Advanced Azure

Develop a passion for learning.

TEKsystems Global Services

WORKFORCE DEVELOPMENT

PARTICIPANT GUIDE

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DAY 1 - COURSE REVIEW

Azure Core Infrastructure

Dashboard & Cloud Services: Navigated the portal, examined core components like VNets, compute, and storage.
Resource Management: Built understanding of resource groups, providers, ARM templates, and automation strategies.

VM Deployment & Networking

Explored **multi-region deployments**, **scaling strategies** (scale-up vs. scale-out), and high availability features like **Availability Sets** and **Scale Sets**.
Hands-on labs included setting up VMs across subnets and regions and testing connectivity via NSGs and peering.

Containers & Orchestration

Introduced **Azure Container Service**, especially **AKS**, and integrated it into DevOps workflows.
Demonstrated container deployment, registry setup, and CI/CD pipeline integration.

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Microsoft Entra ID

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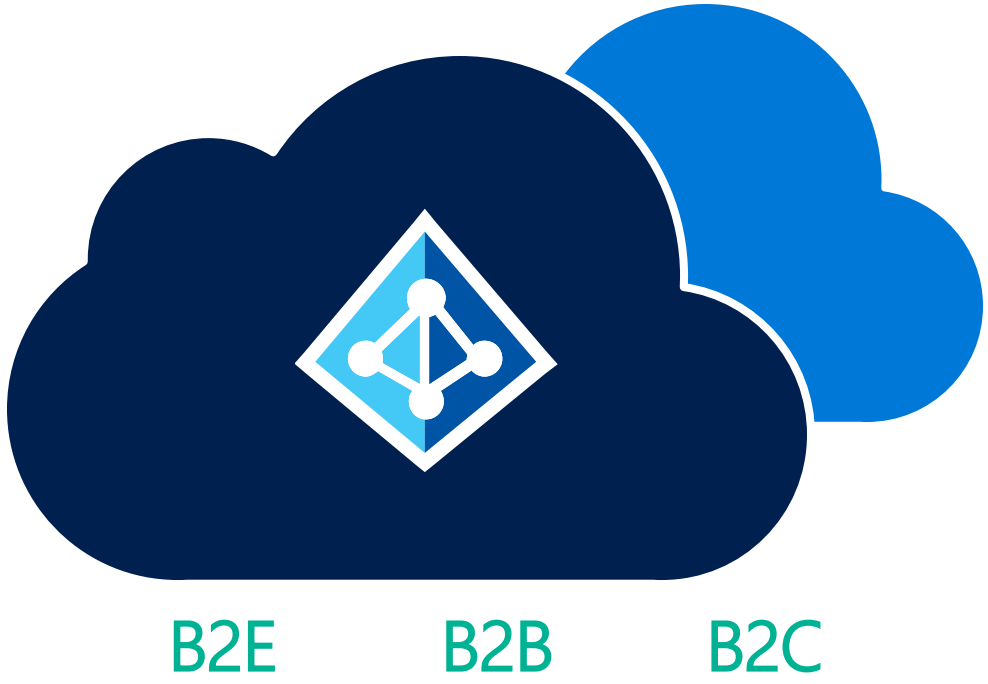
WHAT IS MICROSOFT ENTRA ID (FORMERLY MICROSOFT ACTIVE DIRECTORY)?

A comprehensive identity and access management cloud solution for your employees, partners, and customers.

It combines directory services, advanced identity governance, application access management, and a rich standards-based platform for developers.



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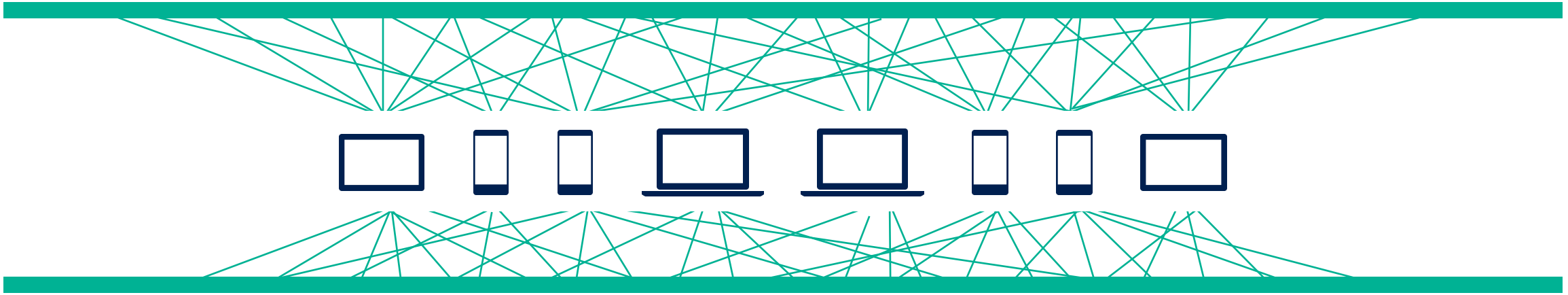
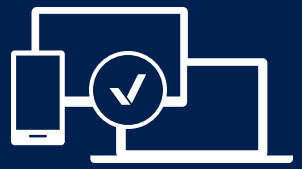
CURRENT REALITY

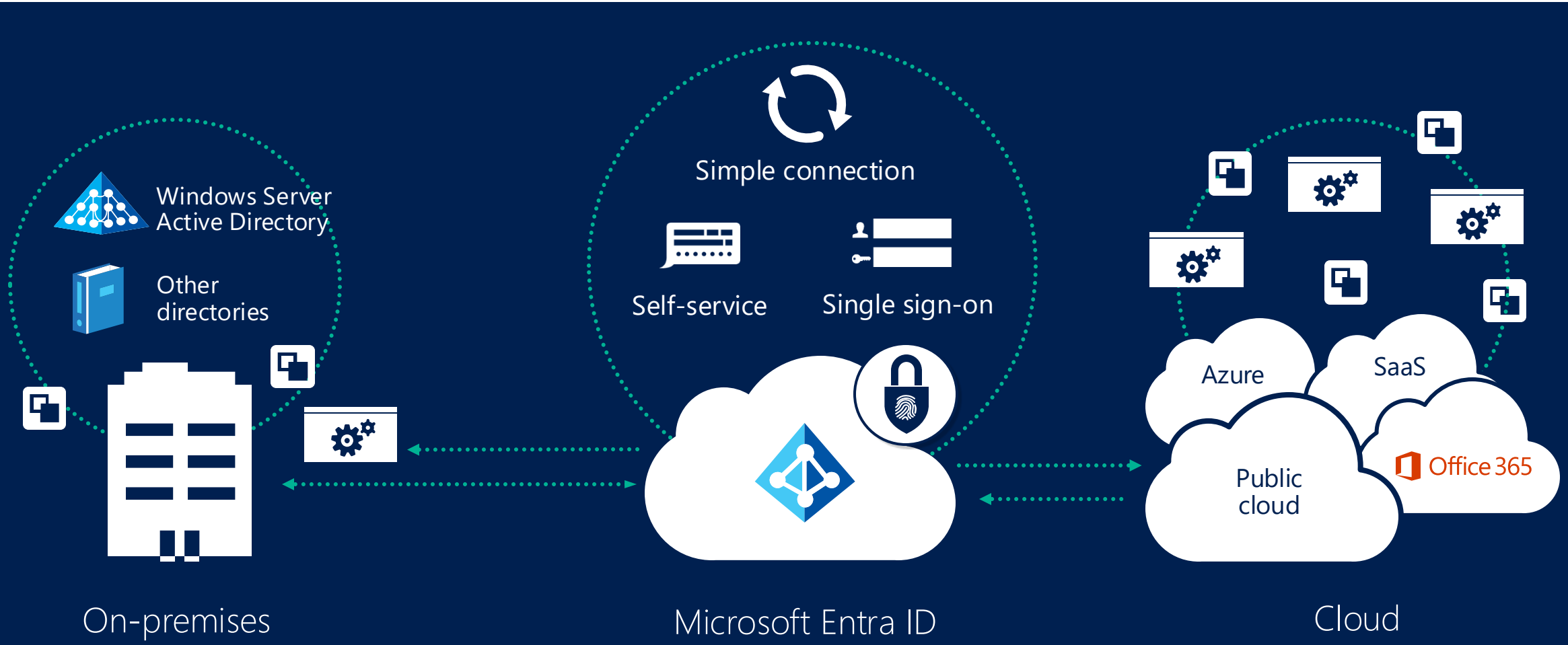
HIGHTAIL Dropbox amazon web services Microsoft Azure EC2 Microsoft Dynamics box CONCUR Basecamp

ShareFile by CITRIX GoToMeeting by CITRIX salesforce.com force.com Office 365 SAP SUGARCRM Microsoft System Center



On-premises	Managed devices	Entra ID
		 Windows Server

IDENTITY AS THE CORE OF ENTERPRISE MOBILITY



MICROSOFT ENTRA ID (AAD)

Microsoft's "Identity Management as a Service (IDaaS)" for organizations.

Millions of **independent** identity systems **controlled** by enterprise and government "tenants."

Information is **owned and used by the controlling organization**—not by Microsoft.

Born-as-a-cloud directory for Office 365. Extended to manage across many clouds.

Evolved to manage an organization's relationships with its customers/citizens and partners (B2C and B2B).

86%
of Fortune 500 companies use Microsoft Cloud (Azure, O365, CRM Online, and PowerBI)

Microsoft Entra ID Directories
>9 M

More than
600 M
user accounts on Microsoft Entra ID

1 trillion
Microsoft Entra ID authentications since the release of the service

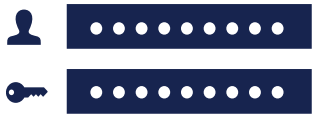
>80k
third-party applications used with Microsoft Entra ID each month

>1.3 billion
authentications every day on Microsoft Entra ID

Every Office 365 and Microsoft Azure customer uses Microsoft Entra ID

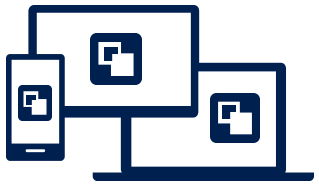
IDENTITY AND ACCESS MANAGEMENT IN CLOUD

Microsoft Entra ID. Identity at the core of your business



1000s of apps, 1 identity

Provide one persona to the workforce for SSO to 1000s of cloud and on-premises apps



Enable business without borders

Stay productive with universal access to every app and collaboration capability

Manage access at scale

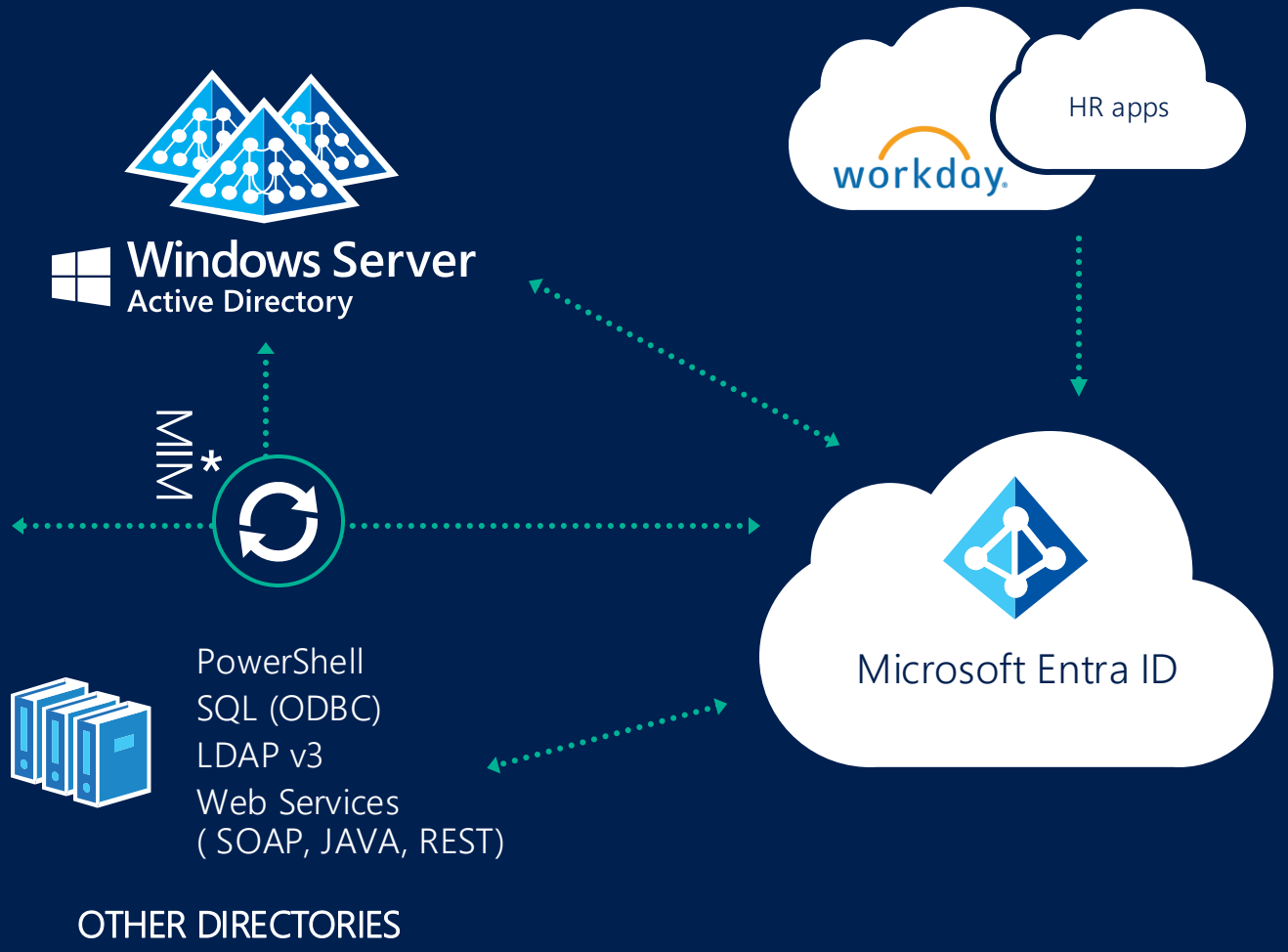
Manage identities and access at scale in the cloud and on-premises

Cloud-powered protection

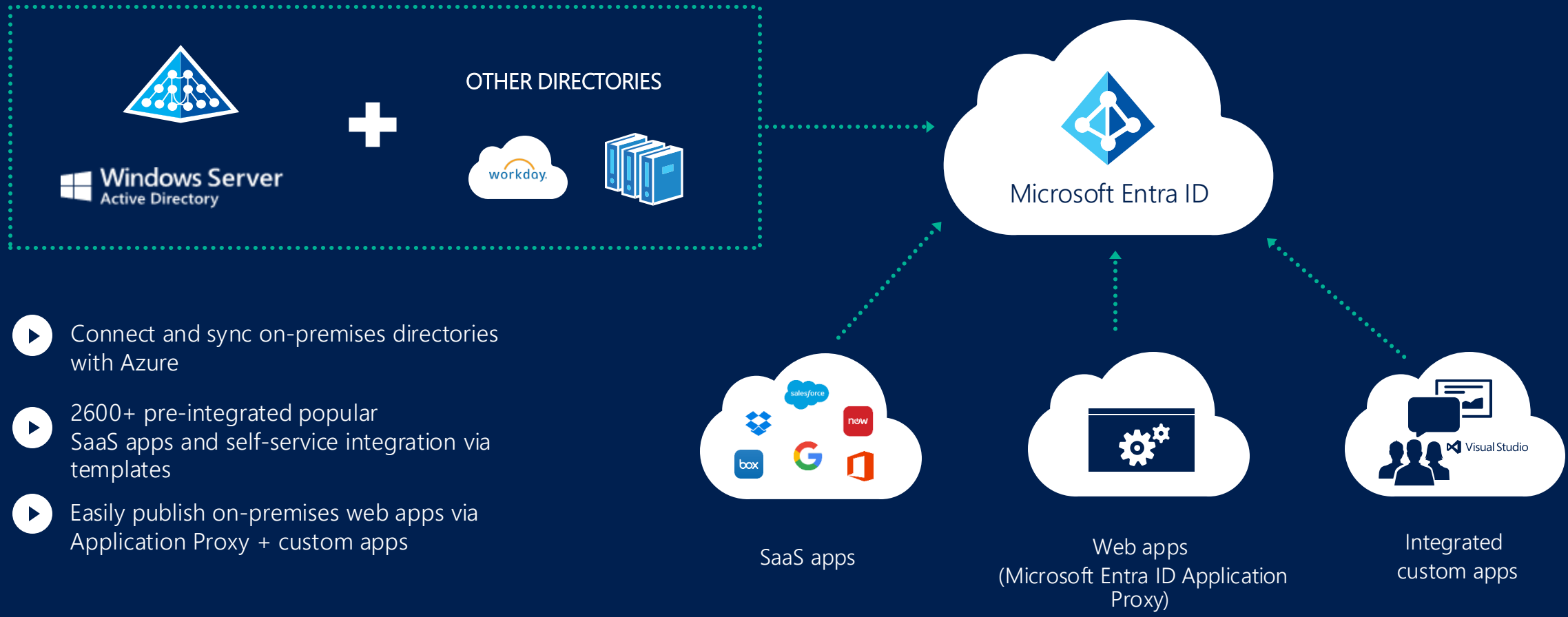
Ensure user and admin accountability with better security and governance

CLOUD CONNECTED, SEAMLESS AUTH EXPERIENCE

Connect and sync on-premises directories with Microsoft Entra ID

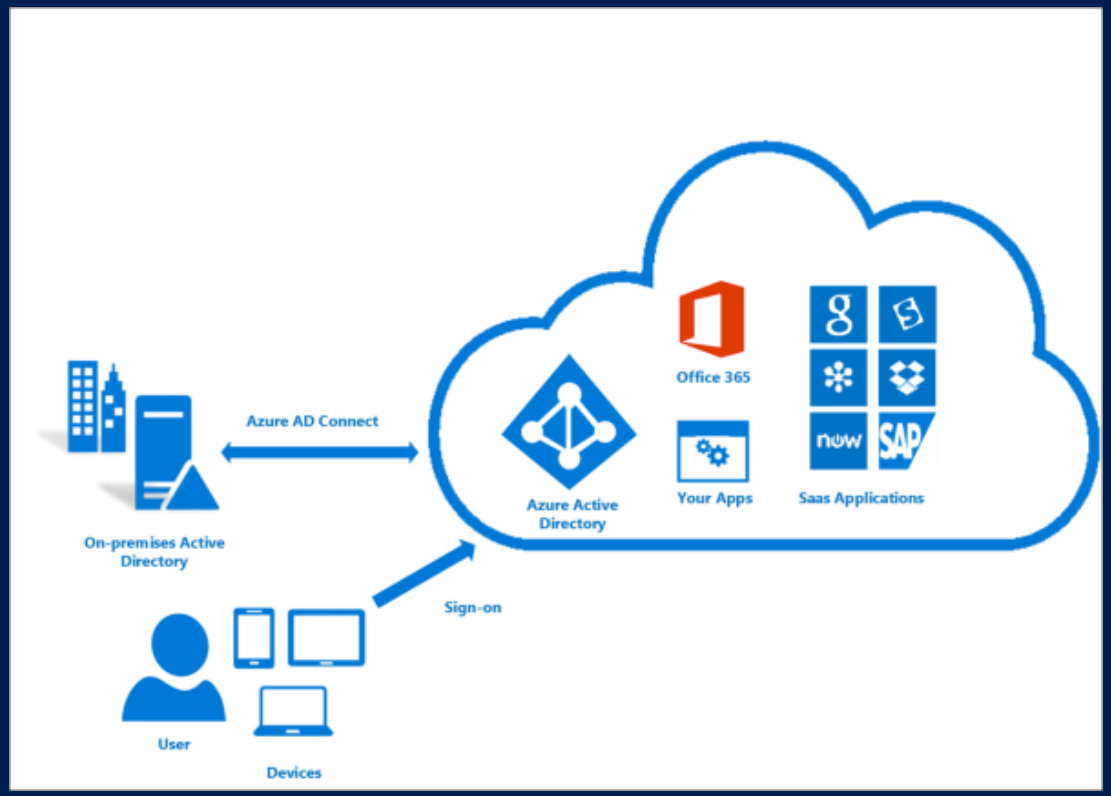


SINGLE SIGN-ON TO ANY APP

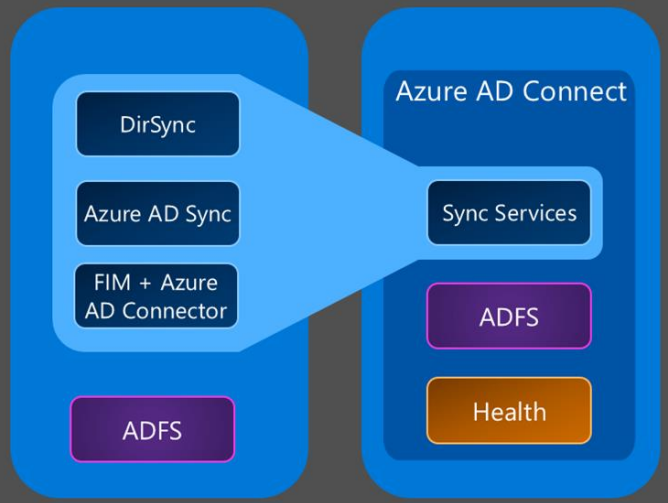


- Connect and sync on-premises directories with Azure
- 2600+ pre-integrated popular SaaS apps and self-service integration via templates
- Easily publish on-premises web apps via Application Proxy + custom apps

