coggle
made for free at coggle.it

Azure Developer

Monitor, troubleshoot, and optimize Azure solutions

- **Azure Front Door**
  Application Delivery Network (ADN)
- **Azure CDN**
  Content delivery network
- **Redis Cache**
  In memory cache
  - **Tiers**
    - **Single Node**
    - **Multiple Node**
    - **Premium**
      Persist data, snapshots, backups etc.
- **Application Insights**
  - **Data Sampling**
  - **Usage**
    - Users
    - Retention
    - Impact
    - Flows
    - User Flows
    - Cohorts

Develop Azure compute solutions

- **Web Apps**
  - **WebJobs**
  - **Backups**
  - **Diagnostic logging**
  - **Deployment methods e.g. Git, FTP etc.**
  - **Auto Scaling**
  - **CORS**
  - **Deployment Slots & Auto Swap**
  - **Alerts & Metrics**
  - **Authentication / Authorisation**
- **VM's**
  - **Site Recovery**
  - **Update Domain**
  - **Fault Domain**
  - **Azure Hybrid Benefit** -
    Reuse existing licenses
  - **Availability Zone**
    Physically separated datacenters within a Region. Protects against data center failure.
  - **Availability Set** -
    Grouping of VM's in single data center. Protects against server rack failure.
  - **Azure Backup**
  - **RDPSign** -
    Sign an RDP file
- **ARM Templates**
- **Functions**
  - Deployment methods e.g. Git, FTP, ZIP etc.
  - **Authorisation Level**
    - Anonymous - No authentication required
    - Function - Function specific key
    - Admin - Global master key
  - **Constraints**
    - Max 200 instances
    - New instance every 10 seconds
    - 5 min timeout - max 10 mins
    - HTTP Requests are restricted to 2.5 mins
    - Continuous function calls can be more costly than VMs
  - **Bindings**
    Input vs output
  - **Triggers**
    Causes function to run
    - Queue
    - Blob
    - Timer
    - HTTP
    - Cosmos DB
    - Event Grid
    - MS Graph
    - Service Bus
  - **Plans**
    - **Consumption**
    - **Premium** - Pre-warmed consumption plan
    - **App Service Plan** - hosted on VM, runs continously
  - **CRON Expressions** -
    {second} {minute} {hour} {day} {month} {day of the week}
- **Containers**
  - **Azure Container Registry** - private registry
    Benefits over Docker Hub
    - More control over access to images
    - Signed images
    - At rest encryption
  - **Dockerfile**
  - **Web App Containers**
  - **Azure Container Instances**
  - **Kubernetes**
    Platform for deploying and managing containers
    - **Concepts**
      - **Pod**
        Group of containers
      - **Master Node**
        Controls and manages worker nodes
      - **Node**
        Worker process - Runs the containers
      - **Kubctl**
        CLI for managing a Kubernetes cluster
- **Durable Functions**
  - **Patterns**
    - **Types**
      - **Client Function**
        Entry point for durable function
      - **Orchestrator Function**
        Orchestrates execution of Activity functions
      - **Activity Function**
        Performs a specific task
      - **Entity Function**
        Manages stateful entities
    - **Function Chaining**
    - **Fan Out / Fan In**
    - **Async jobs**
    - **Monitoring**
    - **Human Interaction**

Develop for Azure storage

- **Storage**
  - **Storage Types**
    - Gen v1
    - Gen v2 (legacy)
    - Blob Storage (legacy)
  - **Access Tiers**
    - Hot
    - Cool
    - Archive
  - **Data Types**
    - **Blobs**
      - **Block Blobs**
        Best for all general scenarios
      - **Page Blobs**
        Optimised for random access - VHD's
      - **Append Blobs**
        Append operations only e.g. log streaming
    - Table Storage
    - Files
    - Queues
  - Access Keys vs SAS
- **Cosmos DB**
  Managed No SQL DB
  - **Consistency Levels**
    - Strong
    - Bounded Staleness
    - Session
    - Consistent Prefix
    - Eventual
  - **Design Patterns**
    - Change Feed
    - Stored Procedures & Triggers
  - **Available API's**
    - Core (SQL)
    - Cassandra
    - Azure Table
    - Gremlin (Graph)
- AzCopy - Copy or move items

