Module 5

Introduction to Azure networking

Module Overview

- Getting started with Azure networking
- Getting started with Azure Load Balancer

Lesson 1: Getting started with Azure networking

- What are Azure virtual networks?
- Determining the need for Azure virtual networks
- Azure networking capabilities
- Creating and configuring Azure virtual networks
- Demonstration: Creating a virtual network

What are Azure virtual networks?

- Logical networking boundary:
  - Automatic but customizable routing
  - Built-in but customizable DNS name resolution
  - Support for TCP, UDP, and ICMP
  - Divided into one or more IP subnets
- Uses one or more IP address spaces:
  - Private:
    - Based on RFC 1918:
      - 10.0.0.0 – 10.255.255.255
      - 172.16.00 – 172.16.255.255
      - 192.168.0.0. – 192.168.255.255
    - Much more common
  - Public
- Supports cross-virtual network and cross-premises connectivity

Determining the need for Azure virtual networks

Virtual networks and Azure resources:

- Resources that require virtual networks include:
  - Azure VMs
  - Virtual machine scale sets
  - Azure Application Gateway (internal)
  - Azure App Service Environment
  - Azure Kubernetes Service
  - Service Fabric
- Resources that support virtual networks:
  - Point-to-site VPN
  - Service Endpoints: Azure Storage, SQL Database, Cosmos DB, SQL Data Warehouse, PostgreSQL, MySQL, Service Bus, Event Hub
- Resources that do not integrate with virtual networks:
  - Azure AD, Traffic Manager, Content Delivery Network, and Container Registry

Azure networking capabilities

- IP address allocation:
  - Dynamic (default) — support for static IP address assignments
- DNS name resolution:
  - Built-in (default) — support for custom (customer-owned) DNS
- Load balancing:
  - Internal and external load balancers
- Traffic filtering:
  - Network Security Groups and application security groups
- Direct PaaS connectivity:
  - Service endpoints
- Traffic routing:
  - User-defined routes and forced tunneling
- Virtual network connectivity:
  - Cross-premises: P2S VPN, S2S VPN, ExpressRoute
  - Cross-Vnet: VNet peering, VNet-to-VNet

Creating and configuring Azure virtual networks

- Private IP address space:
  - Use standard IP address ranges (RFC 1918):
    - 10.x.x.x
    - 172.16.x.x – 172.31.x.x
    - 192.168.x.x
  - Avoid overlap with on-premises and other Azure virtual networks
- IP subnets:
  - Use 29-bit or larger subnet mask
  - For multitier applications, place each tier in a separate subnet
  - Associate Network Security Groups to subnets
- Name resolution:
  - Choose Azure DNS or custom DNS
  - Configure on the virtual network level

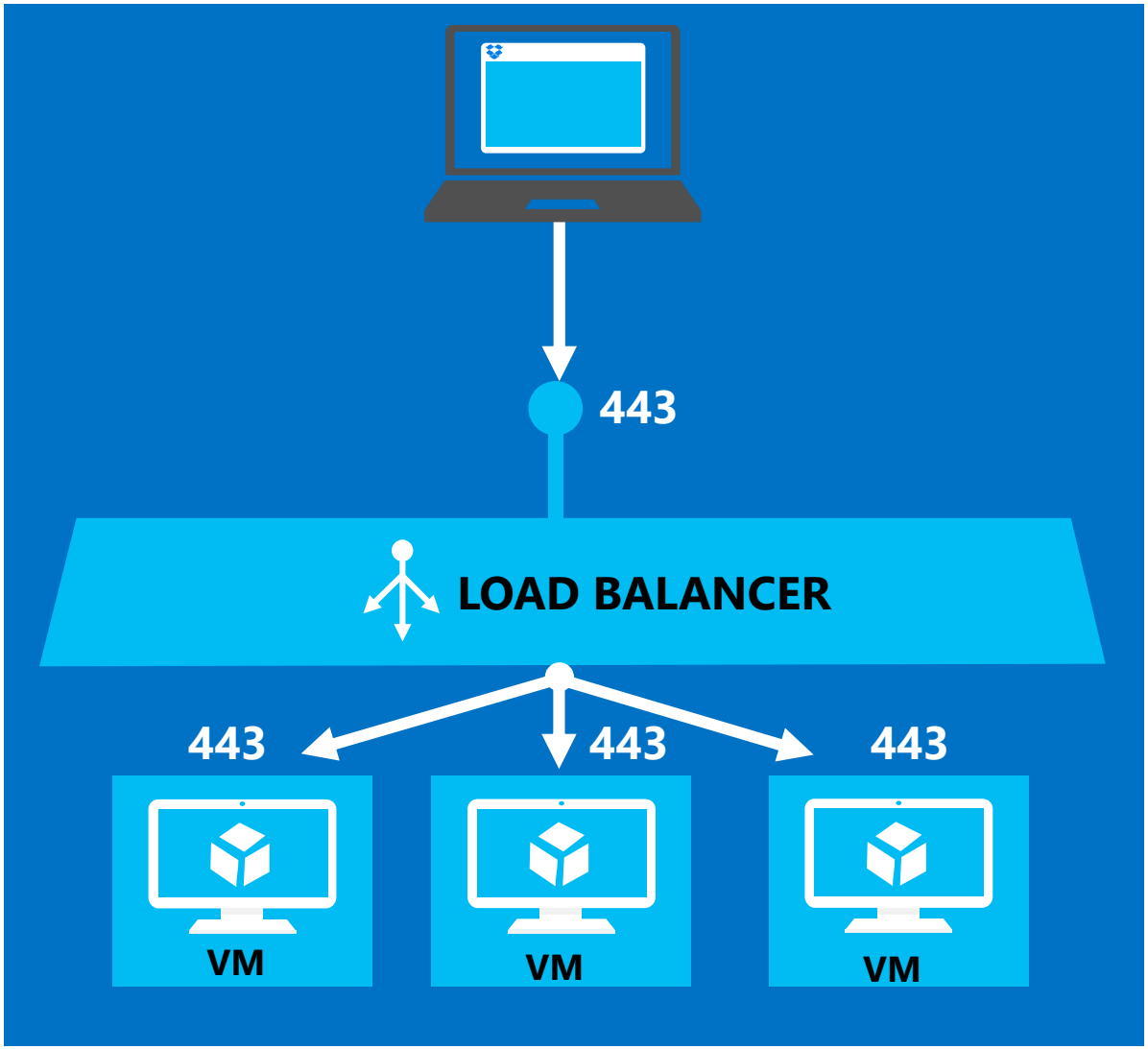
Demonstration: Creating a virtual network

