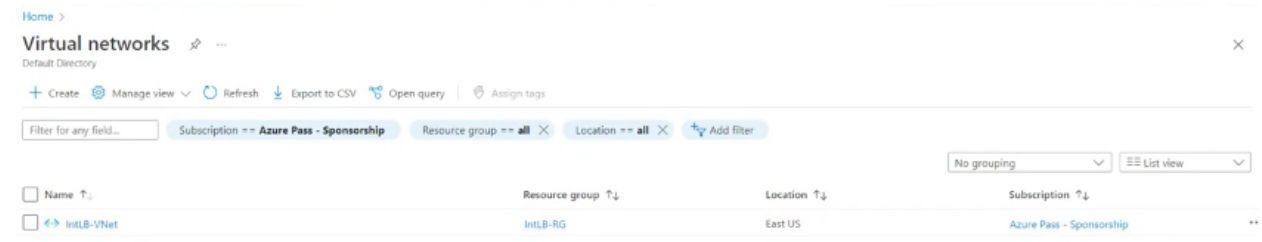
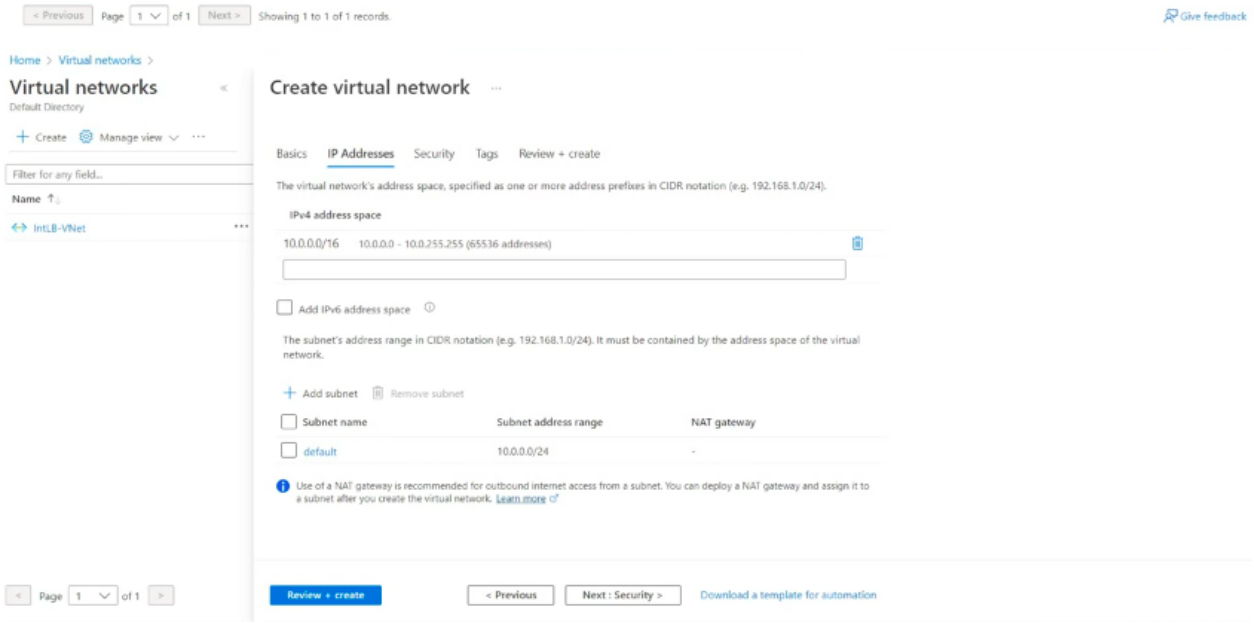
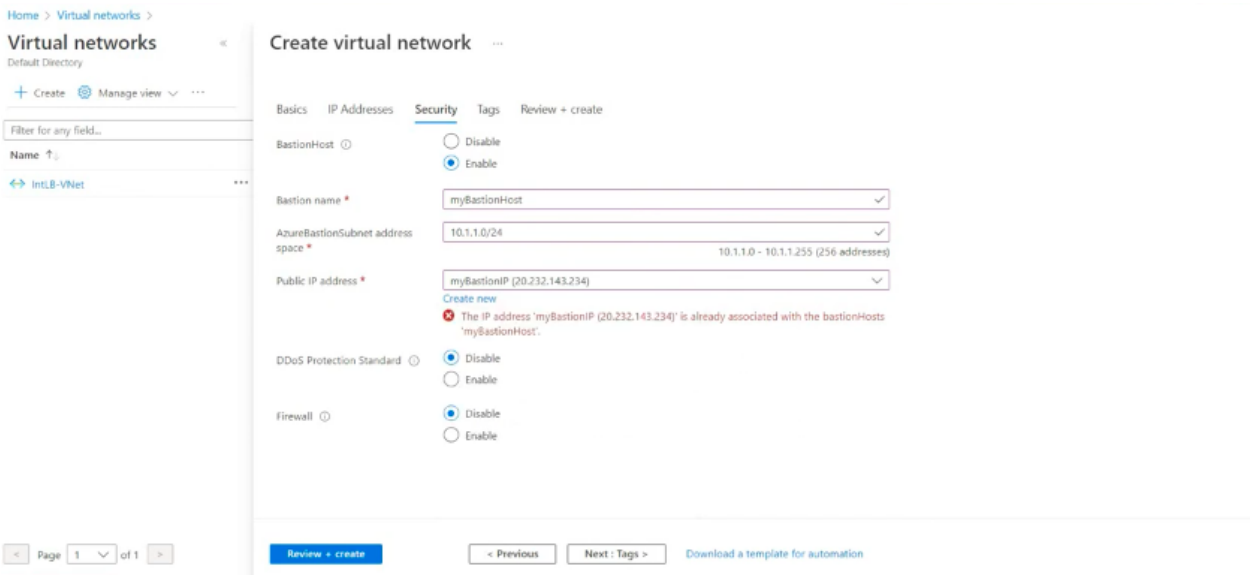
Azure Load Balancer: A Comprehensive Overview

