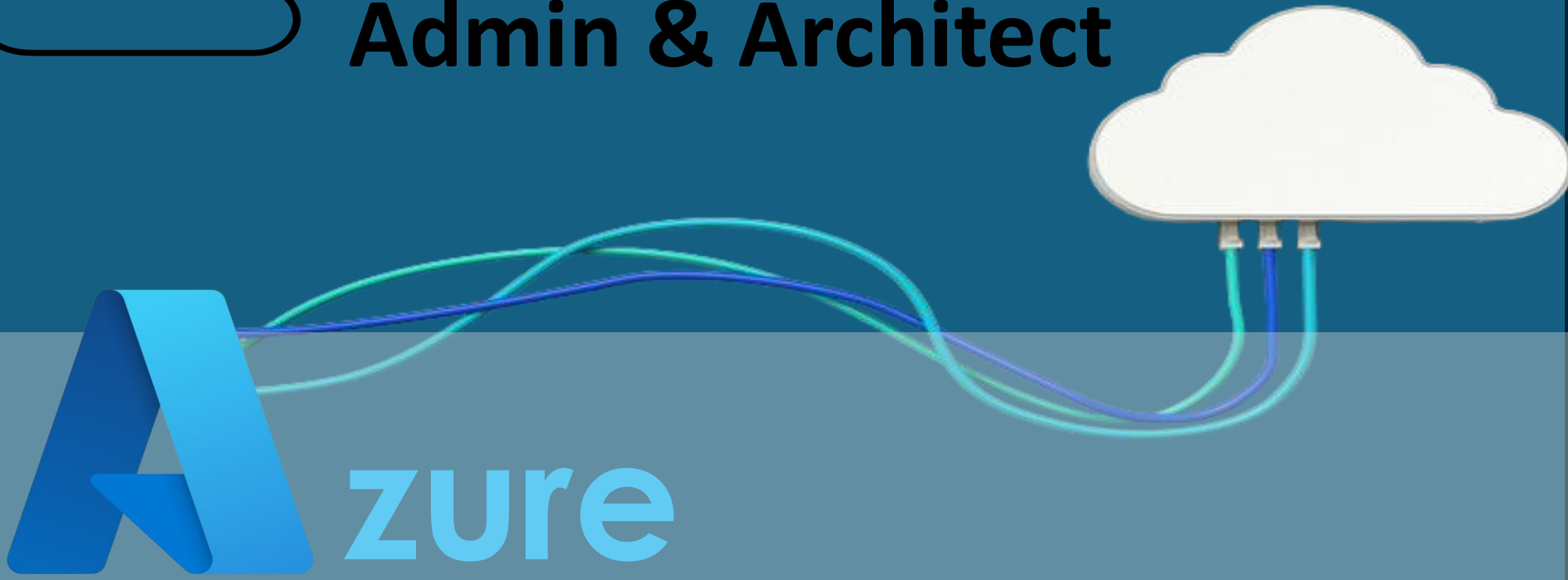
رواد مصر الرقمية

وزارة الاتصالات
وتكنولوجيا المعلومات

Azure Cloud Solution Admin & Architect



Team Members

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- Abdel-Azizi Fouad
- Essam Abdo Hassan

Supervised by:

Eng. Omar Hussien

Project Overview

This project demonstrates a full-scale Azure cloud infrastructure deployment for a web app using secure and scalable practices, focusing on efficient VM management, networking, storage, and application hosting.

Components Deployed:

- 2-Virtual Machines (VMs) with Active Directory and IIS.
- Storage, backup, database setup, and load balancing.