MICROSOFT ENTRA CONNECT V2



Making hybrid identity simple



Azure Active Directory Connect

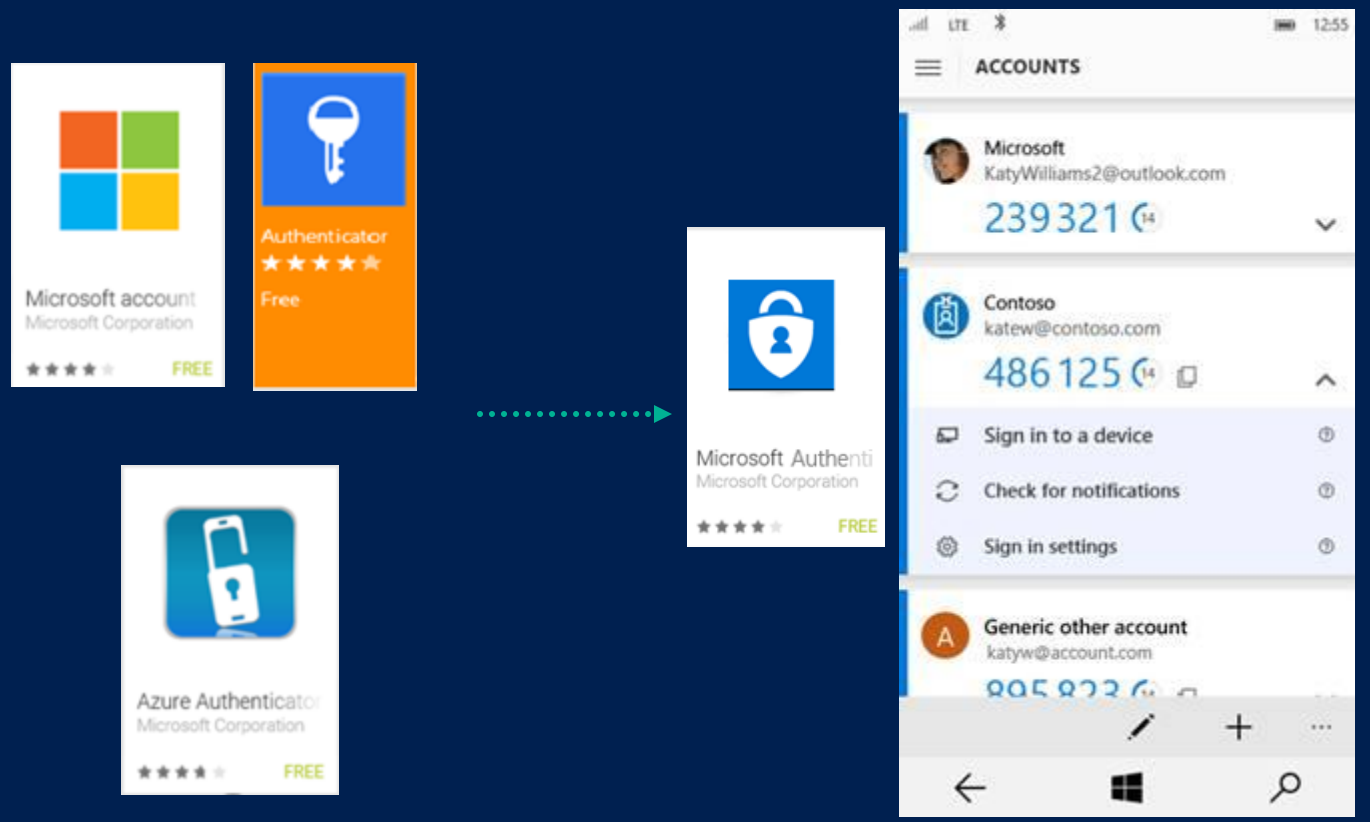
Consolidated deployment assistant for your identity bridge components.

MICROSOFT AUTHENTICATOR

A mobile authenticator application for all platforms

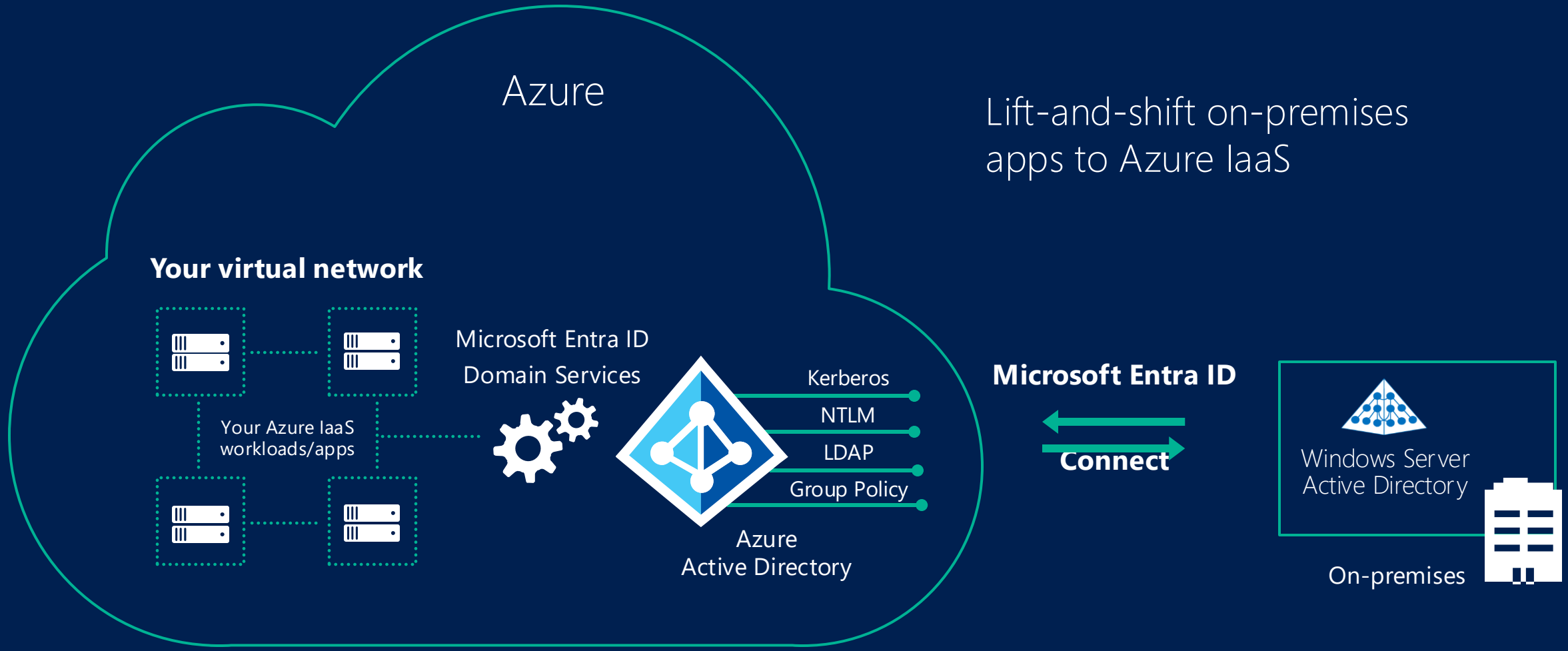
Converges the existing Azure Authenticator and all consumer Authenticator applications.

- MFA for any account, enterprise or consumer and 3rd party : Push Notifications/OTP
- Device Registration (workplace join)
- SSO to native mobile apps - Certificate-based SSO
- Future: Sign in to a device (Windows Hello), app, or website without a password



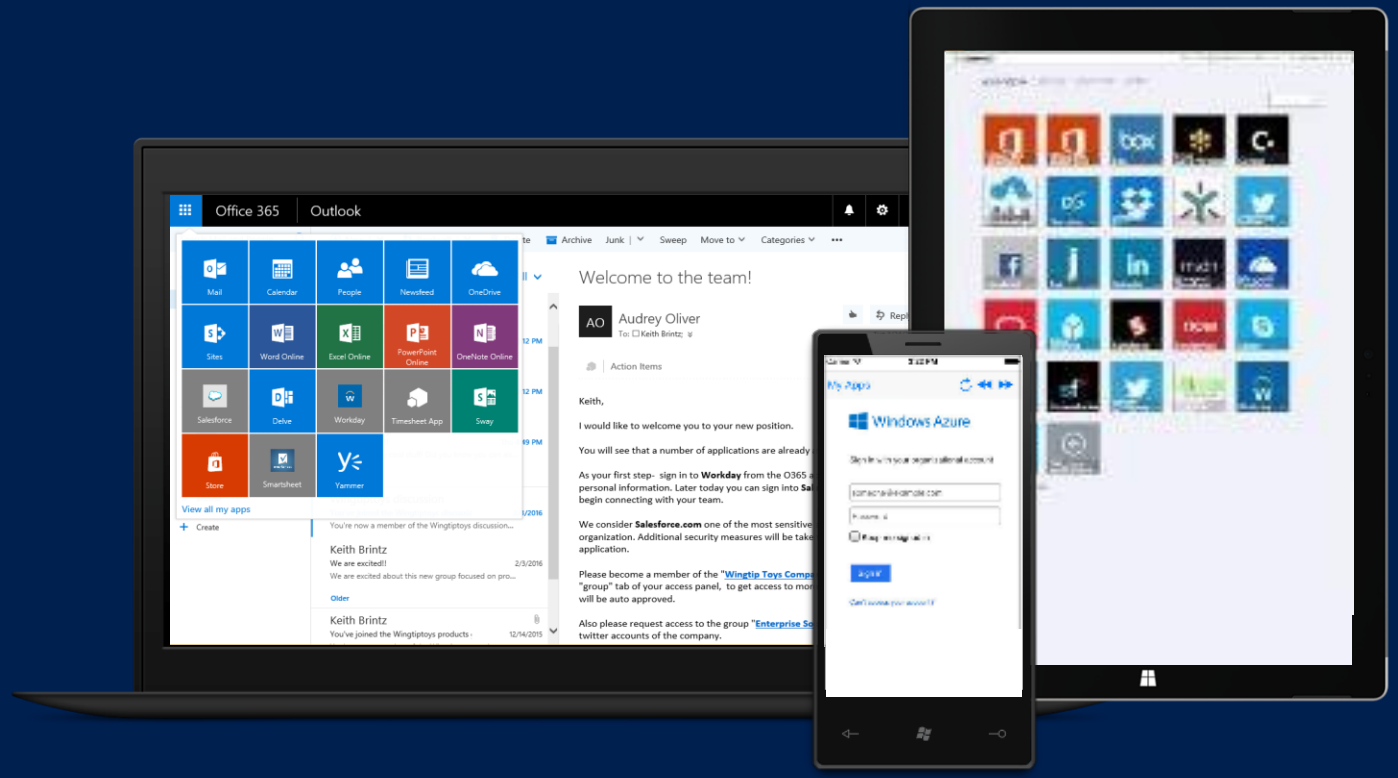
MICROSOFT ENTRA DOMAIN SERVICES

Your domain controller as a service for lift-and-shift scenarios

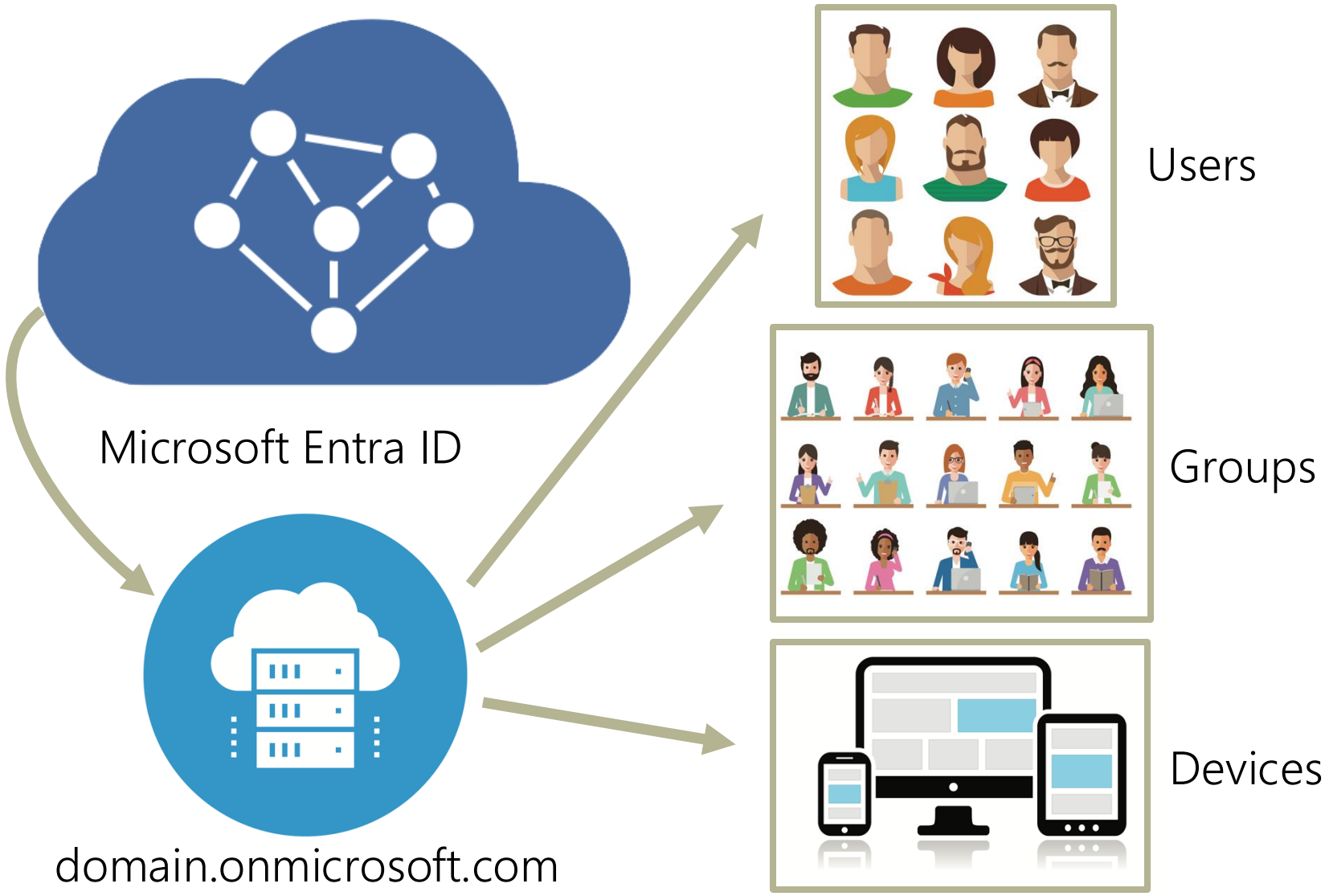


MAKING LIVES OF USERS (AND IT) EASIER

- Company-branded, personalized application Access Panel:
  http://myapps.microsoft.com
  + iOS and Android Mobile Apps
- Integrated Office 365 app launching
- Manage your account, apps, and groups
- Self-service password reset
- Application access requests



USER MANAGEMENT



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CUSTOM DOMAINS

- FQDN
- Must be verified
  - TXT record
- Local Active Directory
- Subdomains
- Primary domain per tenant

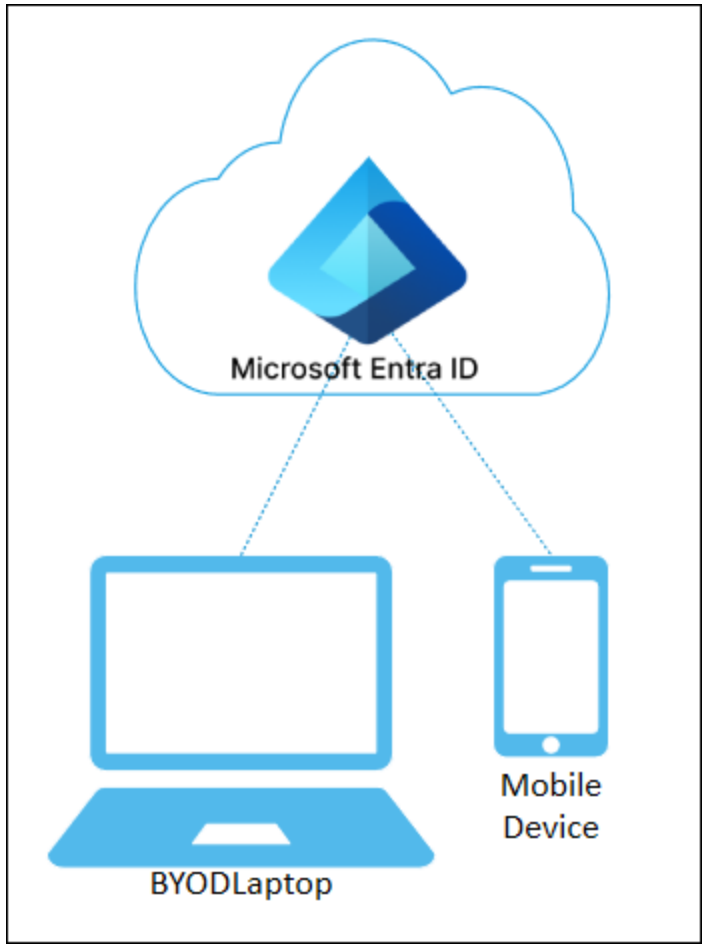
MICROSOFT ENTRA ID USERS

- Types of users
  - Cloud
    - Created in AAD/Flagged as cloud
  - Synced
    - From onsite AD/Flagged as local
  - Member or Guest
- Common settings
- Usage Location
- User Principal Name

MICROSOFT ENTRA ID GROUPS

- Types of groups
  - Assigned or Dynamic
  - Security or Office 365
- Owners and members
- Expiration of groups

MICROSOFT ENTRA ID DEVICES



Registration types

- Registered or joined
- Hybrid joined

MICROSOFT ENTRA ID APPS

- Microsoft Entra ID IDaaS
  - Application types
    - Third-party or internal
    - Pre-integrated or proxied
- Automated user provisioning
  - Available on select apps

