

دوره مهندسی کلود | Cloud Engineering

مروری بر دوره

دوره Cloud+ یکی از دوره‌های مبتنی بر رایانش ابری است که بر جوانب فنی و تجاری آن تمرکز دارد. در این دوره چگونگی تطبیق، اجرا و نظارت رایانش ابری را به طور کامل می‌آموزید. از طرفی این دوره، مکمل دوره آشنایی با الزامات مجازی‌سازی بوده و سرفصل‌های آن مطابق با سرفصل‌های تاییدشده کمپانی CompTIA است. آژور فاندمنتال با کد آزمون AZ-۹۰۰ یک دوره جذاب برای ورود به دنیای مایکروسافت آژور بوده و به عنوان پیش‌نیازی برای ورود به دنیای بزرگ Microsoft Azure شناخته می‌شود. در این دوره با مقدمات و مفاهیم بسیار مهم مایکروسافت آژور آشنا شده و در سطح پایه، کار کردن با محیط آژور را می‌آموزید. پس از اتمام آژور فاندمنتال، آمادگی لازم برای گذراندن دوره‌های تخصصی آژور در سطوح بالاتر را بر اساس رودمپ مدنظران به دست خواهید آورد. این دوره در ۳۹ درس مطابق با سرفصل بین‌المللی آن تهیه و تدریس خواهد شد.

آنچه در این دوره خواهید آموخت

- آشنایی با مفاهیم رایانش ابری
- آشنایی با ملاحظات مورد نیاز رایانش ابری هنگام کاربرد آن در کسب‌وکار
- آشنایی با منافع حاصل از رایانش ابری در کسب‌وکار
- آشنایی با تاثیر رایانش ابری بر مدیریت خدمات فناوری اطلاعات
- آشنایی با گام‌های تطبیق موفقیت‌آمیز رایانش ابری در سازمان



- آشنایی با درک پیچیدگی‌های سازمانی در جریان استفاده از رایانش ابری

سرفصل‌ها

COMPTIA CLOUD+

Chapter ۱

- Introducing Cloud Computing Configurations and Deployments
- Introducing Cloud Computing
- Virtualization
- Cloud Service Models
- Cloud Reference Designs and Delivery Models
- Introducing Cloud Concepts and Components
- Connecting the Cloud to the Outside World
- Deciding Whether to Move to the Cloud
- Selecting Cloud Compute Resources
- Hypervisor Affinity Rules
- Validating and Preparing for the Move to the Cloud
- Choosing Elements and Objects in the Cloud
- Internet of Things
- Machine Learning/Artificial Intelligence (AI)
- Creating and Validating a Cloud Deployment



- The Cloud Shared Resource Pooling Model
- Organizational Uses of the Cloud
- Scaling and Architecting Cloud Systems Based on Requirements
- Understanding Cloud Performance
- Delivering High Availability Operations
- Managing and Connecting to Your Cloud Resources
- Is My Data Safe? (Replication and Synchronization)
- Understanding Load Balancers
- Cloud Testing
- Verifying System Requirements
- Correct Scaling for Your Requirements
- Making Sure the Cloud Is Always Available
- Remote Management of VMs
- Monitoring Your Cloud Resources
- Writing It All Down (Documentation)
- Creating Baselines
- Shared Responsibility Model

Chapter ۲

- **Cloud Deployments**
- Executing a Cloud Deployment
- Understanding Deployment and Change Management
- Cloud Deployment Models
- Network Deployment Considerations
- Service Level Agreements



- Matching Data Center Resources to Cloud Resources
- What Are Available and Proposed Hardware Resources?
- Templates and Images
- Physical Resource High Availability
- Introducing Disaster Recovery
- Physical Hardware Performance Benchmarks
- Cost Savings When Using the Cloud
- Energy Savings in the Cloud
- Shared vs. Dedicated Hardware Resources in a Cloud
- Data Center
- Microservices
- Configuring and Deploying Storage
- Identifying Storage Configurations
- Storage Provisioning
- Storage Priorities: Understanding Storage Tiers
- Managing and Protecting Your Stored Data ۹۵ Storage Security
- Considerations
- Accessing Your Storage in the Cloud
- Performing a Server Migration
- Different Types of Server Migrations
- Addressing Application Portability
- Workload Migration Common Procedures
- Examining Infrastructure Capable of Supporting
- a Migration
- Managing User Identities and Roles
- RBAC: Identifying Users and What Their Roles Are



