rule 'MyHTTPRule'." The browser address bar shows the URL: <https://portal.azure.com/#@cloudslice.onmicrosoft.com/resource/subscriptions/d28df0a3-5e54-471f-b9ce-df15fa1a8ff3/resourceGroups/AZ300-RGId51665439/providers/Microsoft.Network/loadBalancers/MyLoadBalancer/loadBalancingRules/MyHTTPRule>.

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Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

### D: Verified

Worlanyo Akpatsa  
Student Number  
101590287

AZ300-2-007: Implement an Azure Load Balancer [Guided]  
19 Minutes Remaining

Instructions Resources Help

- In Port, enter `80`, and then in Backend port, enter `80`.
- In Health probe, select `MyHealthProbe (HTTP:80)` - the health probe may take a few minutes to become fully available. If it does not appear, wait a few minutes and refresh the page.
- Review all remaining default values, and then select `Save`.

The health probe may take a few minutes to become fully available. If it does not appear, wait a few minutes and refresh the page.

You can create a load balancing rule to define how traffic will be distributed to the virtual machines that are in the backend pool.

Check your work

- ✓ Verify that you have created a backend pool.  
Congratulations! You have created a backend pool.
- ✓ Verify that you have created a health probe.  
Congratulations! You have created a health probe.
- ✓ Verify that you have created a load balancing rule.  
Congratulations! You have created a load balancing rule.

Verify

< Previous Next >

Worlanyo Akpatsa  
Student Number  
101590287

Great job!

Congratulations on your success!

100%

Areas where you excelled

- Create an Azure load balancer  
You showed your skills in this area and finished with success.
- Create load balancer resources  
Looks like you have a strong grasp on this material.

Challenge Labs Feedback >

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

### **TASK 2: MANAGE AZURE RESOURCE DEPLOYMENT BY USING AN AZURE RESOURCE MANAGER TEMPLATE. Challenge Labs supporting Module 2: Core Azure Services, AZ900-001**

**EXPORT A NEW AZURE RESOURCE MANAGER TEMPLATE BASED ON A STORAGE ACCOUNT TO YOUR LOCAL COMPUTER**

A: Sign in to the Azure portal using credentials given

The screenshot shows the Microsoft Azure portal interface. At the top, there's a navigation bar with links for Home, My resources, and Marketplace. Below the bar, the main content area has a dark background. On the left, a sidebar displays the user's name ('Worlanyo Akpatsa') and student number ('101590287'). The main content area features a section titled 'Azure services' with icons for Create a resource, Quickstart Center, Azure AI services, Kubernetes services, Virtual machines, App Services, Storage accounts, SQL databases, and Azure Cosmos DB. Below this is a 'Resources' section with tabs for Recent (which is selected) and Favorite. It includes columns for Name, Type, and Last Viewed, with a note stating 'No resources have been viewed recently'. A 'View all resources' button is at the bottom of this section. At the very bottom, there's a 'Navigate' button.

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

### B: On Azure homepage, select storage accounts

The screenshot shows the Microsoft Azure homepage. On the left, there's a sidebar with the user's name (Worlanyo Akpatsa) and student number (101590287). The main area has a "Azure services" section with icons for Create a resource, Quickstart Center, Azure AI services, Kubernetes services, Virtual machines, App Services, and Storage accounts. The Storage accounts icon is highlighted with a red box. Below this is a "Resources" section with tabs for Recent and Favorite, showing a message: "No resources have been viewed recently". A "View all resources" button is present. At the bottom, there's a "Newbie" link and a URL: https://portal.azure.com/#blade/HubsExtension/BrowseResource...

The screenshot shows the "Storage accounts" blade in the Microsoft Azure portal. The top navigation bar includes "Home > Storage accounts". The main area displays a table with one row of data:

| Name        | Type            | Kind      | Resource Group        | Location | Subscription      |
|-------------|-----------------|-----------|-----------------------|----------|-------------------|
| sais1666018 | Storage account | StorageV2 | AZ900RGCloud516660... | East US  | Challenge Labs 09 |

At the bottom, it says "Showing 1 - 1 of 1, Display count: auto".

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Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

### C: Select the storage account present

The screenshot shows the Microsoft Azure Storage accounts overview page. The storage account 'sa51666018' is selected. The left sidebar shows navigation options like Overview, Activity log, Tags, and more. The main content area displays the storage account details:

| Resource group                       | Location                        | Performance                    |
|--------------------------------------|---------------------------------|--------------------------------|
| AZ900RGlod51666018                   | eastus                          | Standard                       |
| Subscription                         | Replication                     | Account kind                   |
| Challenge_Labs_01                    | Locally-redundant storage (LRS) | StorageV2 (general purpose v2) |
| Subscription ID                      | Provisioning state              | Created                        |
| 4a5a6077-91a6-4b7a-ae62-a2ed402b1a70 | Succeeded                       | 5/26/2025, 12:45:38 PM         |
| Disk state                           | Tags                            |                                |
| Available                            | (edit) Add tags                 |                                |

At the bottom, there are sections for Blob service (Hierarchical namespace: Disabled, Default access tier: Hot) and Security (Require secure transfer for REST API operations: Disabled).

## Microsoft Azure I – Azure Administrator

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Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

**D: On storage account page, on left pane, under automation, select export template**

The screenshot shows a Microsoft Azure Storage account page for 'sa51666018'. The left sidebar is collapsed, showing a red box containing the student's name and ID. The main content area shows the storage account details with a preview link. Below it, the 'Automation' section is expanded, showing the 'Export template' option selected. The 'ARM Template' tab is active, displaying a JSON template. A warning message states: 'Microsoft.Storage/storageAccounts/storageTaskAssignments cannot be exported yet and is not included in the template. See error details.' Another message says: 'To export all resources in this resource group, navigate to the "Export template" experience under "Automation" on the left menu of the resource group.' The JSON code in the editor is as follows:

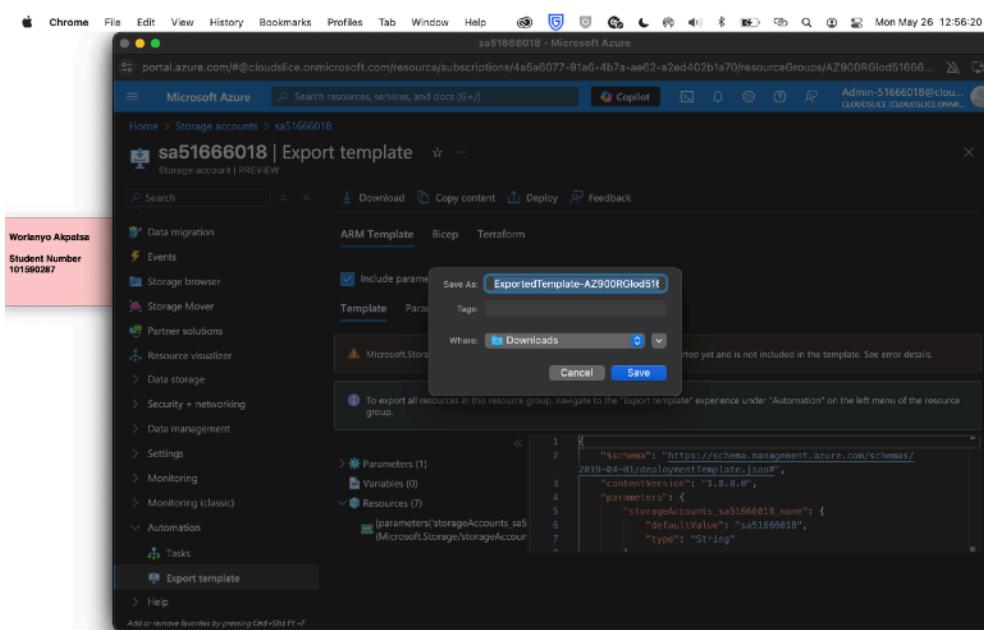
```
$schema: "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
contentVersion: "1.0.0.0",
parameters: {
  "storageAccounts_sa51666018_name": {
    "defaultValue": "sa51666018",
    "type": "String"
  }
}
```

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
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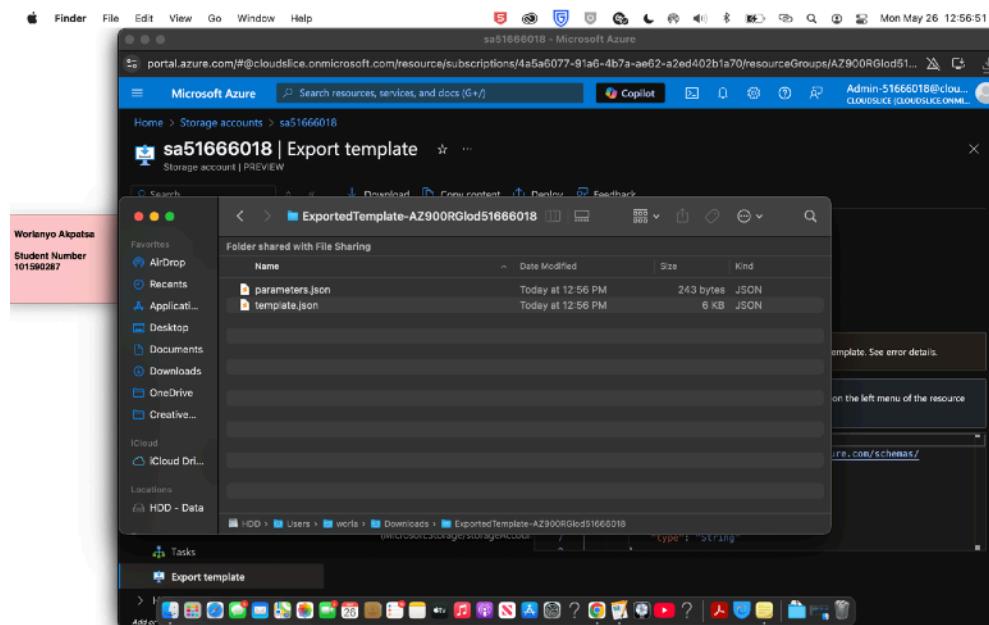
### E: Select download on export template page.



## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
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Term: Spring 2025



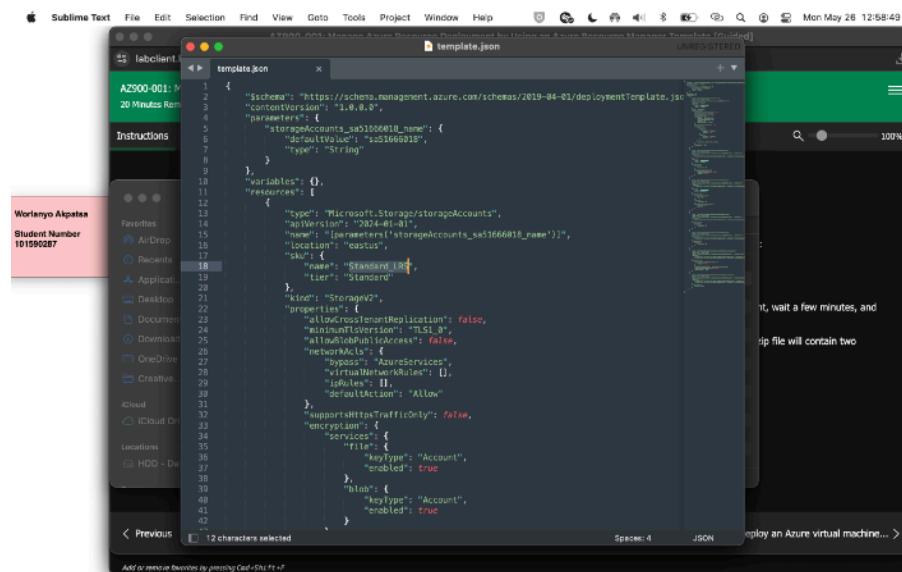
## F: Answering question for resources - sku - name. Answer is Standard-LRS

The screenshot shows a browser window for a challenge lab titled "AZ900-001: Manage Azure Resource Deployment by Using an Azure Resource Manager Template [Guided]". The lab has 19 minutes remaining. It provides instructions for exporting an ARM template from the Azure portal. A note states: "The sa51666018 storage account was created for you during the setup of this Challenge Lab. If you do not see the storage account, wait a few minutes, and then refresh the portal." Below this, it says: "The process of downloading an ARM template to your local computer will vary depending on the browser you use. The exported .zip file will contain two .json files that include the ARM template and the parameters used by the template." At the bottom, there is a file explorer window showing the contents of a download folder, including "parameters.json" and "template.json".

# Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
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```
1  "schema": "https://schemas.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
2  "contentVersion": "1.0.0.0",
3  "parameters": {
4      "storageAccounts_sa3166818_name": {
5          "defaultValue": "sa3166818",
6          "type": "String"
7      }
8  },
9  "variables": {},
10 "resources": [
11     {
12         "type": "Microsoft.Storage/storageAccounts",
13         "apiVersion": "2024-01-01",
14         "name": "[parameters('storageAccounts_sa3166818_name')]",
15         "location": "eastus",
16         "tags": {
17             "name": "Standard_LRS",
18             "tier": "Standard"
19         },
20         "kind": "StorageV2",
21         "properties": {
22             "allowCrossRegionReplication": false,
23             "minimumTlsVersion": "TLS1.0",
24             "allowBlobPublicAccess": false,
25             "networkRules": {
26                 "bypass": "AzureServices",
27                 "virtualNetworkRules": [],
28                 "ipRules": [],
29                 "defaultAction": "Allow"
30             },
31             "supportsHttpsTrafficOnly": false,
32             "encryption": {
33                 "services": {
34                     "file": {
35                         "keyType": "Account",
36                         "enabled": true
37                     },
38                     "blob": {
39                         "keyType": "Account",
40                         "enabled": true
41                     }
42                 }
43             }
44         }
45     }
46 ]
47 }
```

**G: Verified**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

A screenshot of a Chrome browser window displaying a Microsoft Azure lab client interface. The title bar of the browser reads "AZ900-001: Manage Azure Resource Deployment by Using an Azure Resource Manager Template [Guided]". The page content is titled "AZ900-001: Manage Azure Resource Deployment by Using an Azure Resource Manager Template [Guided]" and shows a timer indicating "17 Minutes Remaining". The main content area contains instructions and a list of links for learning more about Azure Resource Manager (ARM), ARM templates, and deployment commands. Below this, a "Check your work" section includes a checked checkbox for verifying the examination of the Azure Resource Manager Template, followed by a "Verify" button. Navigation buttons for "Previous" and "Next: Deploy an Azure virtual machine..." are visible at the bottom.

## DEPLOY AN AZURE VIRTUAL MACHINE BY USING A CUSTOM ARM TEMPLATE

**A: In a new browser window, input the url: [https://github.com/LOD-SContent/ChallengeLabs\\_ArmResources/tree/master/ARMTemplates/101-vm-simple-windows](https://github.com/LOD-SContent/ChallengeLabs_ArmResources/tree/master/ARMTemplates/101-vm-simple-windows)**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

Worlanyo Akpatsa  
Student Number  
101590287

ChallengeLabs\_ArmResources / ARMTemplates / 101-vm-simple-windows /

MGrasdal Update README.md ab4c669 · 4 years ago History

| Name                        | Last commit message                | Last commit date |
|-----------------------------|------------------------------------|------------------|
| ..                          |                                    |                  |
| README.md                   | Update README.md                   | 4 years ago      |
| azuredeploy.json            | Create azuredeploy.json            | 5 years ago      |
| azuredeploy.parameters.json | Create azuredeploy.parameters.json | 5 years ago      |
| metadata.json               | Create metadata.json               | 5 years ago      |

README.md

**Very simple deployment of a Windows VM**

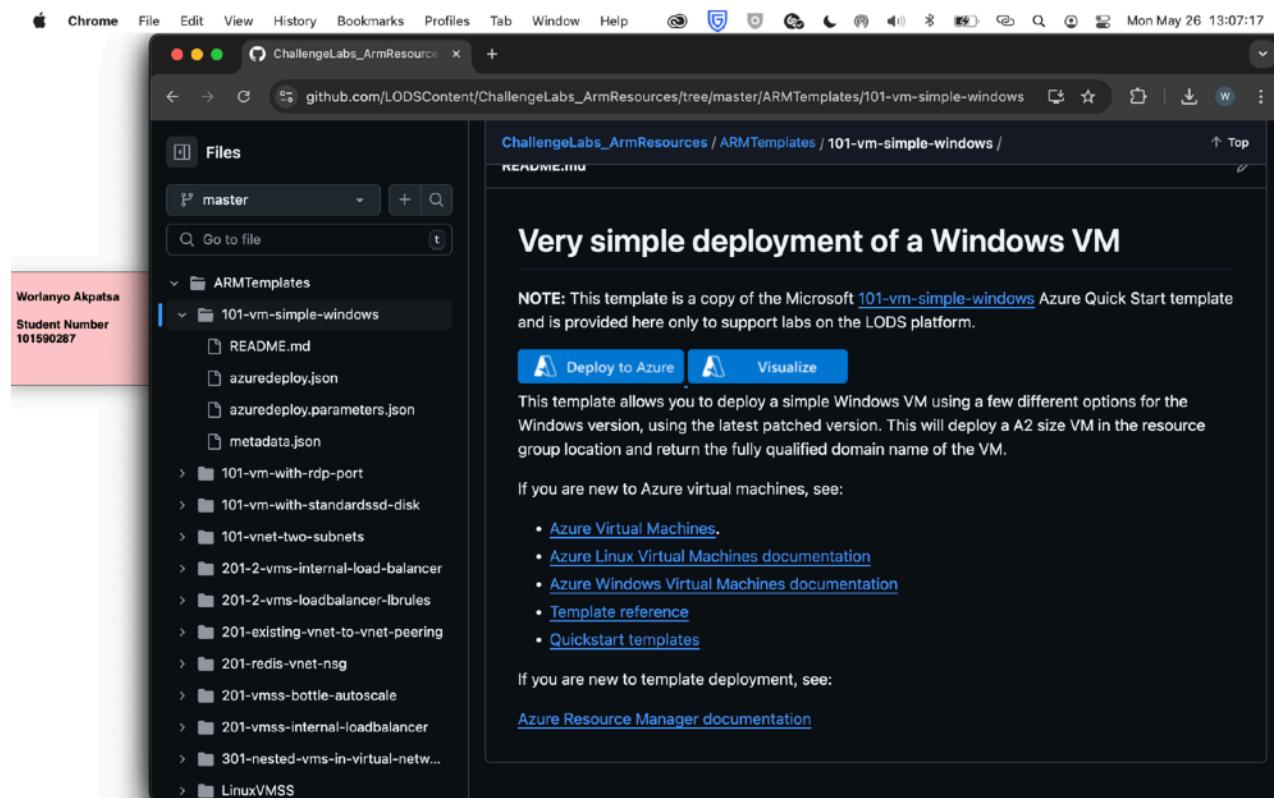
NOTE: This template is a copy of the Microsoft [101-vm-simple-windows](#) Azure Quick Start template and is provided here only to support labs on the LODS platform.

**B: Review info on simple deployment of a Windows VM and select deploy to Azure**

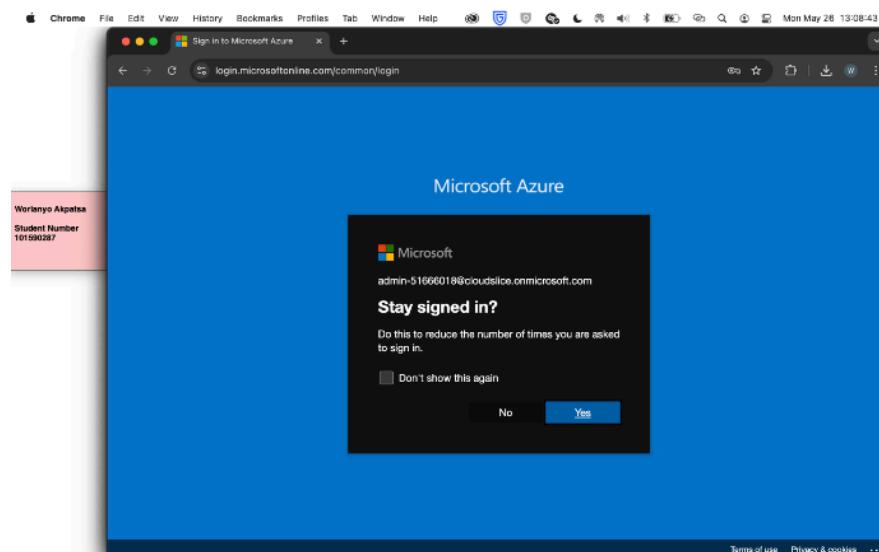
## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



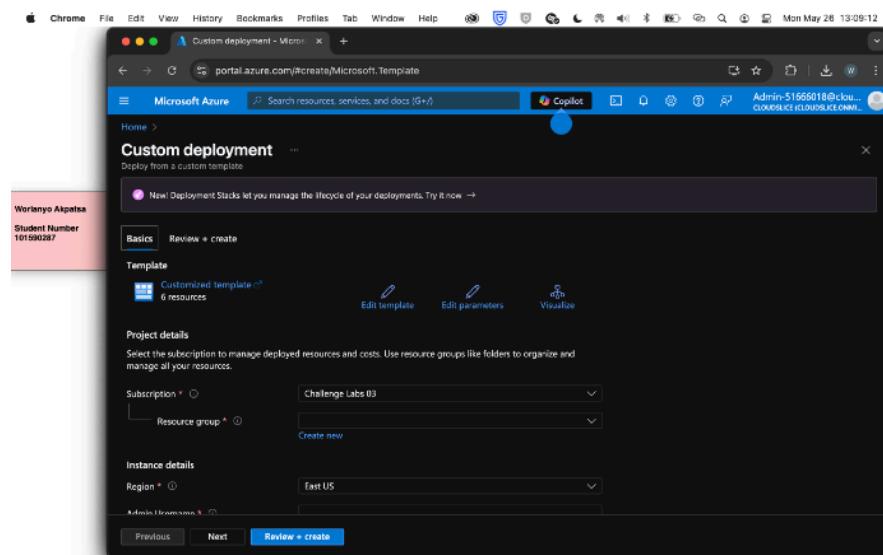
C: Sign in to Azure portal using credentials given. Takes you to a custom deployment page



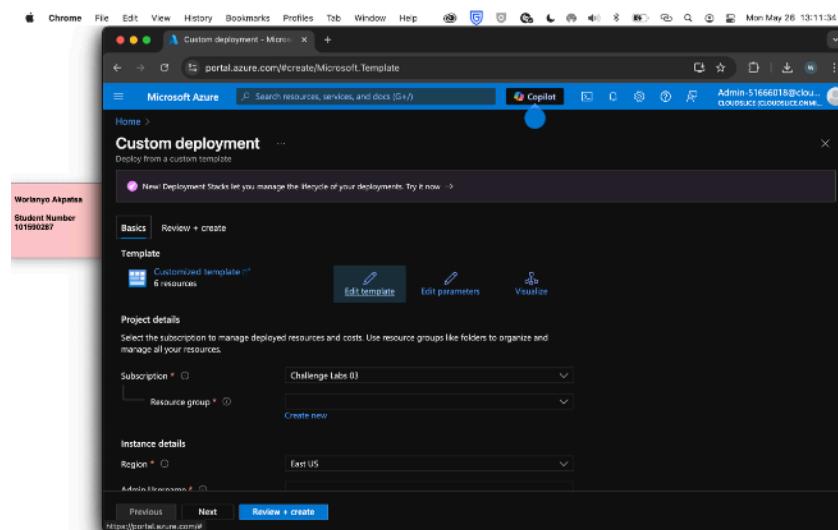
## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



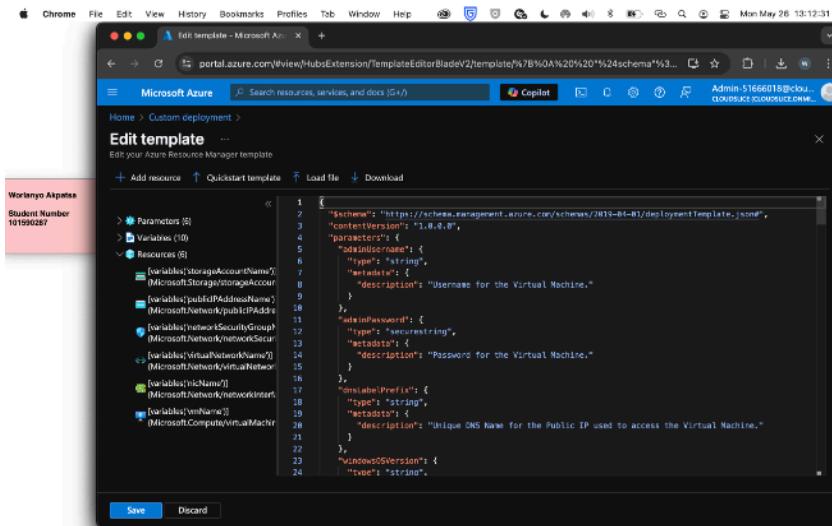
### D: Select edit template



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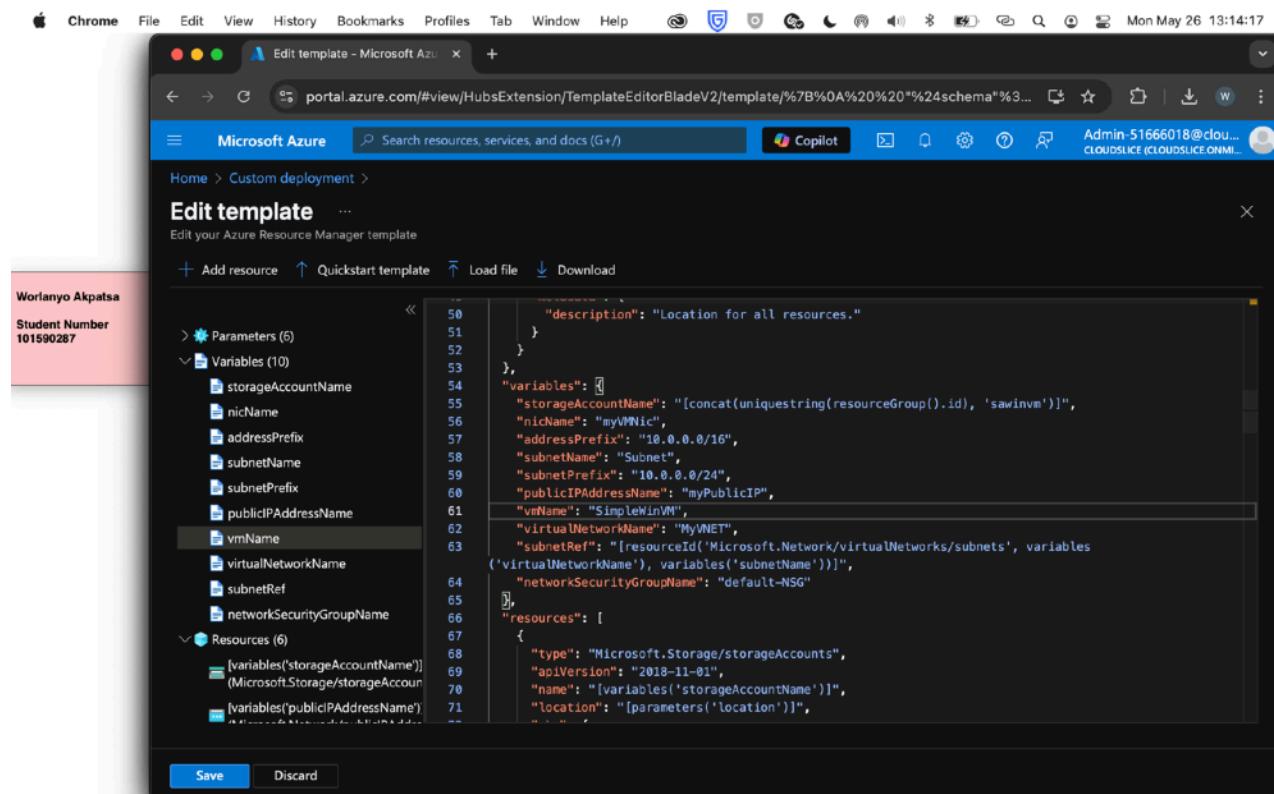


**E: On the left pane, expand variables and select “vmName”**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



The screenshot shows a Chrome browser window displaying the Microsoft Azure Resource Manager template editor. The URL is `portal.azure.com/#view/HubsExtension/TemplateEditorBladeV2/template/%7B%0A%20%20%24schema%3...`. The page title is "Edit template - Microsoft Azure". The left sidebar shows the template structure with sections for Parameters (5), Variables (10), and Resources (6). The "Variables" section is expanded, showing variables like storageAccountName, nicName, addressPrefix, subnetName, subnetPrefix, publicIPAddressName, and vmName. The "vmName" variable is selected and highlighted. The main pane displays the JSON template code. On line 61, the value "SimpleWinVM" is being changed to "MyVM". The "Save" button is visible at the bottom left.

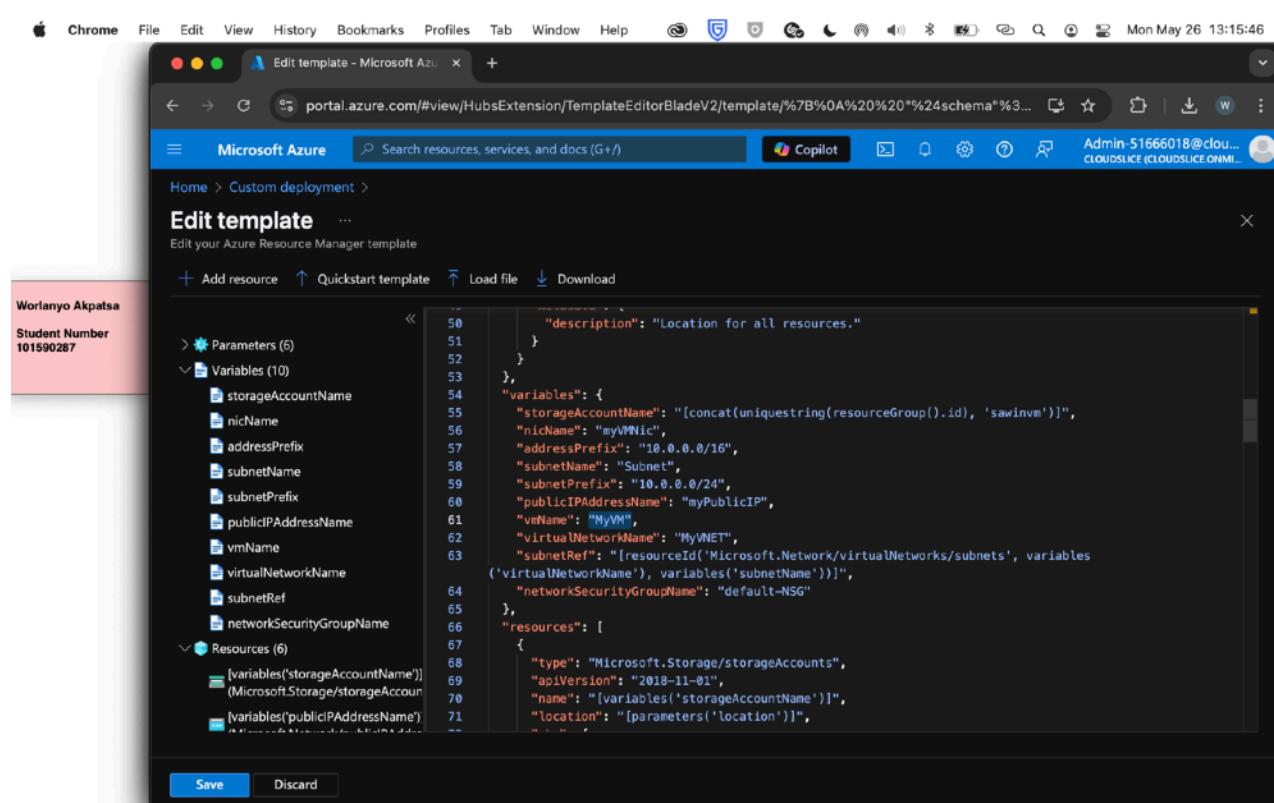
```
50     "description": "Location for all resources."
51   }
52 }
53 },
54 "variables": [
55   "storageAccountName": "[concat(uniquestring(resourceGroup().id), 'sawinvm')]",
56   "nicName": "myVMNic",
57   "addressPrefix": "10.0.0.0/16",
58   "subnetName": "Subnet",
59   "subnetPrefix": "10.0.0.0/24",
60   "publicIPAddressName": "myPublicIP",
61   "vmName": "SimpleWinVM",
62   "virtualNetworkName": "MyVNET",
63   "subnetRef": "[resourceId('Microsoft.Network/virtualNetworks/subnets', variables('virtualNetworkName'), variables('subnetName'))]",
64   "networkSecurityGroupName": "default-NSG"
65 ],
66 "resources": [
67   {
68     "type": "Microsoft.Storage/storageAccounts",
69     "apiVersion": "2018-11-01",
70     "name": "[variables('storageAccountName')]",
71     "location": "[parameters('location')]"
72   },
73   {
74     "type": "Microsoft.Network/virtualNetworks",
75     "apiVersion": "2018-04-01",
76     "name": "[variables('virtualNetworkName')]",
77     "location": "[parameters('location')]"
78   },
79   {
80     "type": "Microsoft.Network/networkInterfaces",
81     "apiVersion": "2018-04-01",
82     "name": "[variables('nicName')]",
83     "location": "[parameters('location')]"
84   },
85   {
86     "type": "Microsoft.Network/publicIPAddresses",
87     "apiVersion": "2018-04-01",
88     "name": "[variables('publicIPAddressName')]",
89     "location": "[parameters('location')]"
90   },
91   {
92     "type": "Microsoft.Network/virtualNetworkSubnets",
93     "apiVersion": "2018-04-01",
94     "name": "[variables('subnetName')]",
95     "location": "[parameters('location')]"
96   }
97 ]
```

F: In the template editor, on approximately line 61, change the vmName value to MyVM and click save

**Microsoft Azure I – Azure Administrator**

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



**G: Making further configurations on the custom deployment page and deploying the vm.**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure portal's "Custom deployment" wizard. On the left, a sidebar displays the user's name (Worlanyo Akpatsa) and student number (101590287). The main form is titled "Custom deployment" and is set to "Deploy from a custom template". It includes fields for "Subscription" (Challenge Labs 03) and "Resource group" (AZ900RGlod51666018). The "Instance details" section contains the following configuration:

- Region: (US) East US 2
- Admin Username: AZ900-Admin
- Admin Password: (redacted)
- Dns Label Prefix: myvm51666018 (with a tooltip ".eastus2.cloudapp.azure.com")
- Windows OS Version: 2019-Datacenter
- Vm Size: Standard\_D2s\_v3
- Location: [resourceGroup().location]

At the bottom, there are "Previous" and "Next" buttons, and a prominent blue "Review + create" button.

## H: Review and Create

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

Worlanyo Akpatsa  
Student Number  
101590287

Custom deployment

Deploy from a custom template

Challenge Labs 03

AZ900RGlob51666018

East US 2

AZ900-Admin

\*\*\*\*\*

myvm51666018

2019-Datacenter

Standard\_D2s\_v3

[resourceGroup().location]

Previous Next Create

## I: Deployment complete

Worlanyo Akpatsa  
Student Number  
101590287

Microsoft.Template-20250526132102 | Overview

Your deployment is complete

Deployment name : Microsoft.Template-20250526132102

Subscription : Challenge Labs 03

Resource group : AZ900RGlob51666018

Start time : 5/26/2025, 12:10:04 PM

Correlation ID : 9688fa77-eef5-46de-8cdf-2a41bd31622d

Deployment details

Next steps

Go to resource group

Give feedback

Tell us about your experience with deployment

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

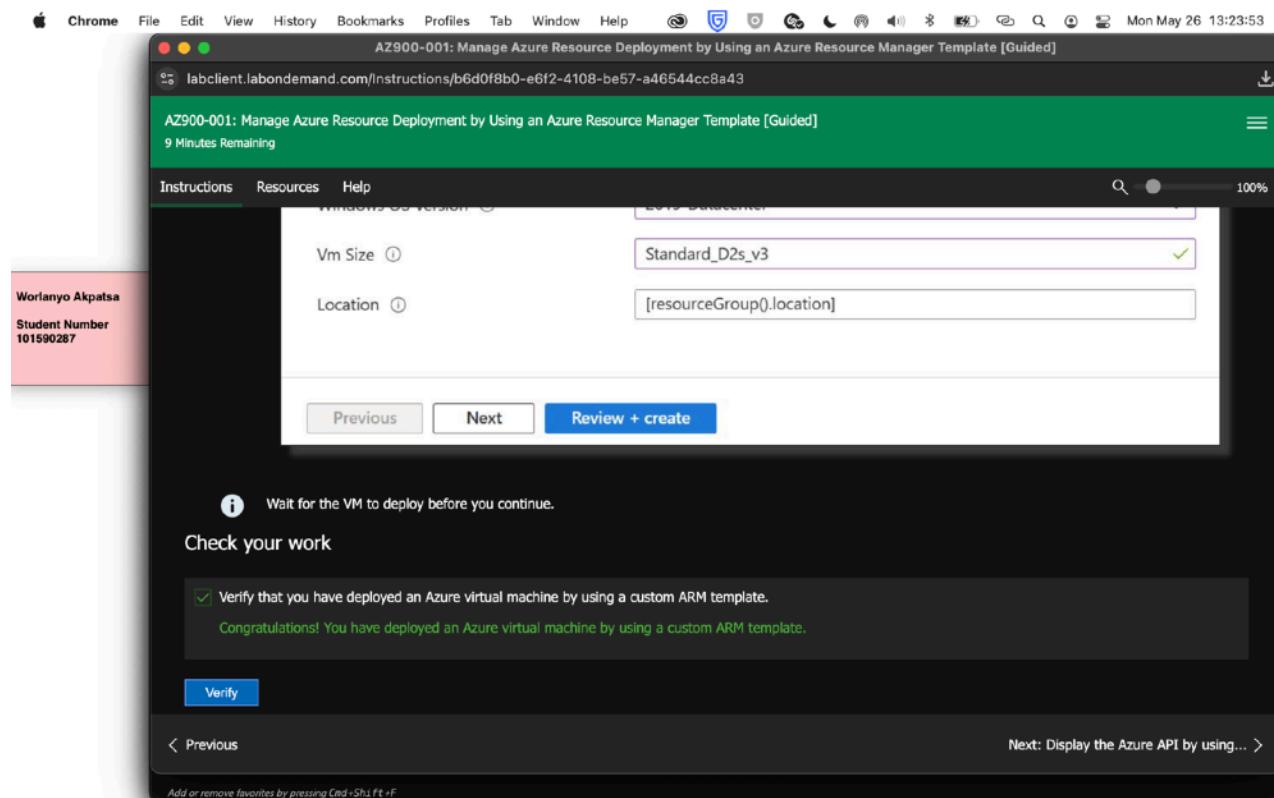
~ ~ ~ ~ ~

**J: Verified**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



## DISPLAY THE AZURE API BY USING THE AZURE RESOURCE EXPLORER

### A: Search for and select resource explorer

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure Resource Explorer blade. At the top, there's a search bar with the placeholder "resource explorer". Below the search bar, the breadcrumb navigation shows "Home > Resource groups > AZ900RGlod". A dropdown menu is open, showing "All" selected and "Services (17)" as the current category. On the left sidebar, under the "AZ900RGlod" resource group, the "Overview" tab is selected, while other tabs like "Activity log", "Access control (IAM)", "Tags", "Resource visualizer", "Events", "Settings", "Cost Management", "Monitoring", "Automation", and "Help" are visible but not selected. The main content area displays a table of resources. The table has columns for "Type", "Location", and three ellipsis (...). The data includes:

| Type                   | Location  | Actions |
|------------------------|-----------|---------|
| Network security group | East US 2 | ...     |
| Storage account        | East US 2 | ...     |
| Public IP address      | East US 2 | ...     |
| Virtual machine        | East US 2 | ...     |
| Disk                   | East US 2 | ...     |
| Disk                   | East US 2 | ...     |
| Network Interface      | East US 2 | ...     |

At the bottom of the table, there's a "Give feedback" link. The URL of the page is https://portal.azure.com/#blade/HubsExtension/ArmExplorerBlade/

**B: On the left pane, expand providers to see the list of resource providers**

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure Resource Explorer interface in a Chrome browser. The left sidebar displays a navigation tree under 'Worlanyo Akpatsa' with 'Student Number 101590287'. The main area is titled 'Resource Explorer' and shows a JSON response for '/providers?api-version=2019-08-01'. The JSON output lists resource providers, including ArizeAI.ObservabilityEval, Astronomer.Astro, Dell.Storage, Dynatrace.Observability, GitHub.Network, Informatica.DataManagement, LambdaTest.HyperExecute, Microsoft.AAD, Microsoft.AadCustomSecurityAttributes, microsoft.aadiam, Microsoft.Addons, Microsoft.ADHybridHealthService, Microsoft.Advisor, Microsoft.AgFoodPlatform, Microsoft.AgriculturePlatform, Microsoft.AlertsManagement, Microsoft.AnalysisServices, and Microsoft.ApiCenter.

```
1  [
2   "value": [
3     {
4       "namespace": "ArizeAI.ObservabilityEval",
5       "resourceTypes": [
6         {
7           "resourceType": "operations",
8           "locations": [],
9           "apiVersions": [
10             "2024-10-01-preview",
11             "2024-10-01"
12           ],
13           "defaultApiVersion": "2024-10-01",
14           "capabilities": "None"
15         },
16         {
17           "resourceType": "locations",
18           "locations": [],
19           "apiVersions": [
20             "2024-10-01-preview",
21             "2024-10-01"
22           ]
23         }
24       ]
25     }
26   ]
27 }
```

**C: To view list of resource providers that are being used by your subscription, expand Subscriptions then expand Providers, and then view the list of providers that are being used by your subscription.**

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure Resource Explorer interface in a web browser. The left sidebar displays a navigation tree with 'Worlanyo Akpatsa' and 'Student Number 101590287'. The main pane shows the 'Resource Explorer' blade for 'Microsoft Compute'. A search bar at the top right contains the query '/providers/Microsoft.Compute?api-version=2019-08-01'. Below the search bar, the results are displayed as a JSON object:

```
1  {
2      "namespace": "Microsoft.Compute",
3      "resourceTypes": [
4          {
5              "resourceType": "availabilitySets",
6              "locations": [
7                  "East US",
8                  "East US 2",
9                  "West US",
10                 "Central US",
11                 "North Central US",
12                 "South Central US",
13                 "North Europe",
14                 "West Europe",
15                 "East Asia",
16                 "Southeast Asia",
17                 "Japan East",
18                 "Japan West",
19                 "Australia East",
20                 "Australia Southeast",
21                 "Australia Central",
22             ]
23         }
24     ]
25 }
```

**D: To view the details of the resources in a resource group, expand ResourceGroups, expand AZ900RGlod51666018, expand Resources, and then select each resource to view the details provided.**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure Resource Explorer interface in a Chrome browser. The left sidebar displays a navigation tree with 'Worlanyo Akpatsa' and 'Student Number 101590287'. The main pane shows a list of resources under 'AZ900RGlod51666018' and 'Resources'. A specific disk resource, 'MyVM\_disk1\_4c8df4162a1145ff98df236ba45f99e8', is selected. On the right, a detailed JSON representation of this disk resource is shown:

```
[Microsoft.Compute/disks] MyVM_disk1_4c8df4162a1145ff98df236ba45f99e8 (Response Time 260ms)
Open blade /subscriptions/4a5a6077-91a6-4b7a-ae62-a2ed402b1a70/resourceGroups/AZ900RGlod51666018/providers/Microsoft.C...
1 {
2   "name": "MyVM_disk1_4c8df4162a1145ff98df236ba45f99e8",
3   "id": "/subscriptions/4a5a6077-91a6-4b7a-ae62-a2ed402b1a70/resourceGroups/AZ900RGlod51666018/providers/Microsoft.C...
4   "type": "Microsoft.Compute/disks",
5   "location": "eastus2",
6   "managedBy": "/subscriptions/4a5a6077-91a6-4b7a-ae62-a2ed402b1a70/resourceGroups/AZ900RGlod51666018/
7   "sku": {
8     "name": "Premium_LRS",
9     "tier": "Premium"
10 },
11   "properties": {
12     "osType": "Windows",
13     "hyperVGeneration": "V1",
14     "supportsHibernation": true,
15     "supportedCapabilities": {
16       "diskControllerTypes": "SCSI",
17       "acceleratedNetwork": true,
18       "architecture": "x64"
19     },
20     "creationData": {
21       "createOption": "FromImage"
22     }
23   }
24 }
```

I am being asked to find the destinationPortRange in the default-NSG resource

I will do so below

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

AZ900-001: Manage Azure Resource Deployment by Using an Azure Resource Manager Template [Guided]  
labclient.labondemand.com/Instructions/b6d0f8b0-e6f2-4108-be57-a46544cc8a43

1 Minute Remaining

Instructions Resources Help

Worlanyo Akpatsa  
Student Number 101590287

- Review the list of resource providers that are being used by your subscription.
- Expand this hint for guidance on reviewing the list of resource providers that are being used by your subscription.
- Review the details of the resources that are deployed to the AZ900RGlod51666018 resource group.
- Expand this hint for guidance on reviewing the details of the resources in a resource group.
- Expand Subscriptions | Providers | Resource Groups| default-NSG, and then in the JSON document tile, find the properties - securityRules - properties element.
- Enter the value for destinationPortRange in the following text box (without quotes):

Check your work

Verify that you have examined the Azure API using the Azure Resource Explorer.

Verify

< Previous Next >

As observed, the destinationportRange is 3389 and it can be seen in line 20. To get here, I expanded subscriptions, then expanded the challenge lab, then expanded resource groups, then expanded the resource group and under resources, found the default-NSG resource.

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure Resource Explorer interface. On the left, a sidebar displays the user's name (Worlanyo Akpatsa) and student number (101590287). The main pane shows a hierarchical tree view of resources under 'AZ900RGlod51667196'. A specific resource, 'default-NSG' under 'Microsoft.Network/networkSecurityGroups', is selected and expanded. The right pane displays the JSON representation of this NSG, specifically its security rules. One rule is highlighted, showing details like port 3389 and protocol TCP.