APP REGISTRATIONS

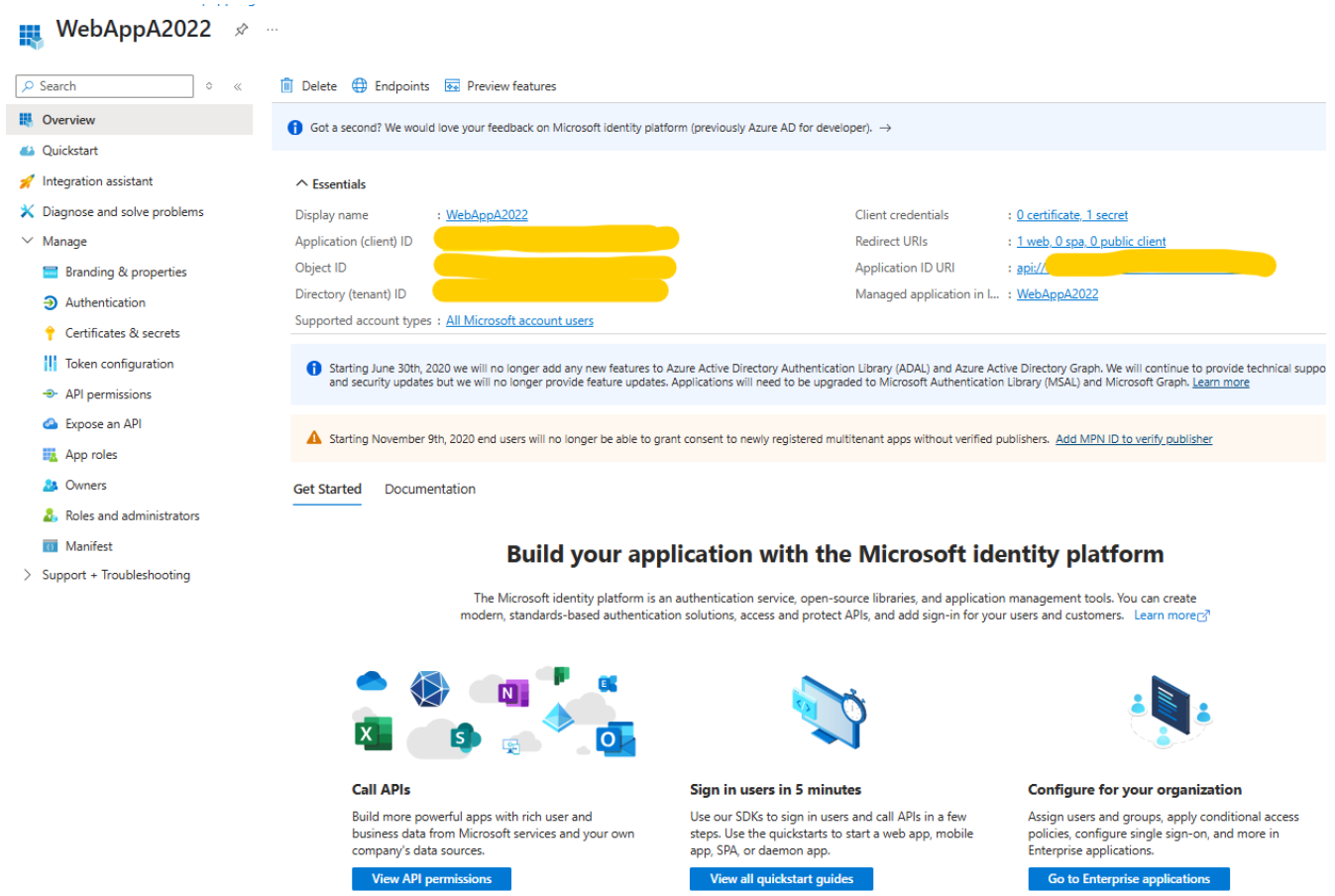
Application Object
The global definition of your app in the tenant

Service Principal
Tenant-specific identity representing the app at runtime

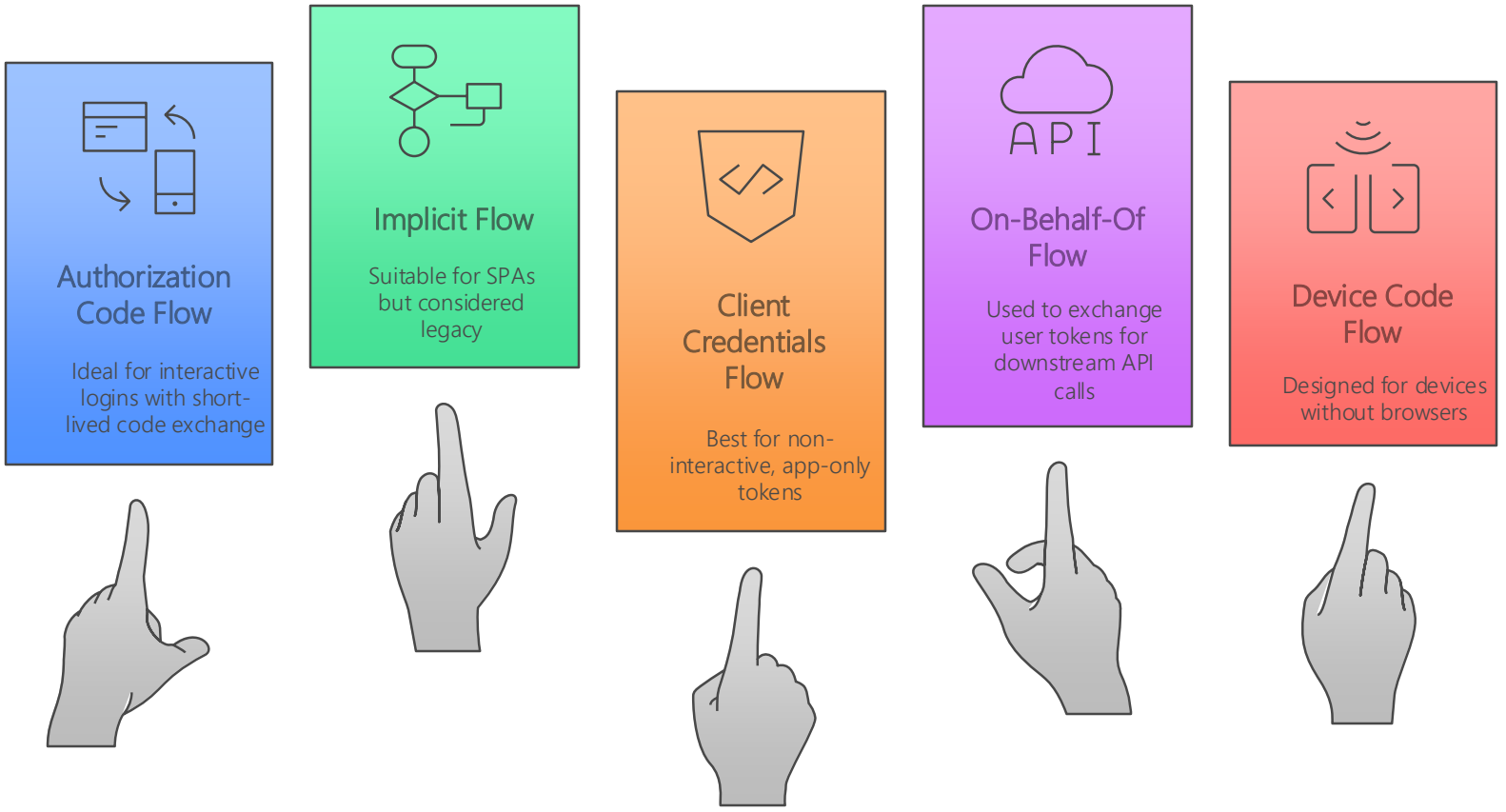
Redirect URIs
Allowed callback endpoints for auth responses

Supported Account Types
Single-tenant, multi-tenant, or personal Microsoft accounts

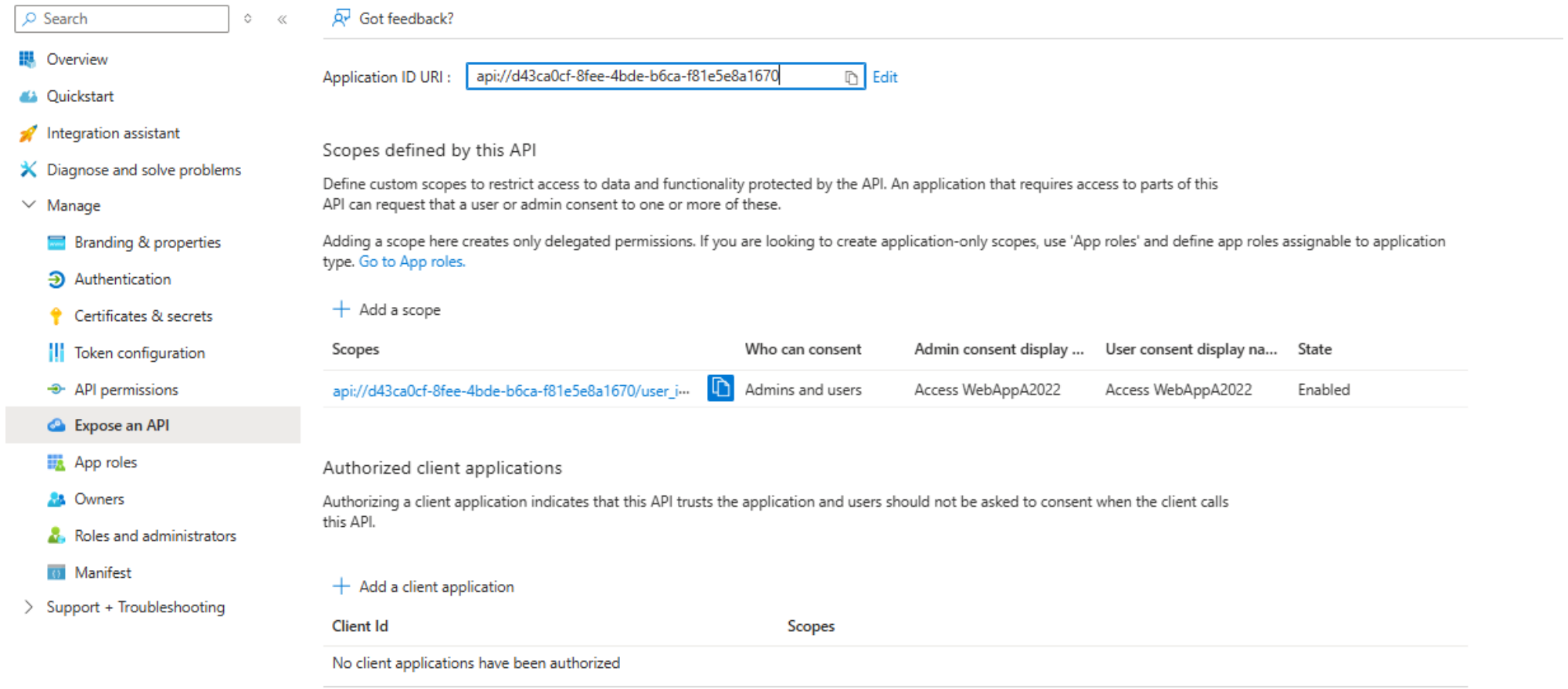
Certificates & Secrets
Credentials used for app authentication



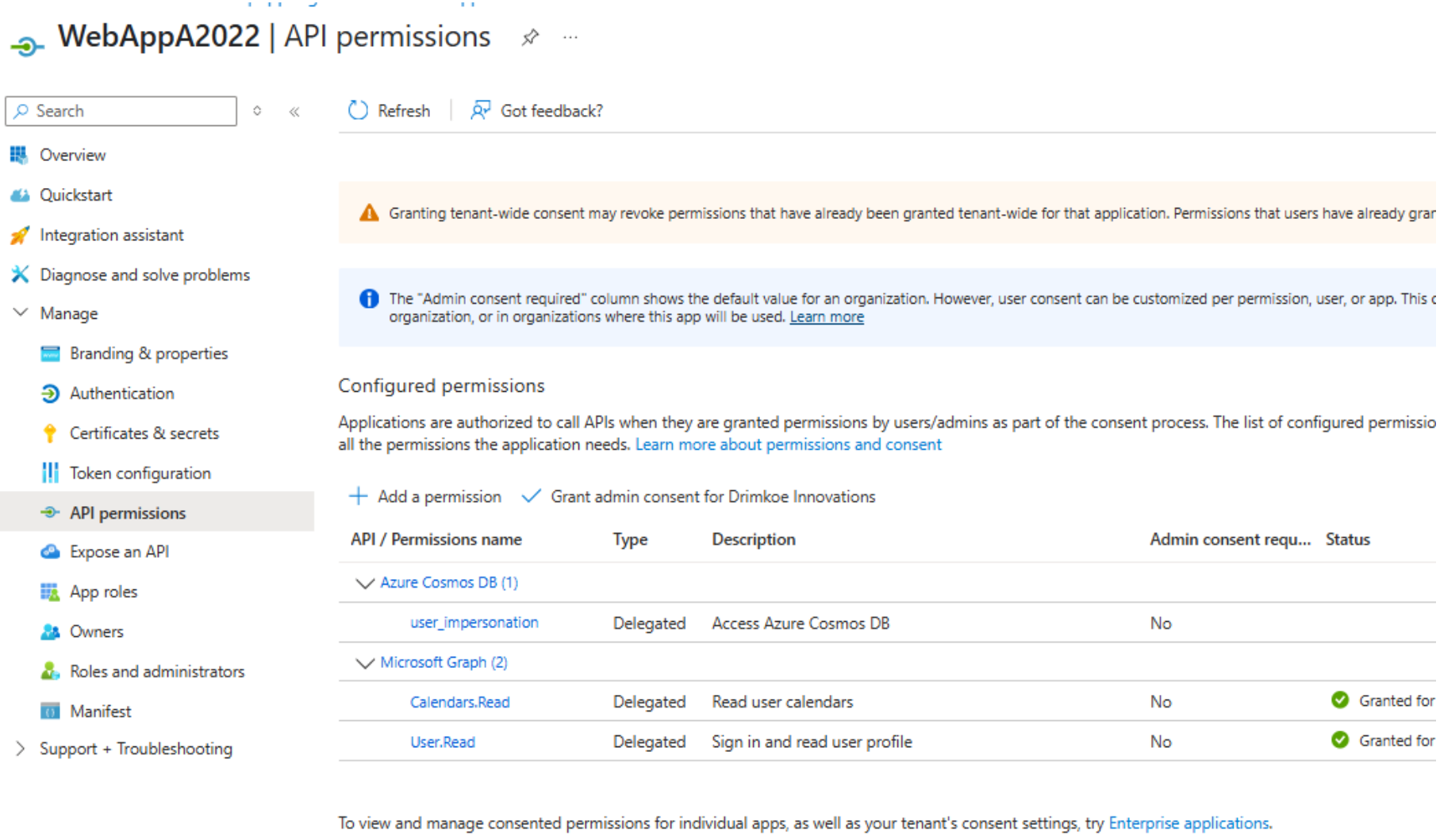
OAUTH 2.0 & OPENID CONNECT FLOWS



EXPOSING APIS & SCOPES



CLIENT CONFIGURATION & PERMISSIONS



SECURITY BEST PRACTICES WITH ENTRA ID

Managed Identities for Azure Resources: Eliminate secrets by using platform-managed identities

Certificate Rotation: Automate renewal for app certificates via Key Vault

Conditional Access Policies: Enforce MFA, device compliance before token issuance

Application Proxy Integration: Publish on-prem apps securely via Entra ID

Monitoring & Alerting: Track sign-ins, risky apps, and expired credentials

POP QUIZ:

You have a multi-tenant web API registered in Microsoft Entra ID with scope api://1234/read. A client app in another tenant requests tokens for that scope but fails. Which step is **required** to enable cross-tenant access?

A. Add a redirect URI in the client's registration
B. Grant admin consent in the target tenant's Enterprise Applications
C. Expose the API scope as "public" in the application manifest
D. Assign the client app to an Azure AD security group in the issuing tenant

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LAB: ENTRA ID

- Create an app registration
- Deploy nodejs app which uses Entra ID for authentication

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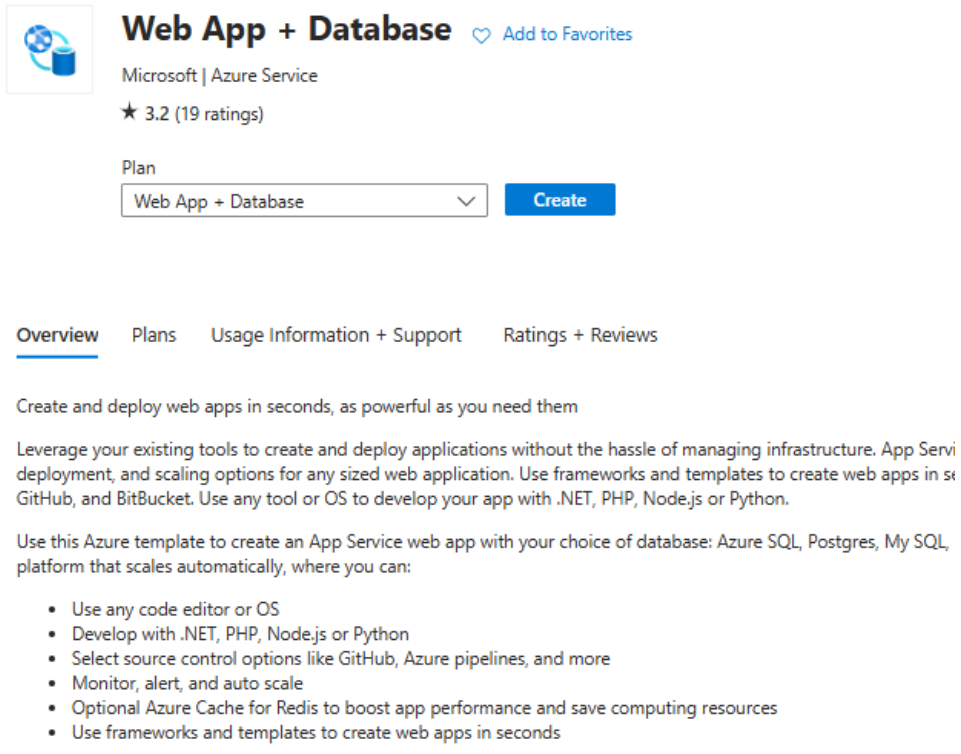
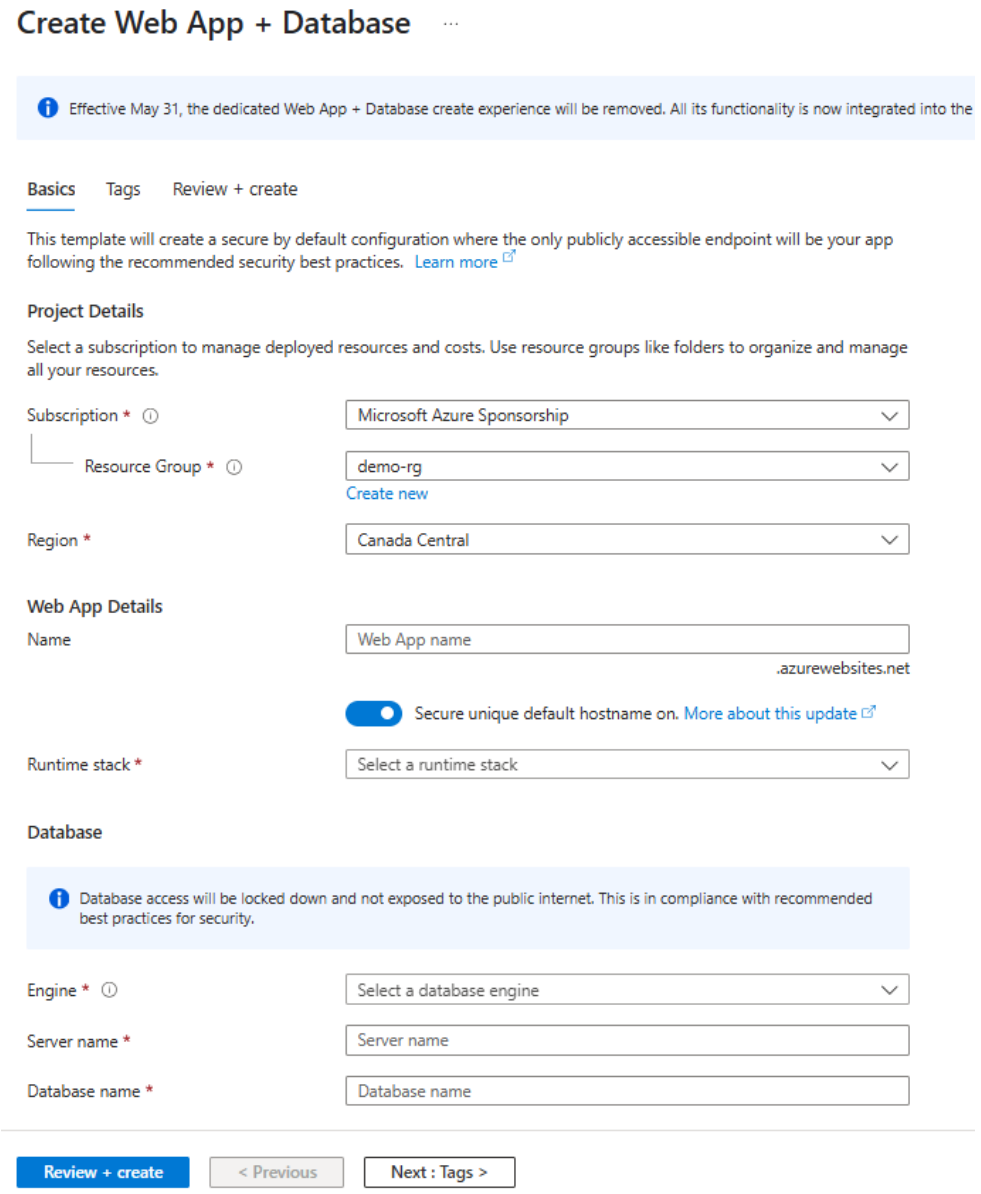
Software
Platform
Infrastructure

AZURE WEB APPS





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WEB APPS - CONFIGURATION OPTIONS

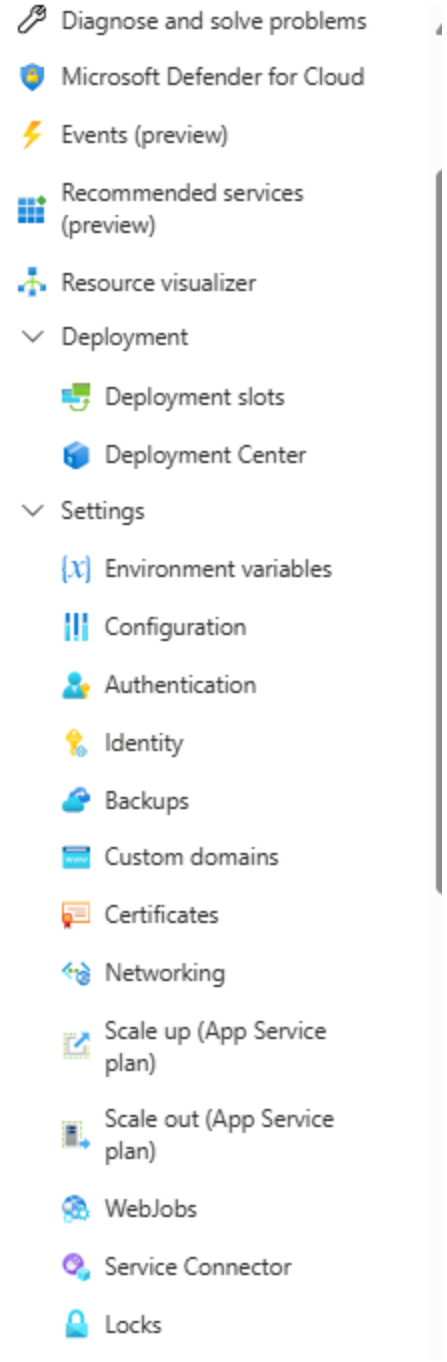
Custom Domains & SSL: Bind custom domains and secure them with free or custom SSL certificates.

