Azure Fundamentals – AZ-900 – Project 2 Report

Title : - Azure Virtual Network and Bastion Host Deployment

📋 Project Summary

This project involved deploying a secure and scalable cloud infrastructure using Microsoft Azure. The goal was to create a virtual network with isolated subnets, deploy virtual machines without public IPs, and enable secure access using Azure Bastion. The setup ensures internal communication between resources while maintaining strong perimeter security.

🛠 Implementation Overview

1. **Virtual Network Creation**
   - Created a new resource group: second-project
   - Defined virtual network: vnet-1 in Central Asia (India) region
   - Configured address space: 10.0.0.0/16
   - Added subnet: subnet-1 with range 10.0.0.0/24
2. **Azure Bastion Host Setup**
   - Enabled Azure Bastion during VNet creation.
   - Created Bastion host: bastion
   - Provisioned public IP: public-ip-bastion
   - Dedicated subnet for Bastion ensured secure browser-based RDP/SSH access.
3. **Virtual Machines Deployment**
   - Deployed two Ubuntu VMs: vm-1 and vm-2
   - Placed both in subnet-1 without public IPs
   - Configured authentication with username azureuser and password.
   - Created and attached NSG: nsg-1 for traffic control
4. **Secure Connectivity & Testing**
   - Connected to VMs using Bastion via Azure Portal
   - Verified internal communication using ping between vm-1 and vm-2
   - Successful ICMP replies confirmed private IP connectivity

🔐 Key Security Highlights

- No public IPs on VMs; Bastion provides secure access
- NSG applied to control inbound/outbound traffic
- Internal-only communication between VMs using private Ips

☑ Outcome

- Successfully deployed a secure virtual network with Bastion access
- Demonstrated best practices in Azure networking and VM isolation
- Validated internal connectivity and Bastion-based remote access

📷 Visual Results of outcome

❖ Virtual Network Creation

- Subnet configuration with subnet-1 and address range.