```
[{"id": "/subscriptions/4a5a6077-91a6-4b7a-ae62-a2ed402b1a70/resourceGroups/AZ900RGlod51667196/providers/Microsoft.Network/networkSecurityGroups/default-NSG", "name": "default-NSG", "type": "Microsoft.Network/networkSecurityGroups", "location": "eastus2", "properties": {"securityRules": [{"id": "/subscriptions/4a5a6077-91a6-4b7a-ae62-a2ed402b1a70/resourceGroups/AZ900RGlod51667196/providers/Microsoft.Network/networkSecurityGroups/default-NSG/securityRules/default-allow-3389", "name": "default-allow-3389", "etag": "W/\"85299c62-ae62-45ac-9d18-d12f4096723b\"", "type": "Microsoft.Network/networkSecurityGroups/securityRules", "properties": {"provisioningState": "Succeeded", "protocol": "Tcp", "sourcePortRange": "*", "destinationPortRange": "3389", "sourceAddressPrefix": "*", "destinationAddressPrefix": "*", "access": "Allow", "priority": 100}]}}, {"id": "/subscriptions/4a5a6077-91a6-4b7a-ae62-a2ed402b1a70/resourceGroups/AZ900RGlod51667196/providers/Microsoft.Network/networkSecurityGroups/default-NSG/securityRules/default-allow-3389", "name": "default-allow-3389", "type": "Microsoft.Network/networkSecurityGroups/securityRules", "location": "eastus2", "properties": {"provisioningState": "Succeeded", "protocol": "Tcp", "sourcePortRange": "*", "destinationPortRange": "3389", "sourceAddressPrefix": "*", "destinationAddressPrefix": "*", "access": "Allow", "priority": 100}}]
```

**VERIFIED AND COMPLETED**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure lab client interface. On the left, a sidebar displays the student's name (Worlanyo Akpatsa) and student number (101590287). The main area is a browser window titled "AZ900-001: Manage Azure Resource Deployment by Using an Azure Resource Manager Template [Guided]". The browser URL is "labclient.labondemand.com/instructions/3f258642-4b89-489d-b8c9-d5465f05aa35". The page content includes a JSON code snippet and two bullet points:

- Expand Subscriptions | Providers | Resource Groups| default-NSG, and then in the JSON document file, find the properties - securityRules - properties element.
- Enter the value for destinationPortRange in the following text box (without quotes):

The text box contains the value "3389". Below the text box is a "Check your work" button. The browser status bar indicates "Mon May 26 13:54:32".  
  
The screenshot also shows a second browser window below it, also titled "labclient.labondemand.com/instructions/3f258642-4b89-489d-b8c9-d5465f05aa35". This window displays a "Great job!" message with a green circular progress bar reaching 100%. A callout box says "Enjoy the success you've worked so hard to achieve!". Below the progress bar, under "Areas where you excelled", there are three green circular icons with corresponding text:

- Export an Azure Resource Manager template by using the Azure portal
- Deploy an Azure virtual machine by using a custom ARM template
- Display the Azure API by using the Azure Resource Explorer

The browser status bar indicates "Mon May 26 13:55:02".

### TASK 3: RUN COMMANDS BY USING AZURE CLOUD SHELL. Challenge Labs supporting Module 2: Core Azure Services, AZ900-003

#### CONFIGURE AN AZURE CLOUD SHELL POWERSHELL SESSION

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

A: Sign in to Azure portal using credentials given

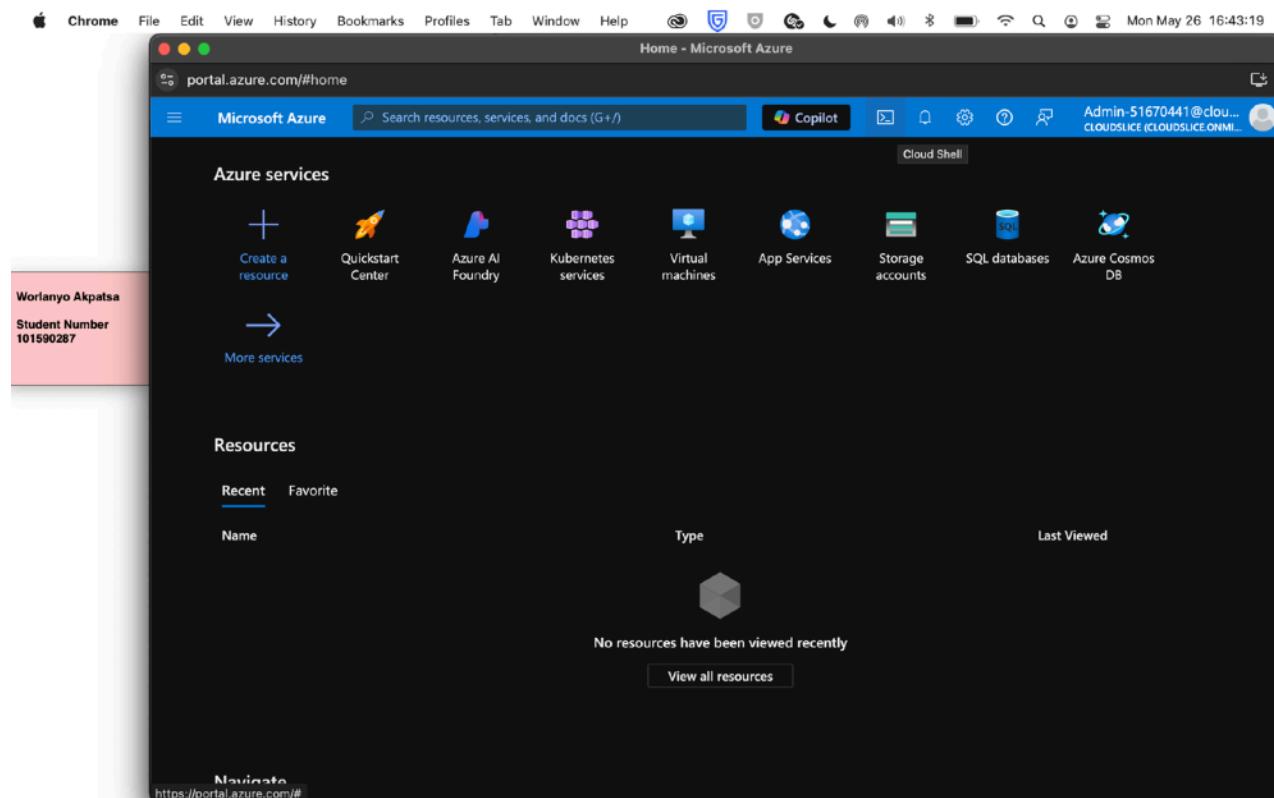
The screenshot shows the Microsoft Azure portal home page. At the top, there is a navigation bar with links for Home, Copilot, and various settings. A search bar is located above the main content area. Below the search bar, there is a section titled "Azure services" featuring icons for Create a resource, Quickstart Center, Azure AI Foundry, Kubernetes services, Virtual machines, App Services, Storage accounts, SQL databases, and Azure Cosmos DB. On the left side, there is a sidebar with the user's name, Worlanyo Akpatsa, and student number, 101590287. The main content area is titled "Resources" and shows a table with columns for Name, Type, and Last Viewed. A message indicates that no resources have been viewed recently, with a "View all resources" button. At the bottom, there is a "Navigate" button.

B: Select the cloud shell icon in Azure portal toolbar at top of screen

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



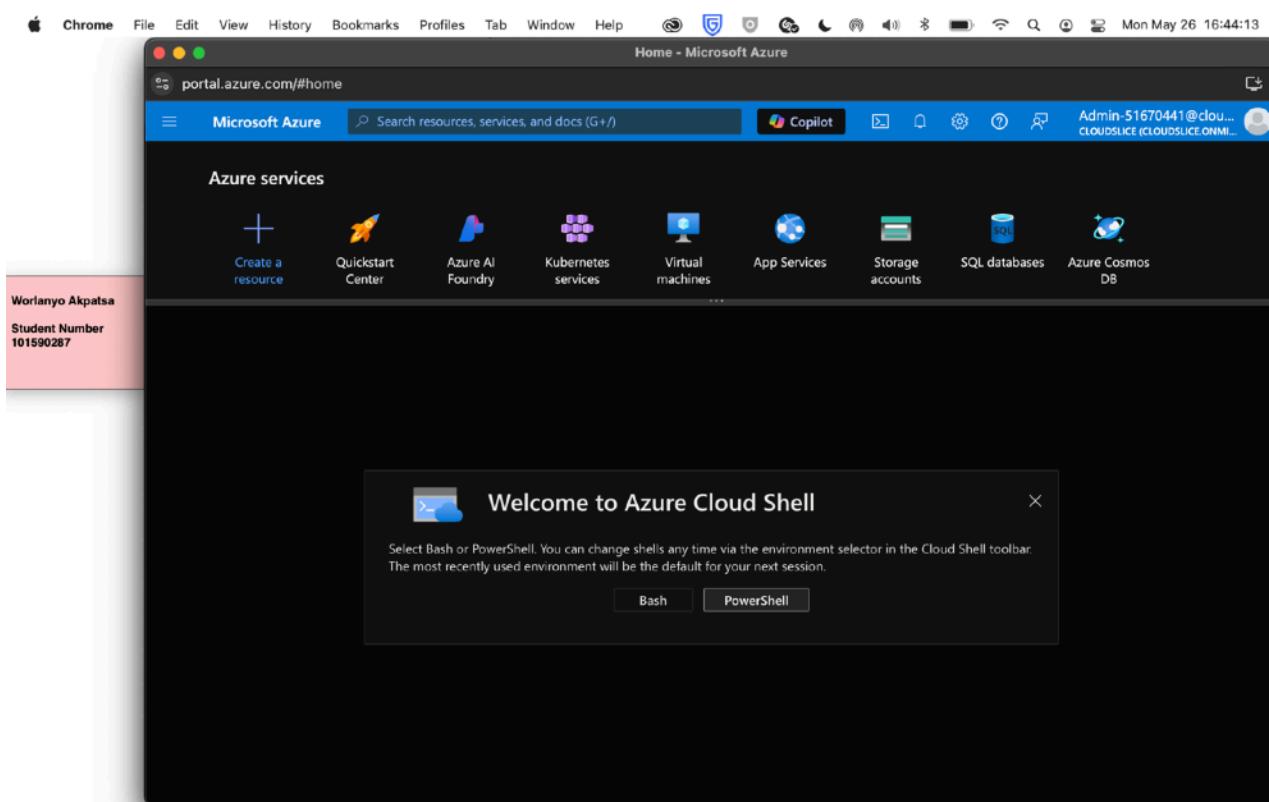
C: Select Powershell

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



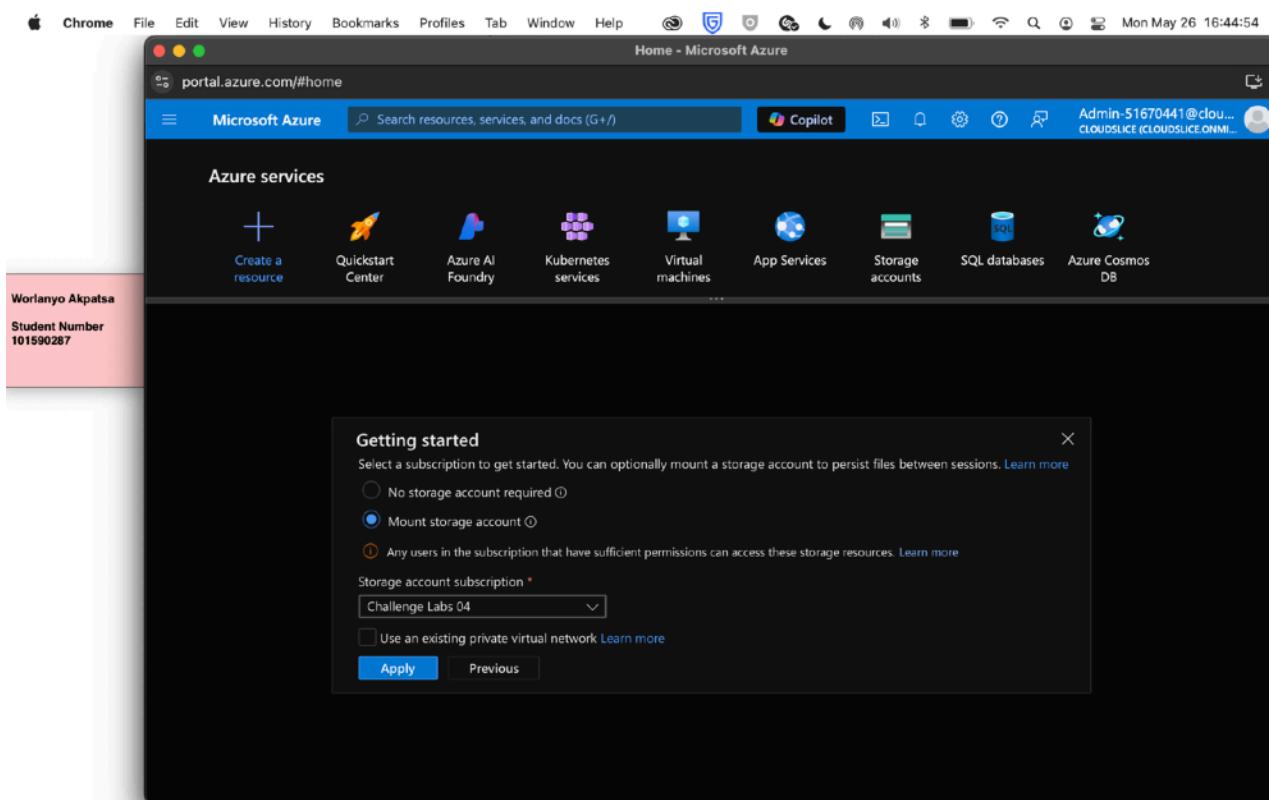
D: Select Mount Storage account and select the subscription given for the lab and select apply

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

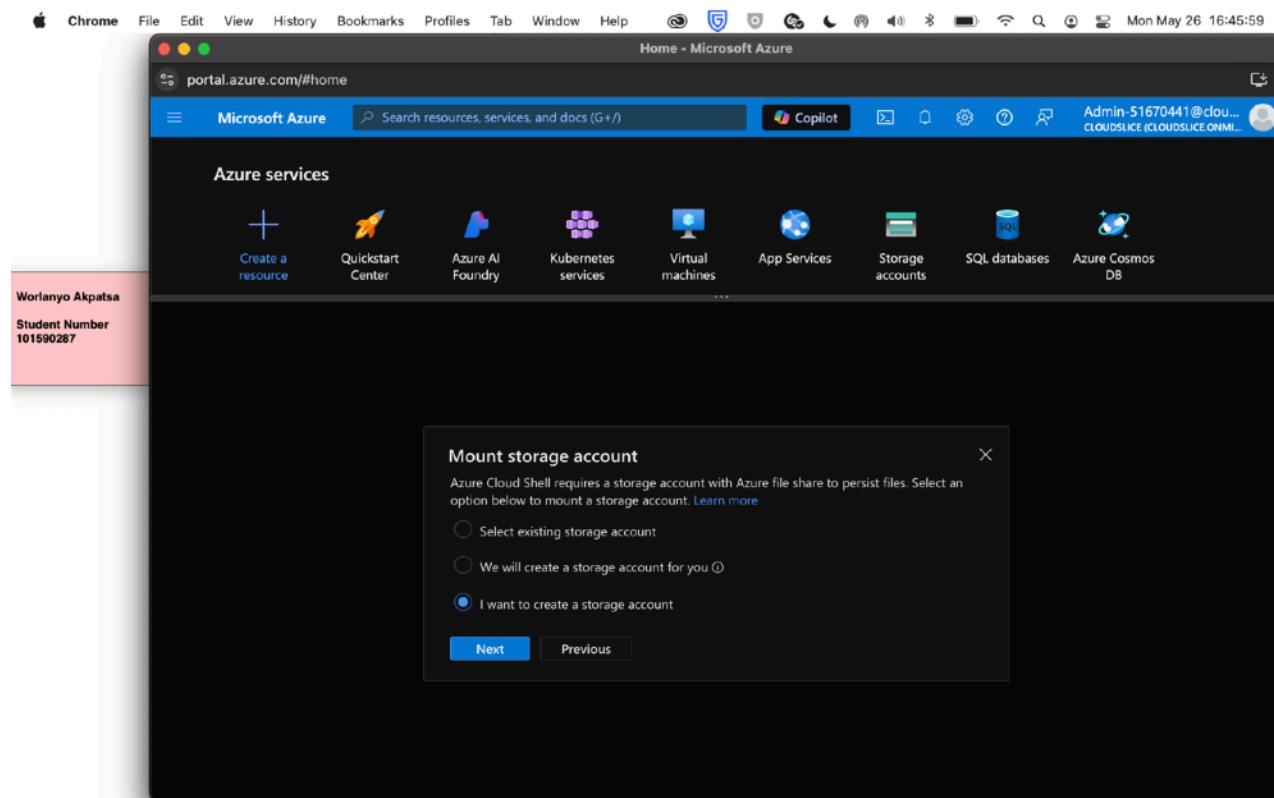


E: On the mount storage account page, select I want to create a storage account

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



F: Fill in info for creating storage account and click create

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Chrome browser window displaying the Microsoft Azure portal at [portal.azure.com/#home](https://portal.azure.com/#home). The user is signed in as Admin-51670441@cloudslice.onmicrosoft.com. The Azure services menu is open, showing options like Create a resource, Quickstart Center, Azure AI Foundry, Kubernetes services, Virtual machines, App Services, Storage accounts, SQL databases, and Azure Cosmos DB. A pink sidebar on the left identifies the user as Worlanyo Akpatsa and lists their Student Number: 101590287. A modal dialog box titled "Create storage account" is in the foreground, prompting for a Subscription (Challenge Labs 04), Resource group (A2900RGlod51670441), Storage account name (sashell51670441), and File share (shell). The "Create" button is visible at the bottom of the modal.

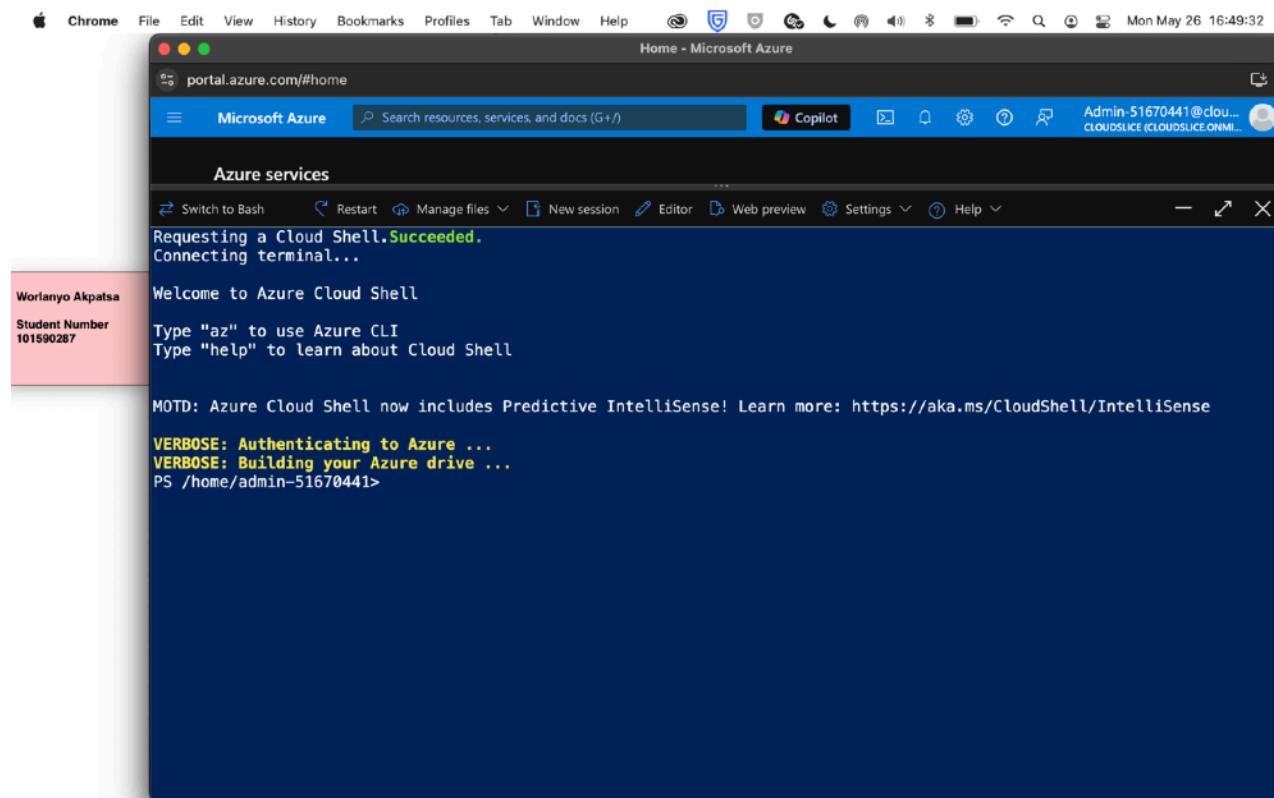
G: Cloud Shell Configuration successful

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



Verified

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure Cloud Shell guided tour in a Chrome browser window. The title bar reads "AZ900-003: Run Commands by Using Azure Cloud Shell [Guided]" and the URL is "labclient.labondemand.com/instructions/a132372c-8981-45ec-a4e7-817932be5562". The main content area displays instructions for setting up Azure Cloud Shell, including steps to enter a storage account name and file share, and to maximize the window. It also explains what Azure Cloud Shell is and how it integrates with the Azure portal. A "Check your work" section at the bottom shows a successful configuration status with a green checkmark and a "Verify" button.

## DEPLOY A VIRTUAL NETWORK BY USING AZURE POWERSHELL CMDLETS

### CREATE A VIRTUAL NETWORK A: Creating a new virtual network

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure Cloud Shell terminal window within a Chrome browser. The terminal is connected to a session for user 'Admin-51670441@cloudshell.onmicrosoft.com'. The session details on the left show 'Worlanyo Akpatsa' and 'Student Number 101590287'. The terminal output shows the creation of a virtual network:

```
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: Azure Cloud Shell now includes Predictive IntelliSense! Learn more: https://aka.ms/CloudShell/IntelliSense

VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
PS /home/admin-51670441> $virtualNetwork = New-AzVirtualNetwork -ResourceGroupName AZ900RGlod51670441 -Location EastUS2 -Name VNet1 -AddressPrefix 10.0.0.0/16
PS /home/admin-51670441>
```

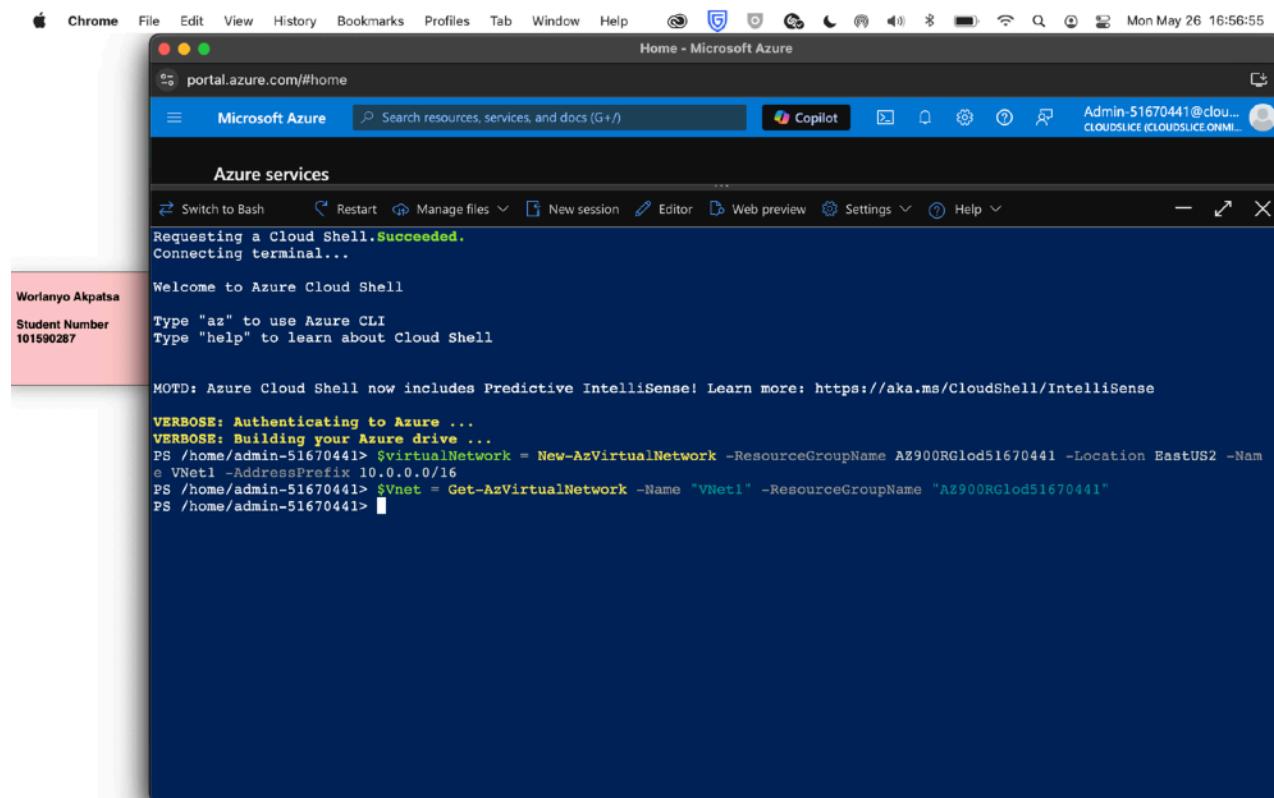
B: Retrieving the value of VNet1 virtual network in the AZ900RGlod51670441 resource group using the Get-AzVirtualNetwork cmdlet.

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



The screenshot shows a Chrome browser window with the Microsoft Azure portal URL (<https://portal.azure.com/#home>) in the address bar. The title bar reads "Home - Microsoft Azure". The main content area is titled "Azure services" and contains a terminal window. The terminal window displays the following text:

```
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: Azure Cloud Shell now includes Predictive IntelliSense! Learn more: https://aka.ms/CloudShell/IntelliSense

VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
PS /home/admin-51670441> $virtualNetwork = New-AzVirtualNetwork -ResourceGroupName AZ900RGlod51670441 -Location EastUS2 -Name VNet1 -AddressPrefix 10.0.0.0/16
PS /home/admin-51670441> $Vnet = Get-AzVirtualNetwork -Name "VNet1" -ResourceGroupName "AZ900RGlod51670441"
PS /home/admin-51670441> [
```

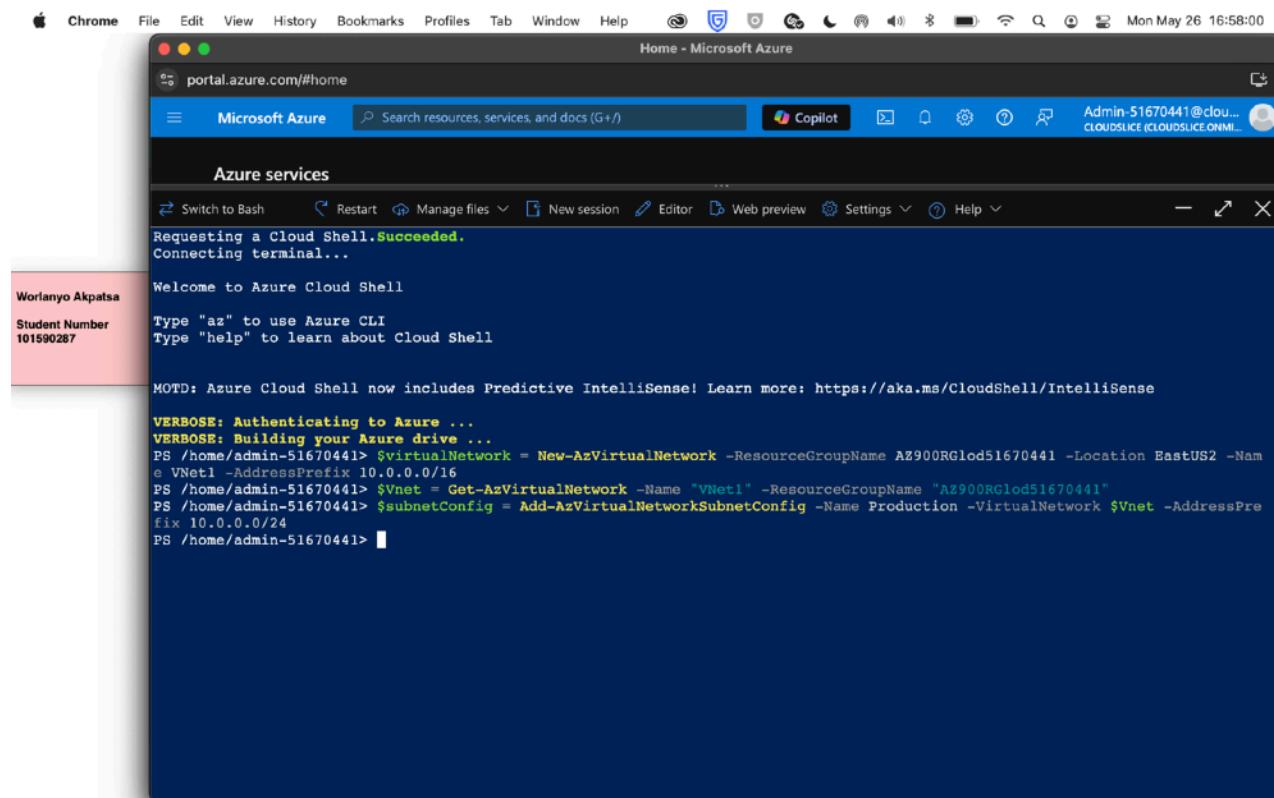
C: Adding a subnet named Production to VNet1

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



The screenshot shows a Microsoft Azure Cloud Shell terminal window within a Chrome browser. The terminal is connected to a session for user 'Admin-51670441@cloudshell.onmicrosoft.com'. The session details on the left show 'Worlanyo Akpatsa' and 'Student Number 101590287'. The terminal window displays a command-line interface for Azure PowerShell (Az). The user has run several commands to create a virtual network, including:

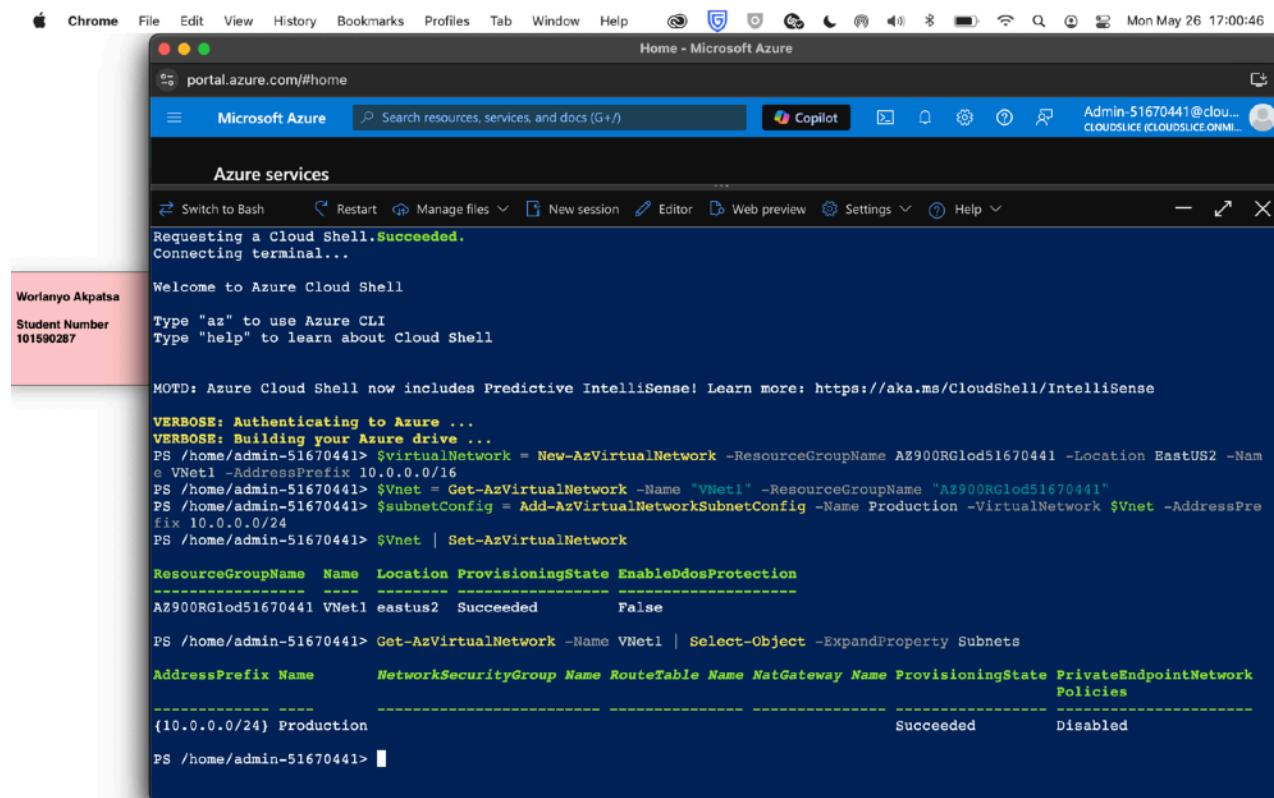
```
PS /home/admin-51670441> $virtualNetwork = New-AzVirtualNetwork -ResourceGroupName AZ900RGlod51670441 -Location EastUS2 -Name VNet1 -AddressPrefix 10.0.0.0/16
PS /home/admin-51670441> $vnet = Get-AzVirtualNetwork -Name "VNet1" -ResourceGroupName "AZ900RGlod51670441"
PS /home/admin-51670441> $subnetConfig = Add-AzVirtualNetworkSubnetConfig -Name Production -VirtualNetwork $vnet -AddressPrefix 10.0.0.0/24
PS /home/admin-51670441>
```

D: Writing the subnet configuration to VNet1 and also confirming that the subnet was indeed created

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



The screenshot shows a Microsoft Azure Cloud Shell interface in a Chrome browser window. The title bar says "Home - Microsoft Azure". The top navigation bar includes "File", "Edit", "View", "History", "Bookmarks", "Profiles", "Tab", "Window", "Help", "Copilot", and various system icons. The date and time "Mon May 26 17:00:46" are shown in the top right. On the left, a sidebar displays "Worlanyo Akpatsa" and "Student Number 101590287". The main area is titled "Azure services" and shows a terminal window. The terminal output is as follows:

```
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: Azure Cloud Shell now includes Predictive IntelliSense! Learn more: https://aka.ms/CloudShell/IntelliSense

VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
PS /home/admin-51670441> $virtualNetwork = New-AzVirtualNetwork -ResourceGroupName AZ900RGlod51670441 -Location EastUS2 -Name VNet1 -AddressPrefix 10.0.0.0/16
PS /home/admin-51670441> $vnet = Get-AzVirtualNetwork -Name "VNet1" -ResourceGroupName "AZ900RGlod51670441"
PS /home/admin-51670441> $subnetConfig = Add-AzVirtualNetworkSubnetConfig -Name Production -VirtualNetwork $vnet -AddressPrefix 10.0.0.0/24
PS /home/admin-51670441> $vnet | Set-AzVirtualNetwork

ResourceGroupName Name Location ProvisioningState EnableDdosProtection
----- ---- ----- -----
AZ900RGlod51670441 VNet1 eastus2 Succeeded False

PS /home/admin-51670441> Get-AzVirtualNetwork -Name VNet1 | Select-Object -ExpandProperty Subnets
AddressPrefix Name NetworkSecurityGroup Name RouteTable Name NatGateway Name ProvisioningState PrivateEndpointNetworkPolicies
----- ---- -----
(10.0.0.0/24) Production Succeeded Disabled

PS /home/admin-51670441> █
```

## DEPLOY A VIRTUAL NETWORK USING AZURE CLI 2.0 COMMANDS

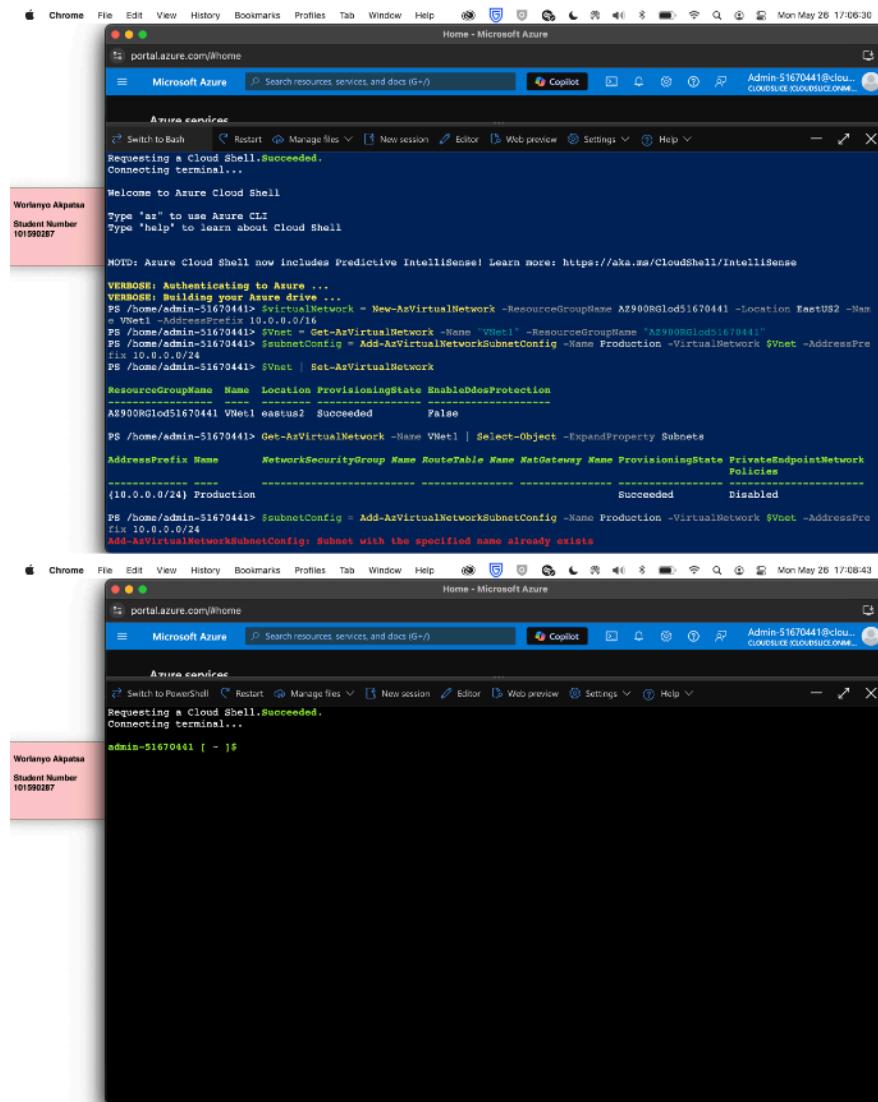
### SWITCH TO AN AZURE CLOUD SHELL BASH SESSION

A: On the top of cloud shell, select switch to bash

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



The screenshot shows two instances of the Microsoft Azure Cloud Shell interface in a browser window. Both instances are titled "Home - Microsoft Azure" and show the URL "portal.azure.com/#home". The top instance displays a PowerShell session with the following command history:

```
PS /home/admin-51670441> $VirtualNetwork = New-AzVirtualNetwork -ResourceGroupName AZ900RGlod51670441 -Location EastUS2 -Name vNet1 -AddressPrefix 10.0.0.0/16
PS /home/admin-51670441> $Vnet = Get-AzVirtualNetwork -Name "vNet1" -ResourceGroupName "AZ900RGlod51670441"
PS /home/admin-51670441> $SubnetConfig = Add-AzVirtualNetworkSubnetConfig -Name Production -VirtualNetwork $Vnet -AddressPre
fix 10.0.0.0/24
PS /home/admin-51670441> $Vnet | Set-AzVirtualNetwork
ResourceGroupName Name Location ProvisioningState EnabledDdosProtection
AZ900RGlod51670441 vNet1 eastus2 Succeeded False
PS /home/admin-51670441> Get-AzVirtualNetwork -Name vNet1 | Select-Object -ExpandProperty Subnets
AddressPrefix Name NetworkSecurityGroup Name RouteTable Name NatGateway Name ProvisioningState PrivateEndpointNetwork
Policies
(10.0.0.0/24) Production Succeeded Disabled
PS /home/admin-51670441> $SubnetConfig = Add-AzVirtualNetworkSubnetConfig -Name Production -VirtualNetwork $Vnet -AddressPro
fix 10.0.0.0/24
Add-AzVirtualNetworkSubnetConfig: Subnet with the specified name already exists
```

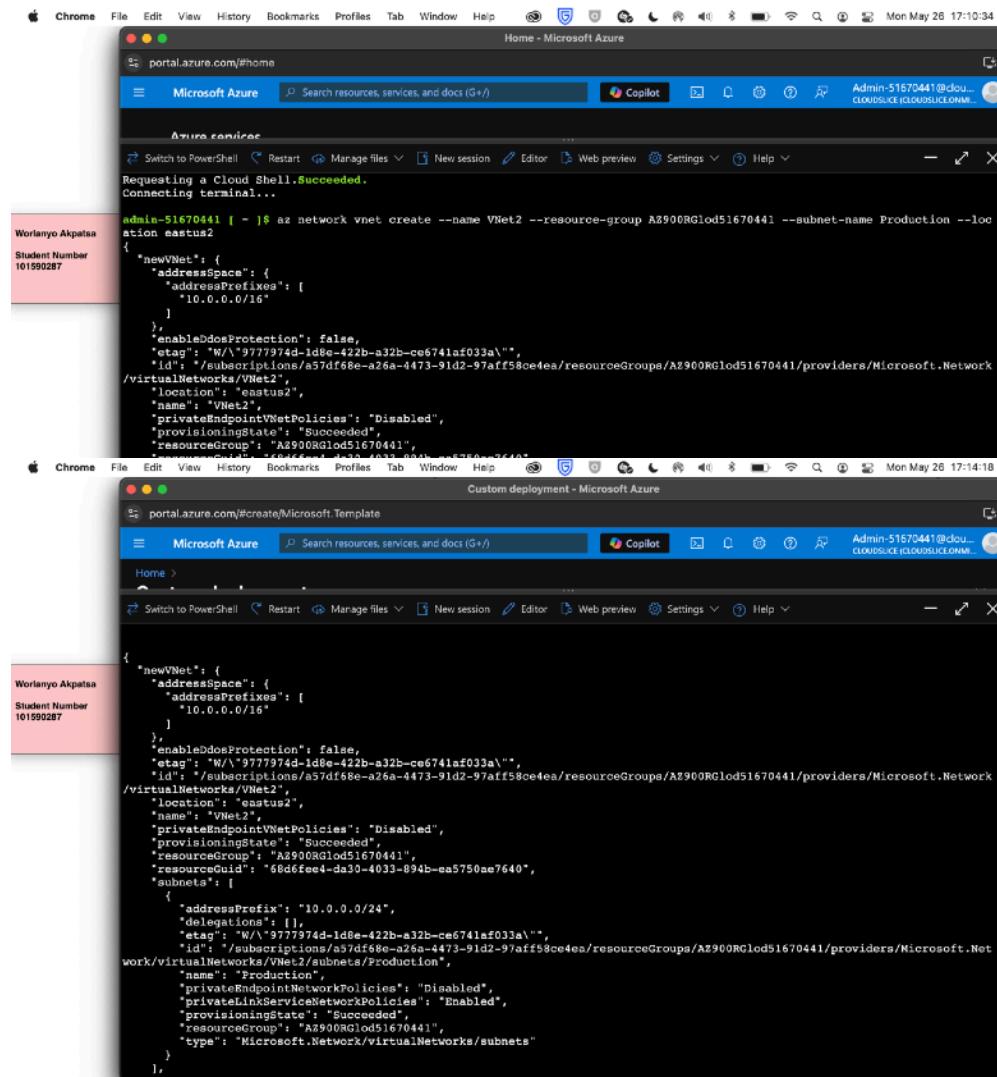
The bottom instance shows a blank PowerShell session with the prompt "admin-51670441 [ ~ ]\$".

B: Create a Virtual network named VNet2

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



The image shows two side-by-side screenshots of a Microsoft Azure PowerShell interface within a web browser (Chrome). Both windows have a pink sidebar on the left with the user's name (Worlanyo Akpatsa) and student number (101590287).

**Top Window:** The title bar says "Home - Microsoft Azure". The main pane shows a PowerShell session starting with "Requesting a Cloud Shell. **Succeeded.**". It then displays the command and its output for creating a new VNet:

```
admin@51670441: ~]$ az network vnet create --name VNet2 --resource-group AZ900RGlod51670441 --subnet-name Production --location eastus2
{
  "newVNet": {
    "addressSpace": {
      "addressPrefixes": [
        "10.0.0.0/16"
      ]
    },
    "enableDdosProtection": false,
    "etag": "W/\\"9777974d-1d8e-42b-a32b-ce6741af033a\\"",
    "id": "/subscriptions/a57df68e-a26a-4473-91d2-97aff58ce4ea/resourceGroups/AZ900RGlod51670441/providers/Microsoft.Network/virtualNetworks/VNet2",
    "location": "eastus2",
    "name": "VNet2",
    "privateEndpointNetPolicies": "Disabled",
    "provisioningState": "Succeeded",
    "resourceGroup": "AZ900RGlod51670441",
    "resourceId": "6bd6f6ee4-da30-4033-894b-ea5750ae7640",
    "resourceType": "Microsoft.Network/virtualNetworks",
    "subnets": [
      {
        "addressPrefix": "10.0.0.0/24",
        "delegations": [],
        "etag": "W/\\"9777974d-1d8e-42b-a32b-ce6741af033a\\"",
        "id": "/subscriptions/a57df68e-a26a-4473-91d2-97aff58ce4ea/resourceGroups/AZ900RGlod51670441/providers/Microsoft.Network/virtualNetworks/VNet2/subnets/Production",
        "name": "Production",
        "privateEndpointNetworkPolicies": "Disabled",
        "privateLinkServiceNetworkPolicies": "Enabled",
        "provisioningState": "Succeeded",
        "resourceGroup": "AZ900RGlod51670441",
        "type": "Microsoft.Network/virtualNetworks/subnets"
      }
    ],
    "tags": {}
  }
}
```

**Bottom Window:** The title bar says "Custom deployment - Microsoft Azure". The main pane shows the JSON configuration for the VNet creation, which is identical to the one above:

```
{
  "newVNet": {
    "addressSpace": {
      "addressPrefixes": [
        "10.0.0.0/16"
      ]
    },
    "enableDdosProtection": false,
    "etag": "W/\\"9777974d-1d8e-42b-a32b-ce6741af033a\\"",
    "id": "/subscriptions/a57df68e-a26a-4473-91d2-97aff58ce4ea/resourceGroups/AZ900RGlod51670441/providers/Microsoft.Network/virtualNetworks/VNet2",
    "location": "eastus2",
    "name": "VNet2",
    "privateEndpointNetPolicies": "Disabled",
    "provisioningState": "Succeeded",
    "resourceGroup": "AZ900RGlod51670441",
    "resourceId": "6bd6f6ee4-da30-4033-894b-ea5750ae7640",
    "resourceType": "Microsoft.Network/virtualNetworks",
    "subnets": [
      {
        "addressPrefix": "10.0.0.0/24",
        "delegations": [],
        "etag": "W/\\"9777974d-1d8e-42b-a32b-ce6741af033a\\"",
        "id": "/subscriptions/a57df68e-a26a-4473-91d2-97aff58ce4ea/resourceGroups/AZ900RGlod51670441/providers/Microsoft.Network/virtualNetworks/VNet2/subnets/Production",
        "name": "Production",
        "privateEndpointNetworkPolicies": "Disabled",
        "privateLinkServiceNetworkPolicies": "Enabled",
        "provisioningState": "Succeeded",
        "resourceGroup": "AZ900RGlod51670441",
        "type": "Microsoft.Network/virtualNetworks/subnets"
      }
    ],
    "tags": {}
  }
}
```

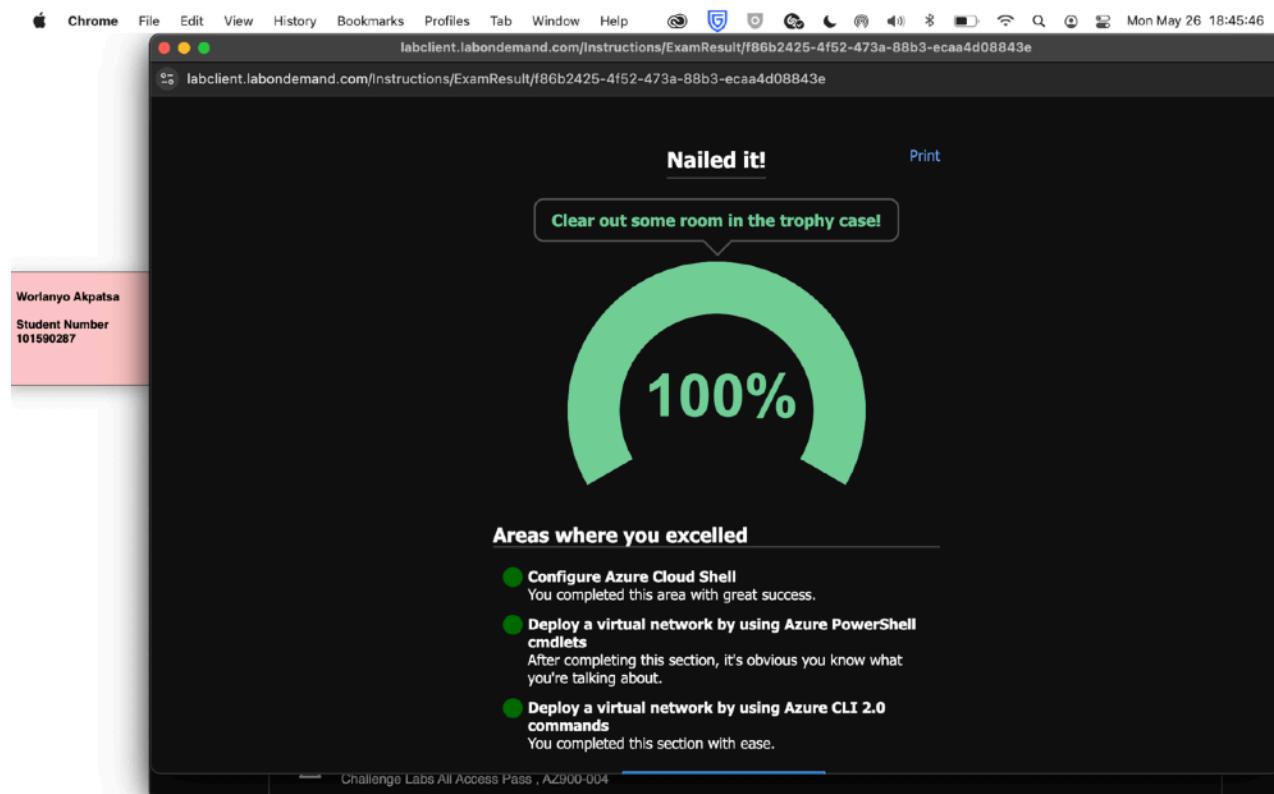
C: Confirmation

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



### TASK 4: CONFIGURE A ROUTE TABLE USING THE AZURE PORTAL. Challenge Labs supporting Module 2: Core Azure Services, IaaS-004

#### CREATE A ROUTE TABLE

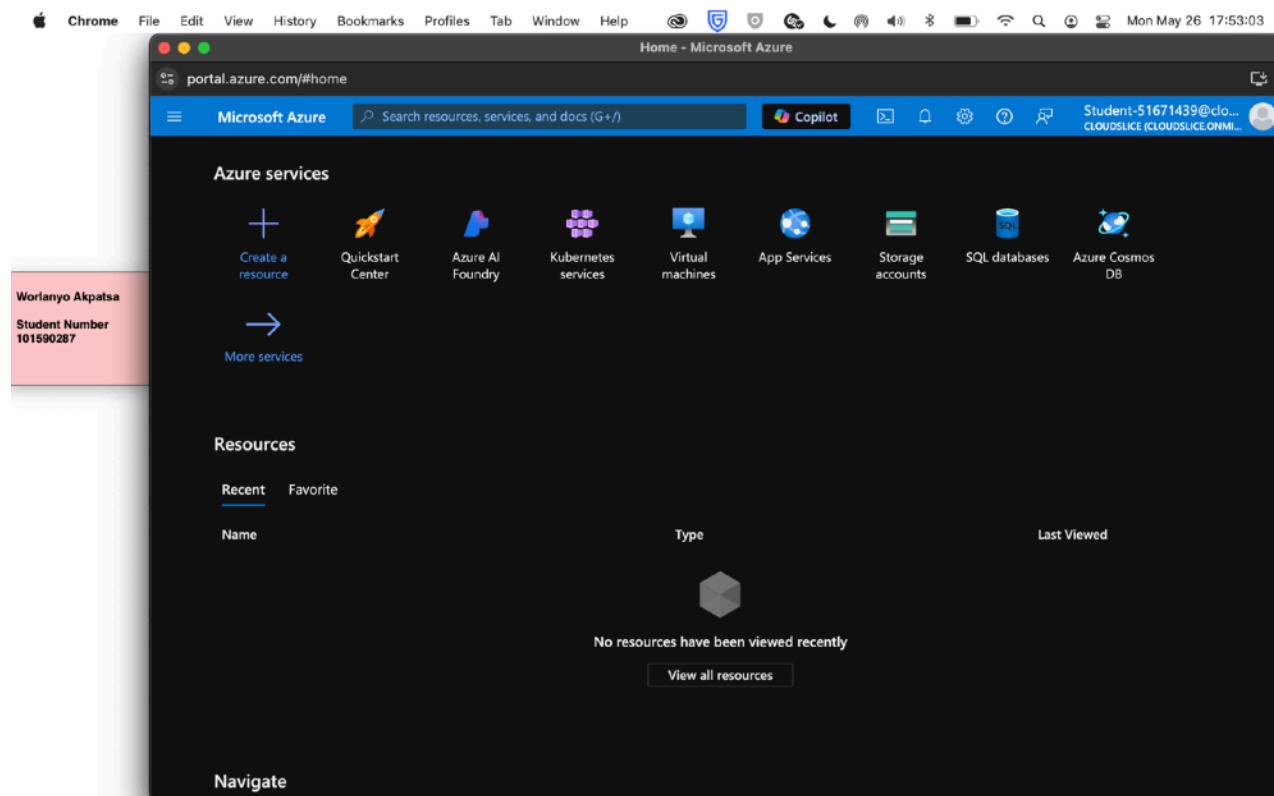
A: Sign in to Azure portal using credentials

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

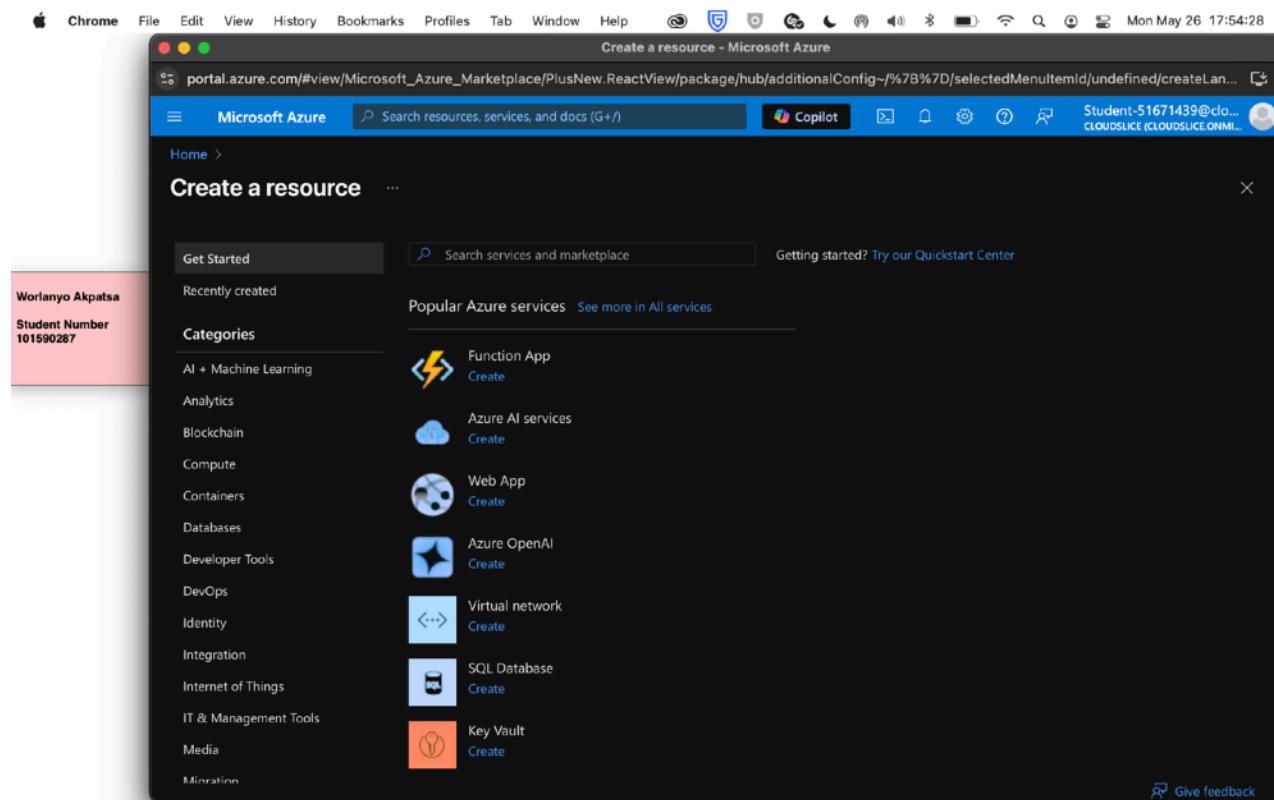


B: Select create a resource and then search for and select route table

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



C: Select create under route table. Takes you to the create a route table page

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure Marketplace interface. On the left, there's a sidebar with user information (Worlanyo Akpatsa, Student Number 101590287) and navigation links like Get Started, Service Providers, Management, Private Marketplace, Private Offer Management, My Marketplace (Favorites, My solutions, Recently created, Private plans), and Categories (Networking, AI + Machine Learning, Security). The main area has a search bar with 'route table' entered, and filters for Pricing: All, Operating System: All, Publisher Type: All, Product Type: All, and Publisher name: All. A message box says 'New! Get AI-generated suggestions for 'route table'' with a 'View suggestions' button. Below, it says 'Showing 1 to 4 of 4 results for 'route table''. There are four cards: 1. 'Route table' by Microsoft, starting at \$0.005/hour, with a 'Create' button. 2. 'VNS3 NATe 6.x - NAT Gateway Appliance' by Cohesive Networks, starting at \$0.005/hour, with a 'Create' button. 3. 'Botminds AI – Automated Invoice Processing' by Botminds AI Technologies Pvt. Ltd., starting at \$2,000.00/month, with a 'Subscribe' button. 4. 'Laravel-v-9.0.0' by Niles Partners Inc., starting at \$0.006/hour, with a 'Create' button. A blue button at the bottom right says 'Is Marketplace helpful?'.

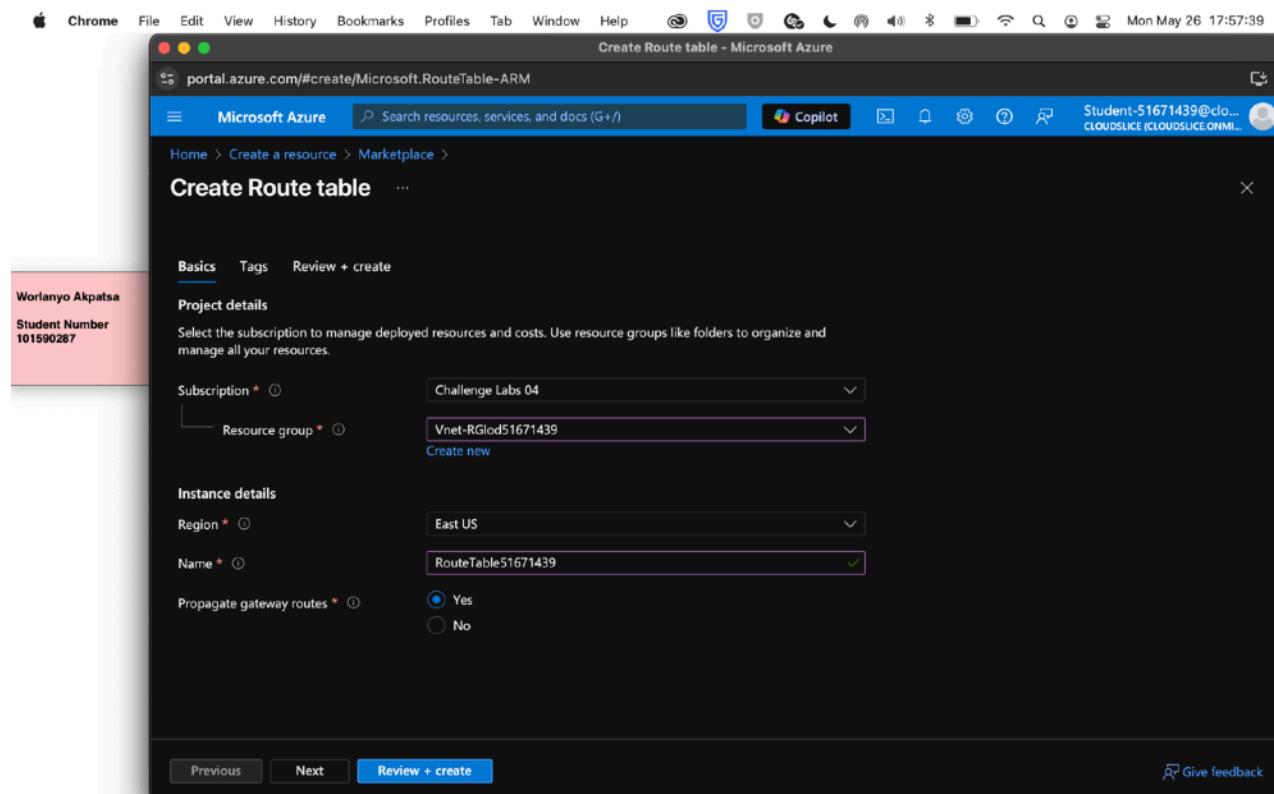
D: Creating route table

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



E: Route table created

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure portal page titled "Microsoft.RouteTable-20250526175602 | Overview". The deployment status is shown as "Your deployment is complete" with a green checkmark. Deployment details include:

- Deployment name: Microsoft.RouteTable-20250526175602
- Subscription: Challenge Labs 04
- Resource group: Vnet-RGCloud51671439
- Start time: 5/26/2025, 5:58:08 PM
- Correlation ID: 8a98d6e0-eb3f-4956-b389-6dff162a78091

Below the deployment summary, there are links for "Deployment details" and "Next steps", and a "Go to resource" button. At the bottom, there are sections for "Give feedback" and "Cost management". A sidebar on the left identifies the user as "Worlanyo Akpatsa" and "Student Number 101590287".

## CREATE AN AZURE FIREWALL

A: Search for Azure firewall in marketplace. Select create under Azure firewall

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

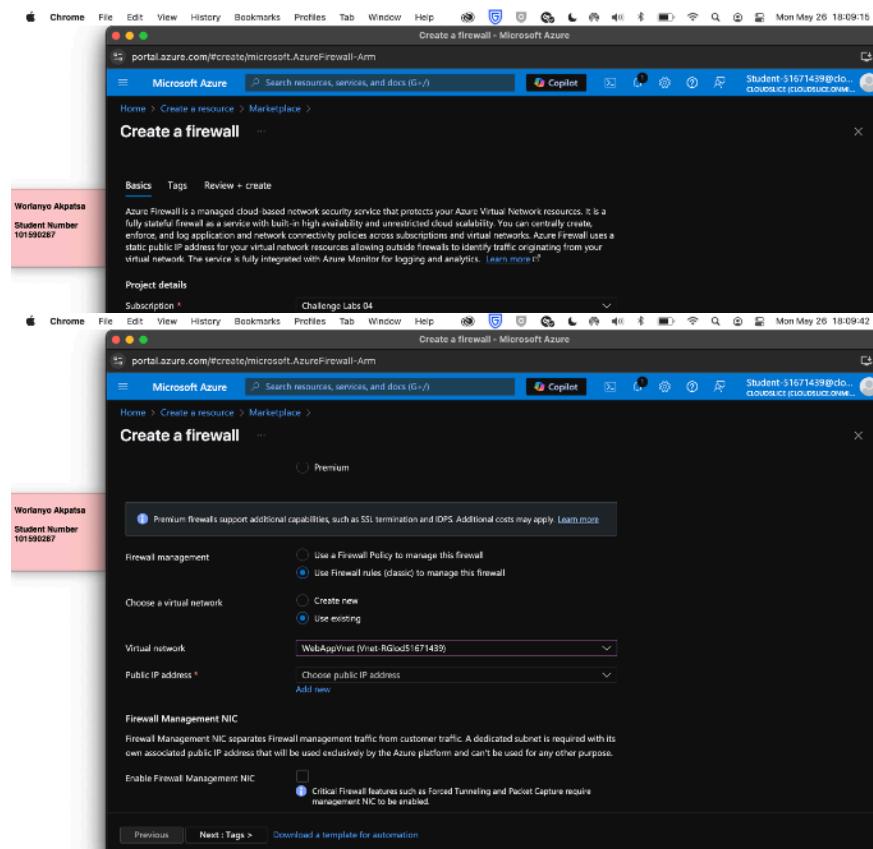
The screenshot shows the Microsoft Azure Marketplace interface. The search bar at the top contains the query "azure firewall". Below the search bar, there are several filter options: "Pricing : All", "Operating System : All", "Publisher Type : All", "Product Type : All", and "Publisher name : All". A message box indicates "New! Get AI-generated suggestions for 'azure firewall'" with a "View suggestions" button. The results section displays 1 to 20 of 375 results for "azure firewall". Each result card includes a thumbnail, the provider name, the service name, a brief description, and a "Create" button. The results are categorized into four columns: Firewall (Microsoft), Sophos Firewall (Sophos), Azure Firewall Solution for Sentinel (Microsoft Corporation), and Fortinet Fortigate Firewall (GBM Abu Dhabi). The left sidebar shows the user profile "Worlanyo Akpatsa" and "Student Number 101590287", along with sections for "Get Started", "Service Providers", "Management", "Private Marketplace", "Private Offer Management", "My Marketplace" (Favorites, My solutions, Recently created, Private plans), and "Categories" (Security, Networking, Compute).

B: Fill in info on basics page for firewall

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



C: Firewall created

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure Firewall Overview page for a deployment named "Microsoft.AzureFirewall-20250526181151". The deployment status is marked as "Your deployment is complete" with a green checkmark. Deployment details include:

- Deployment name: Microsoft.AzureFirewall-20250526181151
- Subscription: Challenge Labs 04
- Resource group: Vnet-RGId51671439
- Start time: 5/26/2025, 6:11:53 PM
- Correlation ID: 58190545-5fa0-447d-8051-311c4d175365

Below the deployment details, there are two expandable sections: "Deployment details" and "Next steps". A blue "Go to resource" button is located below these sections. At the bottom of the page, there is a "Cost management" section with a green dollar sign icon, encouraging users to stay within their budget.

## ADD A ROUTE TO AZURE FIREWALL

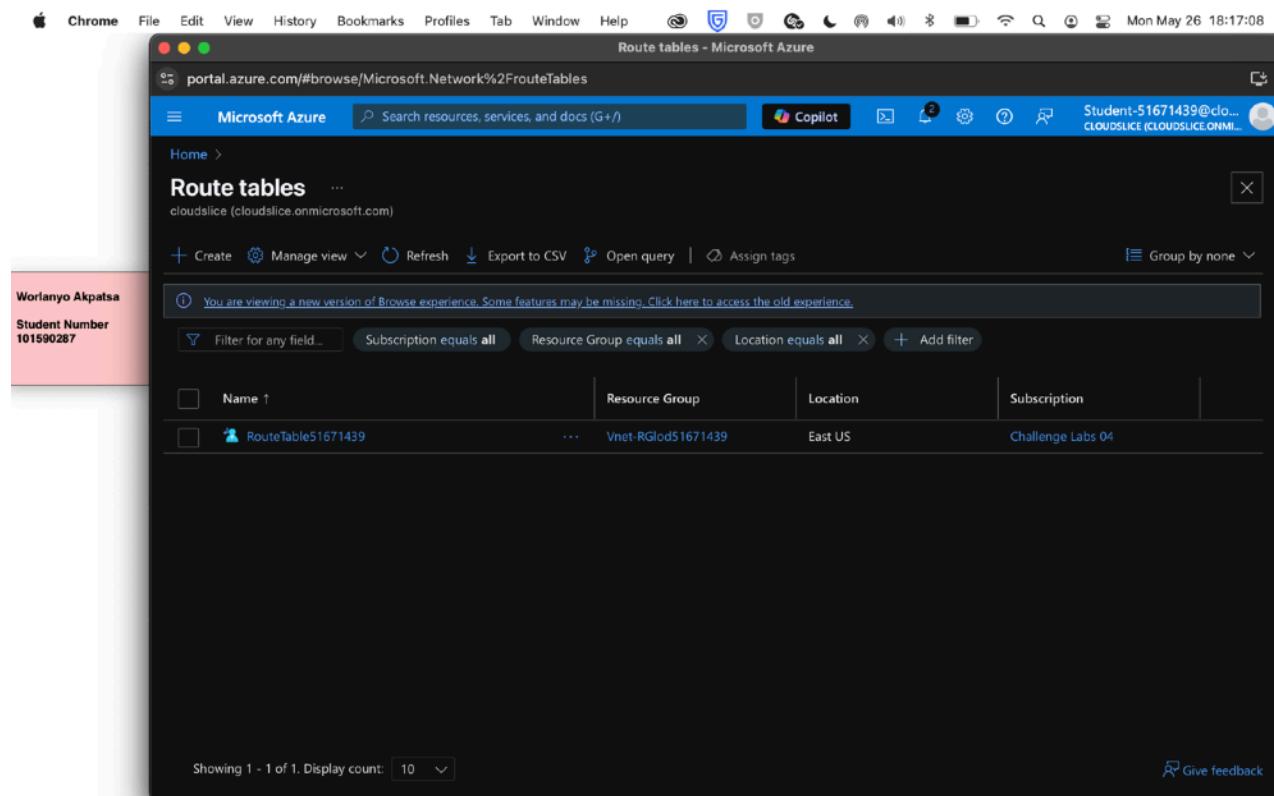
A: Search route tables and open your created route table

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes links for Chrome, File, Edit, View, History, Bookmarks, Profiles, Tab, Window, Help, and various system icons. The title bar reads "Route tables - Microsoft Azure". The main content area displays the "Route tables" page under the "Microsoft Azure" section. The URL in the address bar is "portal.azure.com/#browse/Microsoft.Network%2FRouteTables". A search bar at the top right contains the placeholder "Search resources, services, and docs (G+/-)". Below the search bar are buttons for "Copilot", "Copilot 2", "Copilot 3", "Copilot 4", "Copilot 5", "Copilot 6", "Copilot 7", and "Copilot 8". The user's name "Student-51671439@cloudslice.onmicrosoft.com" and email "CLOUDSLICE (CLOUDSLICE.ONMICROSOFT.COM)" are shown on the right. The left sidebar has a red header bar with the user's name and student number "Worlanyo Akpatsa" and "Student Number 101590287". The main content area shows a table with one row of data:

| Name ↑             | Resource Group    | Location | Subscription      |
|--------------------|-------------------|----------|-------------------|
| RouteTable51671439 | Vnet-RGId51671439 | East US  | Challenge Labs 04 |

At the bottom of the table, there is a message: "Showing 1 - 1 of 1. Display count: 10". On the far right, there is a "Give feedback" link.

B: In route table page, select settings in the left pane and under it, choose routes

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows two separate browser windows side-by-side, both displaying the Microsoft Azure portal interface.

The top window shows the "RouteTable51671439" overview page. The left sidebar menu includes "Overview", "Activity log", "Access control (IAM)", "Tags", "Diagnose and solve problems", "Resource visualizer", and "Settings". Under "Overview", it lists the Resource group (Vnet-RGId51671439), Location (East US), and Subscriptions (Challenge Labs 04). It also shows "Associations" and "0 subnet associations".

The bottom window shows the "Routes" section of the same route table. The left sidebar menu includes "Overview", "Activity log", "Access control (IAM)", "Tags", "Diagnose and solve problems", "Resource visualizer", and "Settings". Under "Routes", it lists "Subnets", "Properties", "Locals", and "Monitoring". A message "No results" is displayed below the table header.

C: Select add to add a route and fill in the required info. After, click add

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure portal interface. On the left, there is a sidebar with the user's name (Worlanyo Akpatsa) and student number (101590287). The main navigation bar includes Home, Route tables, and RouteTable51671439. The 'Routes' section is selected. A modal window titled 'Add route' is open, prompting for route configuration. The 'Route name' field is set to 'AzureFWRoute'. The 'Destination type' is chosen as 'IP Addresses' with the value '0.0.0.0/0'. The 'Next hop type' is set to 'Virtual appliance' with the value '10.1.0.4'. A note at the bottom of the modal states: 'Ensure you have IP forwarding enabled on your virtual appliance. You can enable this by navigating to the respective network interface's IP address settings.' At the bottom right of the modal is a 'Give feedback' link.

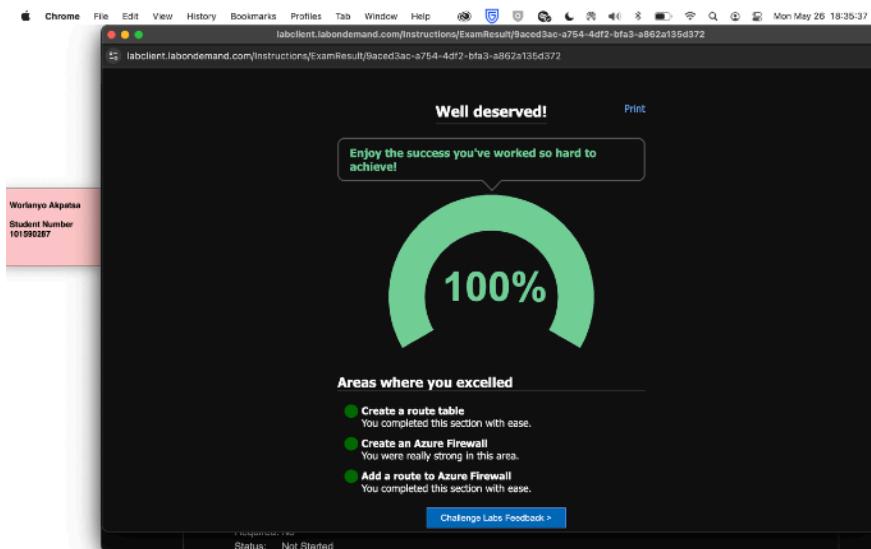
D: Route added

The screenshot shows the 'RouteTable51671439 | Routes' page. The sidebar on the left is identical to the previous screenshot. The main area displays a table of routes. There is one entry: 'AzureFWRoute' with 'Address prefix' '0.0.0.0/0', 'Next hop type' 'VirtualAppliance', and 'Next hop IP address' '10.1.0.4'. The table has columns for 'Name', 'Address prefix', 'Next hop type', and 'Next hop IP address'.

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



## TASK 5: INSTALL AND CONFIGURE MICROSOFT ENTRA ID CONNECT. Challenge Labs Module 3: All Access Pass, AZ300.3-001

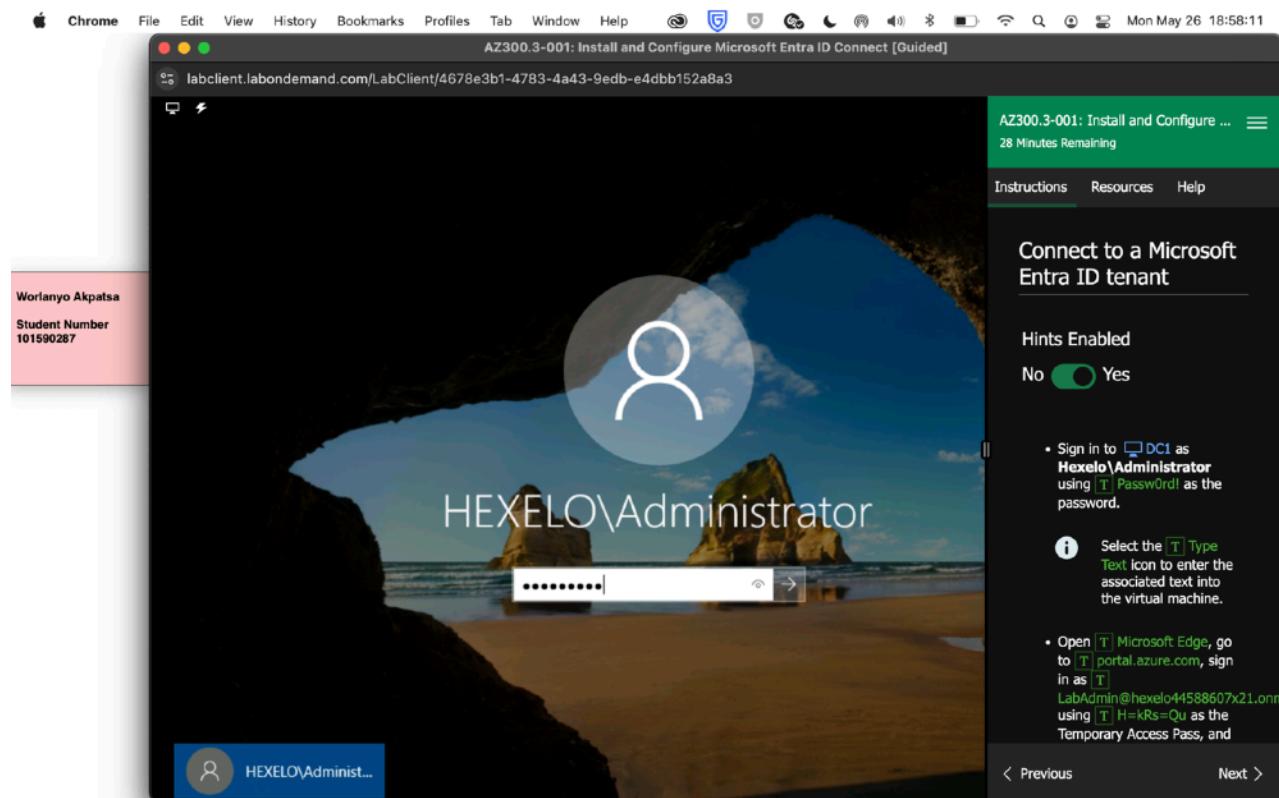
A: Sign into vm using credentials

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



**B: Open edge and sign in to azure portal using credentials given**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a browser window with two tabs open, both titled "AZ300.3-001: Install and Configure Microsoft Entra ID Connect [Guided]".

The left tab displays the Microsoft Azure sign-in page at <https://login.microsoftonline.com/>. It includes a sidebar for "Worlanyo Akpatsa" (Student Number 101590287) and a main content area with the Microsoft logo and a "Microsoft" link.

The right tab displays a guide titled "AZ300.3-001: Install and Configure Microsoft Entra ID Connect [Guided]" with a progress bar showing "19 Minutes Remaining". The guide provides instructions for modifying the technical contact for the tenant, mentioning LabAdmin@hexelo44588607x21.onmicrosoft.com. It also includes a "Copilot" button and navigation links for "Previous" and "Next".