- What Happens When You Authenticate?
- Understanding Federation
- Single Sign-On Systems
- Understanding Infrastructure Services

Chapter ۳

Security in the Cloud

- Cloud Security Compliance and Configurations
- Establishing Your Company's Security Policies
- Selecting and Applying the Security Policies to Your Cloud Operations
- Some Common Regulatory Requirements
- Encrypting Your Data
- Remote Access Protocols
- Automating Cloud Security
- Security Best Practices
- Access Control
- Accessing Cloud-Based Objects
- Cloud Service Models and Security
- Cloud Deployment Models and Security
- Role-Based Access Control
- Mandatory Access Control
- Discretionary Access Control
- Multifactor Authentication
- Single Sign-On

Chapter ۴



Implementing Cloud Security

- Implementing Security in the Cloud
- Data Classification
- Segmenting Your Deployment
- Implementing Encryption
- Applying Multifactor Authentication
- Regulatory and Compliance Issues During Implementation
- Cloud Access Security Broker
- Automating Cloud Security
- Automation Tools
- Techniques for Implementing Cloud Security
- Security Services

Chapter ۵

Maintaining Cloud Operations

Applying Security Patches

- Patching Cloud Resources
- Patching Methodologies
- Patching Order of Operations and Dependencies

Updating Cloud Elements

- Hotfix



- Patch
- Version Update
- Rollback
- Workflow Automation
- Continuous Integration and Continuous Deployment
- Virtualization Automation Tools and Activities

Storage Operations

- Types of Backups
- Backup Targets
- Backup and Restore Operations

Chapter ۶

Disaster Recovery, Business Continuity, and Ongoing Maintenance

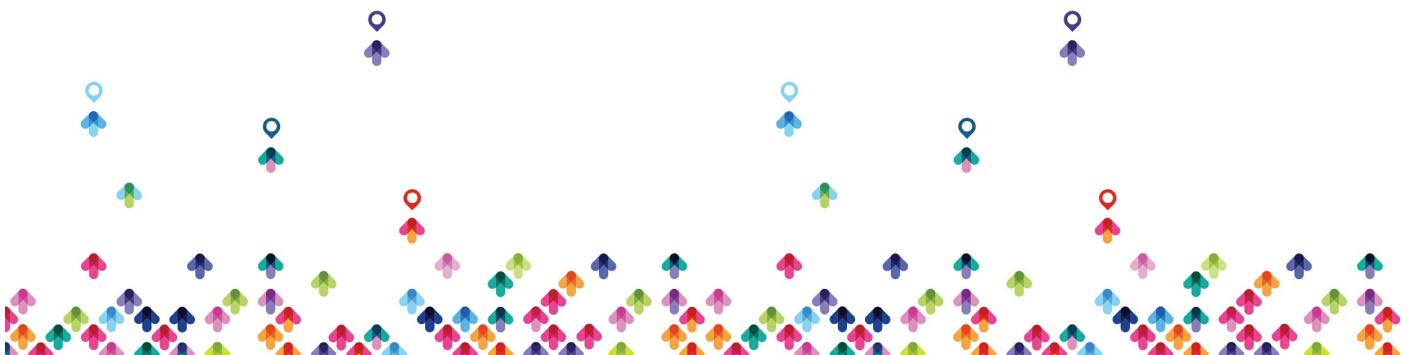
Implementing a Disaster Recovery and Business

- Continuity Plan
- Service Provider Responsibilities and Capabilities
- Disaster Recovery Models and Techniques

Business Continuity

- Establishing a Business Continuity Plan
- Establishing Service Level Agreements