The Full Diagram of the project

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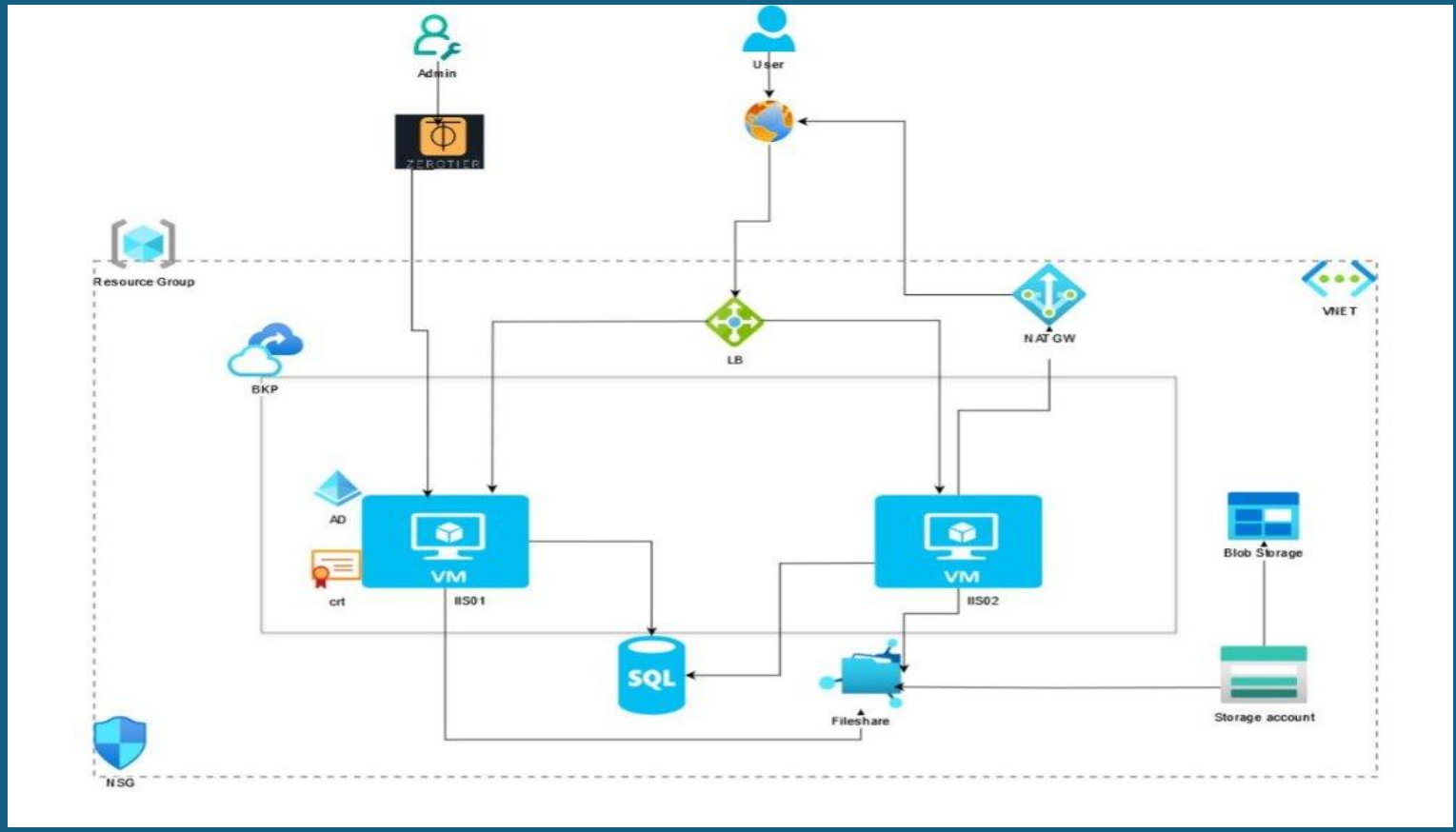
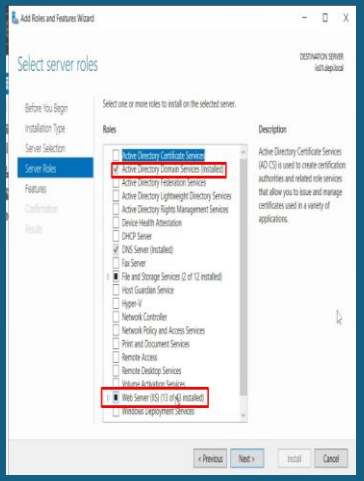
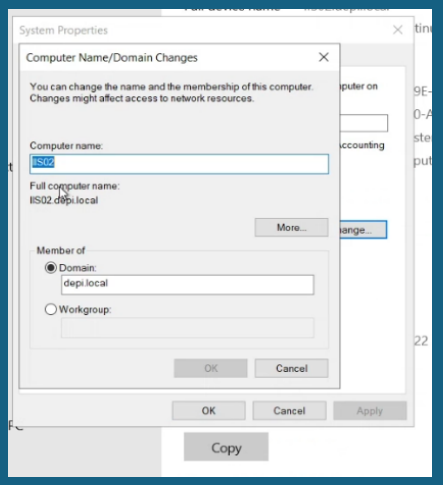
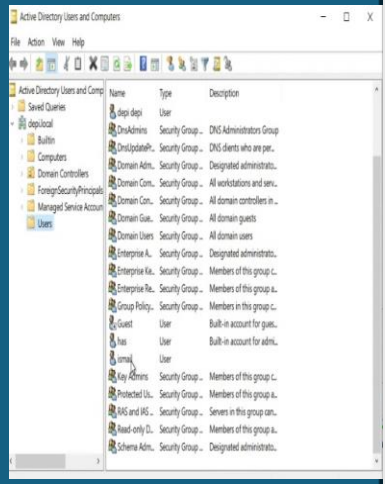
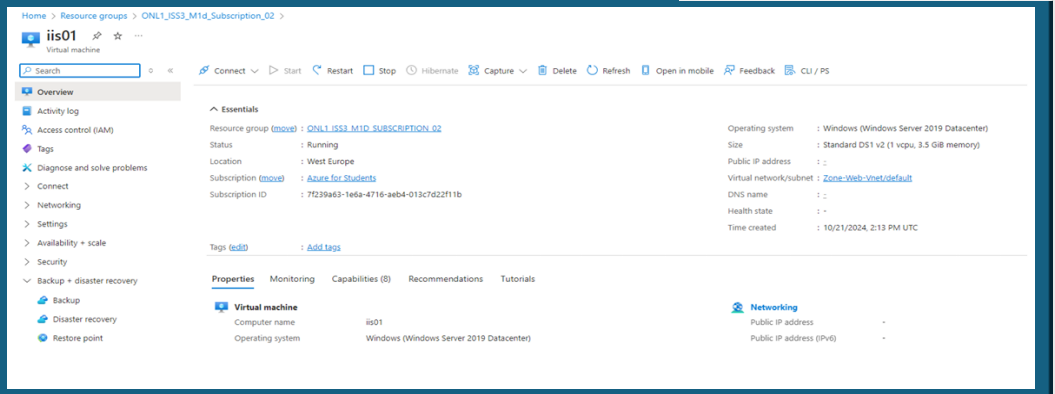