Deployment Slots: Use staging slots for zero-downtime deployments and A/B testing.

App Settings & Secrets: Manage environment variables and secrets securely via Azure Key Vault.

Backup & Restore: Automate backups and restore apps to previous states with minimal downtime.

Traffic Routing: Route traffic between slots for gradual rollouts or testing.



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WEB APPS - PERFORMANCE OPTIMIZATION

Auto-Scaling Rules

Automatically adjust resources based on demand using metrics.

Always On

Ensures applications remain active, minimizing delays from cold starts.

App Service Plans

Select the appropriate service tier to meet performance requirements.

VNet Integration

Securely link applications to backend services through virtual networks.

Caching Strategies

Implement caching with Azure Cache for Redis to optimize database performance.

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WEB APPS – SECURITY BEST PRACTICES

Authentication & Authorization: Integrate with Microsoft Entra ID, OAuth, or social logins.

Managed Identity: Securely access Azure resources without storing credentials.

Private Endpoints: Restrict access to your app via private IP addresses.

DDoS Protection & WAF: Protect against common web threats and attacks.

TLS Enforcement: Enforce HTTPS and use latest TLS versions.

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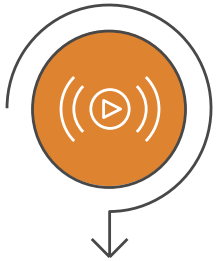
WEB APPS – MONITORING & DIAGNOSTICS

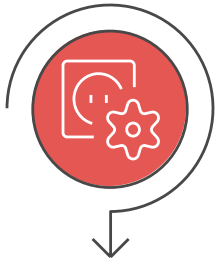
Application Insights

Provides real-time telemetry and performance metrics. Tracks user behavior for insights.



Log Streaming

Allows viewing logs in real time for debugging. Aids in quick diagnostics.

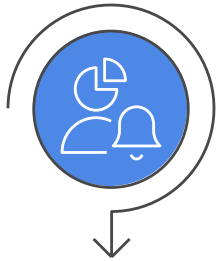


Diagnostic Settings

Routes logs to Log Analytics, Event Hub, or Storage. Offers flexible log management.

Health Checks

Monitors application health and triggers auto-healing processes. Ensures application stability.



Alerts & Metrics

Sets up alerts for performance, availability, and security. Notifies of potential anomalies.

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WEB APPS – DEVOPS AUTOMATION

CI/CD Pipelines: Integrate with GitHub, Azure DevOps, or Bitbucket for automated deployments.

Infrastructure as Code: Use ARM, Bicep, or Terraform to manage app infrastructure.

Deployment Center: Visual interface for configuring deployment sources and workflows.

GitHub Actions: Automate testing, builds, and deployments with reusable workflows.

Azure CLI & PowerShell: Script and automate app management tasks.

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APP SERVICES – FOR MOBILE APPS

Mobile App Backend: Use Azure App Service to host scalable RESTful APIs.

Authentication & Authorization: Integrate with Microsoft Entra ID, Facebook, Google, and more.

Push Notifications: Send targeted messages using Azure Notification Hubs.

Offline Sync: Enable data sync when devices reconnect to the internet.

Cross-Platform Support: Backend works with iOS, Android, MAUI, and React Native.

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APP FUNCTIONS & MOBILE WORKLOADS

Serverless Architecture: Run backend logic without managing infrastructure.

Event-Driven Triggers: Respond to HTTP requests, queues, or database changes.

Scalable APIs: Build lightweight, scalable endpoints for mobile apps.

Cost Efficiency: Pay only for execution time, ideal for bursty workloads.

Integration with Azure Services: Easily connect to Cosmos DB, Blob Storage, and more.

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DATABASES FOR APPS - COSMOS DB

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AZURE FUNCTIONS - ARCHITECTURE

Serverless Compute
Executes code without VM management

Event-Driven
Reacts to triggers rather than polling

Stateless Workers
Isolated executions with optional durable state

Binding Abstractions
Simplifies I/O via input/output bindings

Integration Framework
Connects seamlessly to Azure services

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FUNCTION EXECUTION FLOW

Your function

```
def my_handler(event, context):
        message = 'Hello {} {}!'.format(event['first_name'],
        event['last_name'])
        return {
                'message' : message
        }
```

Container

- Your code is encapsulated in a prebuilt container from the provider that contains a dispatch agent. An ultra light HTTP endpoint that accepts requests, and executes your snippet of code.

Serverless

- When a request comes in, an API gateway looks for a container running your function, if none exist one is created and the request is routed.

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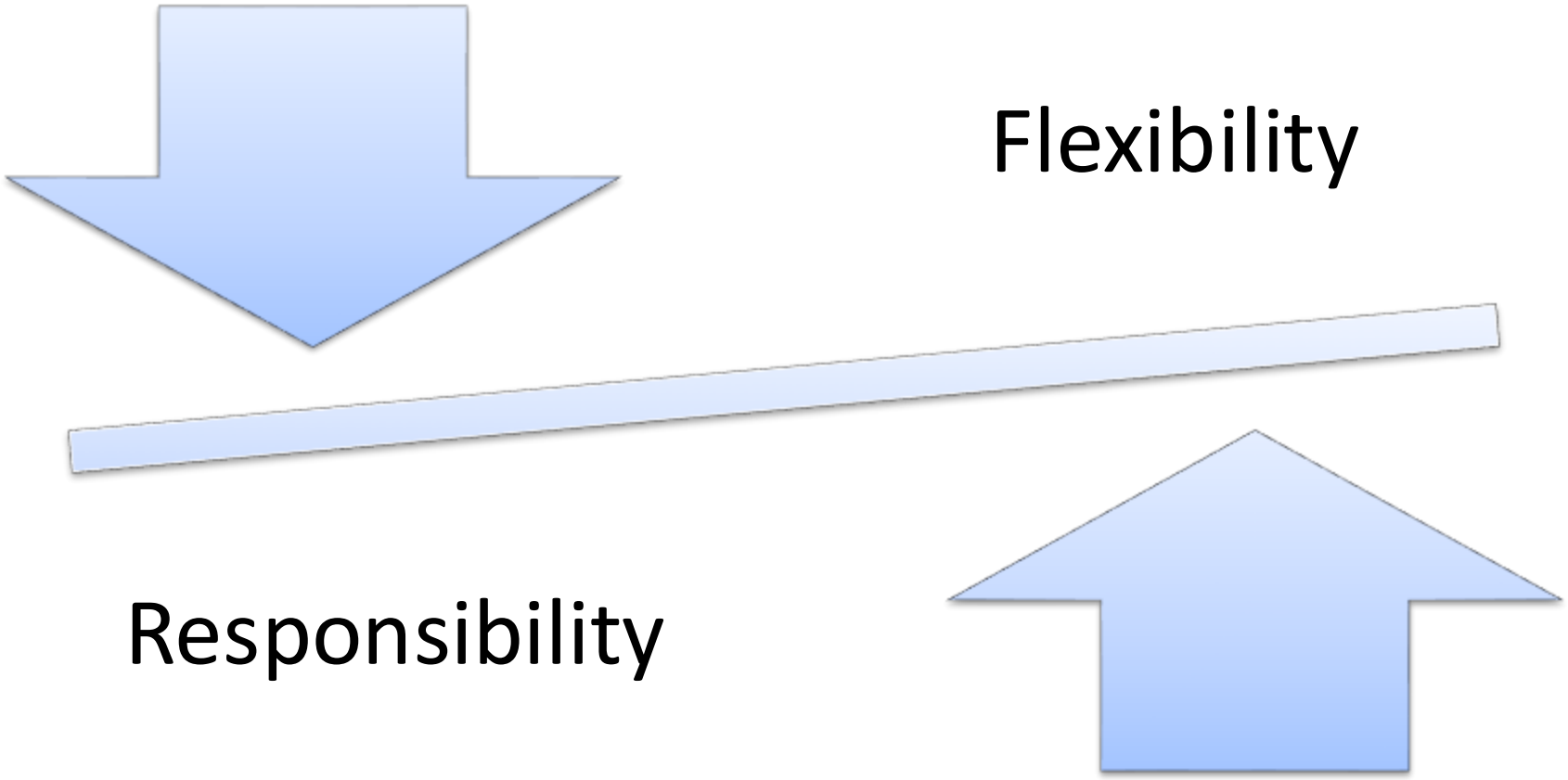
SERVERLESS IS CONTAINERS?



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AZURE FUNCTIONS – HOSTING MODELS & PLANS

Characteristic	Consumption	Premium	Dedicated (App Service)	Elastic Premium	Kubernetes & Container
Scaling	Auto-scale	Pre-warmed instances	Existing App Service resources	Controls min/max scale	Custom containers
Pricing	Pay-per-execution	Included	Included	Included	Varies
Infrastructure	Serverless	Serverless	App Service	Serverless	Custom containers
VNet Support	No	Yes	Yes	Yes	Yes
Cold Start	Yes	Controls cold-start	No	Controls cold-start	Varies

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AZURE FUNCTIONS – TRIGGERS & BINDINGS

Trigger Types
HTTP, Timer, Queue, Event Grid, Cosmos DB, etc.

Input Bindings
Declarative data reads without client SDKs

Output Bindings
Push data to services with minimal code

Binding Expressions
Parameterize at runtime using metadata

Extension Model
Custom bindings via NuGet for new services

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AZURE FUNCTIONS – SCALING & PERFOMANCE

Dynamic Scaling
Scale based on event metrics automatically

Cold-Start Impact
Mitigated by pre-warming or Premium plan

Concurrency Controls
Batch sizes, max concurrent function executions

Host Scaling Logic
Based on queue length, CPU, and custom metrics

Distributed Tracing
Monitor performance via Application Insights

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AZURE FUNCTIONS – SECURITY, DEVOPS, BEST PRACTICES

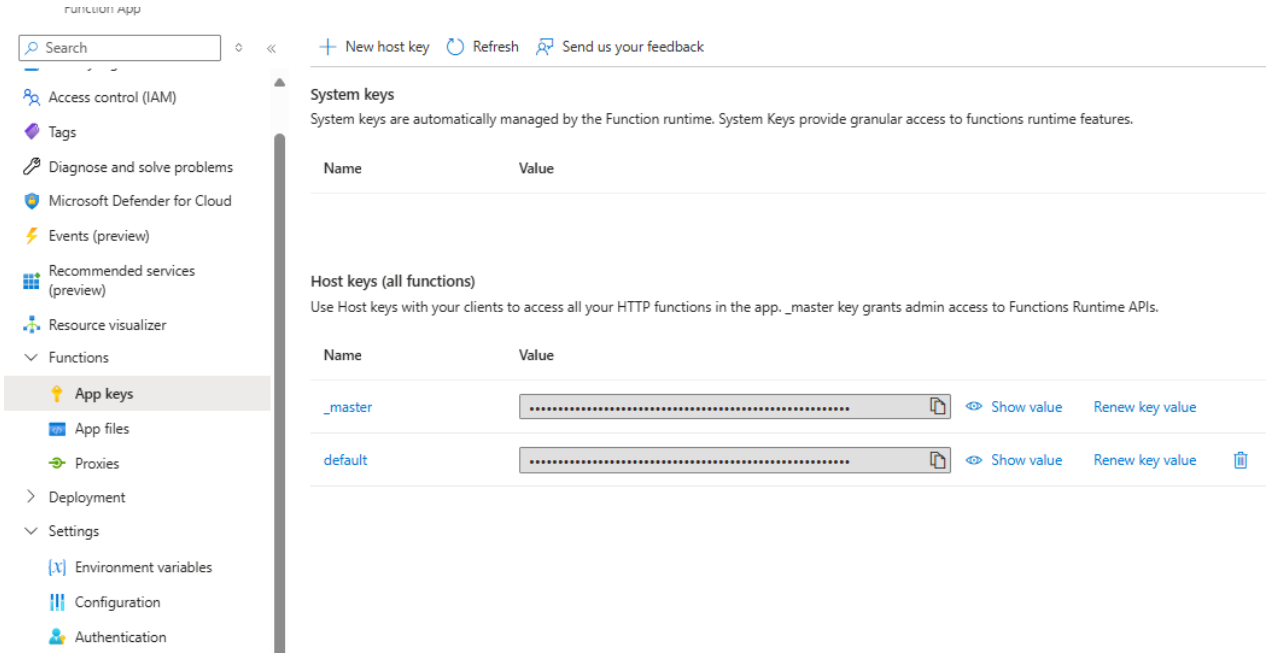
Managed Identities
Securely access Azure AD–protected resources

Function Keys & AAD
Control HTTP access via keys or OAuth tokens

CI/CD Integration
Deploy via GitHub Actions, Azure DevOps pipelines

Configuration Management
Use App Settings & Key Vault references

Monitoring & Alerts
Leverage built-in logs, metrics, and alerts



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DURABLE FUNCTIONS

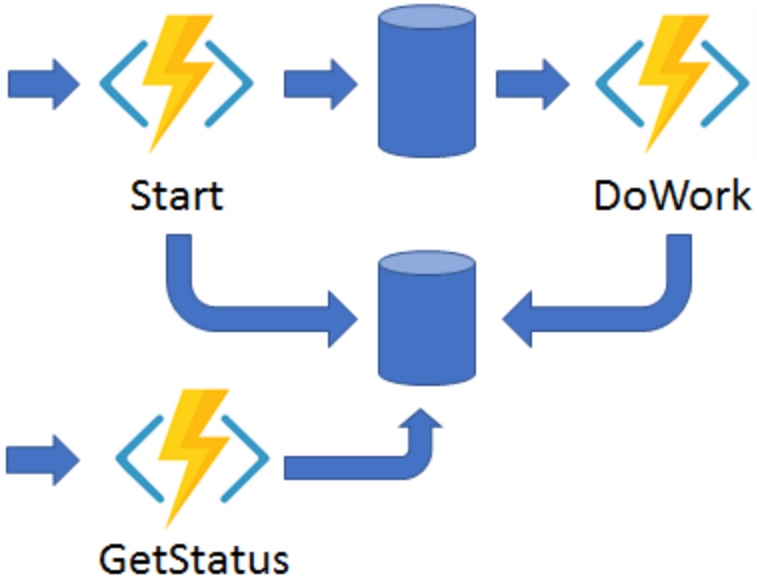
Orchestrator Functions
Coordinate workflows by calling activity functions

Activity Functions
Execute discrete, single-purpose tasks

Entity Functions
Provide durable, single-instance stateful objects

Client Functions
Serve as entry points to start or query orchestrations

Task Hubs
Underlying storage containers for state and history



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DURABLE FUNCTIONS – ORCHESTRATION PATTERNS

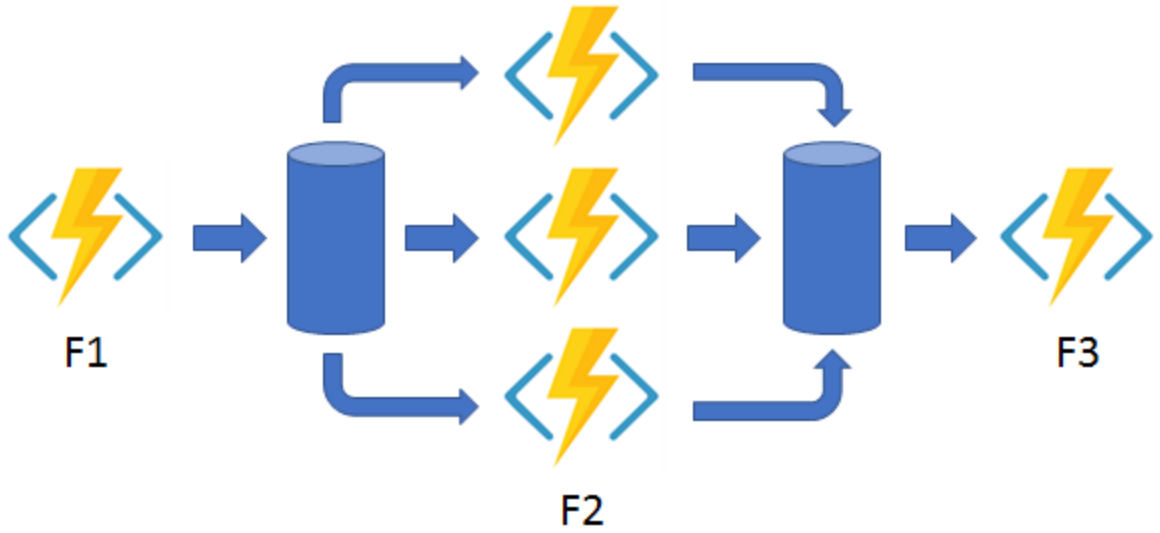
Function Chaining
Sequential task execution, passing outputs forward

Fan-Out/Fan-In
Parallel activities with aggregated results

Async HTTP APIs
Long-running processes with status monitoring

Human Interaction
Pausing for external events like approvals

Monitoring & Compensation
Implement retries, compensating actions on failure



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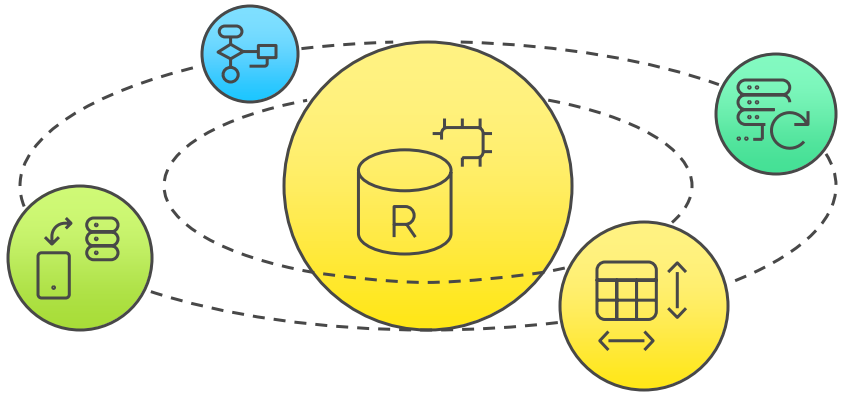
ENTITY FUNCTIONS & STATE MANAGEMENT

Operations & Signals

Invoke entity methods by name or pattern

Lock-Free Concurrency

Runtime serializes messages per entity



State Versioning

Automatic snapshotting and history replay

Scaling Entities

Entities scale horizontally via sharding

Durable Entities are the Durable Functions answer to stateful objects. Each entity represents a single logical instance identified by an ID. You define methods on the entity class; the runtime takes care of persisting its state in storage.