Cloud Maintenance

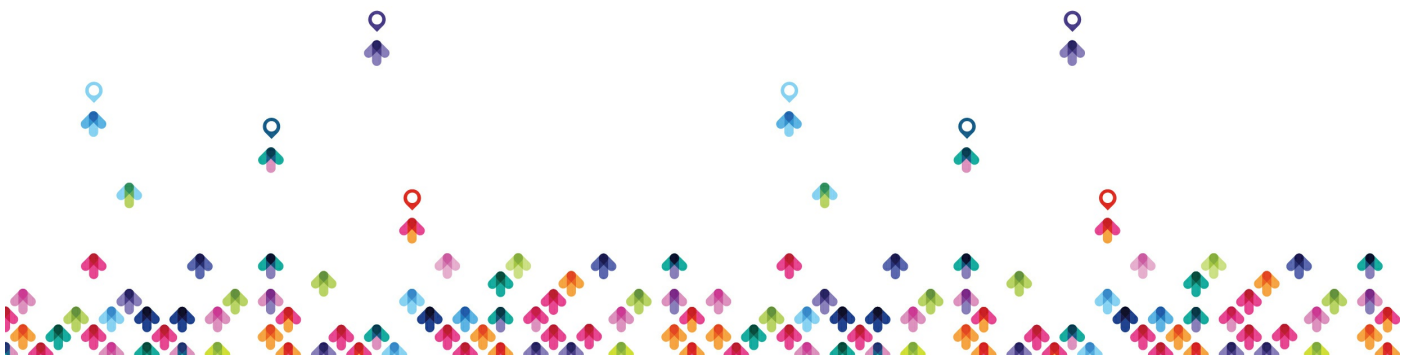


- Establishing Maintenance Windows
- Maintenance Interruptions to Operations
- Maintenance Automation Impact and Scope
- Common Maintenance Automation Tasks

Chapter ۷

Cloud Management

- Cloud Metrics
- Monitoring Your Deployment
- Cloud Support Agreements
- Standard Cloud Maintenance Responsibilities
- Configuration Management Applications and Tools
- Change Management Processes
- Adding and Removing Cloud Resources
- Determining Usage Patterns
- Bursting
- Migrating Between Cloud Providers
- Scaling Resources to Meet Requirements
- Extending the Scope of the Cloud
- Understanding Application Life Cycles
- Organizational Changes
- Managing Account Provisioning
- Account Identification
- Authentication
- Authorization



- Lockout Policies
- Password Complexity
- Account Automation and Orchestration

Chapter ۸

Cloud Management Baselines, Performance, and SLAs

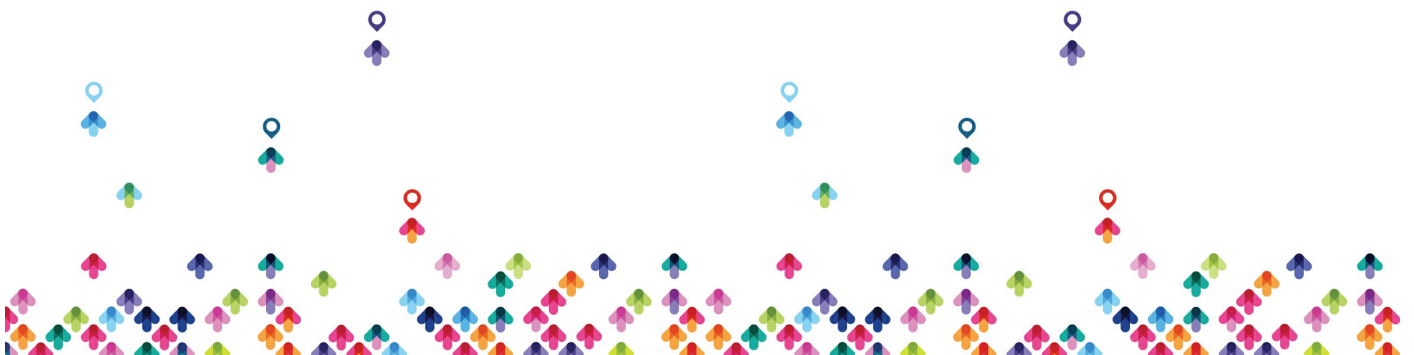
- Measuring Your Deployment Against the Baseline
- Object Tracking for Baseline Validation
- Applying Changes to the Cloud to Meet Baseline Requirements
- Changing Operations to Meet Expected
- Performance/Capacity Requirements
- Cloud Accounting, Chargeback, and Reporting

Chapter ۹

Troubleshooting

Incident Management

- Incident Types
- Logging Incidents
- Prioritizing Incidents
- Preparation
- Templates
- Time Synchronization
- Workflow
- Troubleshooting Cloud Capacity Issues



- Capacity Boundaries in the Cloud
- Troubleshooting Automation and Orchestration
- Process and Workflow Issues