Azure Load Balancer is a cloud-based service that distributes network traffic across multiple backend resources to ensure high availability and performance. Operating at Layer 4 of the OSI model, it serves as the primary point of contact for incoming client traffic, efficiently routing it based on predefined rules and health checks.



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Create virtual network
Basics
IP Addresses
Security
Tags
Review + create
BastionHost
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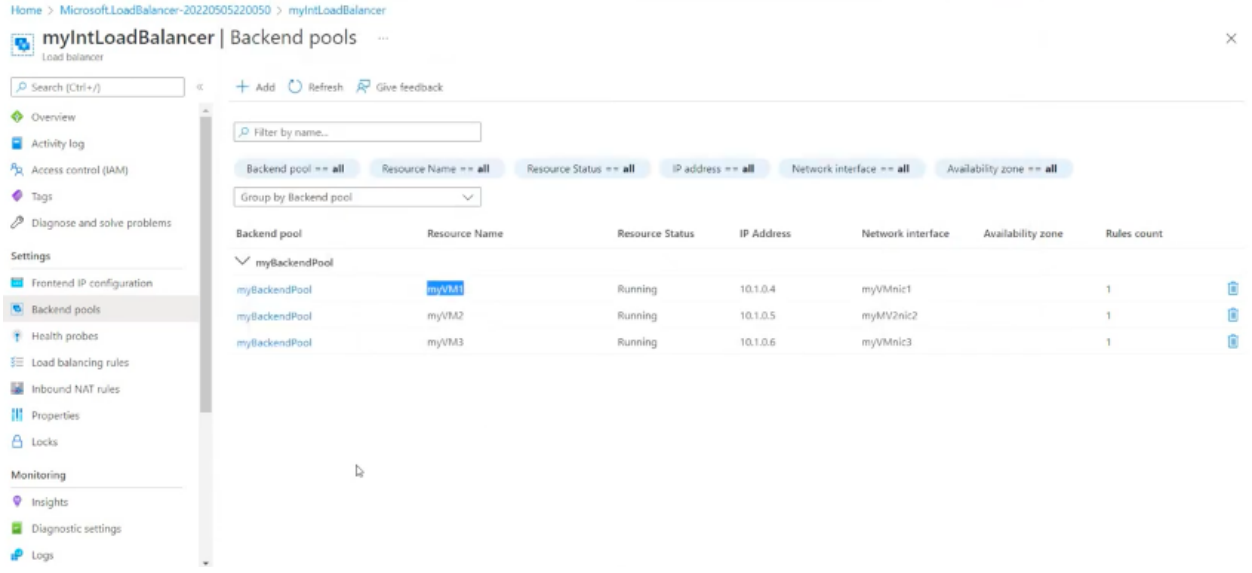
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Add
Refresh
Give feedback
Filter by name...
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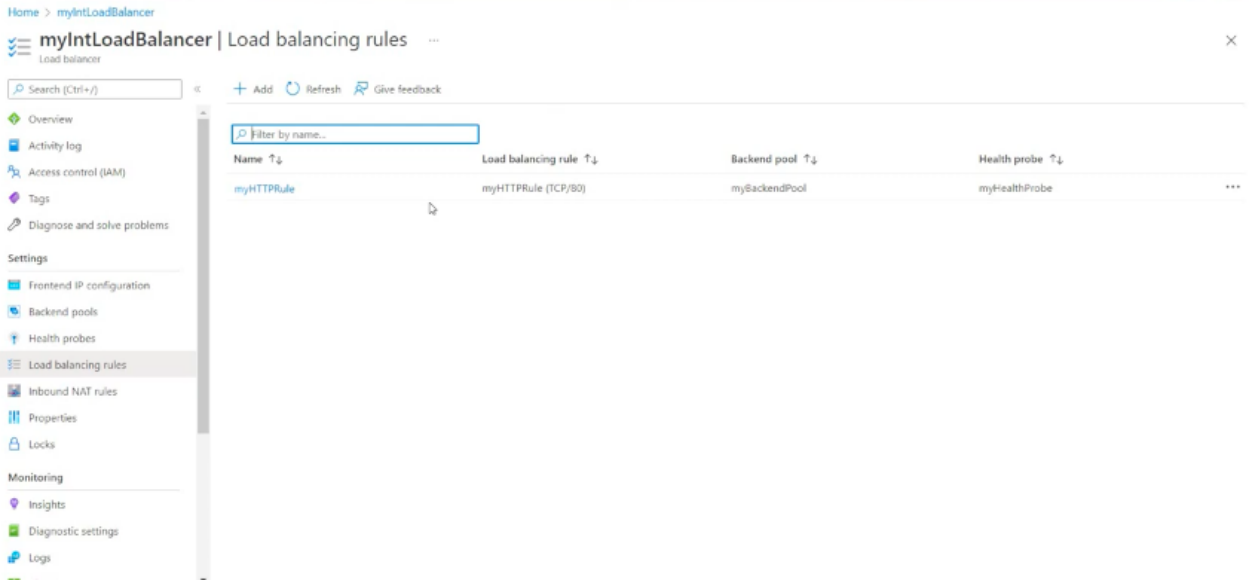