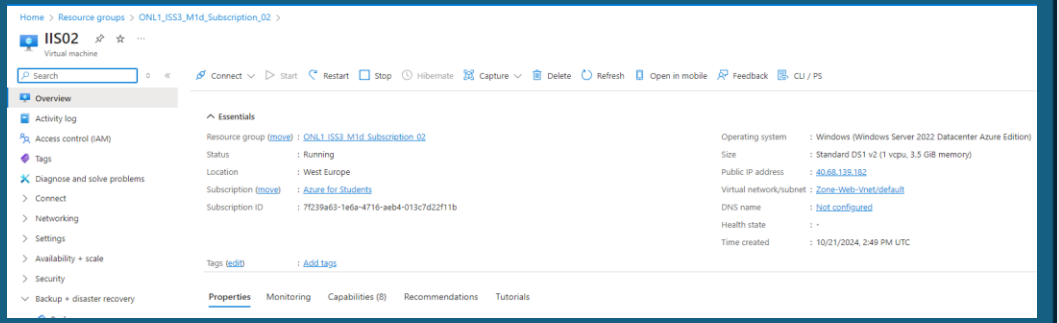
Virtual Machines and Active Directory Configuration











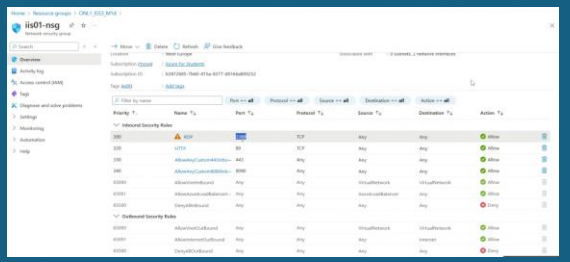
Virtual Machine Deployment:

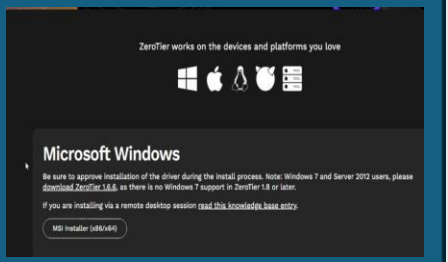
- **Configuration**: Both VMs deployed within the same Virtual Network (*IIS01-vnet*) in the *West Europe* region.
- **Operating System**: Each VM is running *Windows Server 2022* with *IIS* pre-installed for web services.

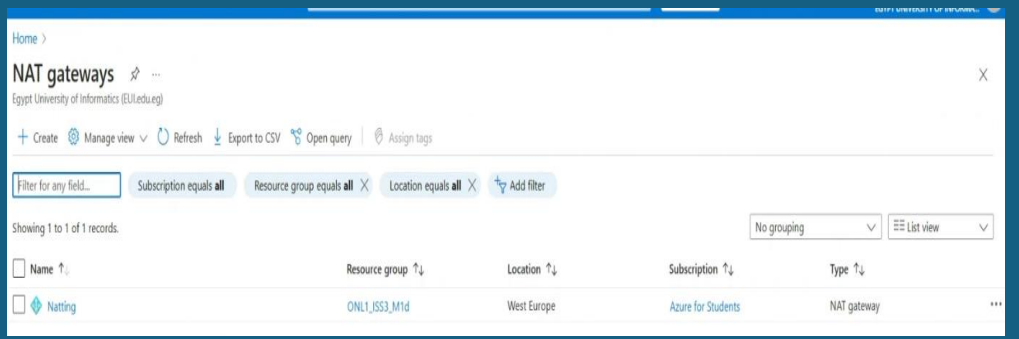
Domain Configuration:

- **Domain Controller**: *IIS01* has been promoted to Domain Controller under the domain (*depi.local*).
- **Domain Membership**: *IIS02* successfully joined the domain, ensuring centralized management and security policies across VMs.

Network and Security Setup







NAT Gateway:

- **Purpose**: Configured to optimize public IP usage, providing internet access to both VMs while maintaining efficient resource utilization.

Network Security Group (NSG):

- **Configuration**: Applied to both VMs, enabling defined inbound and outbound traffic rules for enhanced security and controlled network access.

Remote Access via ZeroTier:

- **Alternative Solution**: Utilized as a cost-effective, secure, peer-to-peer alternative to Azure Bastion for remote access, reducing expenses without compromising secure connectivity.

• Storage Solutions

Storage Account Configuration:

- **Account Name**: *ProjectsAccount2024* with Blob storage container for optimized, scalable storage.

File Share Setup:

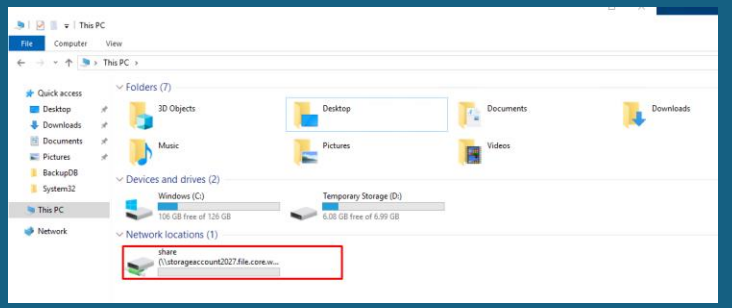
- **Configuration**: Created and mapped to both virtual machines, enabling seamless data accessibility across VMs.