**Modifying the technical contact for the tenant to be the user: [LabAdmin@hexelo.com](mailto:LabAdmin@hexelo.com)**

**A: On portal menu, select Microsoft Entra ID**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure lab client interface. The left sidebar displays the user's name (Worlanyo Akpatsa) and student number (101590287). The main content area shows the Microsoft Entra ID service page. A callout box highlights the 'Microsoft Entra ID' section, which includes a description of streamlining identity management across devices and services. To the right, a guided configuration panel titled 'AZ300.3-001: Install and Configure Microsoft Entra ID Connect [Guided]' is open. It shows 16 minutes remaining and provides instructions for changing the technical contact. The instructions list steps such as selecting 'Microsoft Entra ID' from the portal menu and changing the contact to 'LabAdmin@hexelo.com'. A 'Copilot' button is visible at the top right of the main content area.

**B: Open properties page and change technical contact as instructed.  
After, click save**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Chrome browser window with a Microsoft Azure configuration guide titled "AZ300.3-001: Install and Configure Microsoft Entra ID Connect [Guided]". The URL is [https://portal.azure.com/#view/Microsoft\\_AAD\\_IAM/ActiveDirectoryMenuBlade/](https://portal.azure.com/#view/Microsoft_AAD_IAM/ActiveDirectoryMenuBlade/). The page displays the "Overview" tab of a Microsoft Entra ID tenant named "Hexelo44588607x21". The "Properties" tab is selected. The "Contact for the tenant" section contains instructions for setting up a global administrator account. It includes steps like selecting "Microsoft Entra ID" from the portal menu, navigating to the Properties tab, and saving changes. A note at the bottom right suggests reviewing documentation on Microsoft Entra ID.

## CONFIGURE A MICROSOFT ENTRA ID GLOBAL ADMINISTRATOR ACCOUNT

**A: In entra ID page, select add->user->create new user**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure user creation wizard titled "AZ300.3-001: Install and Configure Microsoft Entra ID Connect [Guided]". The browser window is titled "labclient.labondemand.com/LabClient/4678e3b1-4783-4a43-9edb-e4dbb152a8a3". The main content area displays the "Overview" page for a user named "Hexelo44588607x21". A tooltip for "Create new user" is visible, pointing to the "User" section of the navigation bar. On the right, a "Properties" pane lists the following user details:

| Property               | Value                |
|------------------------|----------------------|
| User principal name    | SyncAdmin            |
| Display name           | SyncAdmin            |
| Auto-generate password | Deselected           |
| Password               | InitialPwd51672252   |
| First name             | Sync                 |
| Last name              | Admin                |
| Role                   | Global Administrator |

**B: On basics page, fill user info as detailed**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure portal window titled "Create new user - Microsoft Azure". The URL is https://portal.azure.com/#view/Microsoft\_AAD\_IAM/~/UserManagement/CreateUser. The page displays a form for creating a new user with the following details:

| Property               | Value                |
|------------------------|----------------------|
| User principal name    | SyncAdmin            |
| Display name           | SyncAdmin            |
| Auto-generate password | Deselected           |
| Password               | InitialPwd51672252   |
| First name             | Sync                 |
| Last name              | Admin                |
| Role                   | Global Administrator |

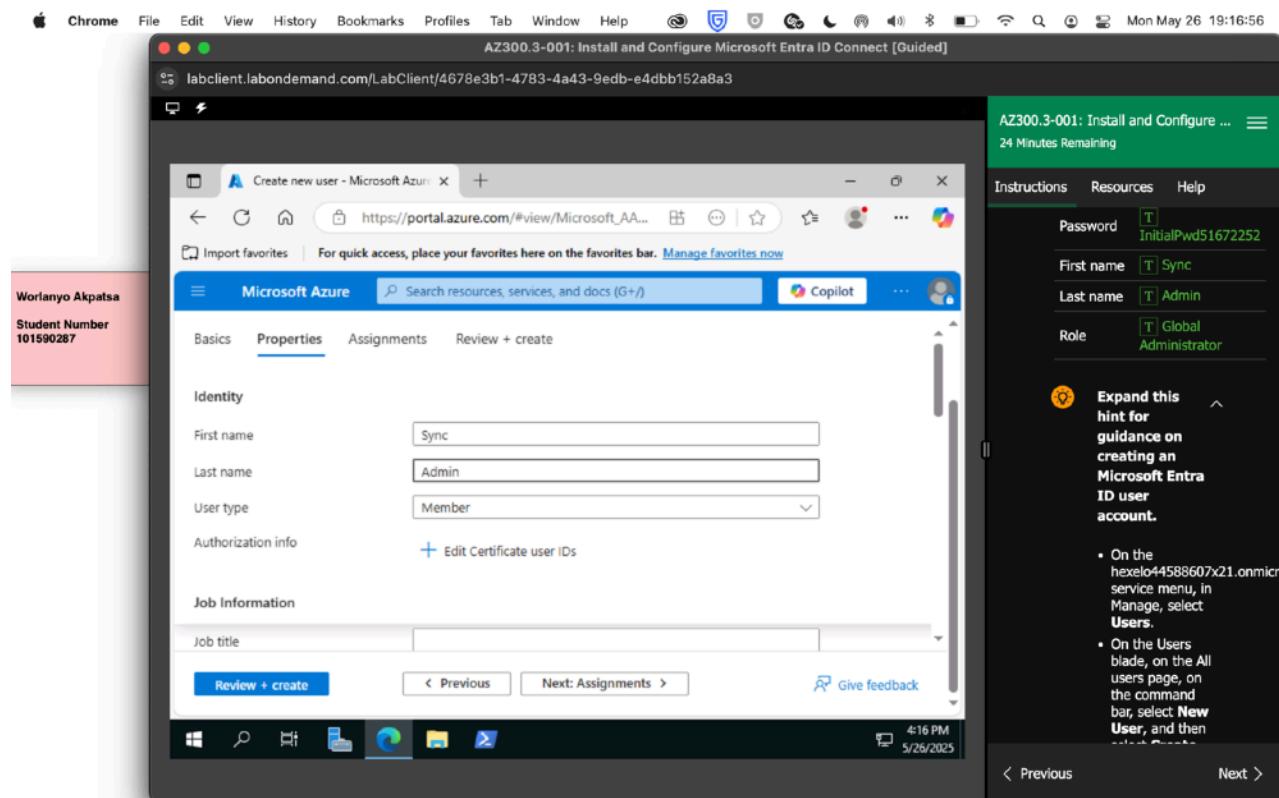
The "Instructions" pane on the right provides guidance: "Create a new user by using the values in the following table. For any property that is not specified, use the default value."

### C: Fill in info for properties page

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



D: On assignments page, click add role

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure portal interface. On the left, a sidebar displays the student's name and ID: "Worlanyo Akpatsa" and "Student Number 101590287". The main content area shows the "Assignments" tab selected on the "Create new user - Microsoft Azure" blade. It displays a message: "Make up to 20 group or role assignments. You can only add a user to a maximum of 1 administrative unit." Below this are three buttons: "+ Add administrative unit", "+ Add group", and "+ Add role". A note below says "No assignments to display." At the bottom are "Review + create" and "Next: Review + create" buttons. To the right, a sidebar titled "AZ300.3-001: Install and Configure Microsoft Entra ID Connect [Guided]" shows "23 Minutes Remaining". It contains instructions: "On the Assignments page, Select Add role.", "On the Directory roles blade, search for Global, select the Global administrator check box, and then select Select.", "On the Create new user blade, select Review + create, review the configuration, and then select Create.", and a note: "If the new user is not immediately listed on the Users page, on". Navigation buttons "< Previous" and "Next >" are at the bottom.

### E: On roles page, search for role of global admin and select it

The screenshot shows the Microsoft Azure portal interface. On the left, a sidebar displays the student's name and ID: "Worlanyo Akpatsa" and "Student Number 101590287". The main content area shows the "Directory roles" page for the user. It lists four roles: "Global Administrator" (selected), "Global Reader", "Global Secure Access Administrator", and "Global Secure Access Log Reader". Each role has a description. At the bottom is a "Select" button. A sidebar on the right provides instructions: "On the Assignments page, Select Add role.", "On the Directory roles blade, search for Global, select the Global administrator check box, and then select Select.", and a note: "If the new user is not immediately listed on the Users page, on". Navigation buttons "< Previous" and "Next >" are at the bottom.

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

A screenshot of a Microsoft Azure user creation guide titled "AZ300.3-001: Install and Configure Microsoft Entra ID Connect [Guided]". The guide is step 22 of 22 minutes remaining. It shows a Microsoft Azure portal window where a new user is being created. The user has been assigned the "Global Administrator" role. The guide provides instructions for adding roles to a user and creating a new user with the "Global Administrator" role selected. A note at the bottom right says, "If the new user is not immediately listed on the Users page, wait a few minutes and then refresh the page." The browser is a Mac version of Chrome.

### F: User created

A screenshot of the Microsoft Azure portal showing the successful creation of a user named "Hexelo44588607x21". A success message box is displayed: "Successfully created user" and "Successfully created user SyncAdmin". The portal shows the user's overview with basic information like name and tenant ID. The guide on the right continues with instructions for adding roles and creating users. The browser is a Mac version of Chrome.

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure lab environment titled "AZ300.3-001: Install and Configure Microsoft Entra ID Connect [Guided]". The browser window displays the Microsoft Azure portal. On the left, a sidebar shows the user's name (Worlanyo Akpatsa) and student number (101590287). The main content area shows the "Overview" page for a new Microsoft Entra ID global administrator account named "Hexelo44588607x21". The "Properties" tab is selected, showing a table with the following properties:

| Property            | Value      |
|---------------------|------------|
| User principal name | SyncAdmin  |
| Display name        | SyncAdmin  |
| Auto-generate       | Deselected |

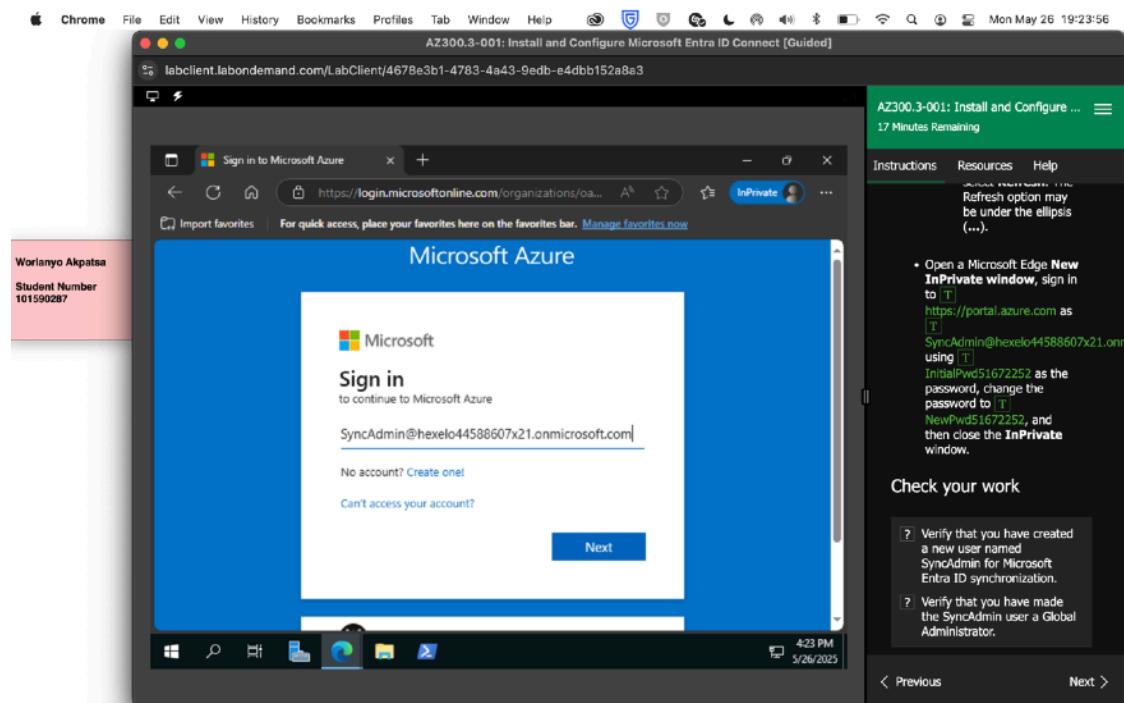
**G: On new inprivate window, sign in to azure using credentials of user created. (Sync Admin)**

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



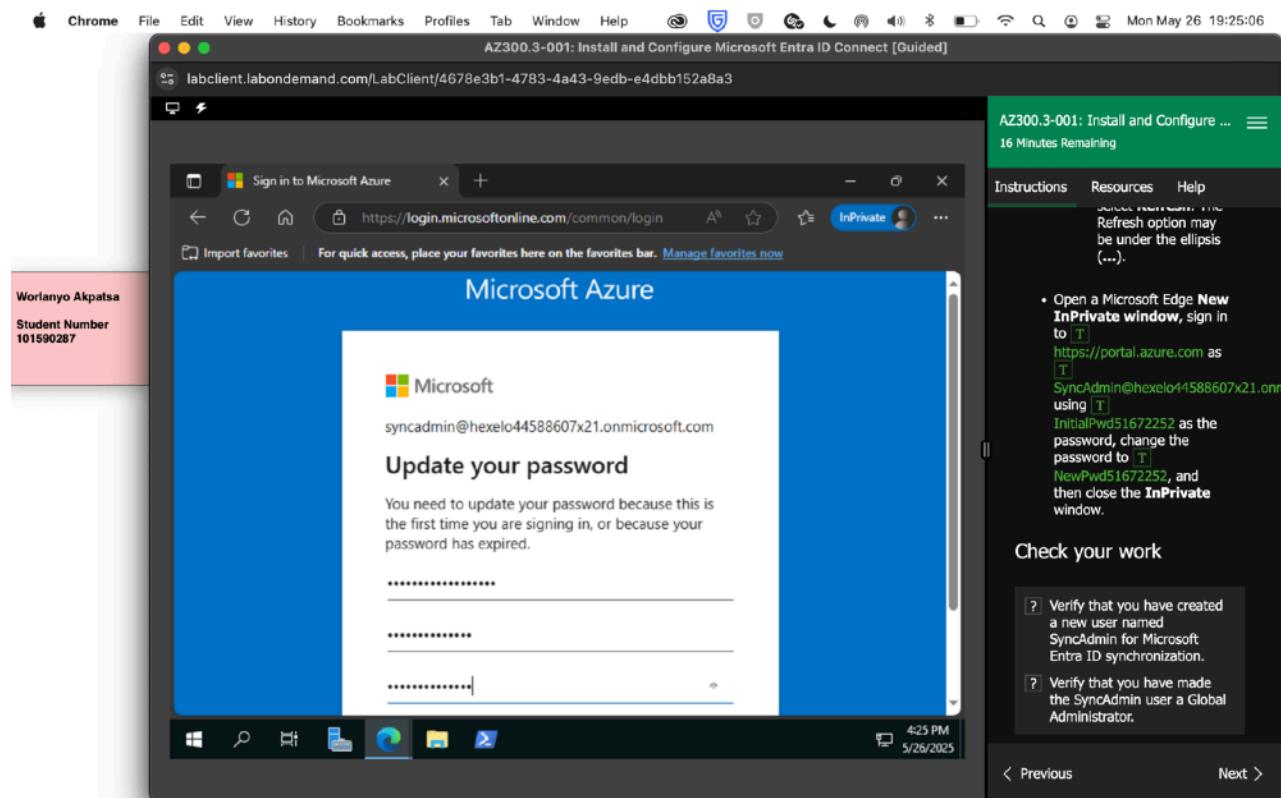
## H: Change Password

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

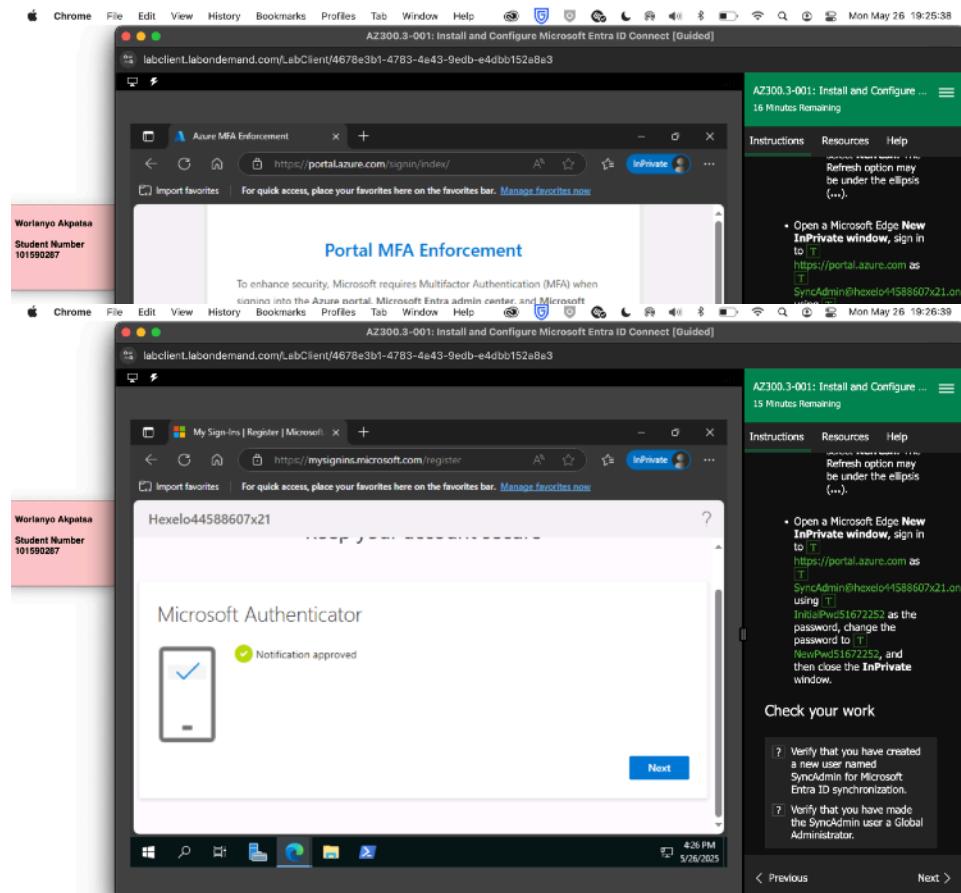


I: MFA

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



## J: Signed in to Azure portal as Sync Admin

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

AZ300.3-001: Install and Configure Microsoft Entra ID Connect [Guided]

labclient.labondemand.com/LabClient/4678e3b1-4783-4a43-9edb-e4dbb152a8a3

Home - Microsoft Azure

https://portal.azure.com/#home

Welcome to Azure!

Start with an Azure free trial

Manage Microsoft Entra ID

SyncAdmin@Hexel...

SyncAdmin@Hexel044588607x21

Sign out

Sign in with a different account

Instructions Resources Help

AZ300.3-001: Install and Configure ... 14 Minutes Remaining

Open a Microsoft Edge New InPrivate window, sign in to https://portal.azure.com as SyncAdmin@hexel044588607x21. Refresh option may be under the ellipsis (...). SyncAdmin@hexel044588607x21.onmicrosoft.com using InitialPwd51672252 as the password, change the password to NewPwd51672252, and then close the InPrivate window.

Check your work

Verify that you have created a new user named SyncAdmin for Microsoft Entra ID synchronization.

Verify that you have made the SyncAdmin user a Global Administrator.

4:27 PM 5/26/2025

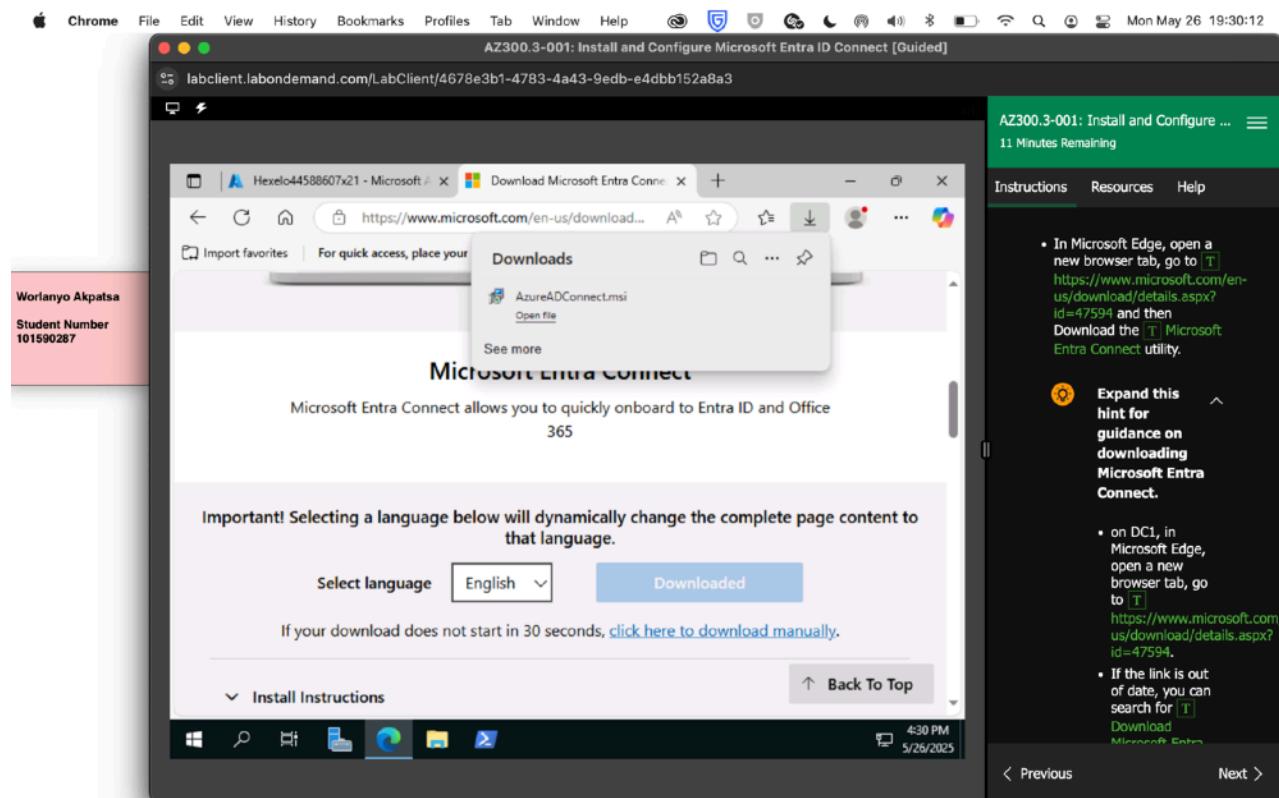
## INSTALL AND CONFIGURE MICROSOFT ENTRA CONNECT

**A: Open link given in lab and download Microsoft Entra Connect Utility**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

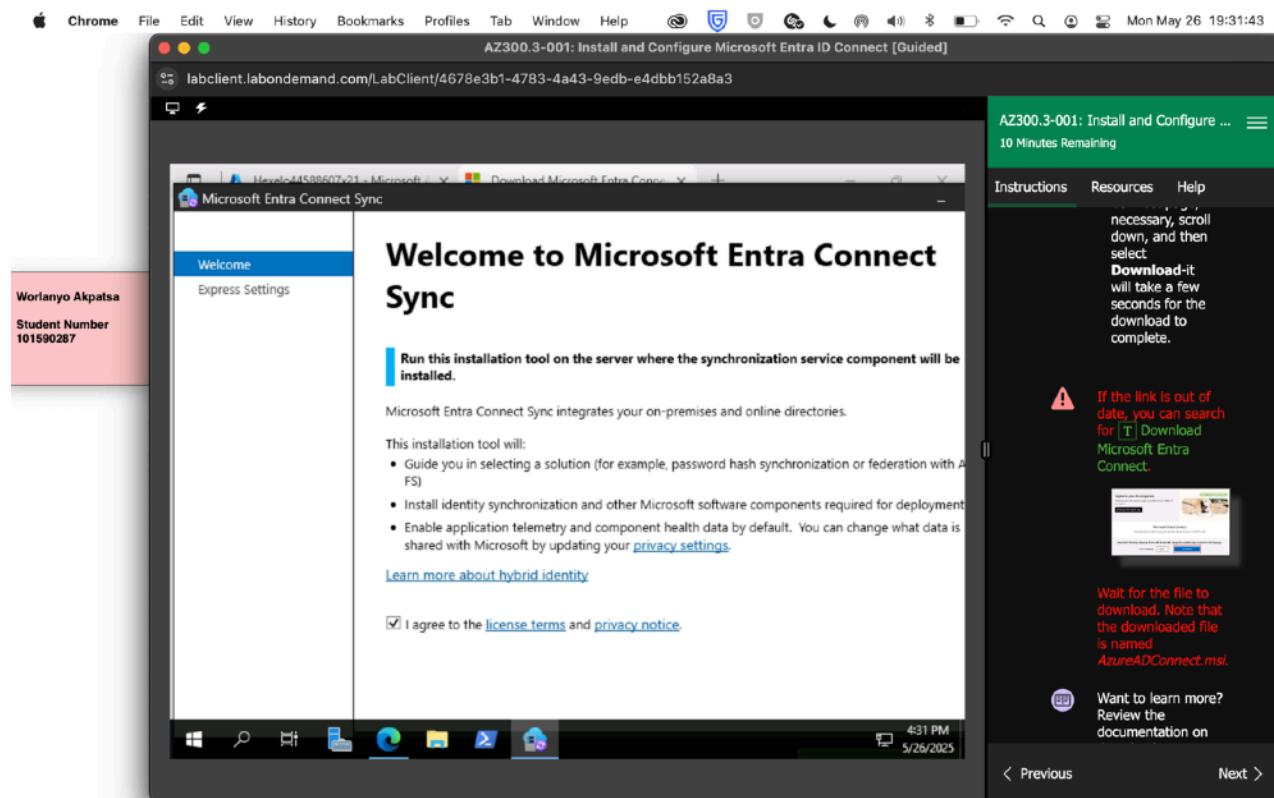


### B: Install Microsoft Entra Connect

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

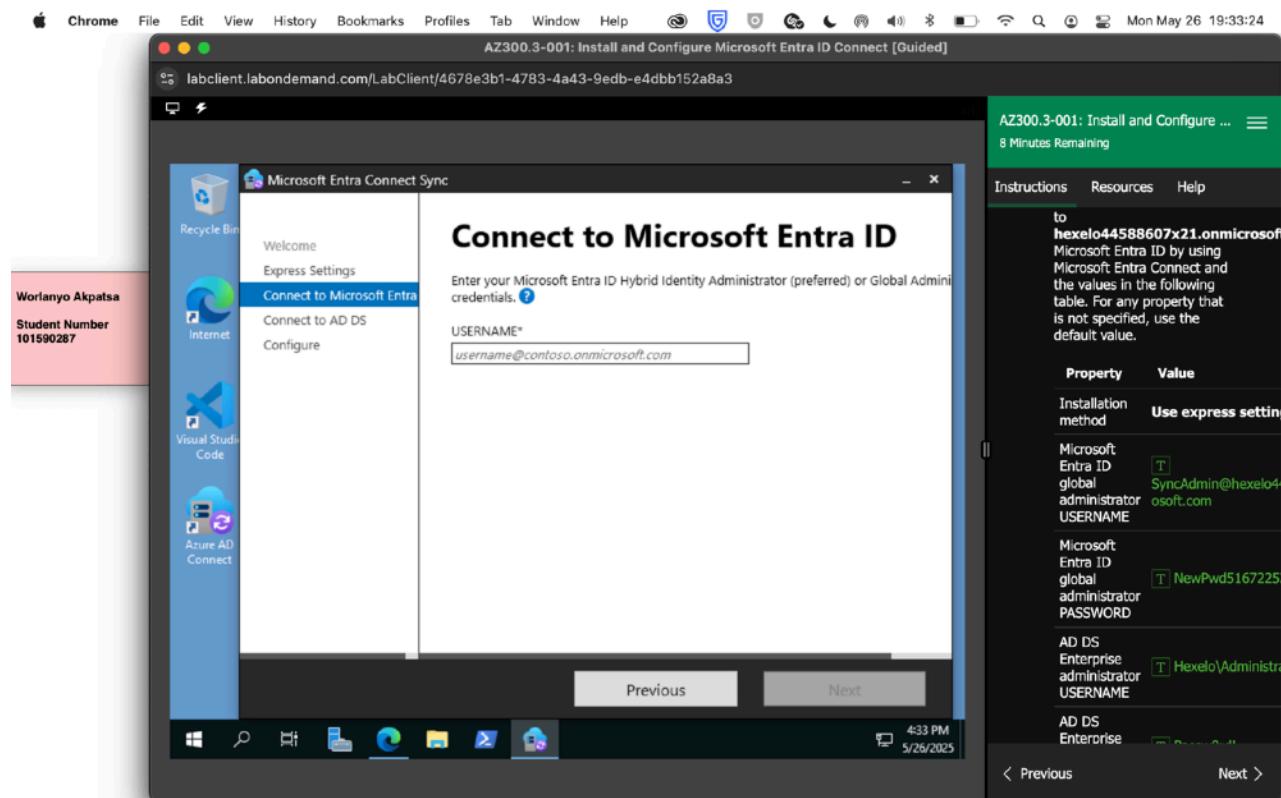


### C: Enter credentials given in lab to connect to Microsoft Entra ID

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

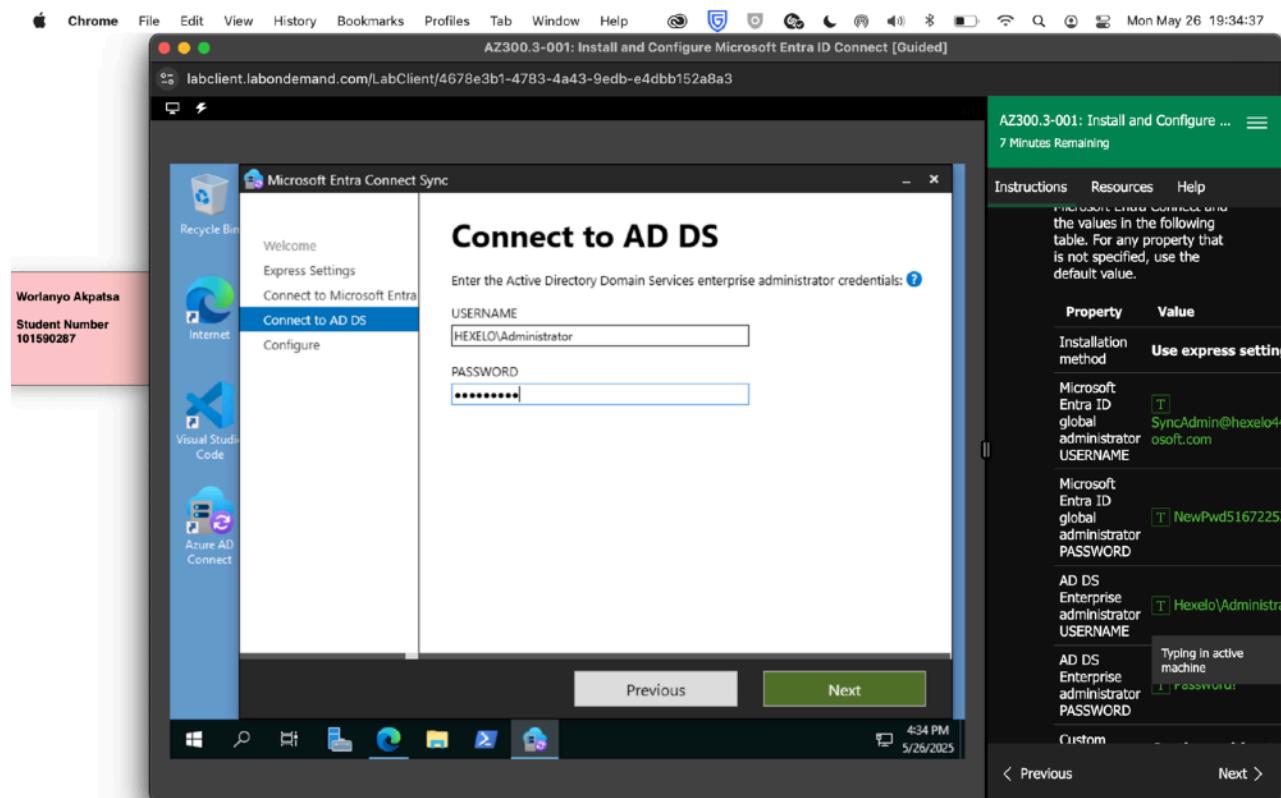


### D: Connecting to AD DS

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

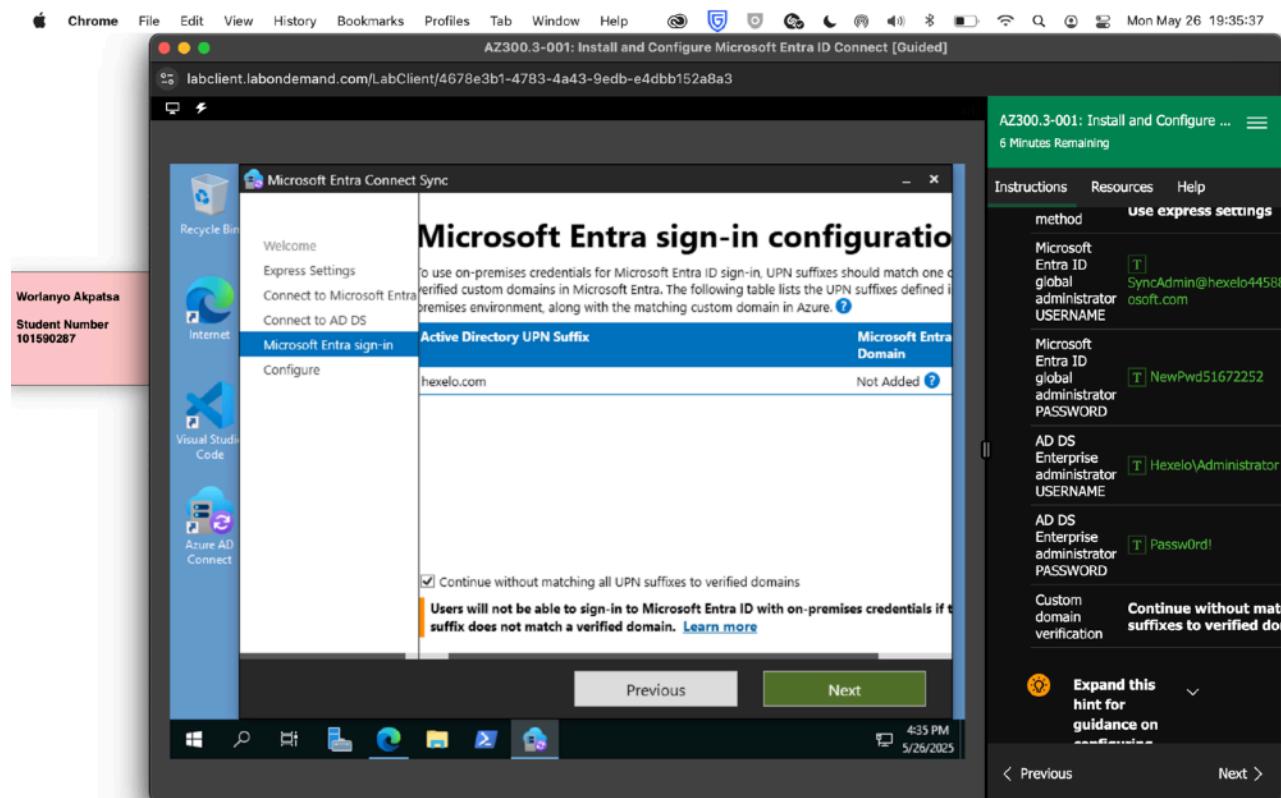


## E: Microsoft Entra Sign-in Configuration

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

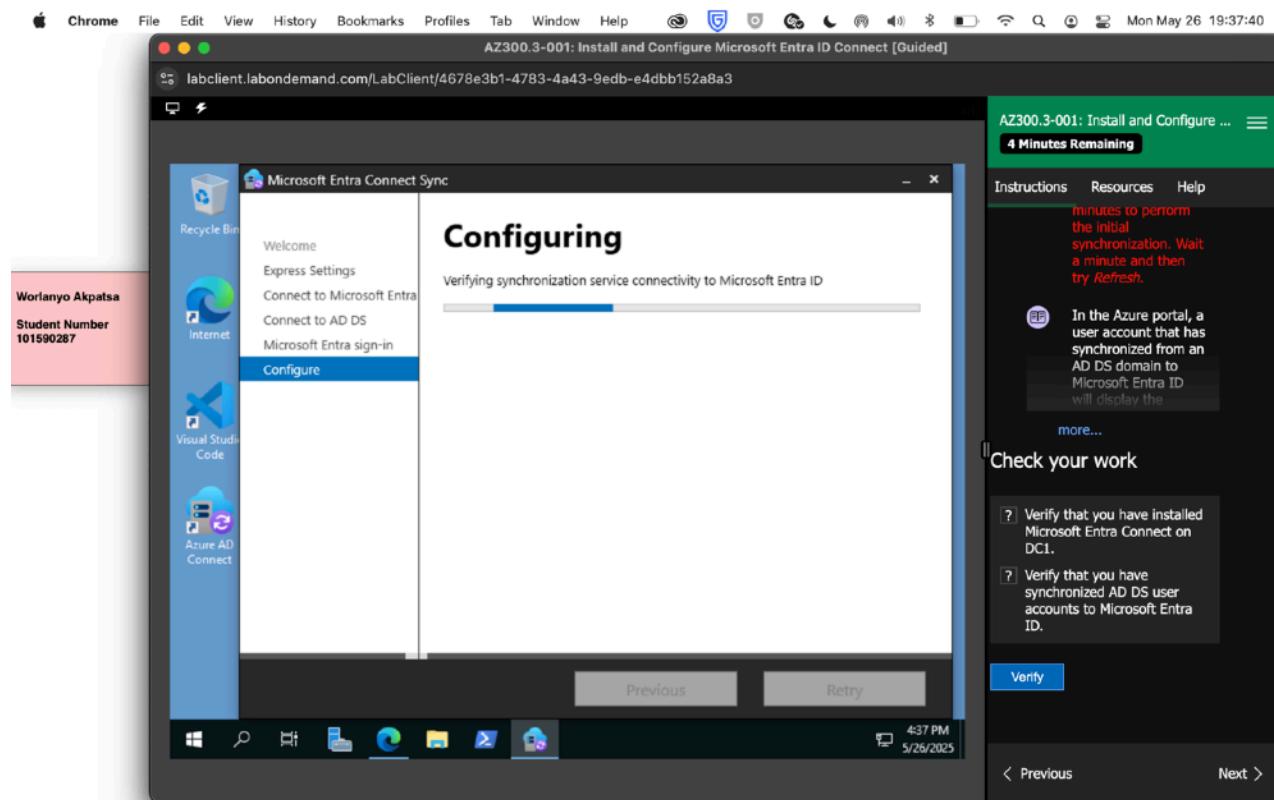


## F: Configuring

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



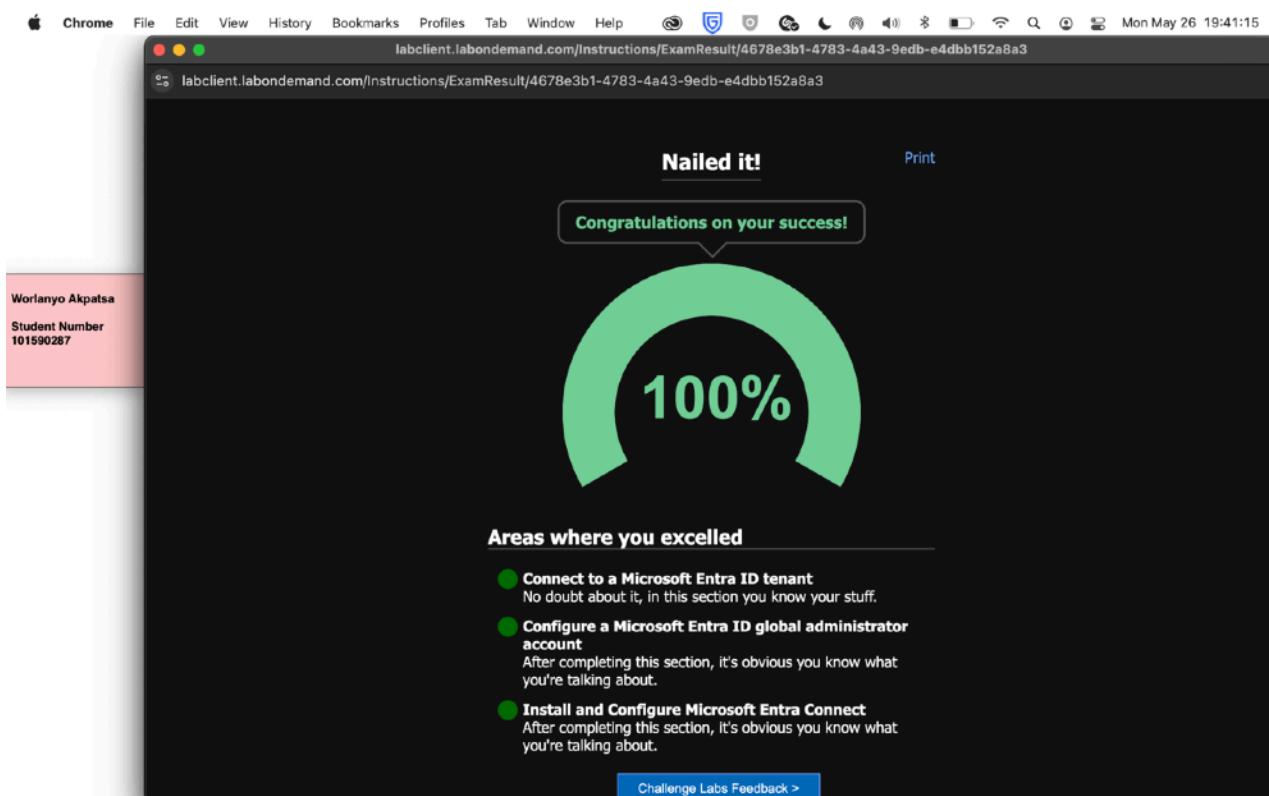
## Completion

## Microsoft Azure I – Azure Administrator

---

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



## TASK 6: AZURE COST MANAGEMENT. Challenge Labs Supporting Module 4: Azure Pricing and Support, AZ900-015

### REVIEW THE SUBSCRIPTIONS PAGE IN THE AZURE PORTAL

A: Sign in to Azure Portal using credentials given

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure portal homepage. At the top, there's a navigation bar with links for Chrome, File, Edit, View, History, Bookmarks, Profiles, Tab, Window, Help, and Copilot. The URL is portal.azure.com/#home. On the right of the top bar, it shows the user Admin-51673052@LOD... and the date Mon May 26 19:55:04. Below the top bar, there's a search bar with placeholder text "Search resources, services, and docs (G+/-)". To the right of the search bar are icons for Copilot, Home, Notifications, Settings, and Help. A pink sidebar on the left displays the student information: Worlanyo Akpatsa and Student Number 101590287. The main content area is titled "Azure services" and features a grid of icons for various services: Create a resource, Quickstart Center, Azure AI Foundry, Kubernetes services, Virtual machines, App Services, Storage accounts, SQL databases, and Azure Cosmos DB. Below this is a section titled "Resources" with tabs for "Recent" (which is selected) and "Favorite". It shows a table with columns for "Name", "Type", and "Last Viewed". A message "No resources have been viewed recently" is centered, with a "View all resources" button below it. At the bottom left is a "Navigate" button.