Types of Azure Load Balancer

1. **Public Load Balancer**:
   - **Purpose**: Balances traffic from the internet to Azure VMs.
   - **Functionality**: Translates private IP addresses to public IPs for outbound connections, making it ideal for web-facing applications.

2. **Internal (Private) Load Balancer**:
   - **Purpose**: Used within a virtual network where traffic remains private.
   - **Functionality**: Facilitates load balancing for applications that require private IPs, suitable for internal enterprise applications or hybrid cloud setups.

Key Features and Benefits

- **Scalability**: Azure Load Balancer supports millions of flows, providing high throughput for both TCP and UDP applications, allowing you to scale applications seamlessly.

- **High Availability**: By distributing traffic across multiple backend resources, it ensures that your services remain available even if individual instances fail.

- **Health Monitoring**: Health probes continuously check the status of backend instances, ensuring traffic is only routed to healthy endpoints, enhancing reliability.

- **Port Forwarding**: Facilitates access to specific VMs using public IP addresses and ports, crucial for applications requiring direct access.

- **IPv6 Support**: Supports load balancing for IPv6 traffic, accommodating modern networking needs.

- **Security**: Built on a zero trust model, the Standard Load Balancer is secure by default, integrating with Network Security Groups (NSGs) to control inbound and outbound traffic. Basic Load Balancer, however, is open to the internet by default.

- **Insights and Diagnostics**: Through Azure Monitor, you gain access to multi-dimensional metrics and insights, providing both current and historical data on the performance and health of your load balancer. This feature helps in proactive monitoring and troubleshooting.

- **Resource Health**: Azure Load Balancer provides detailed insights into the health of your resources, helping to identify and resolve issues quickly.

Use Cases

- **Internal and External Traffic Management**: Manage traffic within a virtual network or from the internet, ensuring efficient resource utilization and performance optimization.

- **Pass-through Load Balancing**: Offers ultra-low latency

connections, ideal for real-time applications where performance is critical.

- **Zone Redundancy**: Distributes resources across multiple availability zones, increasing fault tolerance and resilience.

- **Multi-port and Multi-IP Load Balancing**: Load balance services on multiple ports and IP addresses, supporting complex application architectures.

- **HA Ports**: Enable load balancing of all TCP and UDP flows on all ports simultaneously, useful in scenarios requiring high availability and redundancy.

- **Regional Resource Mobility**: Easily move load balancer resources across Azure regions, supporting dynamic and global application deployments.

Pricing and Service Level Agreement (SLA)

- **Standard Load Balancer**:
  - **Pricing**: Based on usage, offering advanced features and capabilities.
  - **SLA**: Provides a guarantee of availability, ensuring reliability for critical applications.

- **Basic Load Balancer**:
  - **Pricing**: Offered at no charge, suitable for less critical workloads.
  - **SLA**: No formal SLA, which might not be ideal for production environments.

Conclusion

Azure Load Balancer is an essential component for any cloud-based architecture, providing the necessary tools to create scalable, high-

performance, and highly available applications. Its integration with Azure services and comprehensive security features make it a robust solution for managing traffic in both simple and complex environments. Whether for public-facing applications or internal enterprise systems, Azure Load Balancer ensures that your services are resilient, efficient, and secure.