

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.

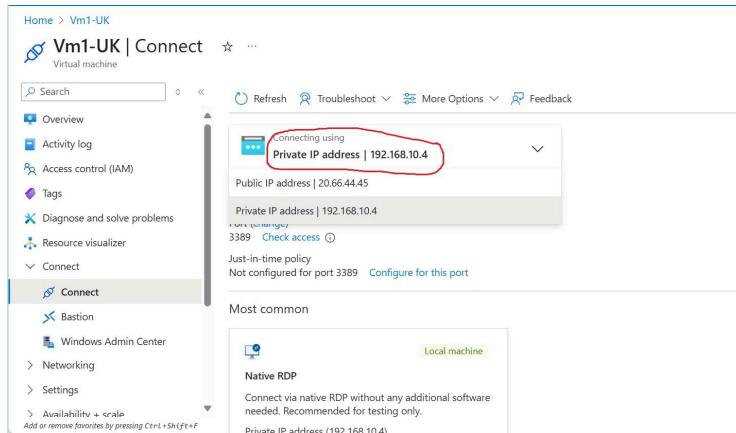
Infrastructure as a service (IaaS)

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 with three main sections:

- Web-server-VM Overview:** Shows a running Windows Server 2019 Datacenter VM with a public IP of 52.137.191.65 and a private IP of 192.168.20.4. It is connected via a Bastion host.
- Vnet-production Virtual Network:** Shows a subnet with an address space of 192.168.0.0/16. It includes details like Azure provided DNS service, BGP community string, and a virtual network ID of f69a235f-6c48-4bb-a530-98184ea3fcfd.
- Vm2-USA Connect:** Shows a second VM connected via a Bastion host with a public IP of 52.160.35.228 and a private IP of 192.168.20.4. It also lists port 3389 as unconfigured.



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.

Microsoft Azure | Search resources, services, and docs (G+) Copilot jamesdavies1995@hotmail.com MICROSOFT LEARN SANDBOX

Home > mywebsite1 Web App

Search < Browse Stop Swap Restart Delete Refresh Download publish profile Reset publish profile ...

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Microsoft Defender for Cloud

Events (preview)

Recommended services (preview)

Resource visualizer

Deployment

Settings

Performance

Search: x-created-by:john

Enable Application Insights for monitoring and profiling for your app.

JSON View

Essentials

Resource group (move) learn-98ed24ff-3154-458a-b2cc-25291bc4ae9

Status Running

Location (move) Canada Central

Subscription (move) Concierge Subscription

Subscription ID 651da11b-7757-4742-ac91-148e47c2869b

Default domain mywebsite1-ewgnhahQaadncfr.canadacentral-01.azurewebsites.net

App Service Plan ASP-learn98ed24ff3154458ab2cc25291b9aa3 (S1: 1)