The screenshot shows the Microsoft Azure portal with the "Subscriptions" blade open. The top navigation bar and sidebar are identical to the previous screenshot. The main content area now displays the "Subscriptions" section. It features a large yellow key icon and the title "Subscriptions". Below this, there's a table with columns for "Name", "Type", and "Last Viewed". A message "No subscriptions have been viewed recently" is centered, with a "View all subscriptions" button below it. To the left, a "Navigate" button is visible. At the bottom, there are sections for "Tools" (Microsoft Learn, Dashboard, Free training from Microsoft, Create an Azure account), "Useful links" (Microsoft Defender for Cloud, Secure your apps and infrastructure), and "Copilot" (Learn more with Copilot, Get started).

**B: Scroll down on homepage and select sub-scriptions**

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Student Name: Worlanyo Akpatsa  
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The screenshot shows a Chrome browser window displaying the Microsoft Azure portal at [portal.azure.com/#view/Microsoft\\_Azure\\_Billing/SubscriptionsBladeV2](https://portal.azure.com/#view/Microsoft_Azure_Billing/SubscriptionsBladeV2). The title bar indicates the URL and the current date and time: Mon May 26 19:56:03. The top navigation bar includes links for Home, Subscriptions, and other Azure services like Storage, Functions, and Logic Apps. The main content area is titled "Subscriptions" and shows a single subscription entry:

| Subscription name     | Subscription ID          | My role          | Current cost | Secure Score | Parent management | Status | ... |
|-----------------------|--------------------------|------------------|--------------|--------------|-------------------|--------|-----|
| Challenge Lab—lod5064 | eb1a7ae9-907f-4561-b5... | Specified access | 0.00         | -            | Lab Profile 73070 | Active | ... |

## C: Current subscription

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

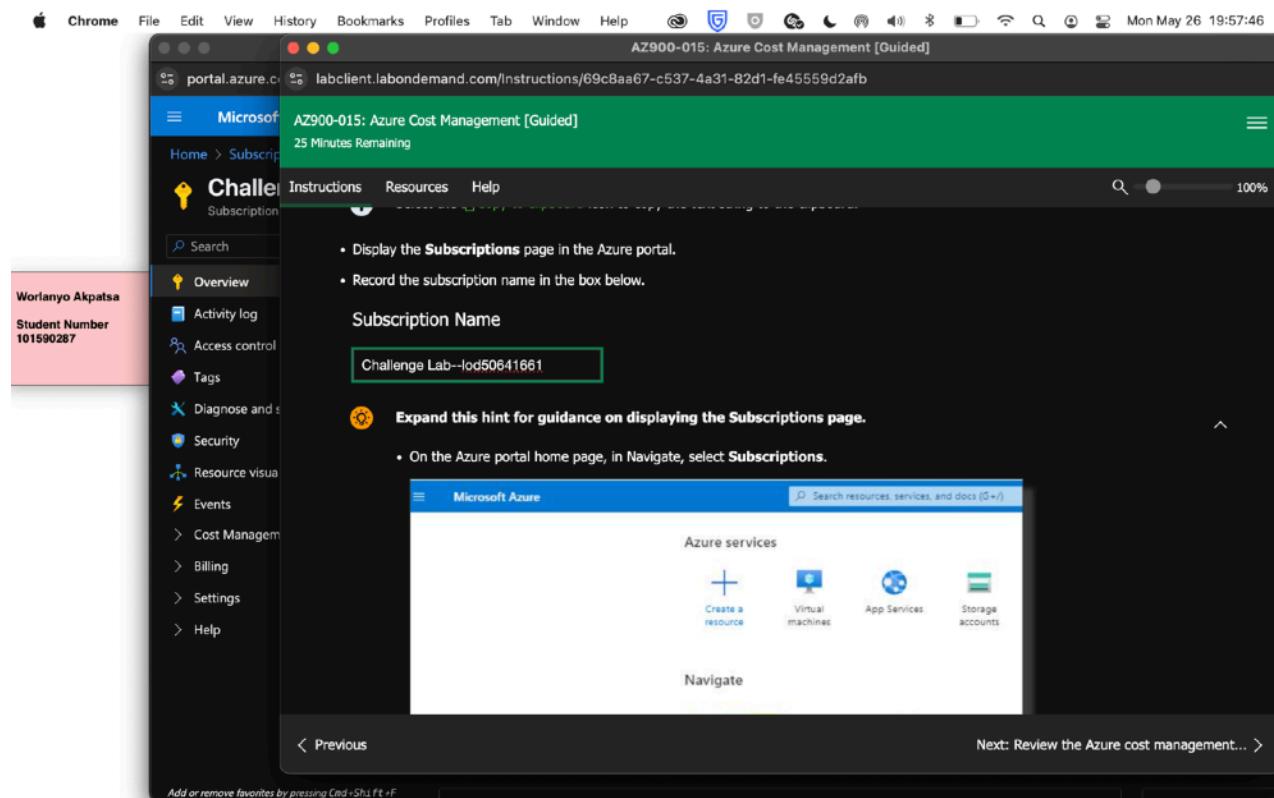
The screenshot shows the Microsoft Azure portal interface. At the top, the browser title bar reads "Challenge Lab--lod50641661 - Microsoft Azure". The address bar shows the URL "portal.azure.com/#@LODSPROMCA.onmicrosoft.com/resource/subscriptions/eb1a7ae9-907f-4561-b5bc-bb31c4d7194f/overview". The main content area displays the "Challenge Lab--lod50641661" subscription details. On the left, a sidebar shows the user's name "Worlanyo Akpatsa" and student number "101590287". The main pane shows the subscription ID "eb1a7ae9-907f-4561-b5bc-bb31c4d7194f", directory "LODS-Prod-MCA (LODSPROMCA.onmicrosoft.com)", status "Active", and parent management group "lod-org-1340-pool-337-lab73070". It also includes sections for spending rate and forecast (both 0.00) and costs by resource (no active resources). A message at the bottom left says "Add or remove favorites by pressing Cmd+Shift+F".

I am being asked subscription name. it is Challenge Lab—lod50641661

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Student Name: Worlanyo Akpatsa  
Student ID: 101590287

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## REVIEW THE AZURE COST OF MANAGEMENT OPTIONS

**CHANGE THE SCOPE FOR THE COST MANAGEMENT PAGES TO THE AZ900RG RESOURCE GROUP AND VIEW CUSTOMIZABLE COST ANALYSIS VIEWS**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

**A: On left pane in subscription page, under cost management, select cost analysis. On cost analysis page, select scope**

The screenshot shows a Microsoft Azure Cost Analysis page. At the top, there's a navigation bar with links for Home, Subscriptions, and the current page, Challenge Lab--lod50641661 | Cost analysis. Below the navigation is a search bar and a Copilot button. The main area has a title 'Challenge Lab--lod50641661 | Cost analysis' and a subtitle 'Subscription'. On the left, a sidebar lists various Azure services: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Security, Resource visualizer, Events, Cost Management, Cost analysis (which is selected and highlighted in grey), Cost alerts, Budgets, Advisor recommendations, Billing, Settings, and Help. The main content area displays cost data for May 2025. It includes sections for ACTUAL COST, FORECAST UNAVAILABLE, and BUDGET: NONE. A message at the bottom states 'No cost reported during this period — [Go to last month](#)'. At the bottom of the page, there are dropdown menus for Service name, Location, and Resource group name, all currently set to 'Nothing to display'. The overall interface is dark-themed.

**B: Choose AZ900RG on scope page by clicking on the link under the search bar until AZ900RG shows up. After selecting, this opens an accumulated costs tab**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with the user's name (Worlanyo Akpatsa) and student number (101590287). The main area displays a 'Challenge Lab--lod50641661 | Cost analysis' page. A modal window titled 'Select scope' is overlaid, showing a list of subscriptions with 'AZ900RG' selected. The portal header includes the URL 'portal.azure.com/#@LODSPROMCA.onmicrosoft.com/resource/subscriptions/eb1a7ae9-907f-4561-b5bc-bb31c4d7194f/costByResource', the date 'Mon May 26 20:04:30', and the user 'Admin-51673052@LOD... LODS-PROD-MCA (LODSPROM...)'.

### C: Accumulated costs tab

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

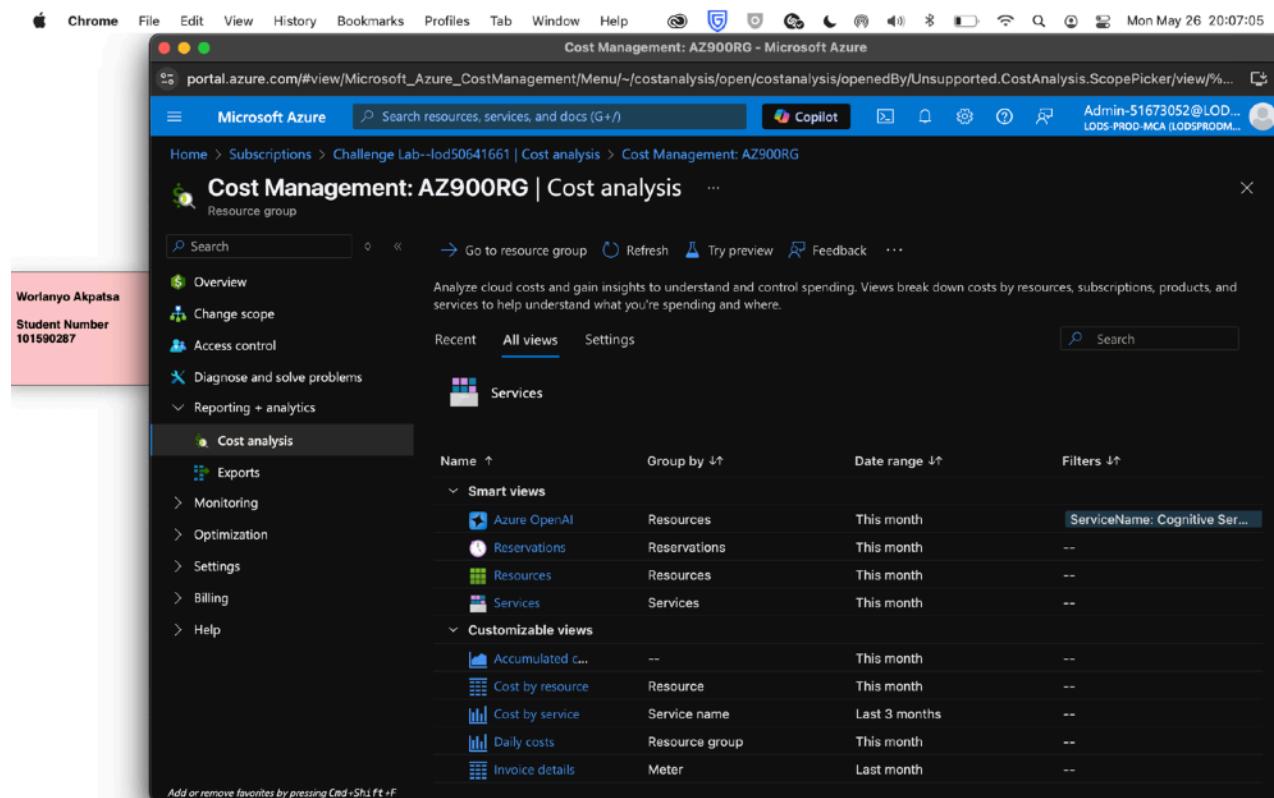
The screenshot shows a Microsoft Azure Cost Management portal window titled "Cost Management: AZ900RG - Microsoft Azure". The URL in the address bar is "portal.azure.com/#view/Microsoft\_Azure\_CostManagement/Menu/~/costanalysis/open/costanalysis/openedBy/Unsupported.CostAnalysis.ScopePicker/view/%...". The top navigation bar includes "Microsoft Azure", a search bar, and various icons for Copilot, notifications, and account information. The main content area displays "Cost Management: AZ900RG | Cost analysis" for a "Resource group". On the left, a sidebar menu lists options like Overview, Change scope, Access control, Diagnose and solve problems, Reporting + analytics (which is expanded to show Cost analysis, Exports, Monitoring, Optimization, Settings, Billing, and Help), and a "Search" bar. The main panel shows a chart titled "AccumulatedCo..." with a single data point for May 2025. Below the chart, there are buttons for Save, Share, Download, Subscribe, Feedback, and a "Pin to dashboard" link. The chart area also includes filters for ACTUAL COST, FORECAST UNAVAILABLE, and BUDGET: NONE, and dropdowns for Group by: None and Granularity: Accumulated. A message at the bottom states "No cost reported during this period — Go to last month". At the bottom of the page, there are dropdown menus for Service name, Location, and Resource group name, along with a note: "Add or remove favorites by pressing Cmd+Shift+F".

**D: Select New tab to view customizable views**

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Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



The screenshot shows a Microsoft Azure Cost Management portal window titled "Cost Management: AZ900RG - Microsoft Azure". The left sidebar displays a navigation menu with sections like Overview, Change scope, Access control, Diagnose and solve problems, Reporting + analytics, Cost analysis, Exports, Monitoring, Optimization, Settings, Billing, and Help. The "Cost analysis" section is currently selected. The main content area is titled "Services" and lists various cost analysis views. The "Smart views" section includes "Azure OpenAI", "Reservations", "Resources", and "Services". The "Customizable views" section includes "Accumulated c...", "Cost by resource", "Cost by service", "Daily costs", and "Invoice details". The top right of the portal shows the date as "Mon May 26 20:07:05" and the user as "Admin-51673052@LOD... LODS-PRD-MCA LODSPROD...".

**Answering a question asked about customizable views shown on cost analysis page**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure Cost Management [Guided] interface in a Chrome browser. The title bar indicates the page is titled 'AZ900-015: Azure Cost Management [Guided]' and the date is 'Mon May 26 20:11:21'. The main content area displays a list of tasks under 'Instructions': 'Azure Cost Management + Billing Center', 'Azure Advisor', 'Customizing with Microsoft Power BI connectors', and 'Cost management application programming interfaces (APIs)'. On the left, a sidebar shows the user's name 'Worlanyo Akpatsa' and student number '101590287'. Below the sidebar is a navigation menu with items like Overview, Activity log, Access control, Tags, Diagnose and solve, Security, Resource visualizations, Events, Cost Management, Cost analysis, Cost alerts, Budgets, Advisor recommendations, Billing, Settings, and Help. A 'Check your work' section asks the user to select only the 'Customizable views' listed on the Cost analysis page. The user has selected 'Accumulated costs', 'Invoice details', 'Cost by service', and 'Cost by resource'. A 'Verify' button is present, and a green message says '✓ That is correct.' At the bottom right, there are links for 'Next: Create a cost management budget...' and 'Are these recommendations helpful?'. A note at the bottom left says 'Add or remove favorites by pressing Ctrl+Shift+F'.

## E: Exploring cost alerts, budgets and advisor recommendations pages

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The image displays two side-by-side screenshots of the Microsoft Azure portal interface, both titled "Challenge Lab--lod50641661".

**Top Window (Cost alerts):** This window shows the "Cost alerts" section. The left sidebar includes options like Overview, Activity log, Tags, Diagnose and solve problems, Security, Resource visualizer, Events, and Cost Management (with Cost analysis and Cost alerts selected). The main content area displays a green dollar sign icon and the message "No Alerts to display". A note at the bottom says "Your alerts will be shown here. Learn more".

**Bottom Window (Budgets):** This window shows the "Budgets" section. The left sidebar includes Overview, Activity log, Tags, Diagnose and solve problems, Security, Resource visualizer, Events, Cost Management (with Cost analysis and Cost alerts selected), and Budgets (selected). The main content area displays a note: "You do not have any budgets".

## E: Exploring cost alerts, budgets and advisor recommendations pages

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes links for Chrome, File, Edit, View, History, Bookmarks, Profiles, Tab, Window, Help, and Copilot. The URL in the address bar is [portal.azure.com/#@LODSPROMCA.onmicrosoft.com/resource/subscriptions/eb1a7ae9-907f-4561-b5bc-bb31c4d7194f/advisorRecommendations](https://portal.azure.com/#@LODSPROMCA.onmicrosoft.com/resource/subscriptions/eb1a7ae9-907f-4561-b5bc-bb31c4d7194f/advisorRecommendations). The title of the page is "Challenge Lab--lod50641661 - Microsoft Azure". The main content area is titled "Challenge Lab--lod50641661 | Advisor recommendations". On the left, there is a sidebar with various options: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Security, Resource visualizer, Events, Cost Management (which is expanded to show Cost analysis, Cost alerts, and Budgets), Advisor recommendations (which is selected and highlighted in grey), Billing, Settings, and Help. The "Advisor recommendations" section includes a "Feedback" button, download options for CSV and PDF, and buttons for "Create alert" and "Create recommendation digest". There are also filter buttons for Recommendation Status (Active), Resource Group (All), and Type (All). A message at the bottom of this section says, "As of September 30th, 2024, Azure Advisor no longer displays aggregated potential yearly savings. Learn more about calculating cost savings." Below this, a message states, "You are following all of our cost recommendations for the selected subscriptions and resources. See list of cost recommendations". The URL at the bottom of the page is <https://portal.azure.com/#@LODSPROMCA.onmicrosoft.com/resource/subscriptions/eb1a7ae9-907f-4561-b5bc-bb31c4d7194f/advisorRecommendations>.