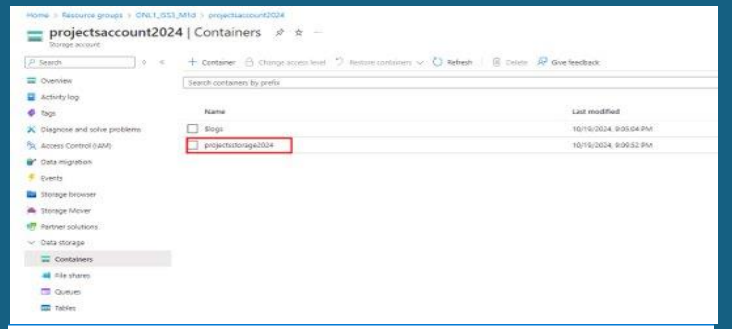
Data Access Control:

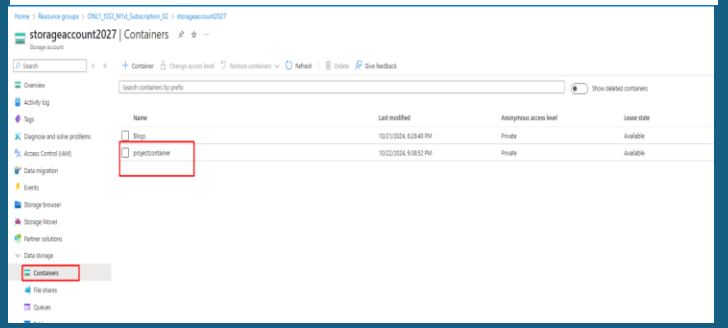
- **Access Method**: Shared Access Signature (SAS) URL for controlled file-sharing access.

Access Tier:

- Configured with the *Hot Access Tier* for high-frequency data access and quick retrieval.







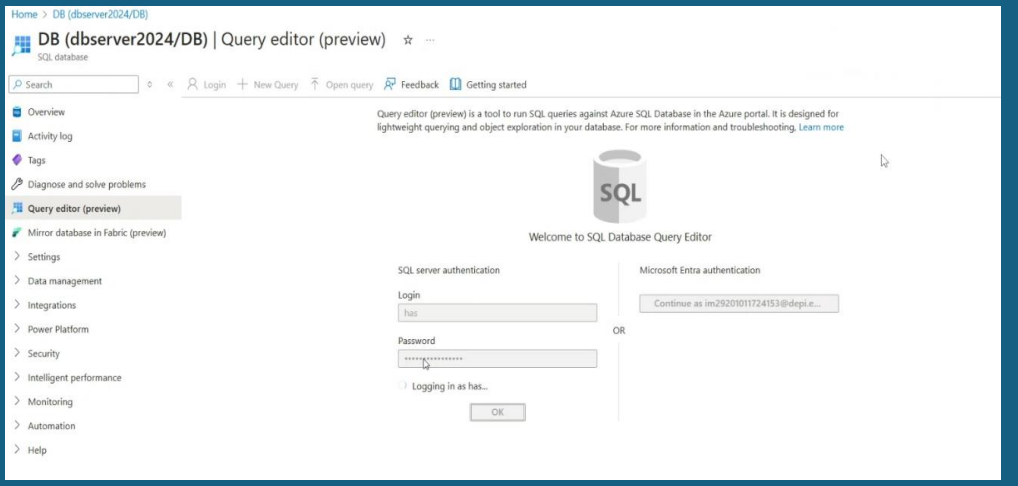
- **Database Deployment**

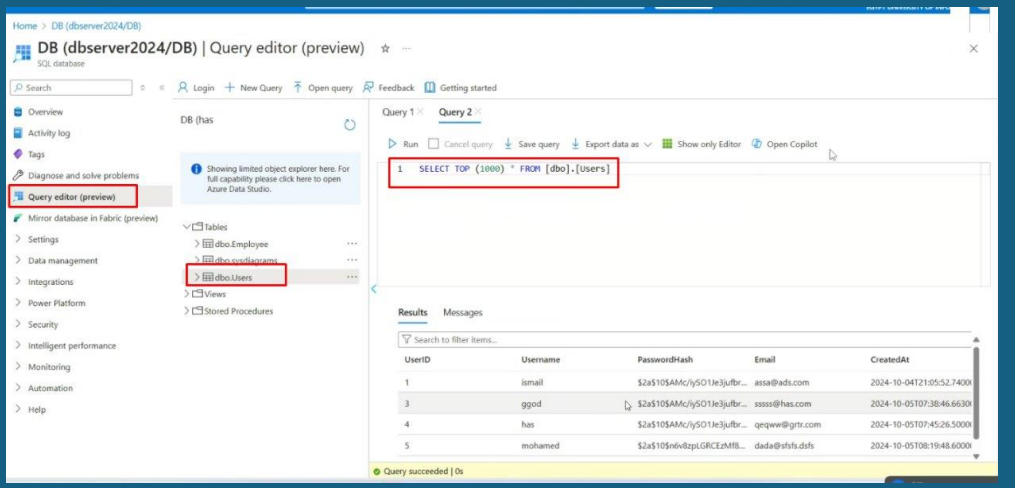
Azure SQL Database:

- Deployed SQL Server with a dedicated *Users* table for structured data storage.