Chapter ۱۰

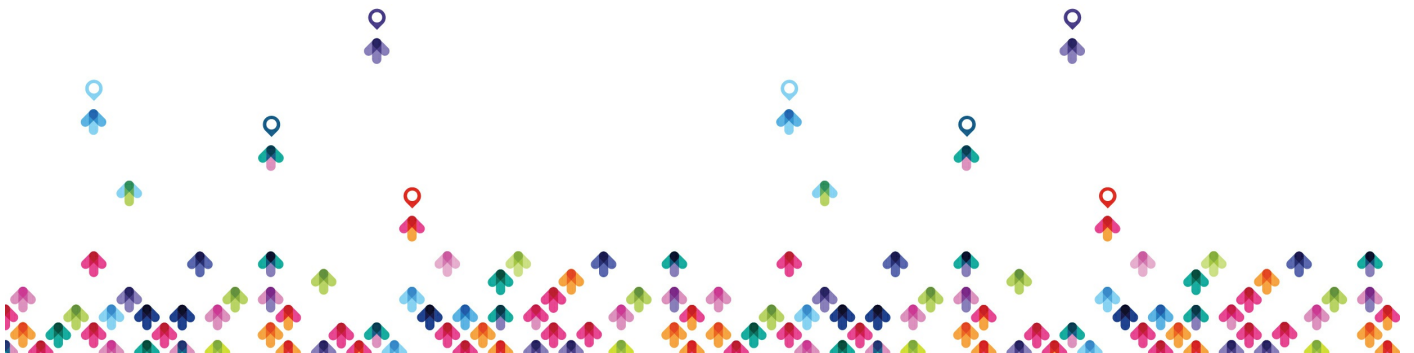
Troubleshooting Networking and Security Issues and Understanding Methodologies

Troubleshooting Cloud Networking Issues

- Identifying the Common Networking Issues in the Cloud
- Network Troubleshooting and Connectivity Tools
- Remote Access Tools

Troubleshooting Security Issues

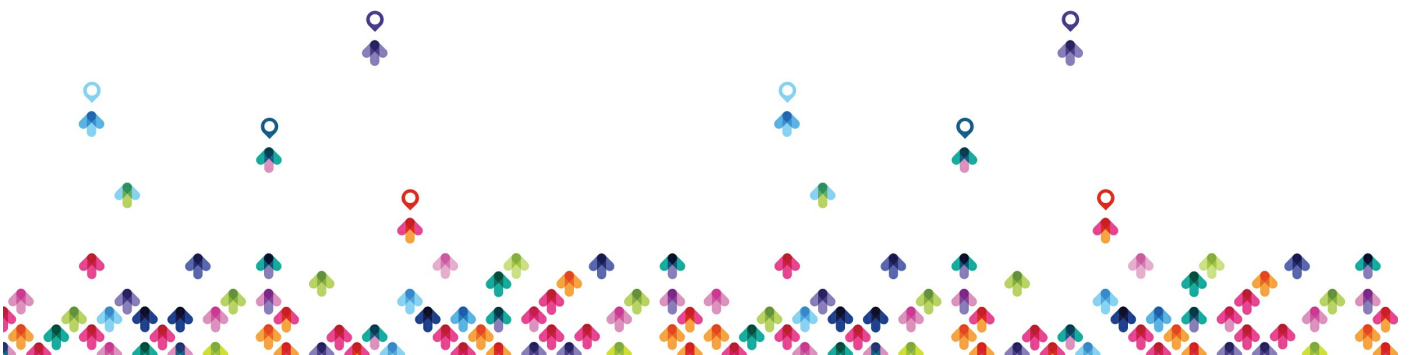
- Account Privilege Escalation
- Network Access Issues
- Authentication
- Authorization
- Federations
- Certificate Configuration Issues
- Device- Hardening Settings
- External Attacks
- Internal Attacks



- Maintain Sufficient Security Controls and Processes
- Network Access Tunneling and Encryption
- Troubleshooting Methodology
- Identifying the Problem
- Establishing a Theory
- Testing the Theory
- Creating and Implementing a Plan of Action
- Verifying the Resolution
- Documenting the Ordeal