In this demonstration, you will learn how to create an Azure virtual network

Lesson 2: Getting started with Azure Load Balancer

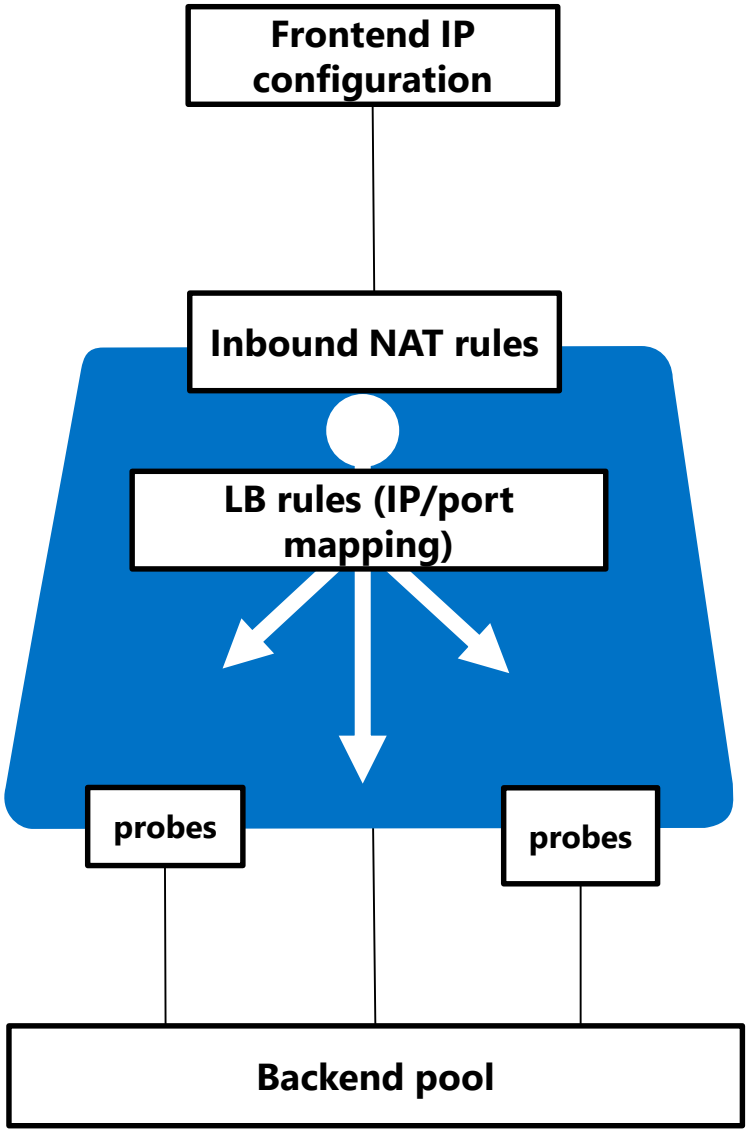
- Overview of Azure Load Balancer
- Creating an Azure load balancer
- Demonstration: Creating an Azure load balancer

Overview of Azure Load Balancer



Creating an Azure load balancer

- Assign frontend IP(s)
- Configure backend pool
- Create load balancing rules:
  - Name
  - Protocol
  - Port
  - Backend port
  - Backend pool
  - Probe
  - Session persistence
  - Idle timeout
  - Floating IP
- Create inbound NAT rules:
  - Name
  - Protocol
  - Port
  - Backend port
  - Backend virtual machines



Demonstration: Creating an Azure load balancer

In this demonstration, you will see how to create an Azure load balancer

Lab: Creating and configuring virtual networks

- Exercise 1: Creating a virtual network
- Exercise 2: Creating an Azure load balancer

Logon Information

Virtual machine: **10979F-MIA-CL1**

User name: **Admin**

Password: **Pa55w.rd**

Estimated Time: 30 minutes

Lab Scenario

Adatum Corporation plans to deploy a number of Azure virtual machines in a load-balanced configuration. You plan to create a virtual network and configure an Azure load balancer to test this plan.

Lab Review

- Can you move virtual machines that you created in the lab to a different virtual network?
- By default, can you successfully ping a Windows Server 2016 virtual machine on a virtual network?

Module Review and Takeaways

- Review Question