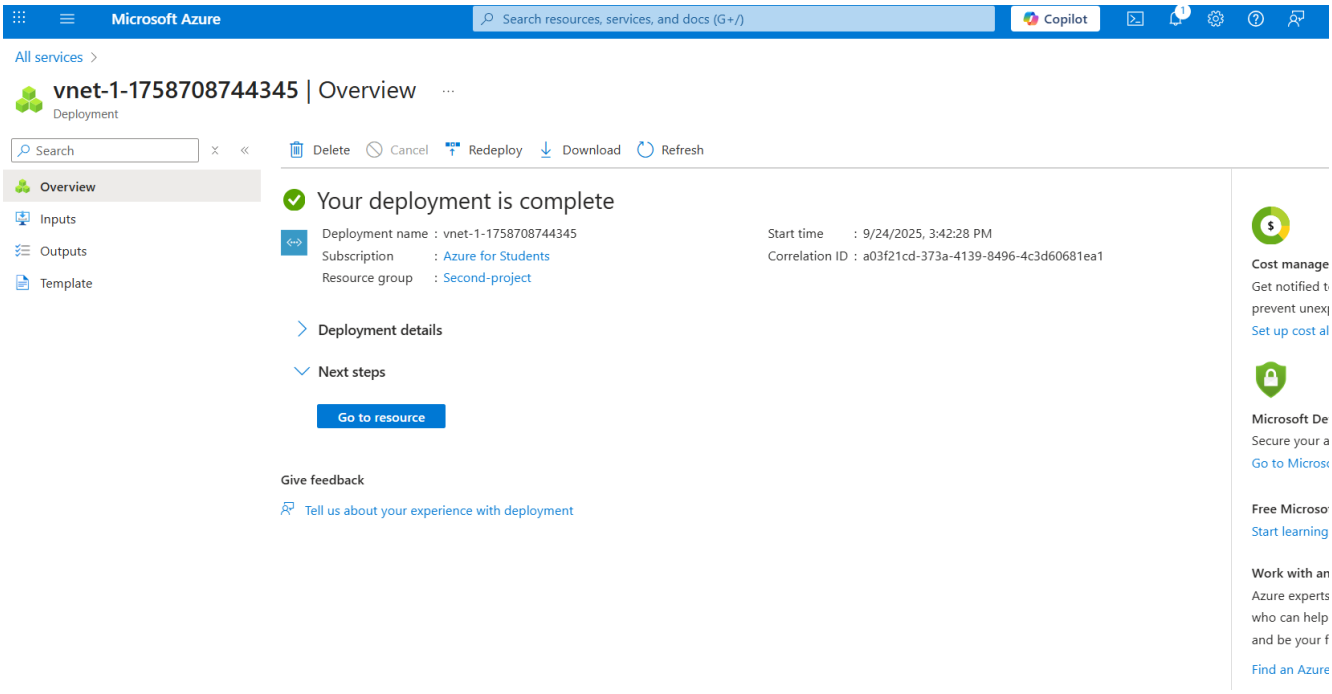

Fig 1:- Virtual Network configuration in Azure Portal

❖ Virtual Machine Deployment

- VM creation screen for vm-1 and vm-2.
- Networking tab showing selection of vnet-1, subnet-1, and NSG nsg-1.