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RELIABILITY & PERFORMANCE

Checkpointing & Replay
Ensures orchestrator resilience across failures

Activity Retries
Configurable retry policies on transient errors

Parallelism Controls
Throttle fan-out to protect downstream systems

Storage Throttling
Backpressure handling for Azure Storage limits

Metrics & Billing
Track orchestration count, execution time, storage costs

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DURABLE FUNCTIONS – DEVOPS & BEST PRACTICES

Idempotent Activities: Design activities to handle replays safely

Versioning Orchestrations: Use version checks to manage code updates

Local Debugging: Leverage the Functions Core Tools emulator

Monitoring Dashboards: Visualize live orchestration states via App Insights

Cleanup & Retention: Configure history retention to control storage growth

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LAB: WebApp

- Deploy web app with az cli
- Deploy second web app with ARM templates

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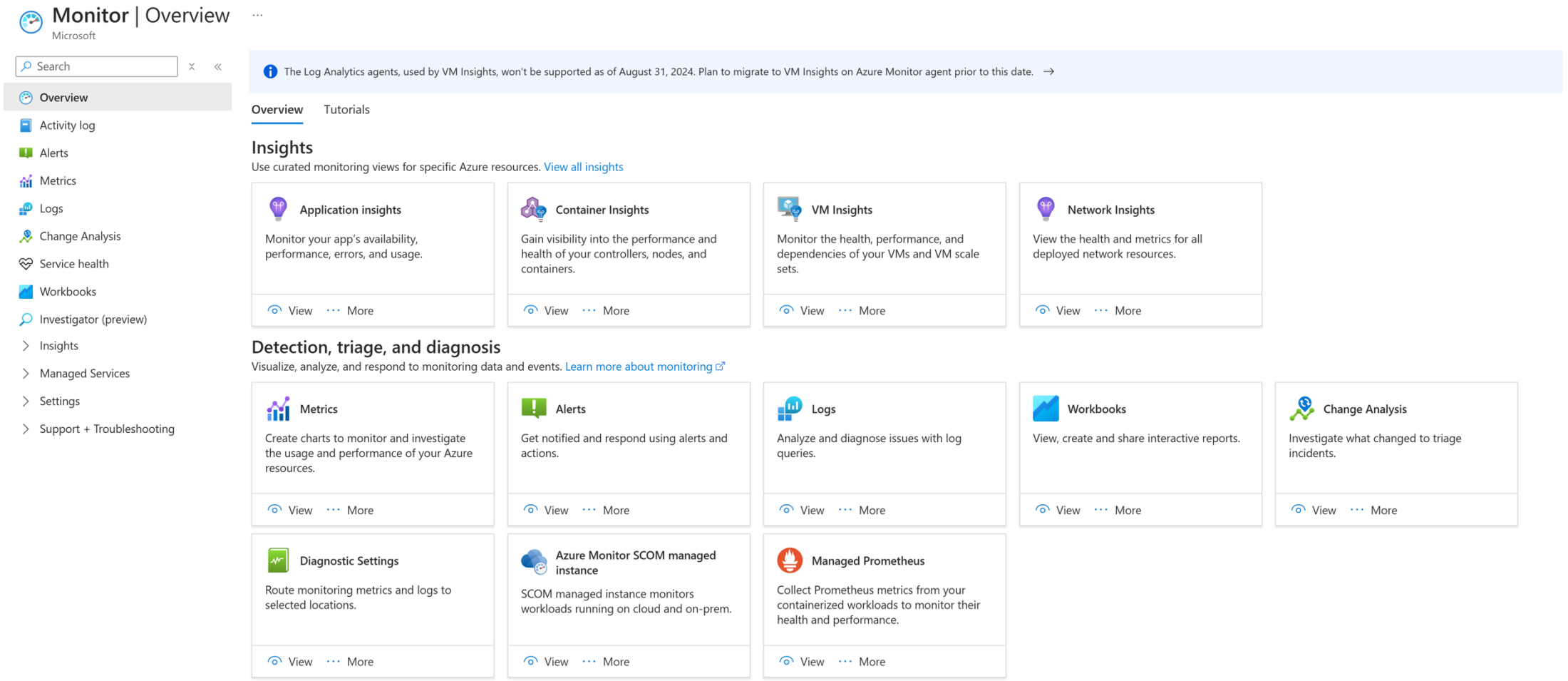
MONITORING

MONITORING & OBSERVABILITY



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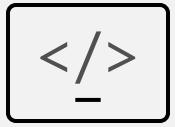
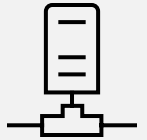
WHY WE NEED CLOUD MONITORING?

Infrastructure

Apps



Network



Visibility into Health: Detect outages and performance degradation
Proactive Issue Detection: Alert on anomalies before customer impact
Capacity Planning: Forecast growth and right-size resources
Compliance & Audit: Retain logs for security and regulatory needs
Cost Optimization: Identify under-utilized assets and idle spend

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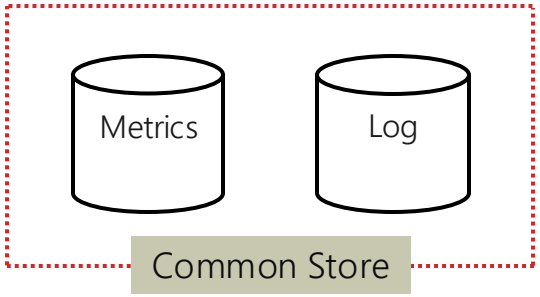
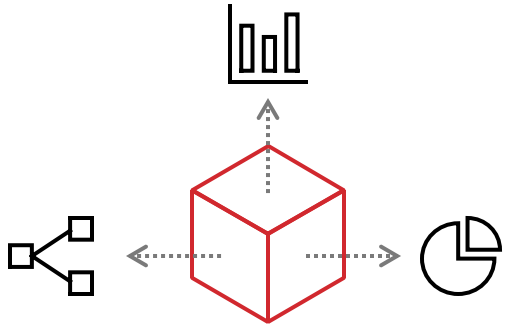
AZURE MONITOR



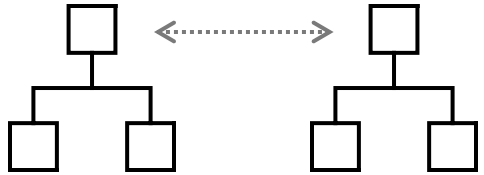
Unified Monitoring

A common platform for all metrics, logs and other monitoring telemetry



Data Driven Insights

Advanced diagnostics and analytics powered by machine learning capabilities



Workflow Integrations

Rich ecosystem of popular DevOps, issue management, SIEM, and ITSM tools

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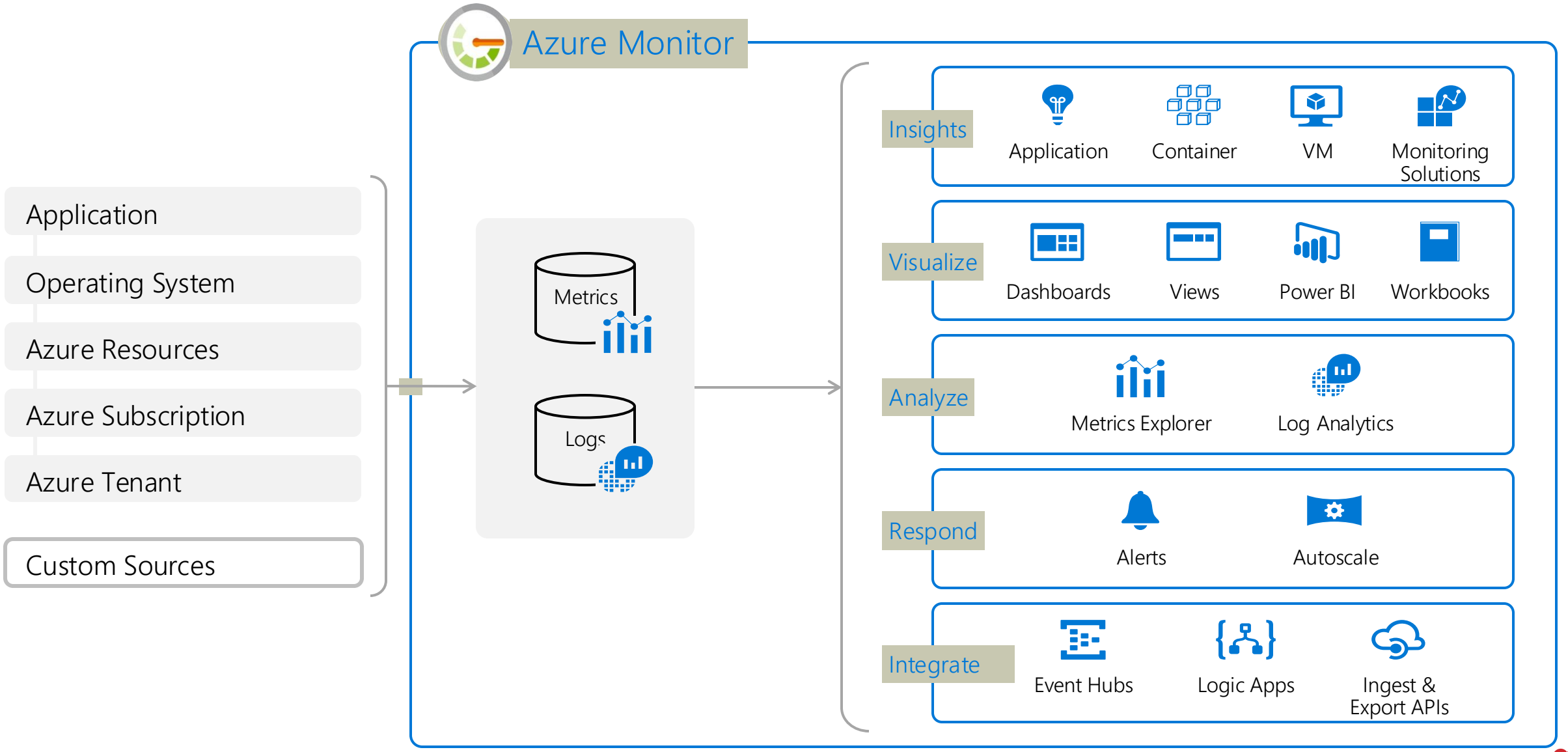
AZURE MONITOR



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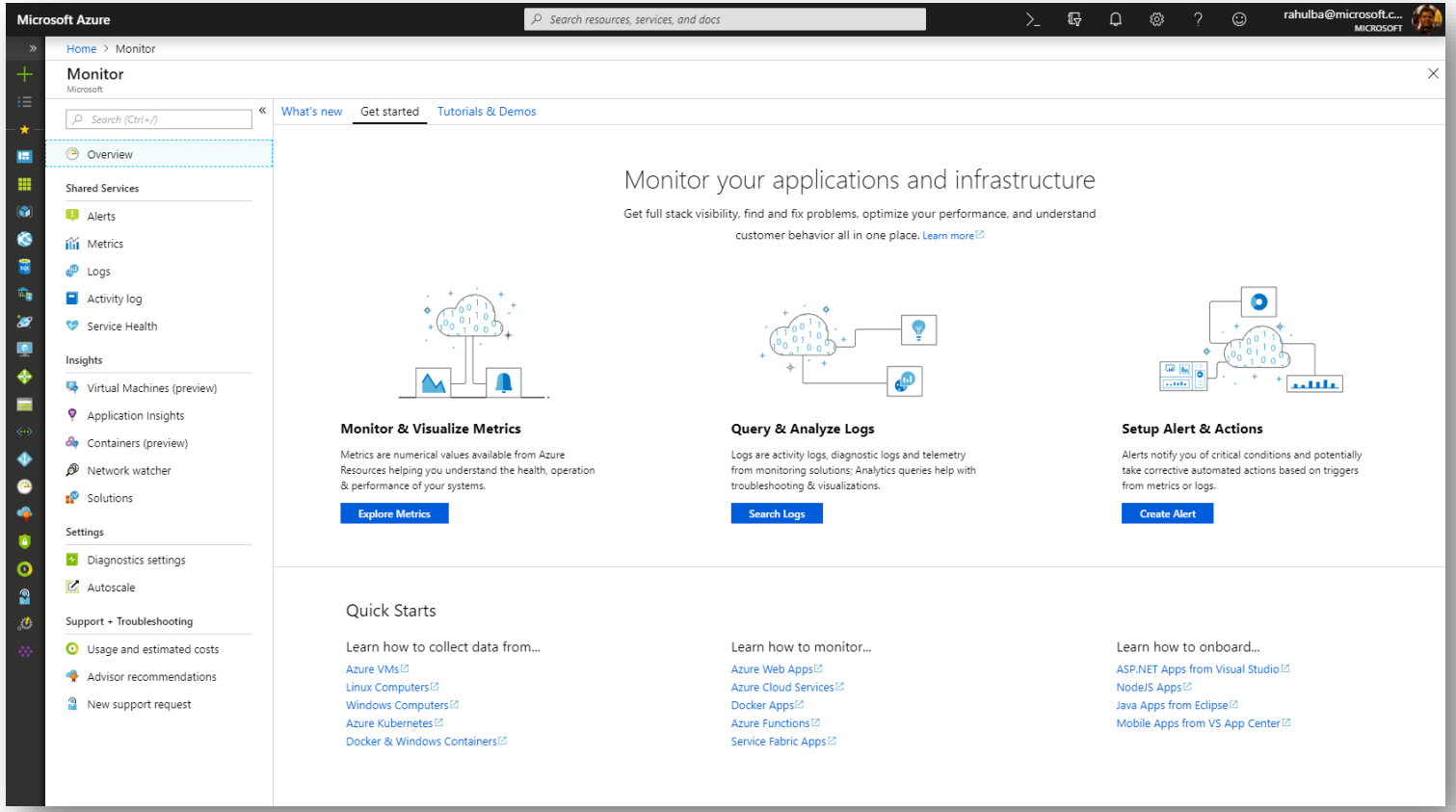
UNIFIED MONITORING DASHBOARD

- One Metrics, One Logs, One Alerts across Azure/on-prem resources
- Unified offering with App Insights & Log Analytics as integrated features
- Integration into native Azure resource blades
- Ability to send custom metrics & custom logs



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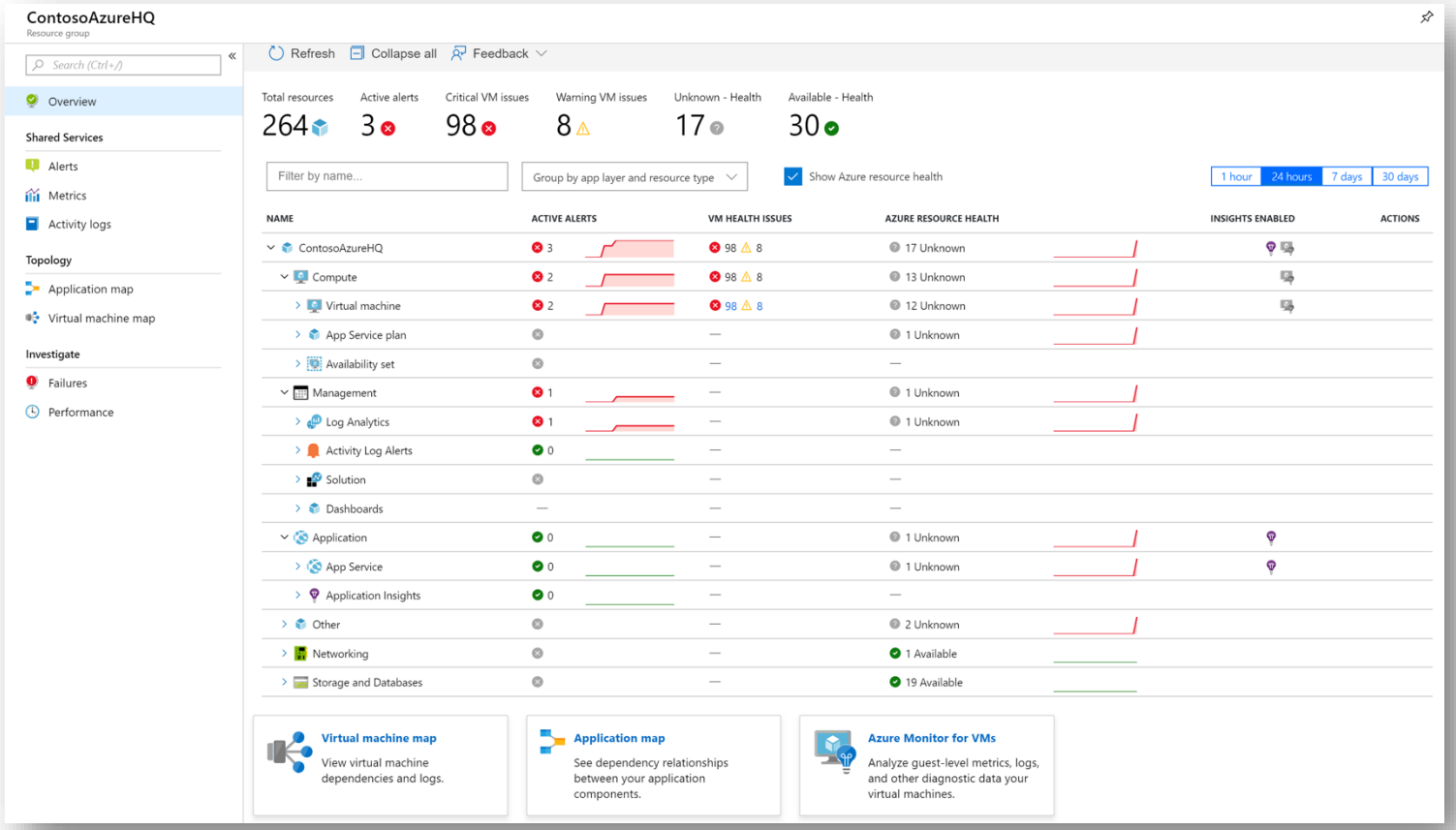
FULL STACK VISIBILITY IN RESOURCE GROUPS

- Monitor health state of all resources
- See alerts firing across app & infra
- Jump to Application Map or VM Map
- Drill down into failures or perf issues



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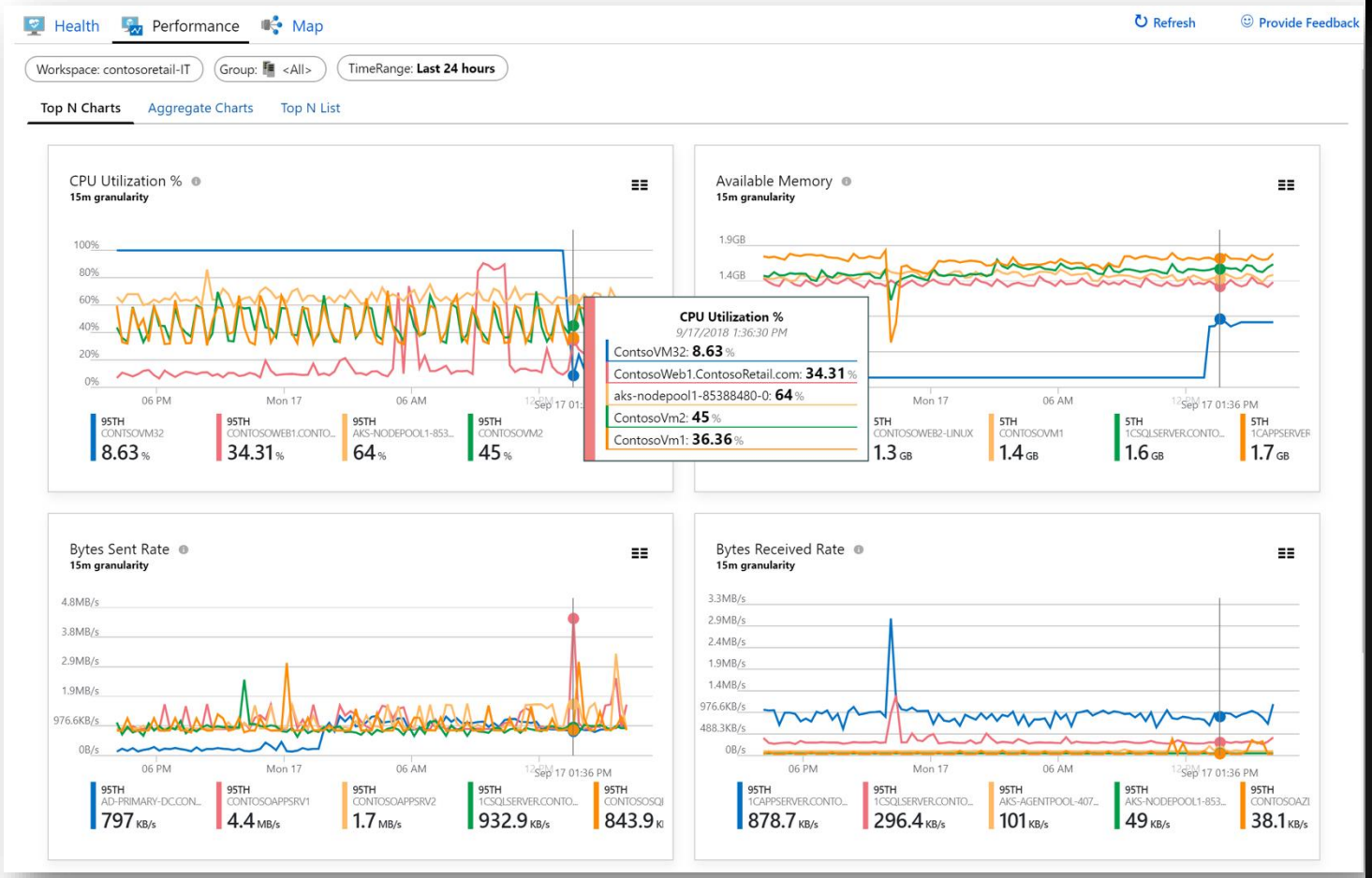
VIRTUAL MACHINES