Implement Azure security

- **Authentication / Authorisation**
  - **Security Tokens**
    - Access Token
    - Refresh Token
    - ID Token
    - JWT
  - **Protocols**
    - OAuth 2.0
    - Open ID Connect
  - **Shared Keys**
  - **Role Based Access Controls (RBAC)**
  - **Shared Access Signature (SAS)**
  - Microsoft Identity Platform
- **Azure Active Directory (AAD)**
  - **Privileged Identity Management**
    Auditing capabilities. Paid feature
  - App manifest
  - **App Registrations**
  - **B2B**
    Guest accounts
  - **B2C**
    OpenID Connect, OAuth 2.0 and SAML
  - **Application Types**
    - Confidential application
    - Public application
  - **Concepts**
    - **Role Based Access Control (RBAC)**
    - **Identity**
      Thing that can be authenticated
    - **Principal**
      An identity acting with certain roles / claims
    - **Service Principal**
      An identity used by a service or application
    - **Permission inheritance** -
      Management group, Subscription, Resource group, Resource
    - **Role Assignment** -
      Binding of a role definition for a user, group, service principal, or managed identity
    - Can be allow or deny policy
- **App Configuration**
  Centralised configuration service
- **Keyvault**
  Store secrets, keys and certificates
  - **Keys**
    - **Hardware Protected Keys**
      Secured using a HSM
    - **Software Protected Keys**
      Protected using software generated keys
  - **Certificates**
    - Self-signed
    - App generated CSR
    - Integrated CA CSR

Connect to and consume Azure services and third-party services

- **Queues**
  - **Queue Storage**
    Choose if:
    - Need simple queue solution
    - Need audit trails - retain messages
    - Queue size > 80gb
    - Track queue progress
  - **Service Bus**
    Choose if:
    - Need At-Most-Once or FIFO delivery
    - Transaction support
    - Receive messages without polling the queue
    - Larger messages - upto 256KB (standard) or 1MB (premium)
    - Queue size is < 80gb
    - Batch processing
    - **Delivery Guarantees**
      - **At-Least-Once-Delivery**
      - **At-Most-Once-Delivery**
      - **FIFO**
    - **Relay**
      Component that performs synchronous, two-way communication between applications across network boundaries
    - **Topic**
      Broadcast message to multiple subscribers
    - **Queue**
      Only 1 message to 1 subscriber
      Pricing based on queue size + number of operations
      Available in v1 or v2 storage only, not blob storage
      - **Authorisation**
        - Azure Active Directory
        - Shared Key
        - Shared Access Signature (SAS)
      - **Delivery Guarantees**
        - **At-Least-Once-Delivery**
- **Azure API Management**
  Publish, secure, transform, maintain, and monitor APIs
  - **Plans**
    - **Consumption** - Isolated, auto-scale, no AAD integration, no vnet
    - **Developer** - private, 1 scale unit, no SLA, vnet
    - **Basic** - private, 2 scale units, no AAD integration
    - **Standard** - private, 4 scale units
    - **Premium** - private, 10+ scale units, vnet, multi-region
  - **Concepts**
    - **Revisions**
      Provider chooses when to adopt
    - **Versions**
      Consumer chooses when to adopt
    - **Error Handling**
    - **Policies**
      - **Inbound**
      - **Outbound**
      - **Backend**
    - **Subscriptions**
      Named container subscription key pairs
- **LogicApps**
  Cloud-based workflow engine
  - **Integrated Service Environment**
  - **Custom Connector**
  - **Custom Template**
  - **Enterprise Integration Pack**
- **Events**
  Light weight
  Pub / Sub model
  Fan out - many subscribers
  - **Event Grid**
    Events sent from sources to the Event Grid and forwarded to subscribers
    - **Concepts**
      - **Event Handler**
        App or service reacting to an event
        E.g. Azure functions, Webhook, LogicApps, Power Automate etc.
      - **Event**
        What happened?
      - **Event Subscription**
        Defines events on a topic an event handler wants to receive
      - **Event Topic**
        Endpoint where events are sent
        System vs custom topics
    - **Event Source**
      Where the event took place
      Responsible for sending events to the grid
      - **Azure Subscriptions & Resource Groups**
      - **Container Registry**
      - **Event Hub**
      - **Service Bus**
      - **Storage Account**
      - **Media Services**
      - **IoT Hub**
      - **Custom Events**
        Generated via REST API, or Azure SDK
  - **Notification Hub**
    - **Concepts**
      - **Hubs**
      - **Namespaces**
  - **Event Hub**
    - **Plans**
      - **Basic**
      - **Standard**
        - Longer term retention
        - Create >1 consumer group
        - Kafka integration
        - Forward to Data Lake or blob storage
    - Event Hub
      - Client filtering
      - Unlimited client end points
      - Retries delivery upto 24 hours - events stored in buffers (aka partitions)
      - Pay per event
      - 1MB max message size