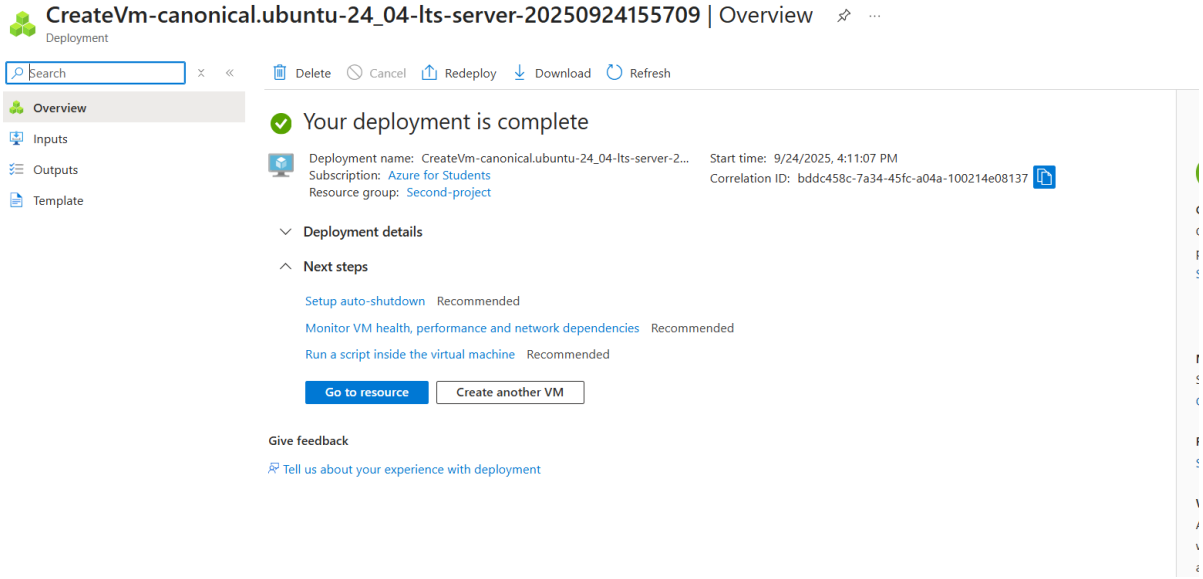

Fig2 :- VM-1

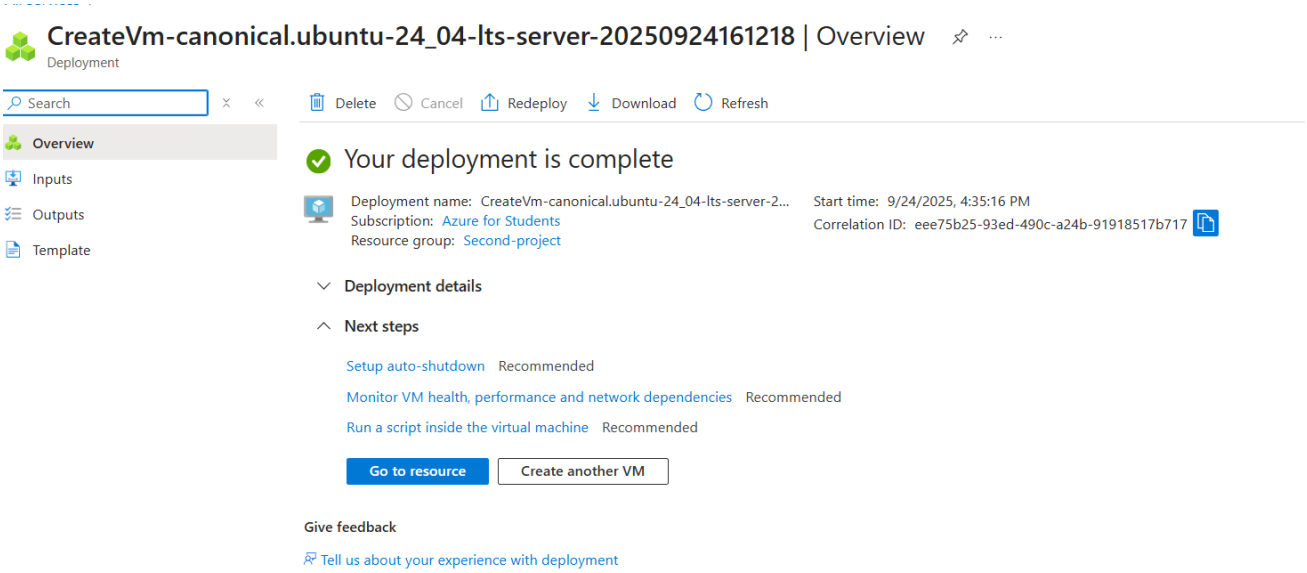

Fig3 :- VM-2

❖ Bastion Connection

- Bastion login screen with username/password prompt.