- Monitor single VMs or at scale
- Identify & isolate host-level or guest-level health problems
- Troubleshoot perf issues like CPU, memory, disk, and network
- Visualize service dependencies & connection failures in Maps
- Onboard at scale using PowerShell or Azure Policy



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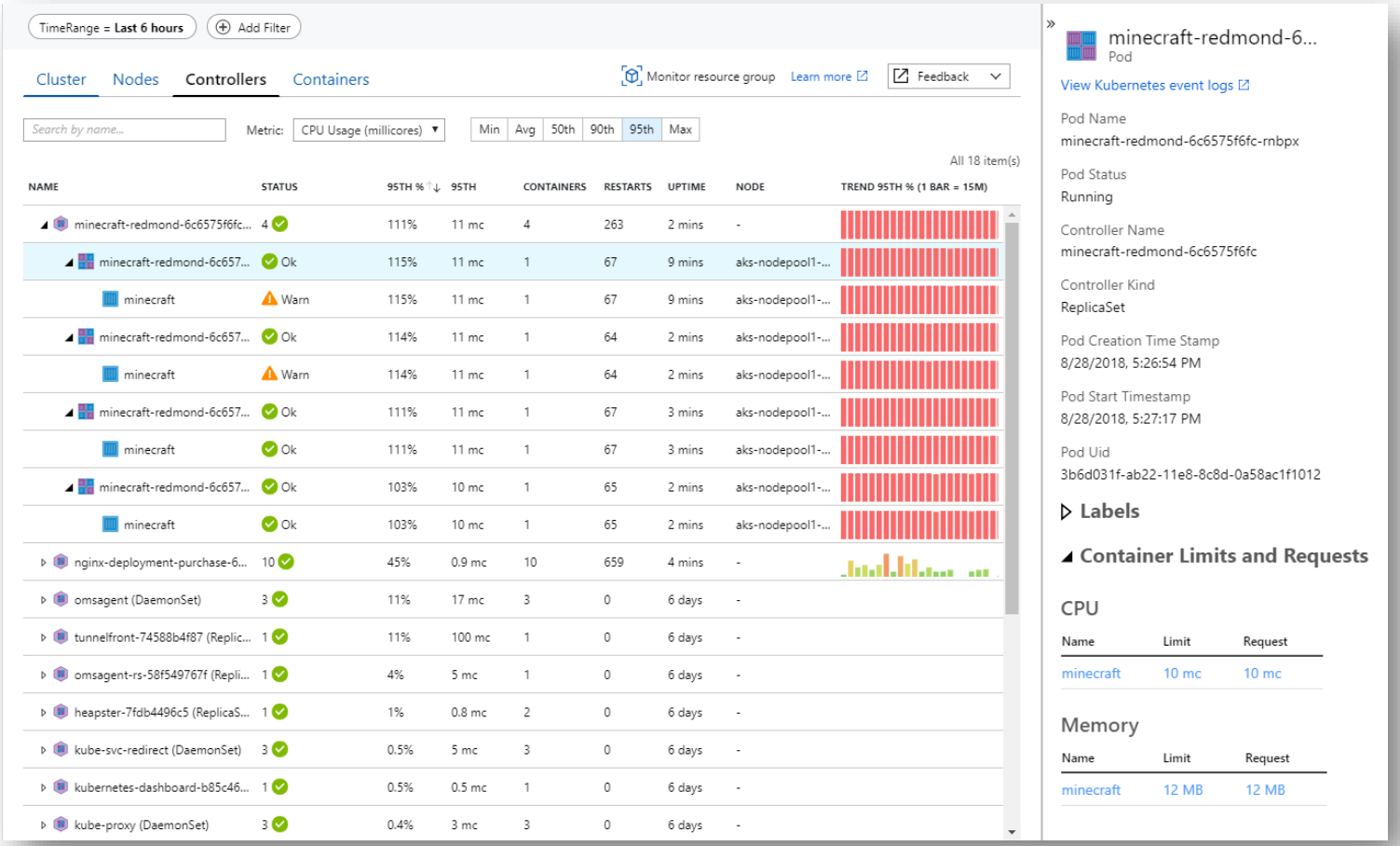
AKS CONTAINERS

- Monitor multi-cluster health & node/pod status
- View overall perf across nodes, controllers and containers
- Analyze Kubernetes event & container logs for troubleshooting
- Understand cluster capacity needs under average or heaviest loads
- Monitor containers on demand in AKS with virtual nodes



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MONITORING VMS, CONTAINERS & APPS

Characteristic	Infrastructure Metrics	Container & Kubernetes	Application Performance	Log Aggregation & Search	Distributed Tracing
Key Aspects	CPU, memory, disk I/O, network throughput	Pod health, node status, cluster events	Request latency, error rates, dependency	Centralized logs from various sources	Follow requests across microservices

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MONITORING INTEGRATIONS

Application Insights
Deep APM for .NET, Java, Node, Python with SDKs

Azure Log Analytics
Kusto-powered query language for custom insights

Third-Party Integrations
Prometheus exporters, Grafana dashboards, Datadog, New Relic

ITSM & Notifications
Connect alerts to PagerDuty, ServiceNow, Teams, or OpsGenie

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METRICS FOR AUTO-SCALING

Trigger Signals
CPU, memory, queue length, custom App Insights metrics

Scale-Out & Scale-In Rules
Define thresholds, cool-down periods, and instance limits

Predictive Autoscale
Schedule-based scaling aligned to known usage patterns

Custom Metrics & Alerts
Leverage log-based metrics (e.g., request rate per second)

Autoscale Profiles
Multiple rules per profile for different time windows or regions

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POP QUIZ:

You need to autoscale a Service Bus-driven function app based on message backlog. Which metric is **best** to trigger scale-out?

A. CPU Percentage
B. Memory Working Set
C. Service Bus Queue Length
D. HTTP Request Latency

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POP QUIZ:

Your Log Analytics workspace is growing 50 GB/day, and costs are soaring. Which action most **directly** reduces storage bill?

A. Increase workspace pricing tier
B. Archive older logs to a storage account
C. Enable daily export to Power BI
D. Turn on Azure Monitor autoscale

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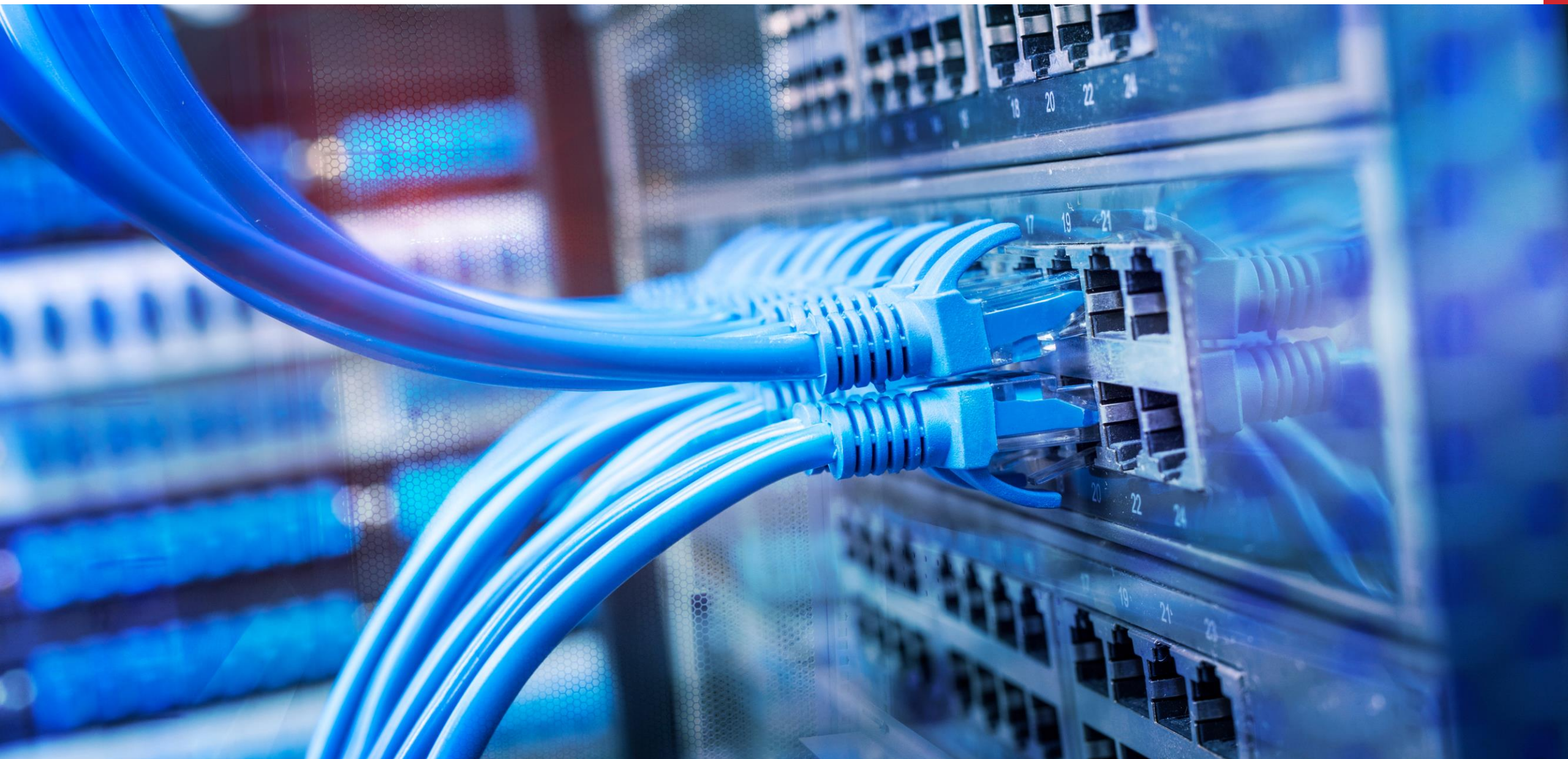
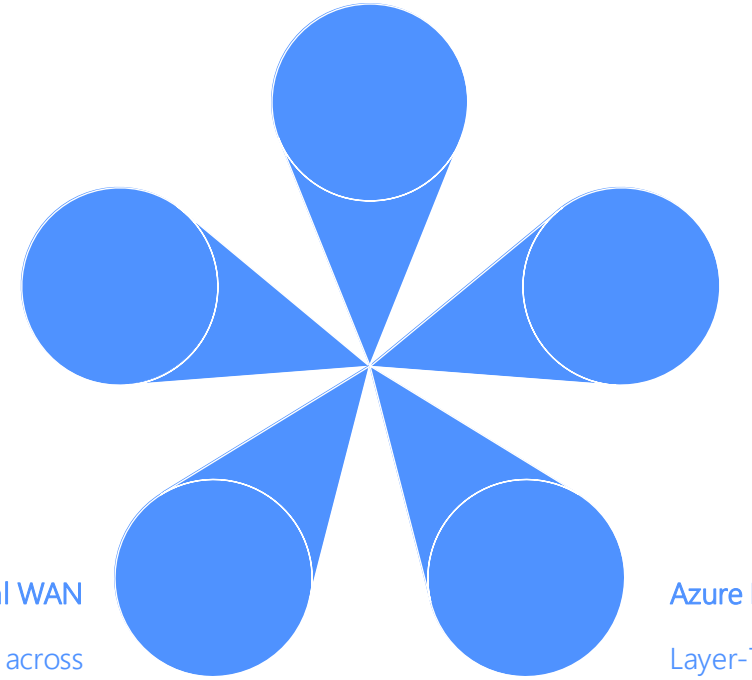
NETWORKING



NETWORKING PATTERNS FOR GEOGRAPHIC RESILIENCY



Global VNet Peering

Low-latency backbone links between regions

Content Delivery Network

Cache static assets close to users

ExpressRoute Global Reach

Private cross-region connectivity via Microsoft

Azure Virtual WAN

Hub-and-spoke across multiple regions

Azure Front Door

Layer-7 global load-balancing and failover

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DNS STRATEGIES FOR MULTI-REGION FAILOVER

Azure Traffic Manager Profiles
Geographic, priority, performance, or weighted routing

Alias Records
Map CDN or Front Door endpoints transparently

TTL Tuning
Balance responsiveness against DNS query load

Health Probes
Monitor endpoint health to trigger DNS changes

Private DNS Zones
Regional name resolution for VNet-to-VNet scenarios

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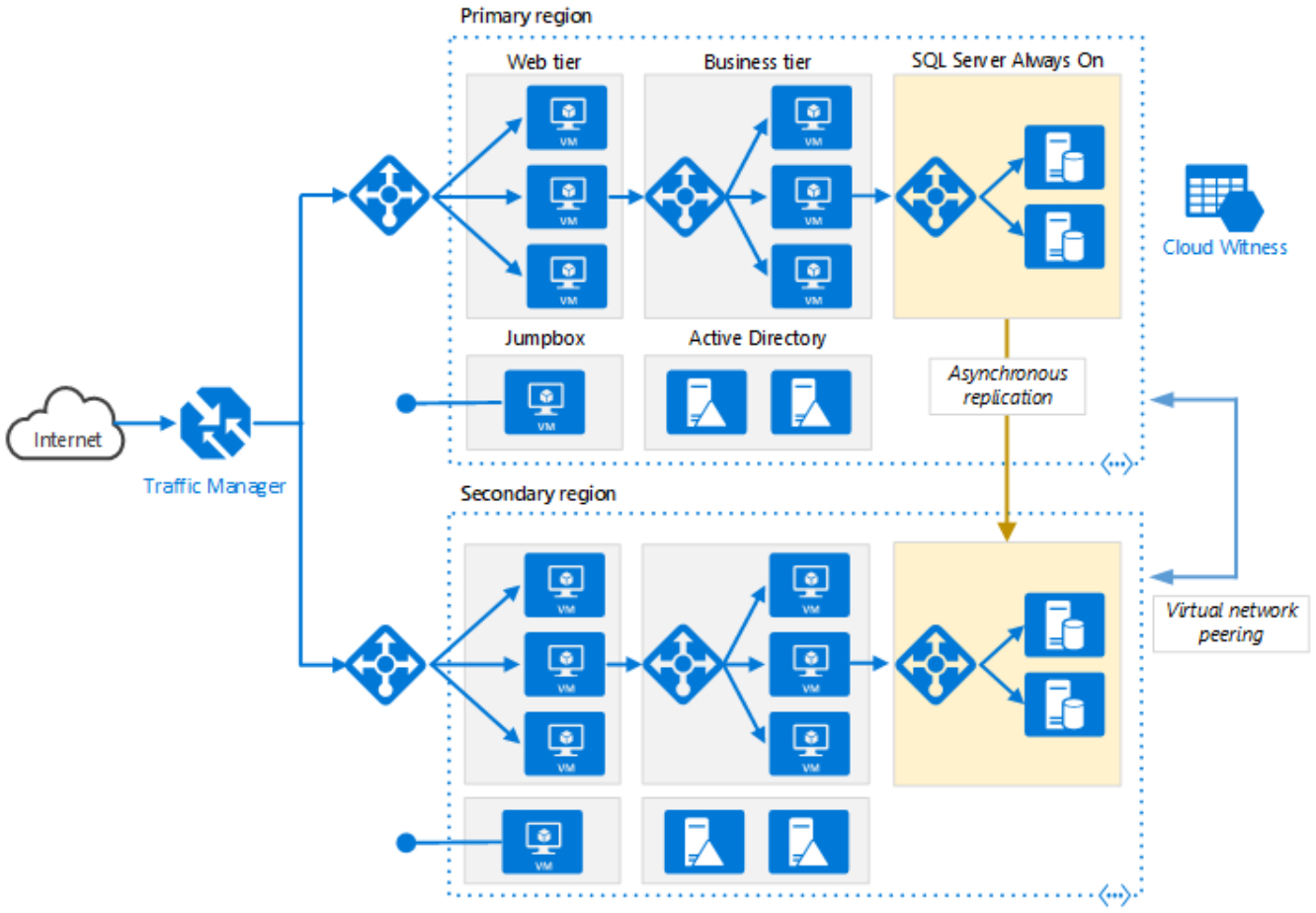
RESILIENT APPLICATION ARCHITECTURE



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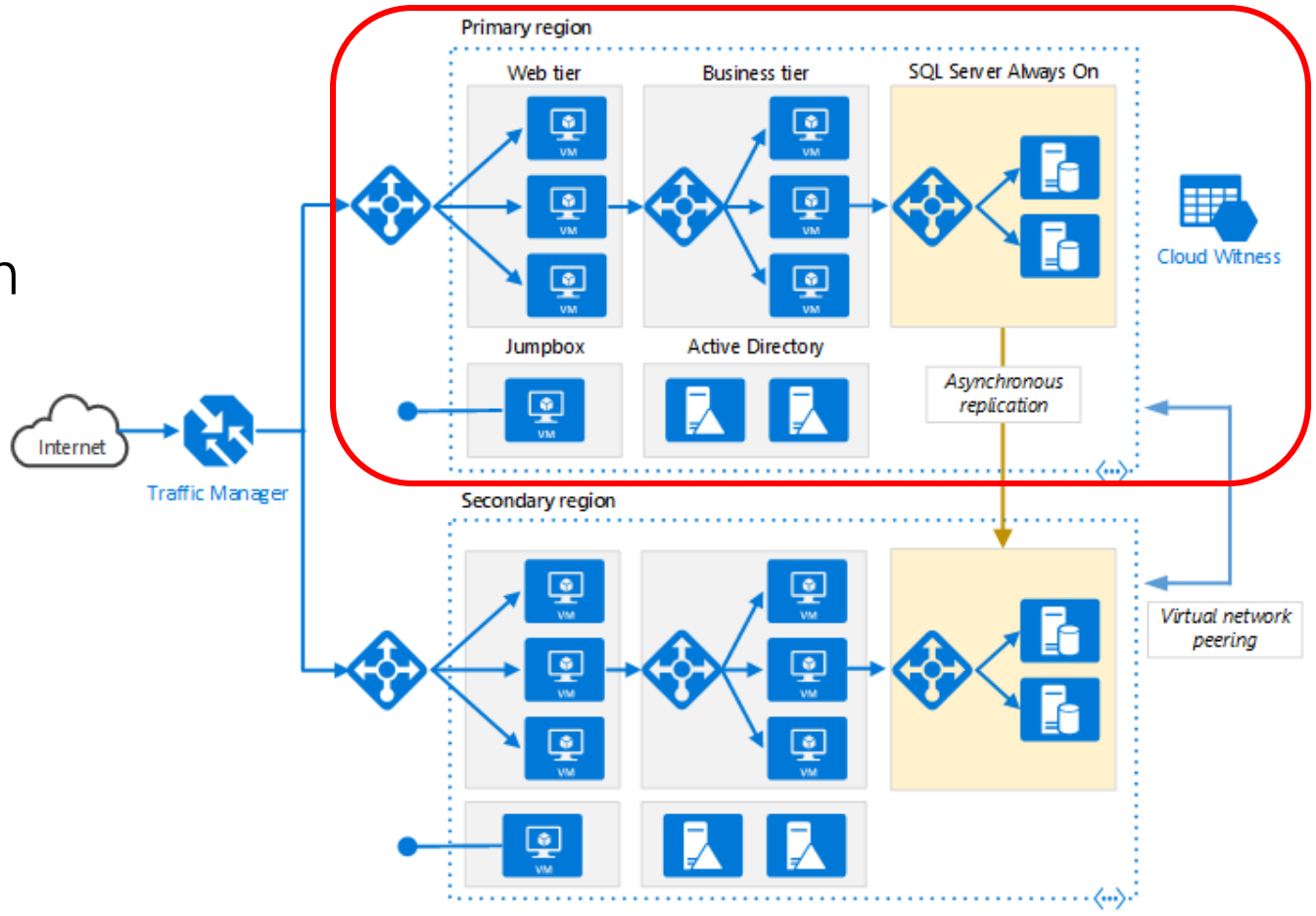
RESILIENT APPLICATION ARCHITECTURE

