**Microsoft Azure Fundamentals: Azure Service Resilience**

**Azure and High Availability**

**High Availability (HA)**

* IT service availability at all times
* Data accessibility at all times

**HA: Recovery Time Objective (RTO)**

* Maximum amount of time a service can be inaccessible
* Normally measured in minutes or hours
* Example: An e-commerce payment server cannot be down for more than ten minutes

**HA: Recovery Point Objective (RPO)**

* Maximum amount of tolerable data loss
* Normally measured in minutes or hours
* Influences how often data backups are taken
* Example: The organization can tolerate a loss oft wo hours of customer order data

**Incident Response Plan (IRP)**

* Proactive planning
* Identifies team members an their responsibilities
* Determines how to identify, respond to, and eradicate an incident
* Provides details regarding incident escalation and notifications

**Disaster Recovery Plan (DRP)**

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**DRP and IRP Examples**

DRP:

* Azure Site Recovery (ASR)
* Uses the cloud as an alternate disaster recovery (DR) site
* On-premiess backup tot he cloud
* Also includes virtual machine (VM) replication

IRP:

* Azure distributed denial-of-service (DDoS) protection
* Azure storage account geo-redundancy
* Azure VM replication to secondary region

**Microsoft Azure High Availability**

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**Load Balancing**

* Enhances app performance
* Increases app fault tolerance

**Azure Site Recovery (ASR)**

* Disaster Recovery as a Service (DRaaS)
* Physical and VM replication to a secondary region

Backup service:

* VMs
* SQL Server
* Windows files and folders
* Azure storage account blobs
* Azure Files shared folders
* Azure managed disk backup

**Backing Up On-premises Servers to the Azure Cloud**

Create a resource 🡪 Marketplace 🡪 Backup and Site Recovery 🡪 Create Recovery Services vault

„backupvault“ 🡪 Backup

Install Agent

**Enabling Virtual Machine Replication**

Virtual machines 🡪 „win2022“ 🡪 Disaster recovery

**Enabling Web Application Backup**

All resouces 🡪 „backupvault“ 🡪 Backup

App services 🡪 „webapp“ 🡪 Backups

**Load Balancing**

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**Azure Load Balancer**

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**Load Balancer Rules**

* Controls app-targeted traffic distribution to back-end hosts
* Define settings such as user session affinity for a specific back-end host

**Inbound Network Address Translation (NAT) Rules**

Port forwarding:

* Load balancer IP address
* Front-end configured port

Connectivity to back-end instances:

* Virtual machines management
* Back-end port

**Application Gateway URL-based Routing**

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**Web Application Firewall (WAF)**

* Part oft he Azure Application Gateway
* Based on the Open Web Application Security Project (OWASP) rule sets
* Protects against common web app exploits
* Cross-site scripting attacks
* Injection
* Directory traversal

**Configuring an Azure Load Balancer**

Create a resource 🡪 Marketplace 🡪 Load Balancer 🡪 Create load balancer

**Creating a Virtual Machine Scale Set**

Create a resource 🡪 Marketplace 🡪 Virtual machine scale set 🡪 Create a virtual machine scale set

**Enabling Storage Account Blob File Versioning**

Create a resource 🡪 Marketplace 🡪 Storage account 🡪 Create a storage account