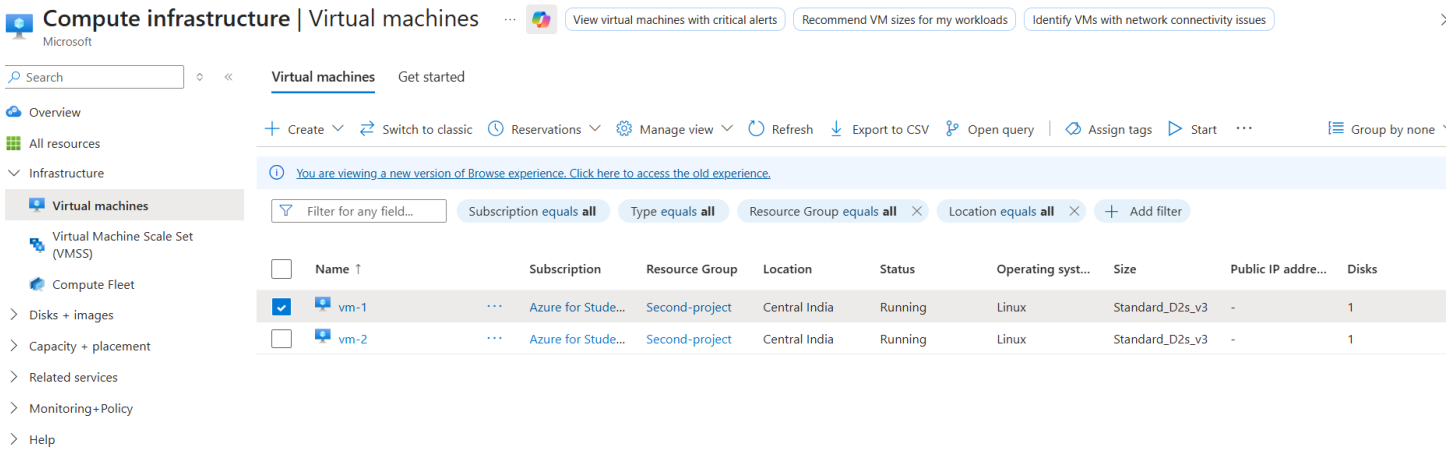

Fig 4:- Virtual Machines created

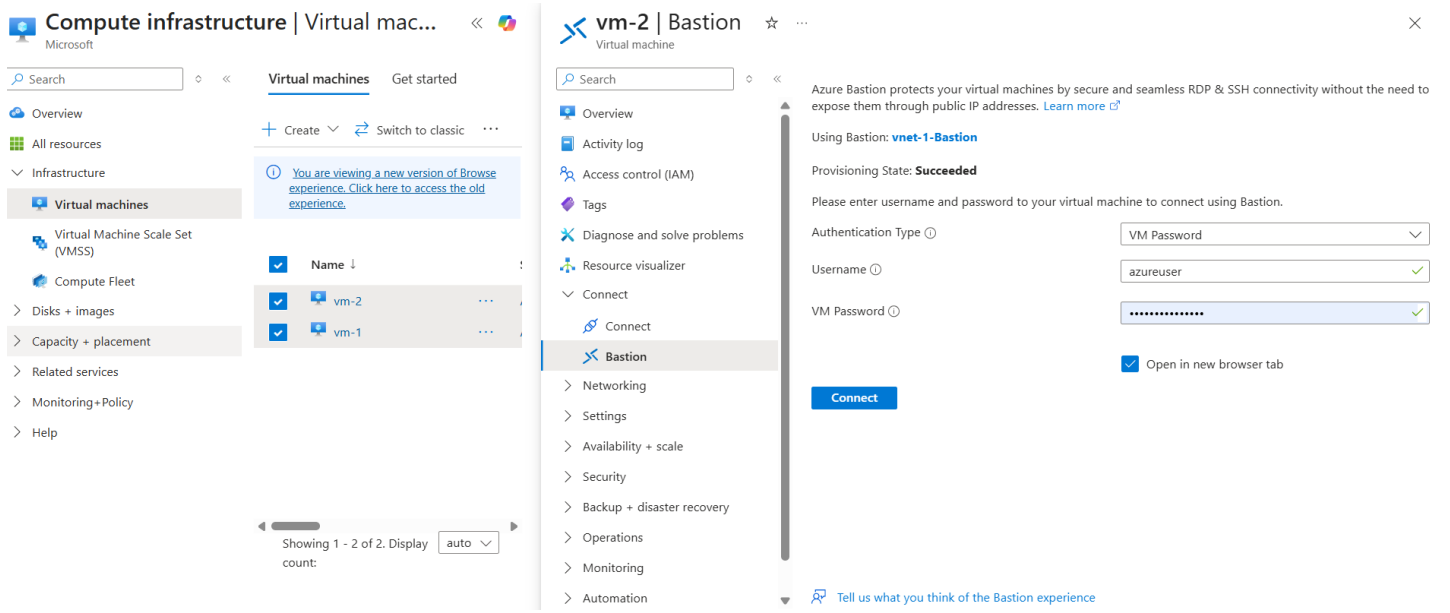

Fig5:- Bastion login screen with username/password

❖ Ping Results

- ping -c 4 vm-2 from vm-1.
- ping -c 4 vm-1 from vm-2.