Operating System Windows

Health Check Not Configured

Add or remove favorites by pressing Ctrl+Shift+F

Website code.txt

File Edit View

```
<!DOCTYPE html><html lang="en"><head><meta charset="utf-8"/><meta name="viewport" content="width=device-width, initial-scale=1.0"/><meta http-equiv="X-UA-Compatible" content="If=edge"/><title>Microsoft Azure App Service - Welcome</title><link rel="shortcut icon" href="https://appservice.azureedge.net/images/app-service/v4/favicon.ico" type="image/x-icon"/><link href="https://appservice.azureedge.net/css/app-service/v4/bootstrap.min.css" rel="stylesheet" crossorigin="anonymous"/><style>html, body{height: 100%; background-color: #ffffff; color: #000000; font-size: 13px;}</style><script>window.onload=function (){(try{var a=window.location.hostname; if ((a.includes(".azurewebsites.net"))||(a.replace(".azurewebsites.net")))}catch (d{})};</script></head><body><nav class="navbar navbar-expand-lg navbar-light bg-light"><div class="container-fluid"><div class="row mt-5"><div class="col-12 col-sm-12 d-block d-lg-none d-xl-none d-md-block d-sm-block d_xs-block"><div class="text-center"></div></div></div><div class="row mt-4"><div class="col-15 ml-5 col-xl-5 col-lg-5 col-md-10 col-sm-11 col-xs-11"><div class="row"><div class="col-15 ml-5 col-md-12 col-sm-12 d-block d-lg-none d-xl-none d-md-block d-sm-block d_xs-block"><div class="text-center"></div></div><div class="col-15 ml-5 col-md-12 col-sm-12 d-block d-lg-none d-xl-none d-md-block d-sm-block d_xs-block"><div class="text-center"><span id="supporting">Supporting Node.js, Java, .NET and more.</span></div></div></div></div><div class="row mt-4"><div class="col-15 ml-5 col-md-12 col-sm-12 d-block d-lg-none d-xl-none d-md-block d-sm-block d_xs-block"><div class="text-center"></div></div></div></div><div class="row mt-3"><div class="col-15 ml-5 col-md-12 col-sm-12 d-block d-lg-none d-xl-none d-md-block d-sm-block d_xs-block"><div class="text-center"><p id="haven'tDeployed">Haven't deployed yet?</p><span>Use the deployment center to publish code or set up continuous deployment.</span><br/><a href="#" id="useCenter">use Center</a></div></div></div>
```

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 image consists of three vertically stacked screenshots from the Microsoft Azure portal, illustrating the management of a storage account and its containers.

Screenshot 1: Storage Account Overview

This screenshot shows the "Overview" page for the storage account "testingaccountjames". Key details displayed include:

- Resource group: learn-2fbae322-7cd6-4896-8d76-0495c8dba749
- Location: westus
- Primary/Secondary Location: Primary: West US, Secondary: East US
- Subscription ID: 63fb4cc0-8431-455e-81bc-f724ec2650c
- Disk state: Primary: Available, Secondary: Available
- Tags: john

Screenshot 2: Container List

This screenshot shows the "Containers" page for the storage account. It lists three containers:

Name	Last modified	Anonymous access level	Lease state
\$logs	29/05/2025, 14:48:51	Private	Available
imagecontainer	29/05/2025, 14:50:47	Private	Available
videocontainer	29/05/2025, 14:51:12	Private	Available

Screenshot 3: Blob Details

This screenshot shows the "Overview" page for the "imagecontainer". It displays a single blob entry:

Name	Modified	Access tier	Archive status	Blob type	Size
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 shows two main windows from the Microsoft Azure portal:

- Top Window (Database Overview):** Shows the 'sqltest' database details. It includes sections for 'Essentials' (Resource group: 'learn-42c24e7-73f7-4d11-9081-5a38645a968e', Status: 'Online', Location: 'East US'), 'Subscription (move)' (Concierge Subscription), and 'Pricing tier' (Free - General Purpose - Serverless: Gen5, 2 vCores). It also shows connection strings and billing information.
- Bottom Window (Query Editor):** Shows a T-SQL query being run against the 'sqltest' database:

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

The results show two rows of data:| FirstName | LastName | Phone |
| --- | --- | --- |
| Orlando | Gee | 245-555-0173 |
| Keith | Harrik | 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.

The screenshot shows the Azure IoT Hub Overview page for a resource named 'iothubjames'. The left sidebar contains navigation links like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Events, Resource visualizer, Device management, Hub settings, Security settings, Defender for IoT, Monitoring, and Automation. The main content area displays the 'Essentials' section with the following details:

Setting	Value
Resource group (move)	learn-95aaaa62-d72e-47df-b048-cd6ecbf6fbf
Status	Active
Location	East US
Service region	East US
Subscription (move)	Concierge Subscription
Tags (edit)	john : all
Minimum TLS Version	1.0

At the bottom, there's a 'Usage' tab, a 'Get started' button, and a 'Show data for last:' dropdown with options: 1 Hour, 6 Hours, 12 Hours, 1 Day (selected), 7 Days, and 30 Days.

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.