AZURE AZ-۹۰۰ MICROSOFT AZURE FUNDAMENTALS

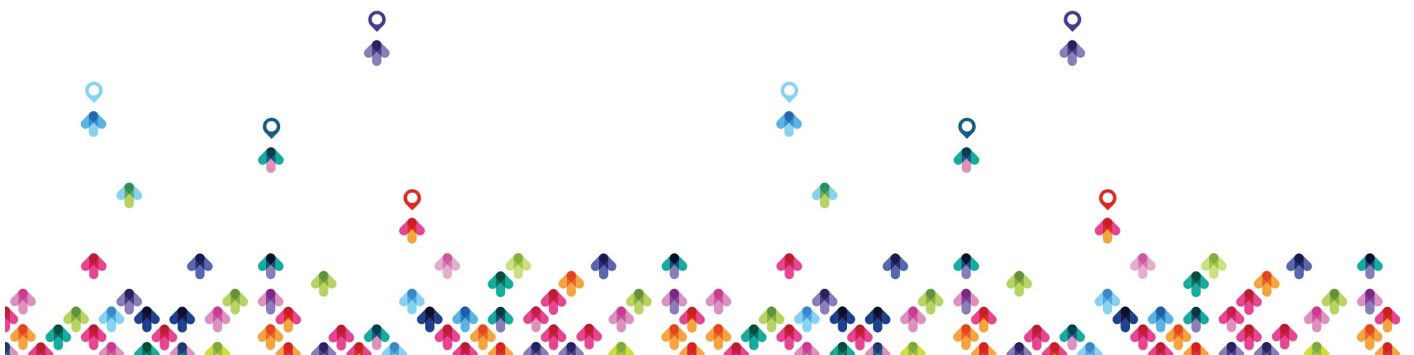
- ۱-Cloud Computing and Vocabulary
- ۲-Principle of economies of scale
- ۳-CapEx vs OpEx and their differences
- ۴-Consumption-based Model
- ۵-IaaS vs PaaS vs SaaS cloud service models
- ۶-Public, Private & Hybrid cloud deployment models
- ۷-Geographies Regions & Availability Zones
- ۸-Resources Resource Groups & Resource Manager



- ۰۹-Compute Services VMs VM Scale Set App Service Functions ACI AKS
- ۱۰-Networking Services Virtual Network VPN Gateway CDN Load Balancer App GW
- ۱۱-Azure Storage Services Blob Queue Table Files Disk and Storage Tiers
- ۱۲-Database Services Cosmos DB SQL Database Db for MySQL & PostgreSQL
- ۱۳- Azure Marketplace
- ۱۴-Azure IoT Services IoT Hub IoT Central Azure Sphere
- ۱۵-Azure Big Data & Analytics Services Synapse HDInsight Databricks
- ۱۶- Azure Artificial Intelligence (AI) Services Machine Learning Studio & Service
- ۱۷-Azure Serverless Computing Services Functions, Logic Apps, Event Grid
- ۱۸-Azure DevOps Solutions Azure DevOps DevTest Labs
- ۱۹-Azure Tools Azure Portal CLI PowerShell & Cloud Shell
- ۲۰-Azure Advisor
- ۲۱-Azure Security Groups Network and Application Security Groups (NSG ASG)
- ۲۲-User-defined Routes (UDR) with Route Tables
- ۲۳-Azure Firewall
- ۲۴- Azure DDoS Protection Distributed Denial of Service



- ۲۵-Azure Identity Services Authentication Authorization & Active Directory (AD)
- ۲۶-Azure Security Center
- ۲۷-Azure Key Vault Secret Key and Certificate Management
- ۲۸-Azure Role-based Access Control (RBAC)
- ۲۹-Azure Resource Locks
- ۳۰-Azure Resource Tags
- ۳۱-Azure Policy
- ۳۲-Azure Blueprints
- ۳۳-Cloud Adoption Framework for Azure
- ۳۴-Core tenets of Security Privacy Compliance (Trust Center DPA OST and more.)
- ۳۵-Cost Affecting Factors
- ۳۶-Cost Reduction Methods Reservations Hybrid Benefit Spot VM Pricing & TCO
- ۳۷-Azure Cost Management
- ۳۸-SLA and Composite SLA in Azure
- ۳۹-Service Lifecycle in Azure Public Preview and General Availability



Creating and managing groups in Azure AD

Manage devices in Azure AD

Self-Service Password Reset (SSPR) In Azure AD

Azure role-based access control (RBAC)

