

Microsoft Azure Cloud Infrastructure Project

Project Overview

This project demonstrates practical deployment, configuration, and validation of core Microsoft Azure services. All resources were provisioned and managed within the Azure portal, reflecting foundational cloud engineering capability aligned with Microsoft Azure Fundamentals (AZ-900) objectives.

Infrastructure as a service (IaaS)

A windows server Virtual Machine was deployed within Microsoft Azure and configured with a public IP address for remote connectivity. The virtual machine was associated with a dedicated VNet (Virtual Network) to ensure logical network segmentation and structured resource management.

Subnet allocation and network association were configured to demonstrate understanding of Azure networking fundamentals, including IP addressing and secure resource connectivity.

The screenshot displays the Microsoft Azure portal interface, showing the configuration of a Virtual Machine (VM) and its associated Virtual Network (VNet).

Web-server-VM Overview:

- Resource group:** learn-8550392c-ec85-4d73-a83f-90c5352deed4
- Status:** Running
- Location:** West US
- Subscription:** Concierge Subscription
- Subscription ID:** 081f341e-de8f-4bcd-8946-3fa44b5188e0
- Operating system:** Windows (Windows Server 2019 Datacenter)
- Size:** Standard D2s v3 (2 vcpus, 8 GiB memory)
- Public IP address:** 52.137.191.65
- Virtual network/subnet:** Web-server-VM-vnet/default
- DNS name:** Not configured
- Health state:** -
- Time created:** 23/05/2025, 15:34 UTC

Vnet-production Overview:

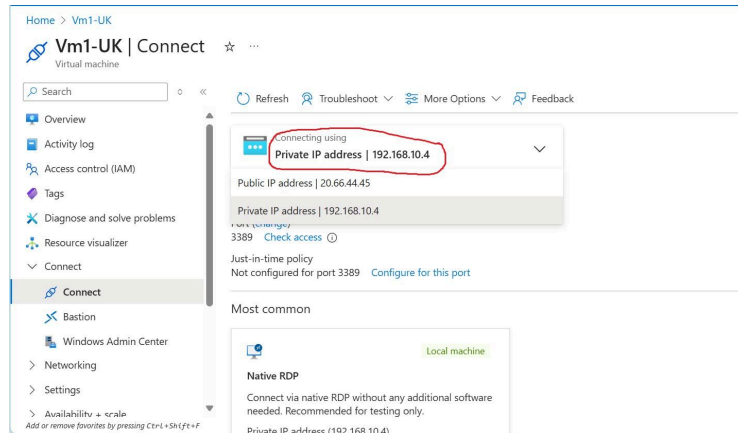
- Resource group:** learn-8dc43162-7b72-4e04-b263-5d0b3d9aad6a
- Location:** West US
- Subscription:** Concierge Subscription
- Subscription ID:** 293caa52-ebff-42e6-9e6f-48771148aeed
- Address space:** 192.168.0.0/16
- DNS servers:** Azure provided DNS service
- BGP community string:** Configure
- Virtual network ID:** f69a235f-6c48-4bbb-a530-98184ea3fcbd

Connectivity Details:

- Public IP address:** 52.160.35.228
- Private IP address:** 192.168.20.4
- Just-in-time policy:** Not configured for port 3389. [Configure for this port](#)

Most common:

- Native RDP:** Connect via native RDP without any additional software needed. Recommended for testing only.