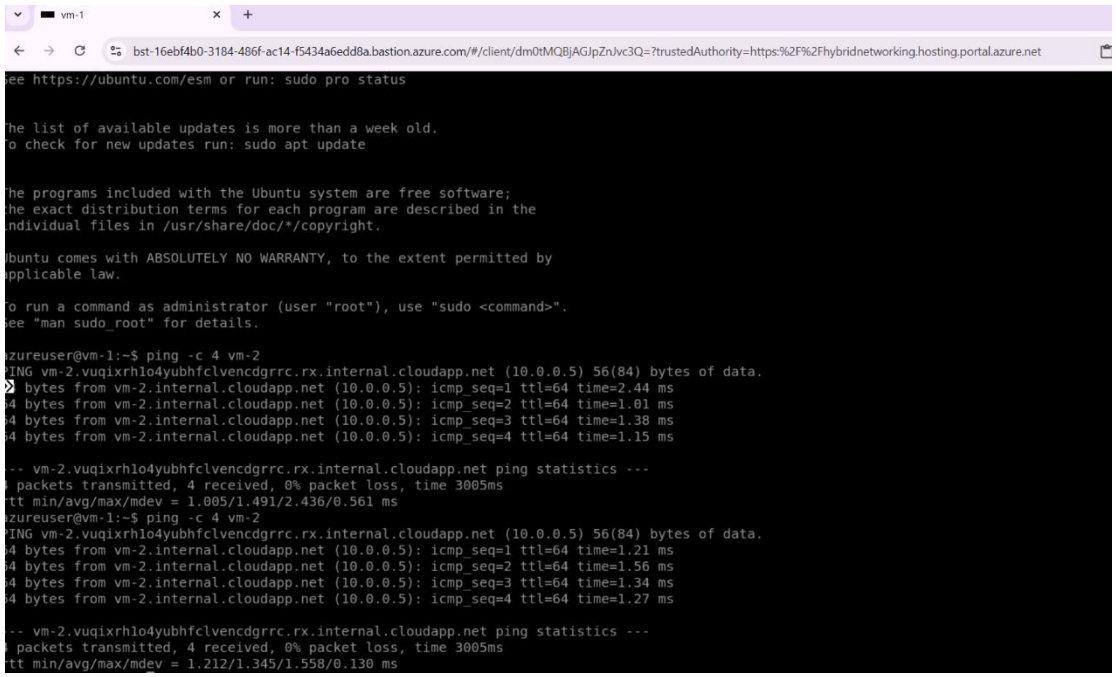

Fig6 :- Terminal output of ping -c 4 vm-2 from vm-1.

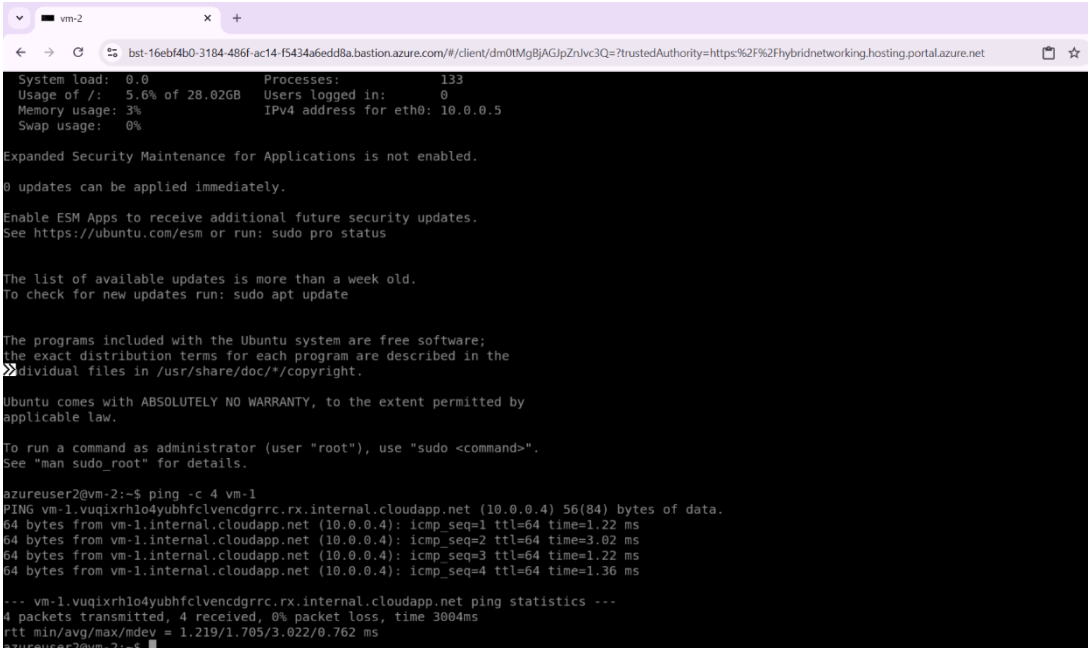

Fig7:-Terminal output of ping -c 4 vm-1 from vm-2.