Azure Policy and Resource Lock

Storage Account management

Redundancy in Storage Account

Manage access keys in storage account

Network topics in Storage Account

Types of Backups from Storage Account

Deploy Azure File Sync

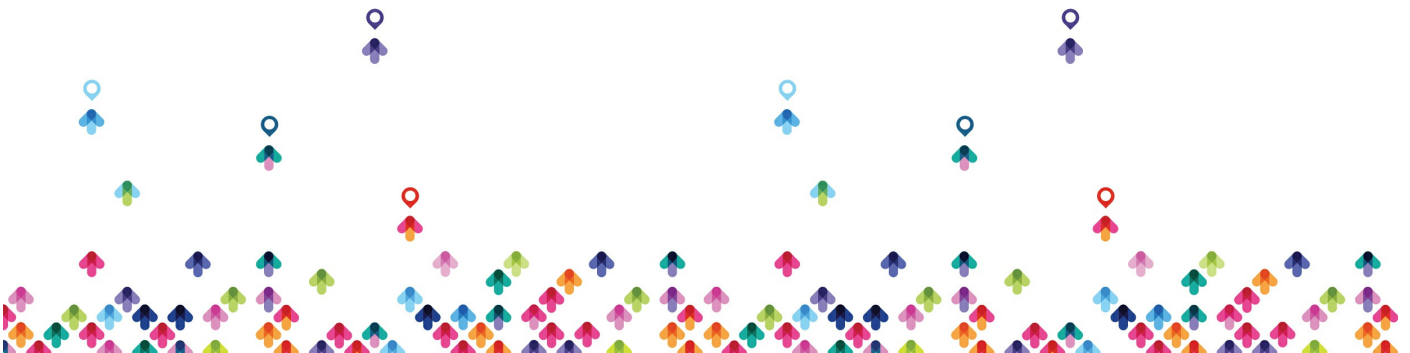
Copy or move data to Azure Storage by using AzCopy

Azure Virtual Network

Network Security Group (NSG)

ARM (Azure Resource Manager) template

Create and Manage Virtual Machine



Types of virtual machine disks and Their management

Azure Disk Encryption (ADE) Options

Sharing in Managed Disk

[Create a snapshot of a virtual hard disk](#)

Custom Script Extension

Advanced settings of virtual machines in Azure

Azure Bastion

Backing up virtual machines in the Azure environment

Microsoft Azure Recovery Services (MARS)

Availability Sets and Availability Zones Concepts

Availability Set in Azure environment

Availability Zone in Azure environment

Azure Virtual Machine Scale Sets

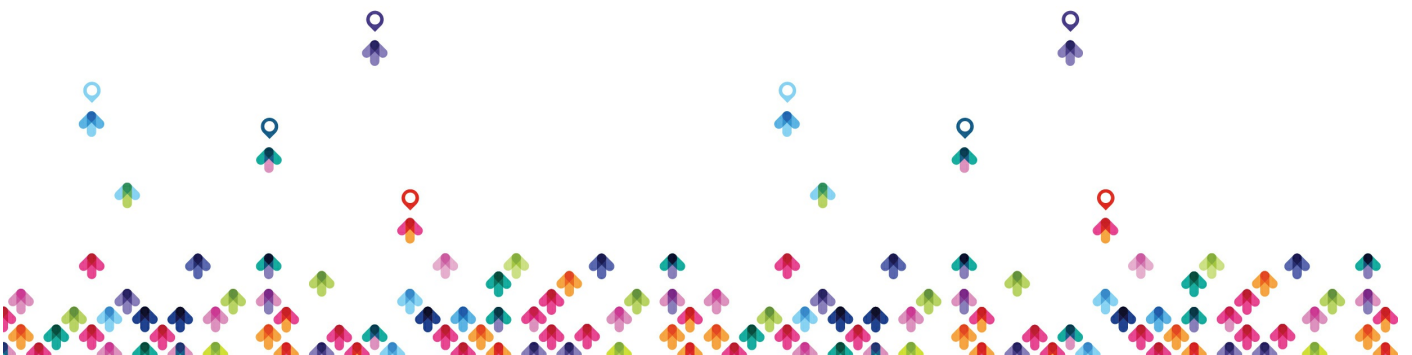
Specialized VM images

Generalized VM images

Proximity Placement Groups

Web App Services

Docker and Container



Azure Kubernetes Service

Azure Monitoring

Load Balancer using Availability Set

Load Balancers using Scale Sets

Azure Load Balancer

Application Gateway Service

Multiple Sites in Azure Application Gateway Service

Azure Virtual Network Peering

Point To Site (P2S) VPN

Site To Site VPN

Azure Virtual Wan

ExpressRoute Virtual Network Gateway

Azure Network Watcher

Virtual Network Traffic Routing

Azure Firewall

Map Domain to IP Address

Private DNS Server

Public DNS Server