On-Premises SQL Server:

- Configured SQL Server 2022 with automated daily backups for enhanced data protection and continuity.





Web Application and Security Integration

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3-Tier Architecture:

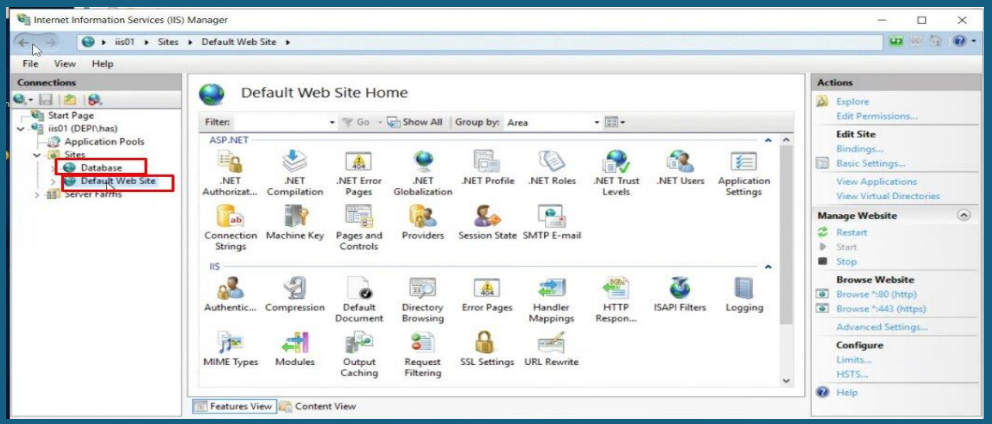
- **Frontend (IIS)**: User-facing layer hosted on IIS, providing the application interface.
- **Backend (Node.js)**: Logic layer where Node.js handles requests, linking frontend to the database.
- **Database**: Centralized data management, accessed by the backend.

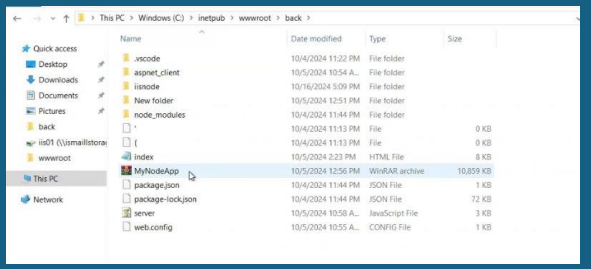
SSL Security:

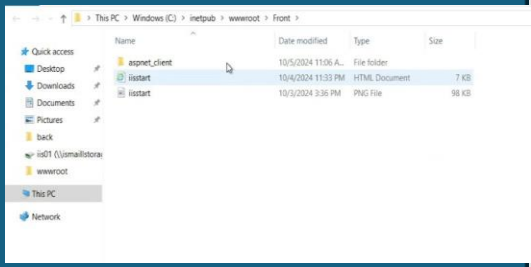
- Configured with a 90-day certificate through Certify app for secure access.

IIS Sites:

- Two distinct sites hosted on *IIS01*, supporting both frontend and backend services.