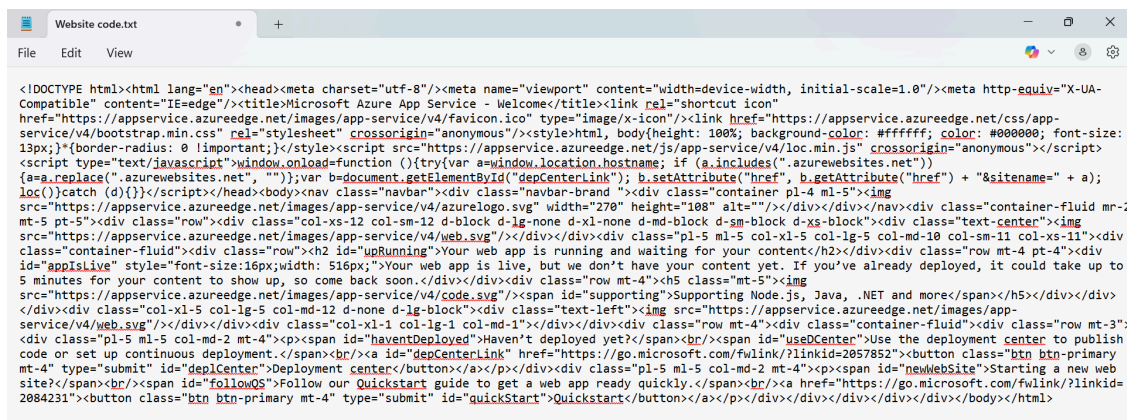
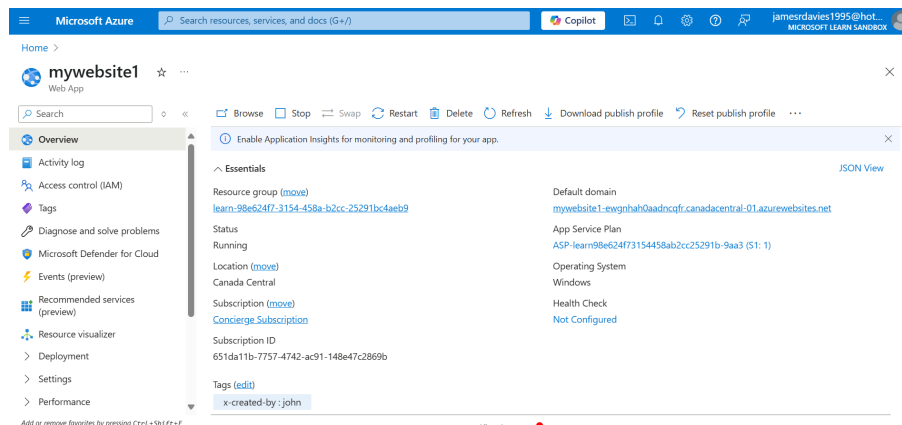


Platform as a Service (PaaS)

Azure app service (Web App Deployment)

An Azure Web App was provisioned using the App Service model, demonstrating knowledge of PaaS architecture. In this deployment model, Azure manages the underlying infrastructure, operating system, and runtime environment, allowing focus on application-level configuration.

The web application was successfully deployed and validated in a running state within the Azure Portal.



Azure Storage & Data Management

Storage Account & Blob Containers

A General Purpose v2 Storage Account was created using the standard performance tier. Blob containers were provisioned within the storage account to demonstrate understanding of Azure object storage architecture.

Image files were uploaded to a blob container to validate data storage functionality and container hierarchy within Azure Blob Storage.

The first screenshot shows the 'Overview' page of the 'testingaccountjames' storage account. The left sidebar lists various management tools. The main content area displays 'Essentials' with details about the resource group, location, subscription, and disk state. A table on the right lists account properties:

Property	Value
Performance	Standard
Replication	Read-access geo-redundant storage (RA-GRS)
Account kind	StorageV2 (general purpose v2)
Provisioning state	Succeeded
Created	29/05/2025, 14:48:18

The second screenshot shows the 'Containers' page for the same storage account. It lists three containers: 'slogs', 'imagecontainer', and 'videocontainer'. Each container has a checkbox, a 'Last modified' timestamp, an 'Anonymous access level' (Private), and a 'Lease state' (Available).

Name	Last modified	Anonymous access level	Lease state
<input type="checkbox"/> slogs	29/05/2025, 14:48:51	Private	Available
<input type="checkbox"/> imagecontainer	29/05/2025, 14:50:47	Private	Available
<input type="checkbox"/> videocontainer	29/05/2025, 14:51:12	Private	Available

The third screenshot shows the 'imagecontainer' page. It displays the 'Overview' tab with the authentication method set to 'Access key' and the location 'imagecontainer'. A table below lists the blobs within the container:

Name	Modified	Access tier	Archive status	Blob type	Size
<input type="checkbox"/> 133910977308069364.jpg	29/05/2025, 14:52:00	Hot (Inferred)		Block blob	2.2

Azure SQL Database

Database Deployment & Query Execution

An Azure SQL database instance was provisioned alongside a logical SQL server. Configuration included region selection and deployment validation within the Azure portal.

SQL queries were executed using the Azure Query Editor to demonstrate database connectivity, table interaction and successful data retrieval. This validated both database provisioning and operational functionality.