## CREATE A COST MANAGEMENT BUDGET AND ALERT WHICH USES the AZ900RG

**A: On left pane of subscription page, under cost management select budgets and on budgets page.**

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Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

Worlanyo Akpatsa  
Student Number  
101590287

Challenge Lab--lod50641661 | Budgets

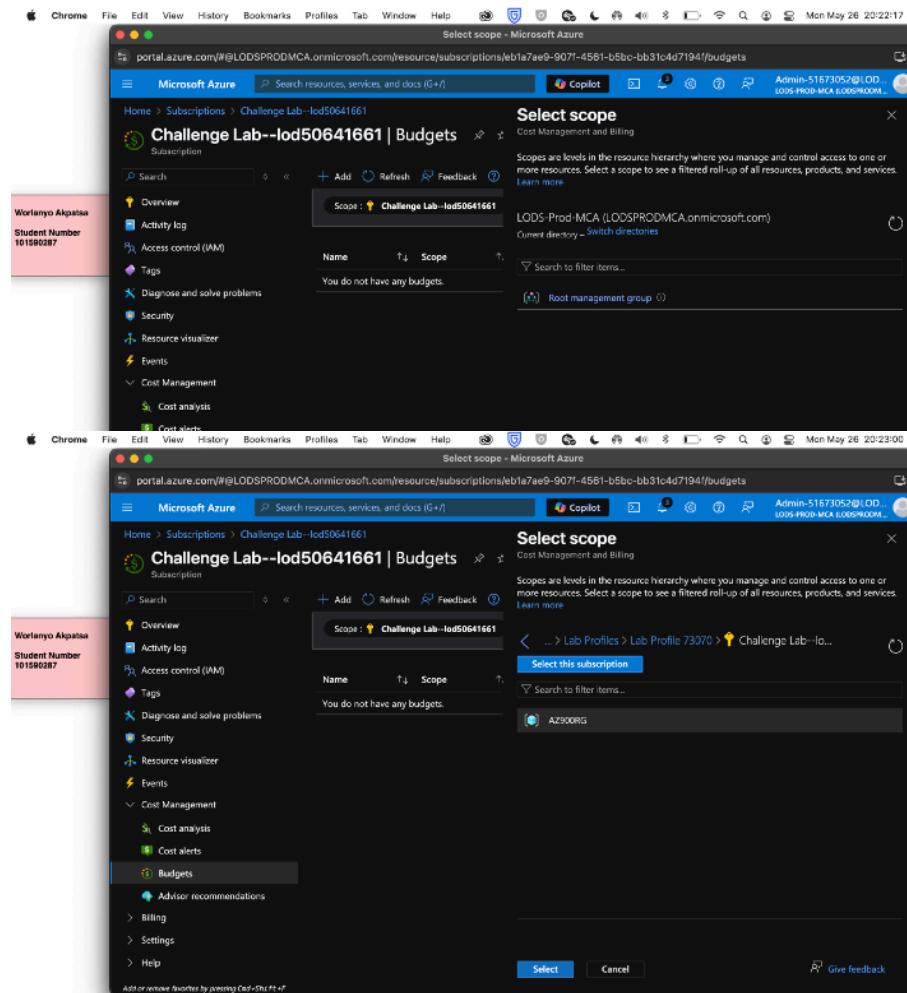
| Name                         | Scope | Reset period | Creation date | Expiration date | Budget |
|------------------------------|-------|--------------|---------------|-----------------|--------|
| You do not have any budgets. |       |              |               |                 |        |

**B: Click on scope. On select scope page, click on the link under the search bar that reads root management group until AZ900RG shows up then select it.**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025



The screenshot shows two instances of the Microsoft Azure portal in a browser window. Both instances are for the same subscription, 'Challenge Lab--lod50641661'. The left instance has the 'Budgets' service selected in the navigation menu. The right instance has the 'Cost Management and Billing' service selected. A modal dialog box titled 'Select scope' is open in both cases. The dialog box displays the current scope as 'Challenge Lab--lod50641661' and provides instructions: 'Scopes are levels in the resource hierarchy where you manage and control access to one or more resources. Select a scope to see a filtered roll-up of all resources, products, and services.' Below this, there are two options: 'Root management group' and 'AZ900RG'. In the second instance (right), 'AZ900RG' is highlighted with a blue selection bar, indicating it is the chosen scope.

C: AZ900RG should be the selected scope. Now click add to add a budget

## Microsoft Azure I – Azure Administrator

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Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows a Microsoft Azure Cost Management portal window titled "Cost Management: AZ900RG - Microsoft Azure". The URL in the address bar is "portal.azure.com/#view/Microsoft\_Azure\_CostManagement/Menu/~/budgets/open/budgets/openedBy/Subscription.Budgets.ScopePicker/view/%7B\*currency%7D". The top navigation bar includes links for Chrome, File, Edit, View, History, Bookmarks, Profiles, Tab, Window, Help, and Copilot. The user is signed in as "Admin-51673052@LOD... LODS-PRD-MCA (LODSPROM...)".

The main content area displays the "Cost Management: AZ900RG | Budgets" page. On the left, there is a sidebar with the following menu items:

- Overview
- Change scope
- Access control
- Diagnose and solve problems
  - Reporting + analytics
  - Monitoring
    - Cost alerts
    - Alert rules
    - Budgets** (selected)
  - Optimization
  - Settings
  - Billing
  - Help

The main panel shows a table header for "Name", "Scope", "Reset period", "Creation date", "Expiration date", and "Budget". Below the header, a message states "You do not have any budgets." There is also a note at the bottom: "Add or remove favorites by pressing Cmd+Shift+F".

**D: Fill in budget name and amount**

## Microsoft Azure I – Azure Administrator

Student Name: Worlanyo Akpatsa  
Student ID: 101590287

Term: Spring 2025

The screenshot shows the 'Create budget' blade in the Microsoft Azure portal. At the top, it displays the URL 'portal.azure.com/#view/Microsoft\_Azure\_CostManagement/BudgetCreateBlade/id/%2Fsubscriptions%2Feb1a7ae9-907f-4561-b5bc-bb31c4d7194f%2FresourceGroups/AZ900RG'. The page title is 'Create budget - Microsoft Azure'. The main heading is 'Create budget'. Below it, there's a 'Budget' section with 'Scope' set to 'AZ900RG' and a 'Filters' button. On the left, a sidebar shows 'Worlanyo Akpatsa' and 'Student Number 101590287'. The main content area has two sections: 'Budget Details' and 'Budget Amount'. In 'Budget Details', fields include 'Name' (My\_RG\_monthly\_budget), 'Reset period' (Monthly), 'Creation date' (2025 May 1), and 'Expiration date' (2027 April 30). In 'Budget Amount', the 'Amount' field is set to 20000. At the bottom are 'Previous' and 'Next >' buttons, and a 'Give feedback' link.

**E: Entering alert conditions and alert recipient (email). After, select create to add budget**

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Student ID: 101590287

Term: Spring 2025

The screenshot shows the Microsoft Azure portal interface. At the top, there's a navigation bar with links like Home, Subscriptions, and Budgets. Below it, a breadcrumb trail indicates the current page: Home > Subscriptions > Challenge Lab - lod50641661 | Budgets > Cost Management: AZ900RG | Budgets > Create budget.

The main content area is titled "Create budget" under the "Budget" section. It has two main configuration sections:

- Alert conditions:** This section allows setting up alerts based on budget forecasts. A table is shown with one row selected:

| Type       | % of budget | Amount | Action group |
|------------|-------------|--------|--------------|
| Forecasted | 80          | 16,000 | None         |
- Alert recipients (email):** This section lists email addresses for receiving alerts. Two entries are present:
  - worlanyo.akpatsa@georgebrown.ca
  - example@email.comA note below the list says: "It is recommended to add [azure-noreply@microsoft.com](#) to your email allow list to ensure alert mails do not go to your spam folder."

At the bottom of the blade, there are "Previous" and "Create" buttons, and a "Give feedback" link.

F: Budget created

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The screenshot shows a Microsoft Azure Cost Management portal window titled "Cost Management: AZ900RG - Microsoft Azure". The URL in the address bar is "portal.azure.com/#view/Microsoft\_Azure\_CostManagement/Menu/~/budgets/open/budgets/openedBy/Subscription.Budgets.ScopePicker/view/%7B\*currency%7D". The top navigation bar includes Chrome, File, Edit, View, History, Bookmarks, Profiles, Tab, Window, Help, Copilot, and various system icons. The top right shows the date and time: Mon May 26 20:26:50. A sidebar on the left displays the user's name, "Worlanyo Akpatsa", and student number, "101590287". The main content area shows the "Cost Management: AZ900RG | Budgets" page. It features a search bar, a "Scope" dropdown set to "AZ900RG", and a "Search by name" input field. Below these are filter buttons for "All periods". A table lists existing budgets, with one entry highlighted: "My\_RG\_monthly\_budget" (AZ900RG (Resource Group), Monthly, Creation date: 5/1/2025, Expiration date: 4/30/2027, Budget: \$20,000.00). A success message at the top right says "Budget was created" and "Budget My\_RG\_monthly\_budget was successfully created." The bottom of the page has a note: "Add or remove favorites by pressing Cmd+Shift+F".

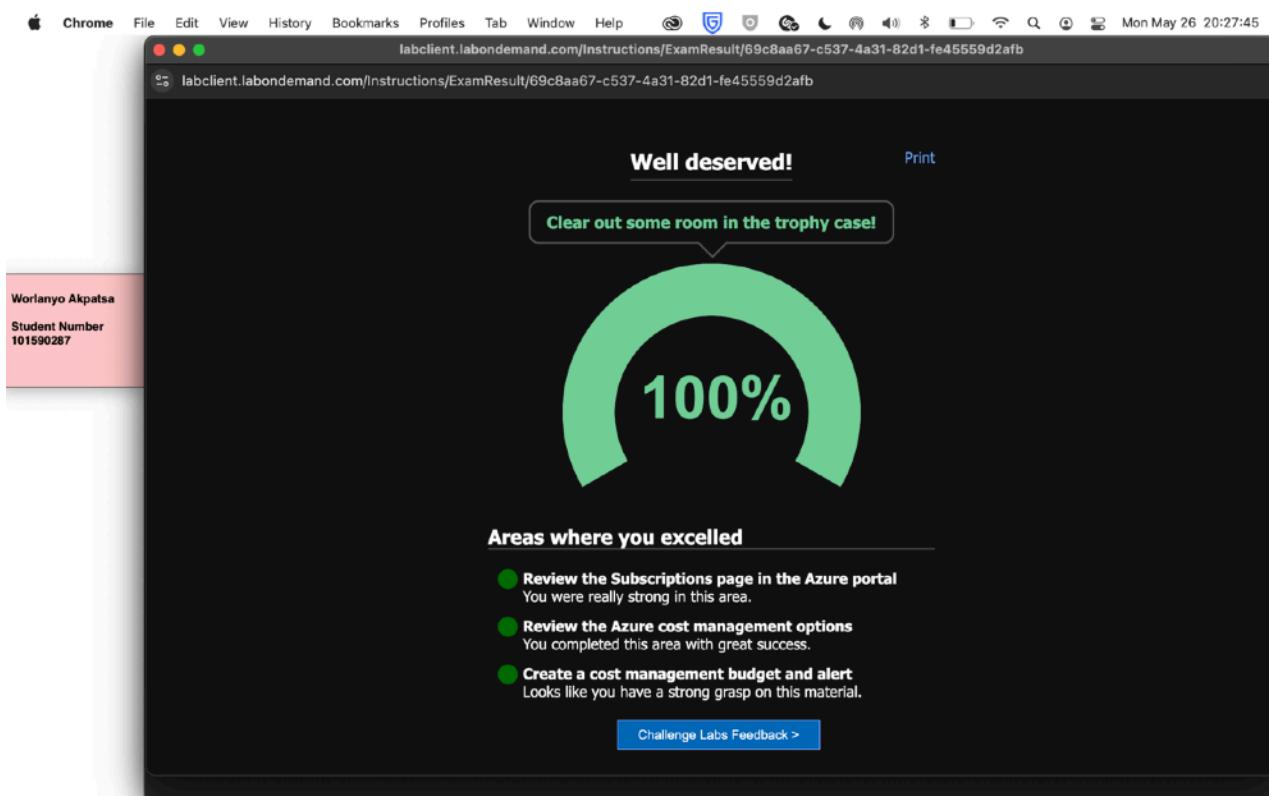
**Completion verified**

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### Case Project Summary

Doing this project exposed me to several different aspects of the Azure portal and I had a really fun time doing the tasks involved.

The one thing that made it really easy to navigate the different labs is Microsoft's UX design; to explain, when creating resources (such as storage accounts) it is very easy to find things you are looking for like research groups or typing in names because all you have to do is click on the drop-

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Student Name: Worlanyo Akpatsa  
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down or type in the boxes provided. They did a real good job with their design which makes usage very easy.

For the project, I successfully completed 6 different Azure challenge labs of different natures. Some of the things we had already done in earlier labs and some of them were quite new.

The first task involved exploring load balancers and their resources. I had to first create a load balancers by searching for it in the Azure Marketplace (this place was something new I discovered where you can find anything Azure related that you're searching for). I created my load balancer and also underwent the process of creating these resources for it: a back end pool, an HTTP health probe and then a load balancing rule. It was a nice task that I had a lot of fun doing. I detailed all the steps in my project (did this for all the different tasks).

The second task was about managing azure resource deployment using an ARM template based on a storage account. I remember earlier in the class we did a lab on templates which I really found interesting so I was very happy to do this one. I chose the storage account in question and downloaded the export template. I also had to answer some questions in the lab by reviewing the templates I downloaded which I also found fun. Next, I deployed an azure virtual machine using a custom ARM template. This template was downloaded from Github and I made some edits to it in the template editor as well as reviewed it very well. Lastly, for this task I had to explore the resource explorer to analyze Azure API. This contained a lot of JSON files for different Azure resources.

The third task was a nice one because I know for certain we had done this in class and labs earlier; it was running commands using the Azure cloud shell. This was pretty straightforward; I opened the cloud shell in Powershell and created a virtual network as well as added a subnet called Production to it. Next, I switched to bash cloud shell and created a second virtual network and successfully completed the task.

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Task 4 was something I had never done before on Azure. It was about creating and configuring a route table and then after, configuring a firewall. Even though I haven't practically done this before, it was one of the easiest tasks to do. All I had to do was create the route table first. I went to the marketplace which I had discovered and searched for route table and created it. I did the same thing for my Azure firewall and successfully created that too. Then, I added a route to my firewall.

Task 5 was about installing and configuring Microsoft Entra ID connect which involved using a VM which was a domain controller. This brought me back to first semester where I created a vm that was also a domain controller. For this task, I had to access Entra ID from the portal menu and create a new user who was global admin. With experience from my Microsoft 365 days, this was a piece of cake to do. After I created user, I logged on using their credentials on a new window and configured MFA. Next, I downloaded Microsoft Entra connect from the Microsoft website and installed it on the VM that was being used. This was a nice experience. I particularly enjoyed this task.

Last task was about Azure cost management which involved the subscriptions page a lot. I always able to review my current subscription and its details. I also reviewed the Azure cost management options that are available on the portal. These include cost analysis, cost alerts, and budgets. Lucky for me, I was able to create a budget and alert with the scope aimed for the resource group. I had a lot of fun configuring the scopes and reviewing the cost analysis page. Here, I was able to see things like the smart views and customizable views.

All in all, this course was a great introduction to Azure and I am happy we are doing a second class on it.