- Primary region
  - Separate VNet for each region
- VMs in ScaleSet



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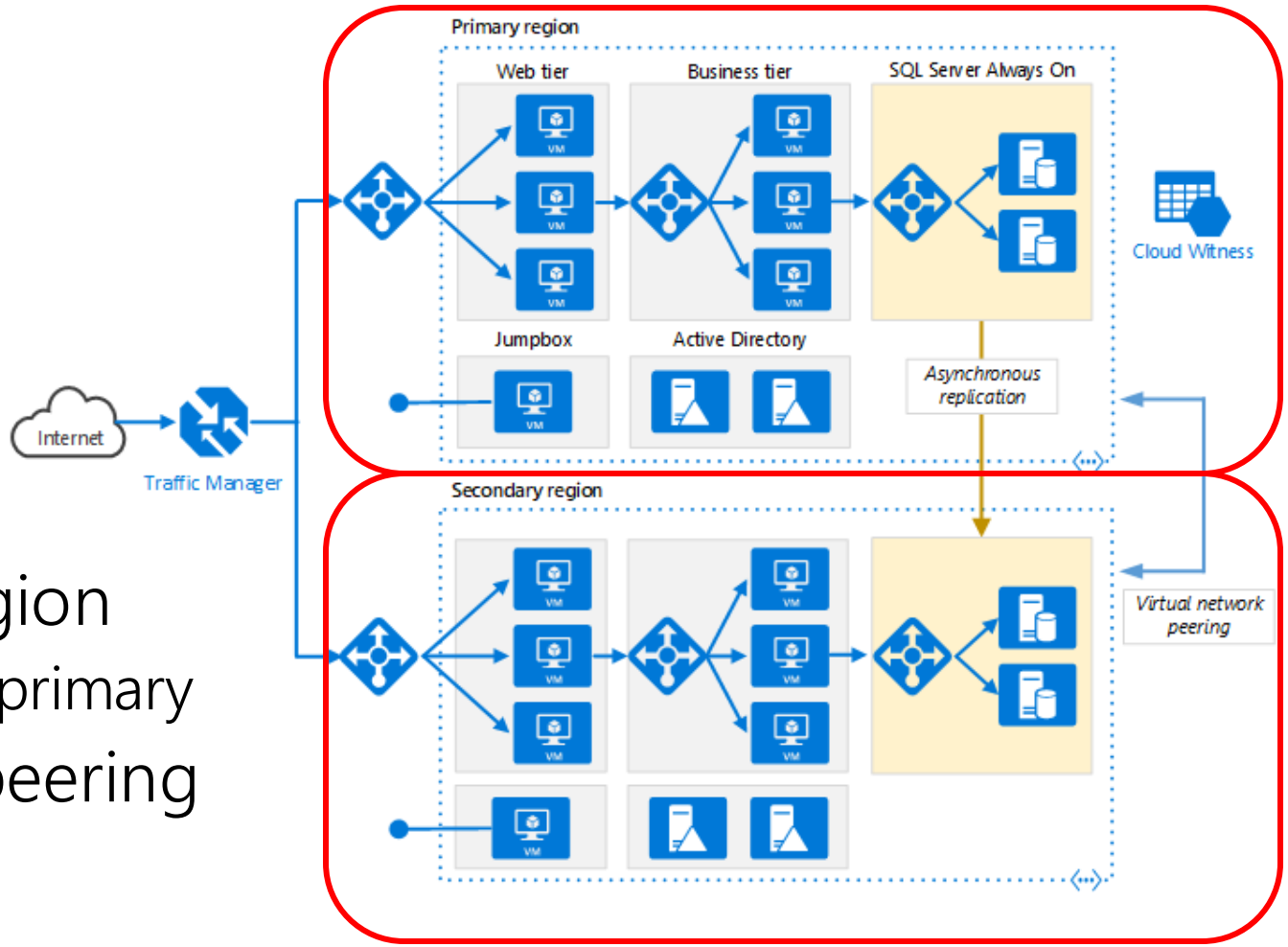
RESILIENT APPLICATION ARCHITECTURE

- Secondary region
  - duplicate of primary
- Global VNet peering



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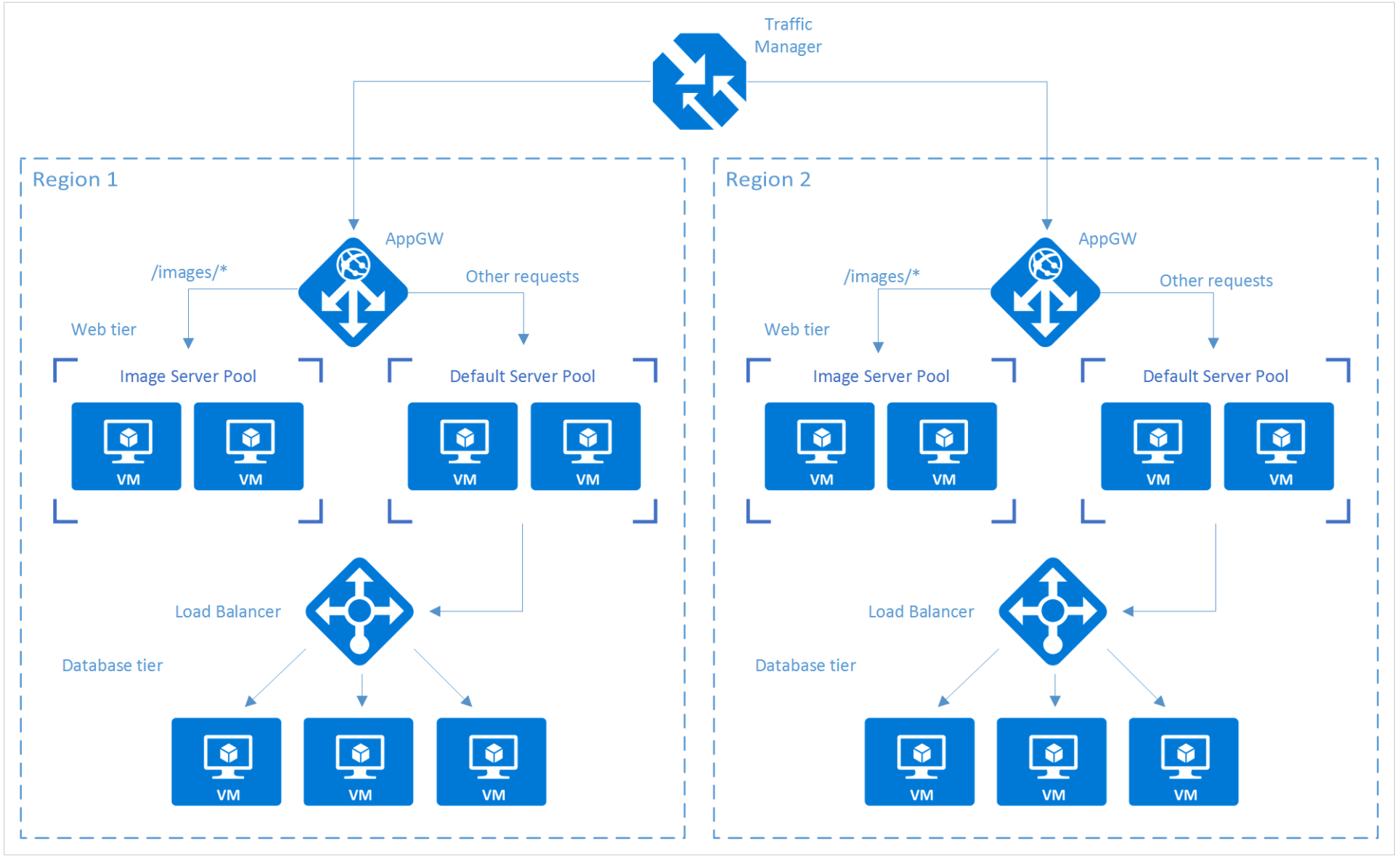
TRAFFIC MANAGER



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TRAFFIC MANAGER

- DNS-based load balancer
- Distribute traffic across global regions
- Six traffic-routing methods
- Endpoint health monitoring and automatic failover

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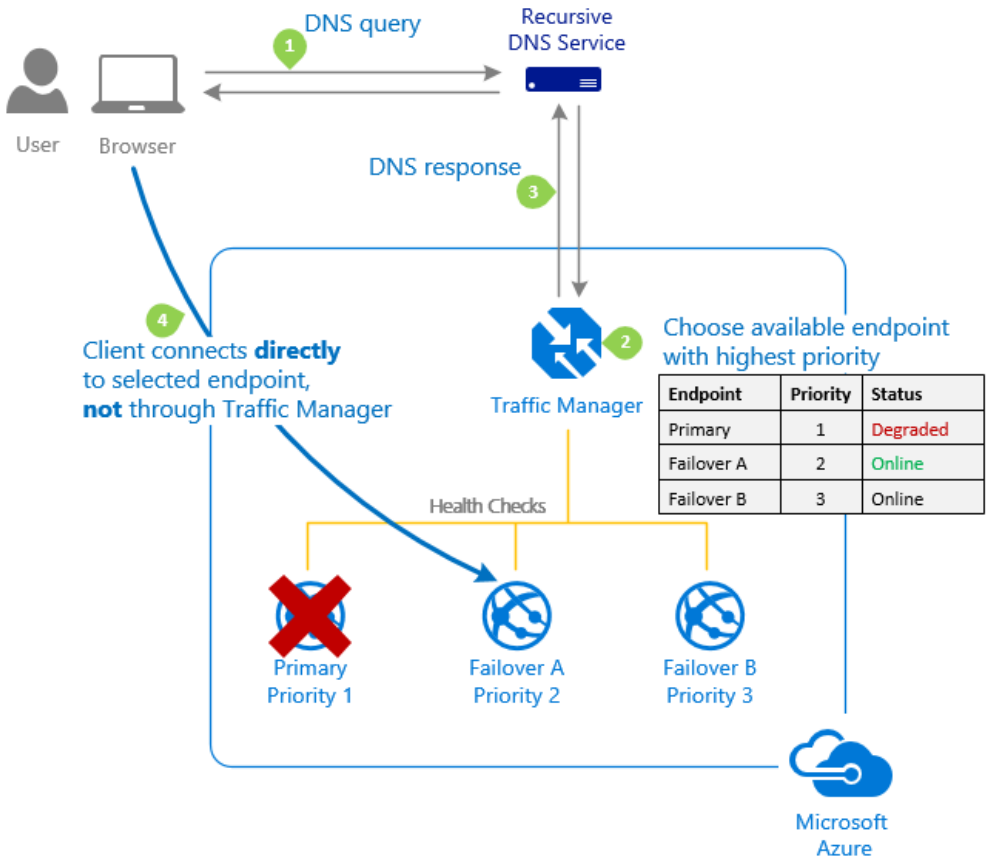
TRAFFIC MANAGER

- Priority method



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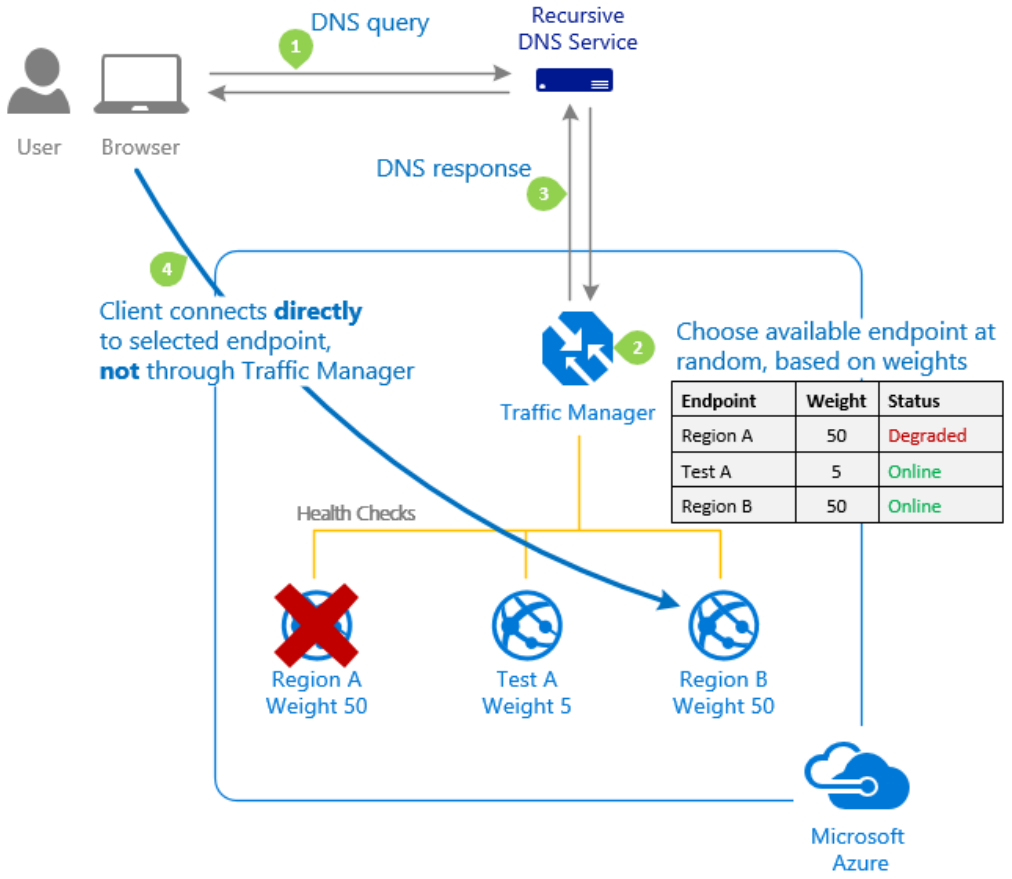
TRAFFIC MANAGER

- Weighted method



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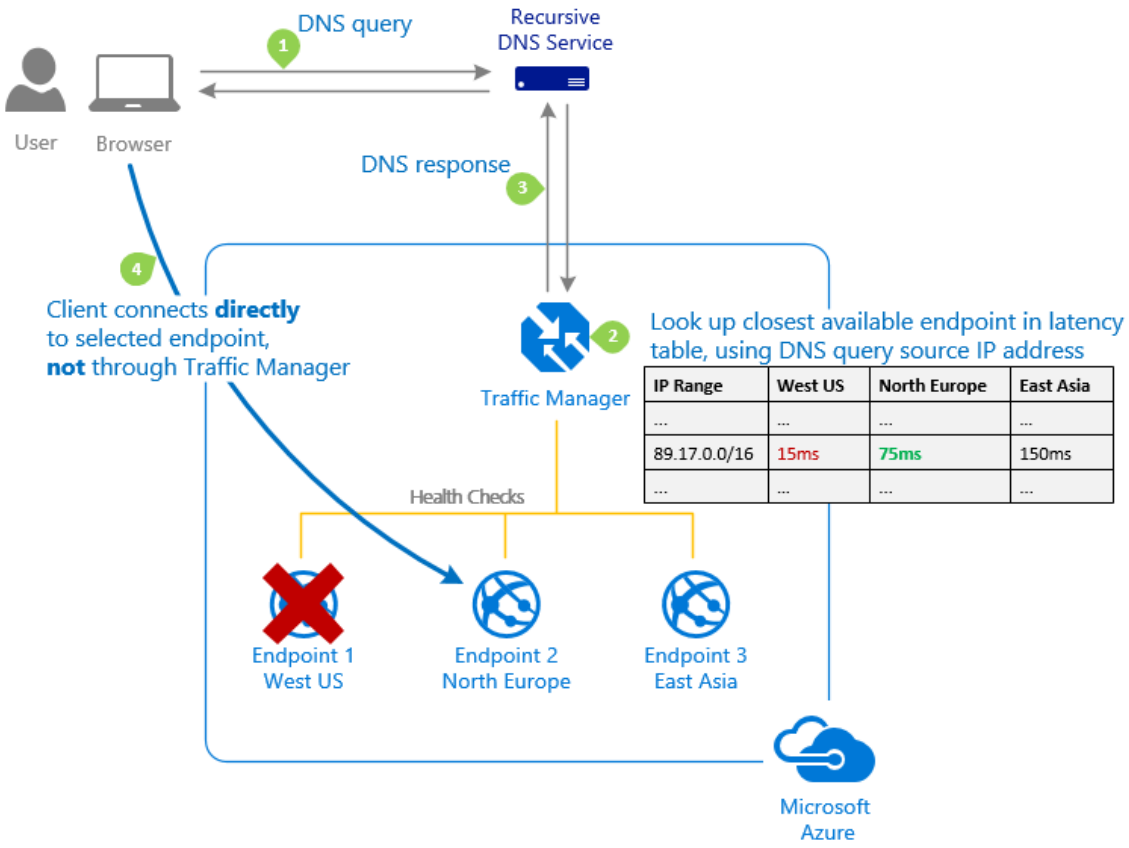
TRAFFIC MANAGER

- Performance method



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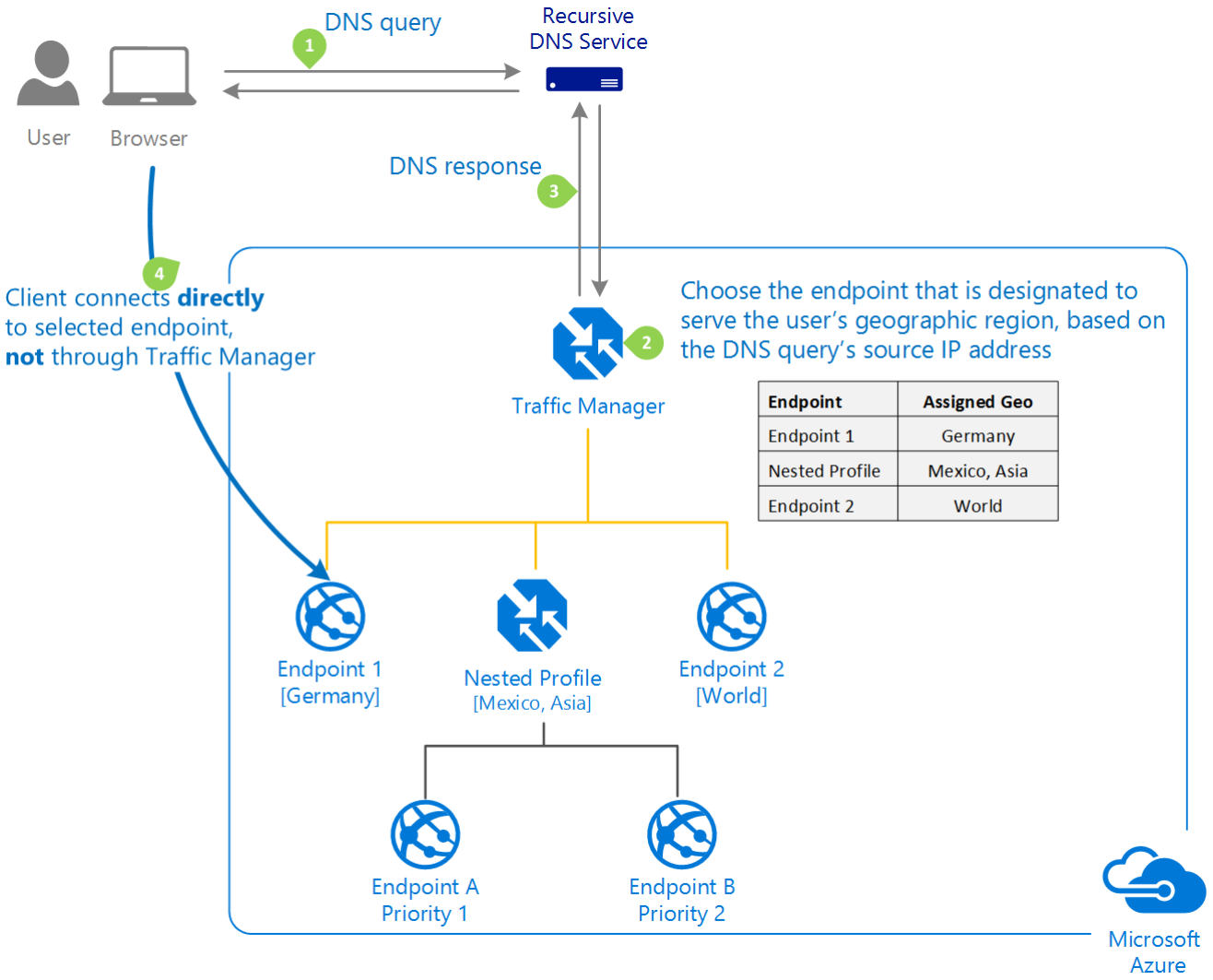
TRAFFIC MANAGER

- Geographic method



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FAILOVER ARCHITECTURES AND BEST PRACTICES

Active-Active vs. Active-Passive
Trade-offs in complexity, cost, and consistency

Health-Based Failover
Automate using probes and Route 53–style policies

Automated Runbooks
Use Automation or Functions to orchestrate failover tasks

Data Replication
Geo-redundant storage, Cosmos DB multi-master, or SQL failover groups