The screenshot displays the Azure portal interface for an Azure SQL database instance named 'sqltest (sqltestjames/sqltest)'. The top navigation bar shows the Microsoft Azure logo, a search bar, and the user profile 'jamesrdavies1995@hotmail.com'. The left sidebar contains a navigation menu with options like Overview, Activity log, Tags, Diagnose and solve problems, Query editor (preview), Mirror database in Fabric (preview), Resource visualizer, Settings, Data management, Integrations, Power Platform, and Security.

The main content area is divided into two sections. The top section, titled 'Overview', provides essential information about the database instance. It includes the Resource group (learn-42cc24e7-73f7-4d11-9081-5a38e45a968e), Status (Online), Location (East US), Subscription (move), Subscription ID (f26515d9-3bc6-4a50-8192-cb816a833f54), Server name (sqltestjames.database.windows.net), Connection strings, Pricing tier (Free - General Purpose - Serverless: Gen5, 2 vCores), Overage billing (Disabled), Free monthly vCore amount (100,000 vCore seconds remaining), and Earliest restore point (No restore point available).

The bottom section, titled 'Query editor (preview)', shows the SQL Query Editor interface. It includes a 'Query 1' tab with the following SQL query:

```
1 select FirstName, LastName, Phone
2 from [SalesLT].[Customer]
```

The query results are displayed in a table with columns 'FirstName', 'LastName', and 'Phone'. The results show two rows of data:

FirstName	LastName	Phone
Orlando	Gee	245-555-0173
Keith	Harris	170-555-0127

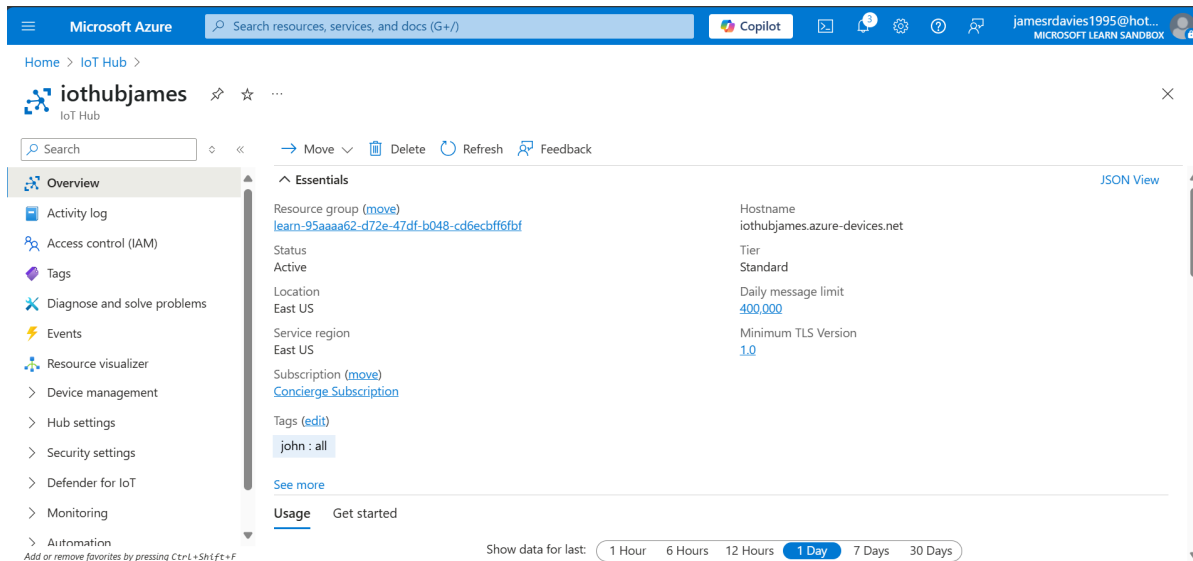
The status bar at the bottom indicates 'Query succeeded | 0s'.

Azure IoT Hub

IoT Hub Deployment

An Azure IoT Hub instance was provisioned to demonstrate understanding of device/cloud communication services within the Azure ecosystem.

Configuration included region selection and pricing tier setup, followed by validation of active deployment status within the Azure Portal.



Project Outcome

This project demonstrates hands-on experience with Azure resource provisioning, networking, configuration, storage management, database deployment and IoT service setup.

The successful deployment and validation of each component reflects practical familiarity with Azure cloud architecture and foundational cloud engineering capability within the Microsoft Azure platform.