Load Balancer and Health Monitoring

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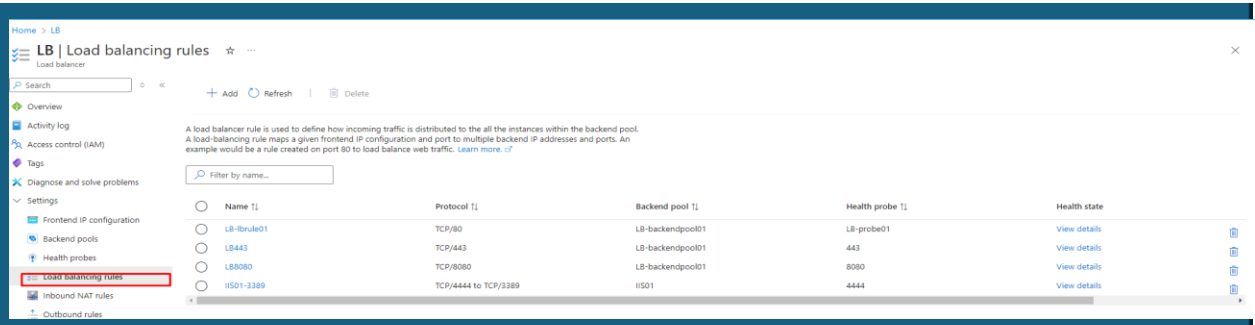
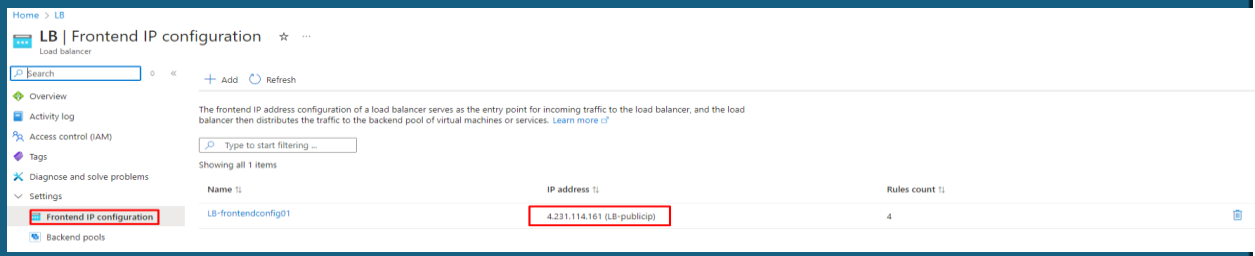
Load Balancer Setup:

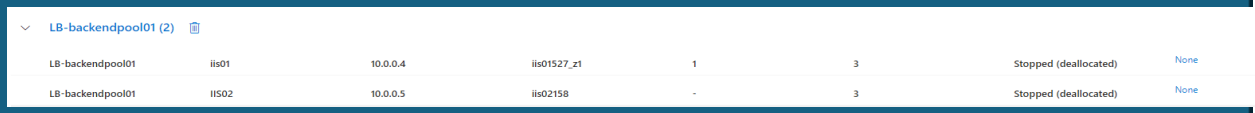
- **Frontend IP**: Configured to manage incoming traffic, directing it to the designated resources.
- **Backend Pool**: Includes specific VMs to balance loads effectively and enhance performance.
- **Health Probes**: Monitors the health of backend resources continuously, ensuring high availability and reliability.

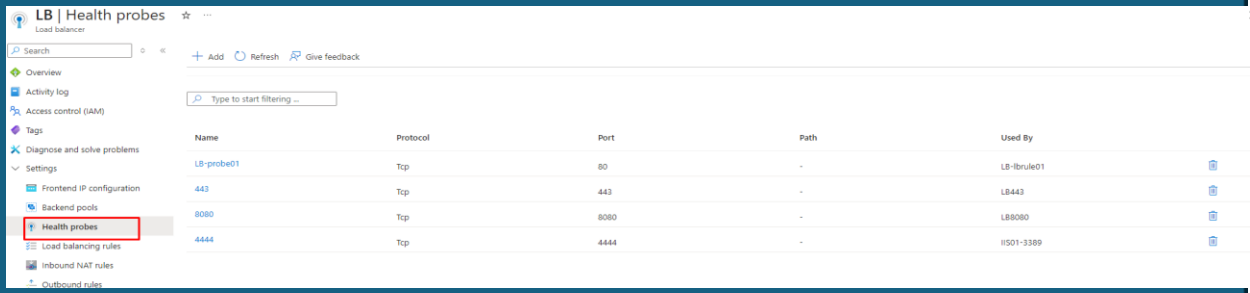
Access Overview:

- Provides secure entry points to both the frontend interface and backend services.
- Designed to ensure seamless connectivity and optimal performance, leveraging Azure's robust load-balancing capabilities.









Web Interface Snapshot