Chaos Engineering
Regularly test failover paths with controlled experiments

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LAB: Load Balancer & Traffic Manager

- Deploy Azure VMs with ARM templates
  - Multi-region
- Implement Load Balancing
- Implement Traffic Manager balancing

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POP QUIZ:

Your primary region goes down. You want DNS-based failover to kick in within 30 seconds, but avoid excessive DNS query load. What TTL and health-probe settings strike the best balance?
A. TTL = 30 s, probe interval = 10 s
B. TTL = 300 s, probe interval = 90 s
C. TTL = 5 s, probe interval = 60 s
D. TTL = 60 s, probe interval = 30 s

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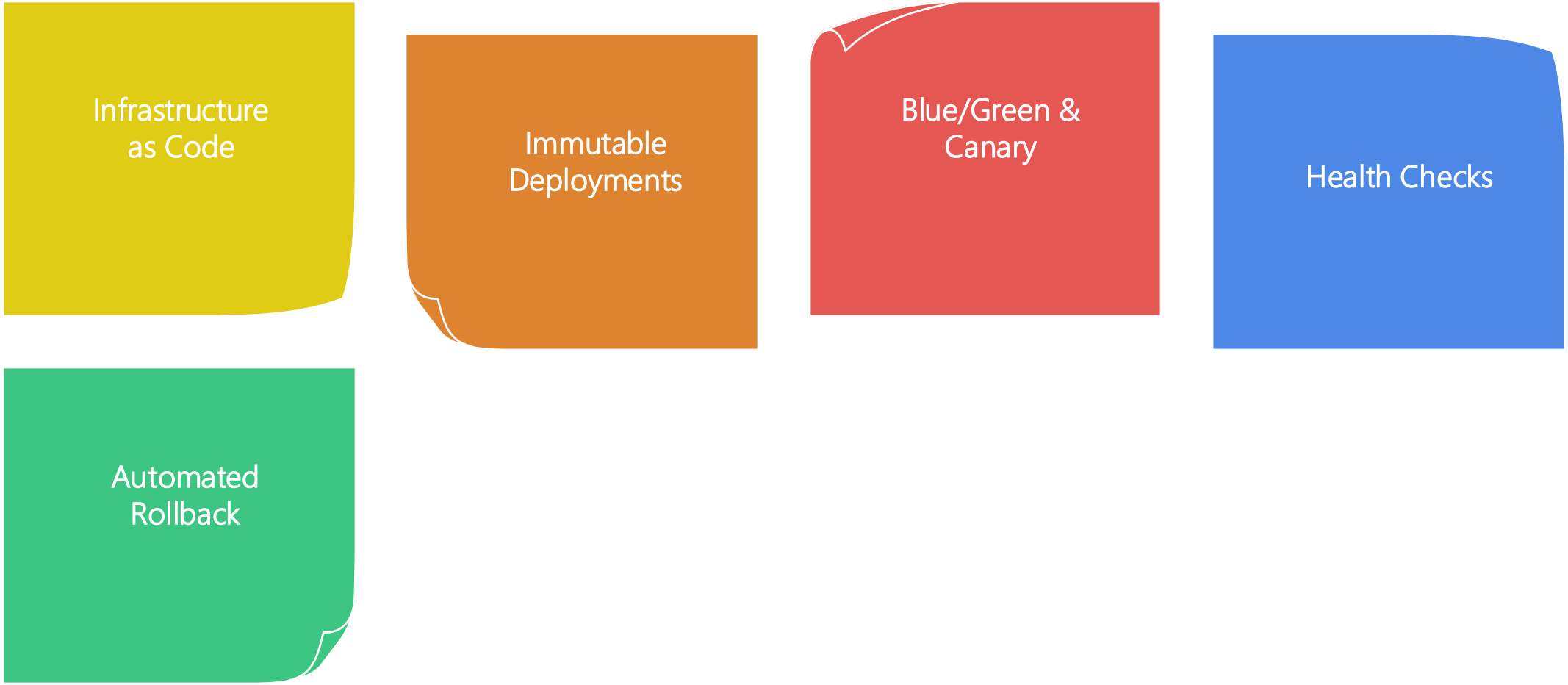
PRODUCTION DEPLOYMENTS BEST PRACTICES



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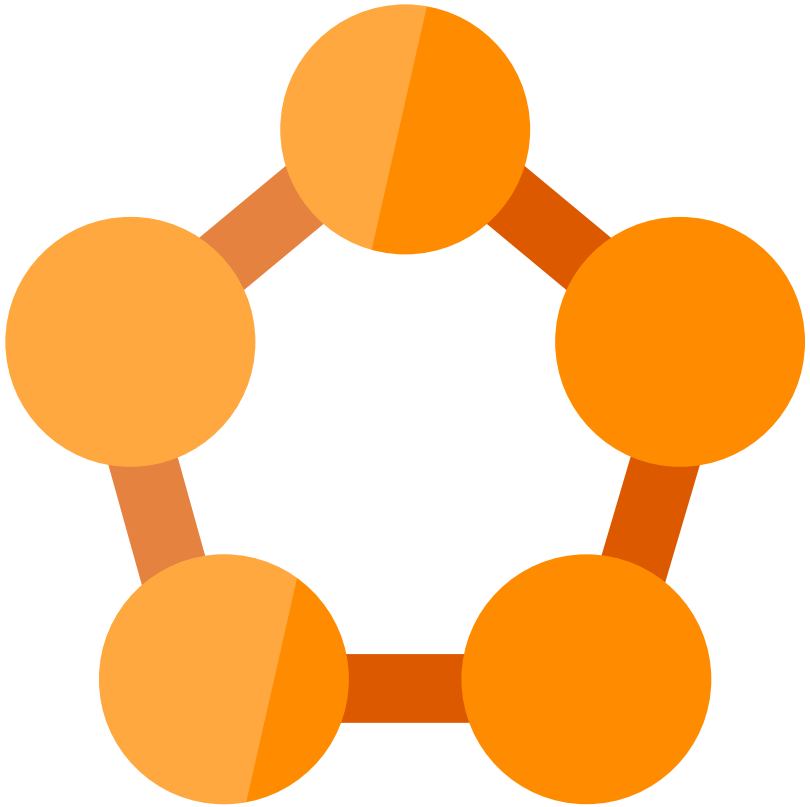
SERVICE FABRIC



Microservices Platform
Hosts stateful and stateless services at scale

Reliable Actors & Services
Built-in patterns for state and lifecycle management

Cluster Resource Management
Automatic placement, scaling, and healing of services

Rolling Upgrades
Zero-downtime application and OS patching

Health-Driven Failover
Monitored by Fabric to maintain SLA compliance

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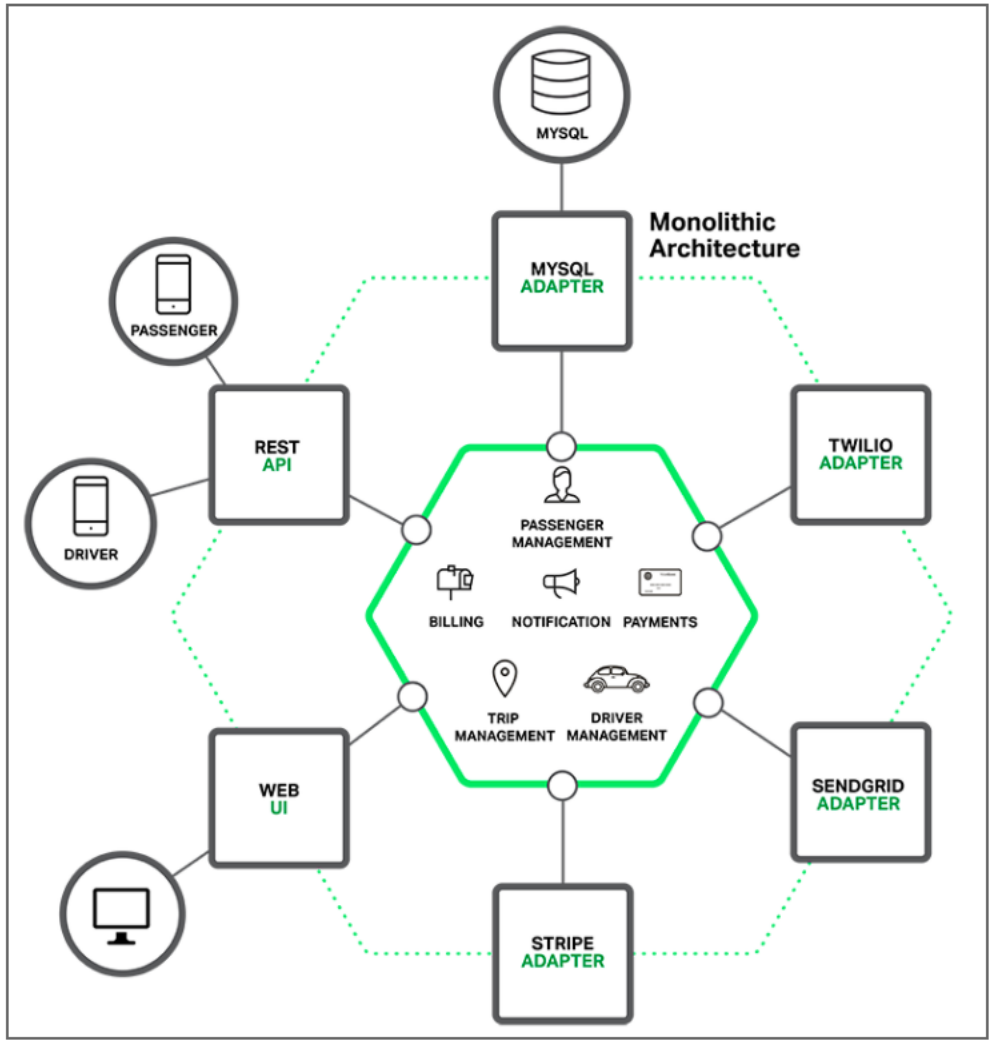
MONOLITHIC APP

- Single development stack
- Changes are difficult
- Updates can lead to downtime



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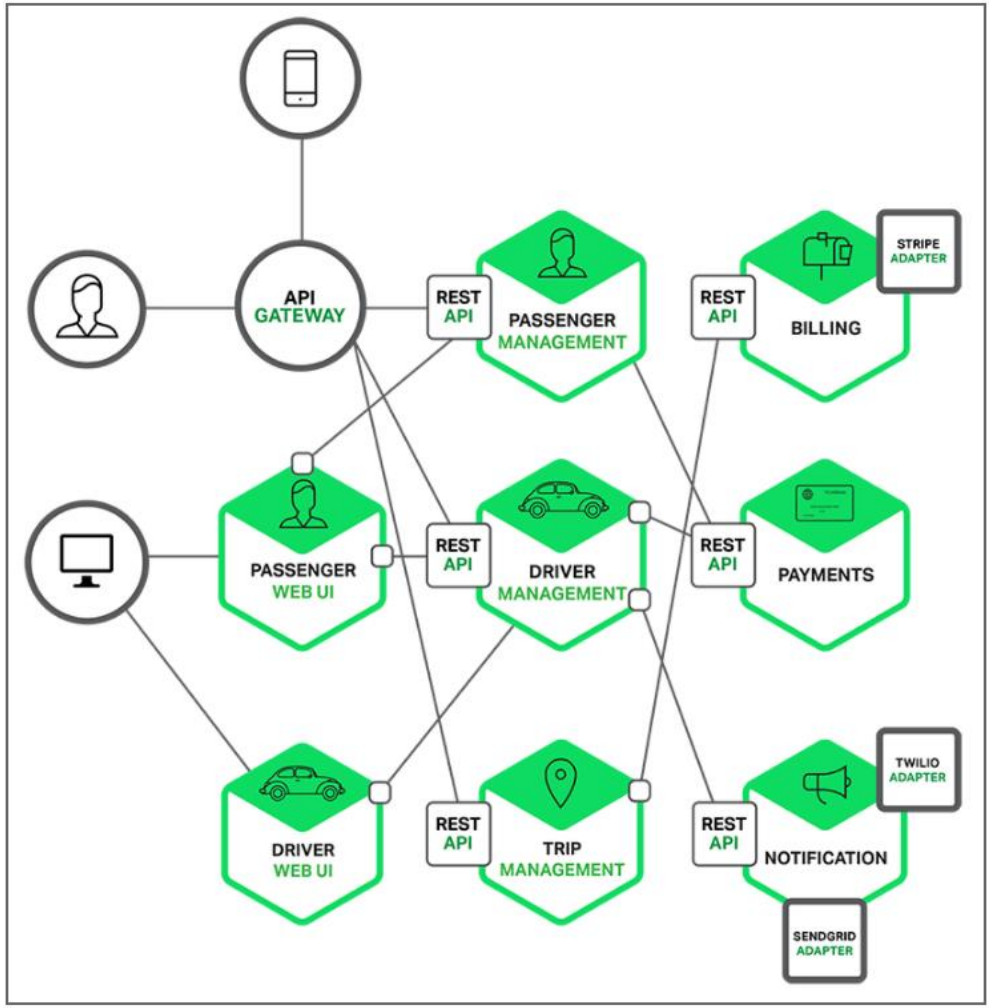
MICROSERVICE APP

- Services communicate with each other over the network.
- Update services independently.
  - No need to change other services.
- Self-contained.
  - You can update the code without knowing anything about internals of other microservices.



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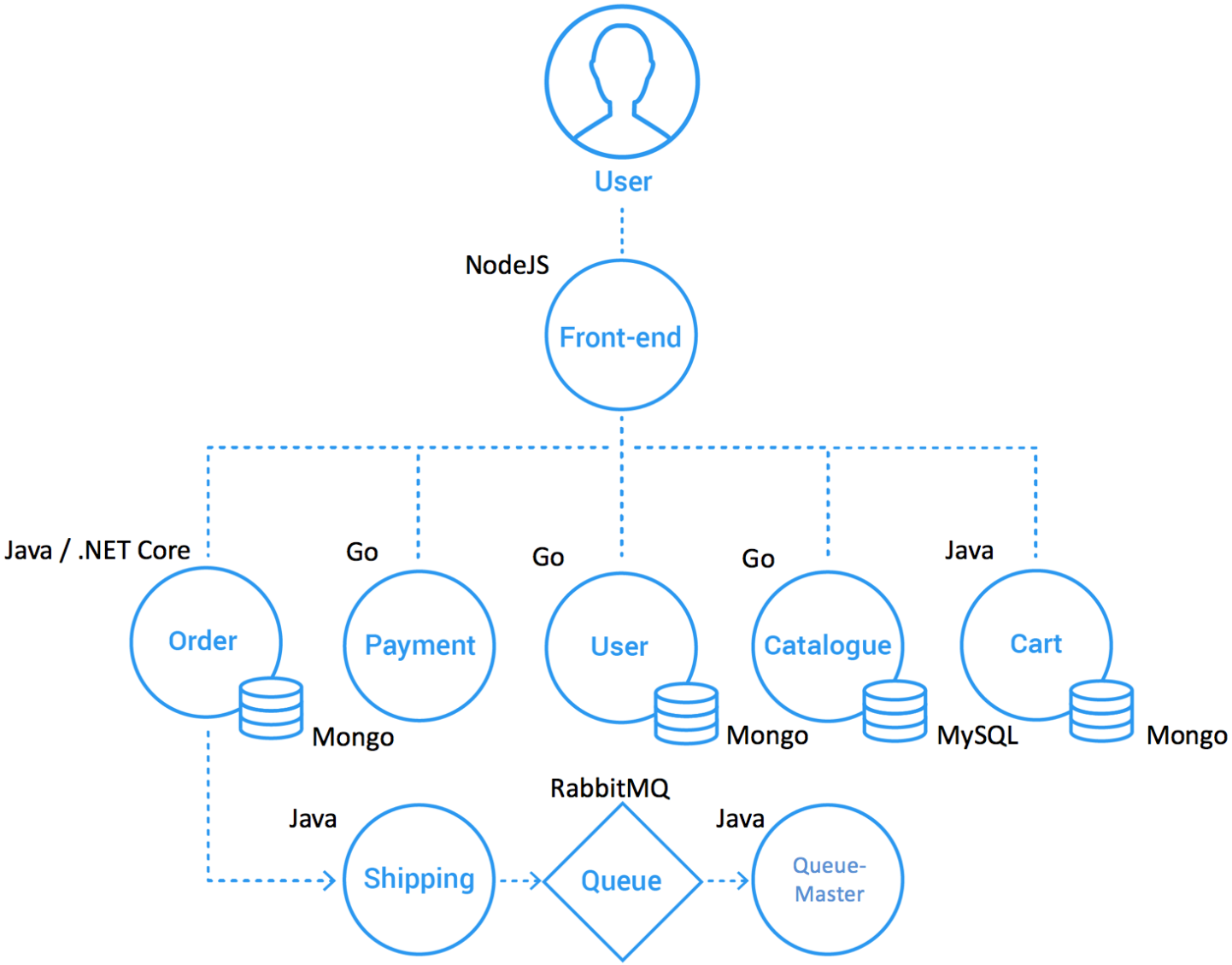
MICROSERVICE EXAMPLE APP

- Go
- Spring Boot
- Node.js
- RabbitMQ
- MySQL
- Mongo



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AZURE SERVICE FABRIC

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AZURE SERVICE FABRIC

- Provide a distributed systems platform that allows developers to build and deploy microservice applications without enduring typical complexities and problems usually associated with microservices application development.
- Rolling upgrades
  - Service Fabric upgrades apps at zero downtime
- Guaranteed availability
  - self-healing, autoscaling

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AZURE SERVICE FABRIC

- Shrinking set of use cases
- Service Fabric was used prior to AKS
- Supports containers
- Start migrating to Kubernetes

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LOAD BALANCERS & TRAFFIC MANAGER

Azure Load Balancer
Layer 4 regional LB for internal and public traffic

Application Gateway
Layer 7 routing, WAF, SSL offload, and path-based rules

Traffic Manager
DNS-based global traffic distribution with failover and performance routing

Health Probes
Enable granular endpoint health checks for each load-balancer

Hybrid Scenarios
Combine global DNS routing with local load balancing for end-to-end resiliency

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AZURE APPLICATION GATEWAY

Application Gateway's **WAF** offers managed rule sets that defend against common web vulnerabilities like SQL injection and cross-site scripting, as well as the ability to author custom rules for specialized threats—critical for production security.

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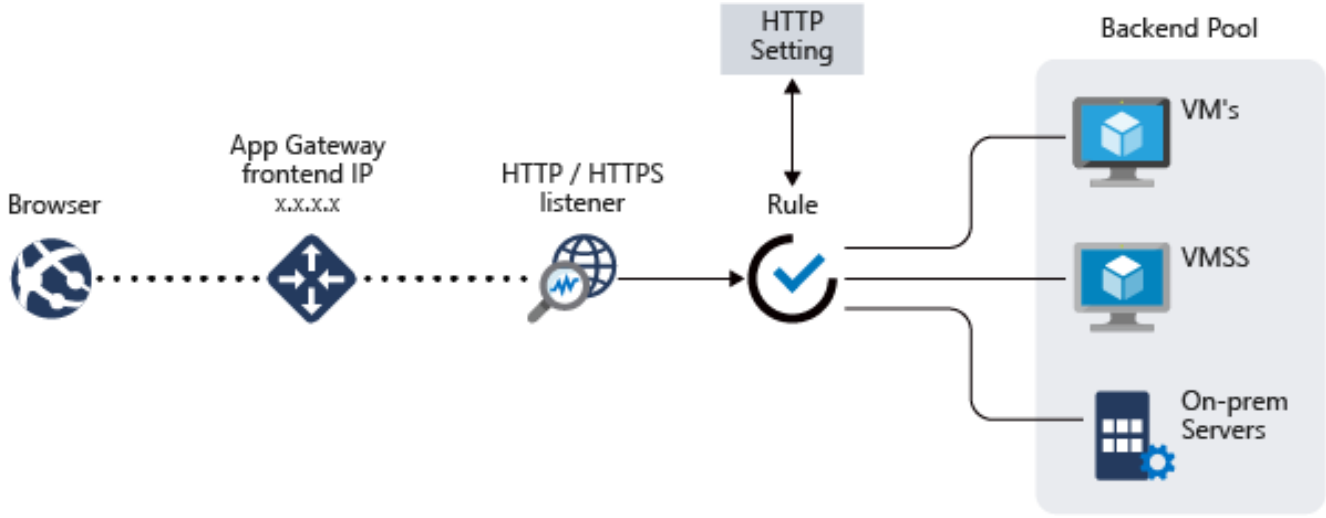
TRADITIONAL LOAD BALANCING

- Layer 4 (TCP & UDP)
- Limited to:
  - source IP, address, port
  - dest IP, address, port



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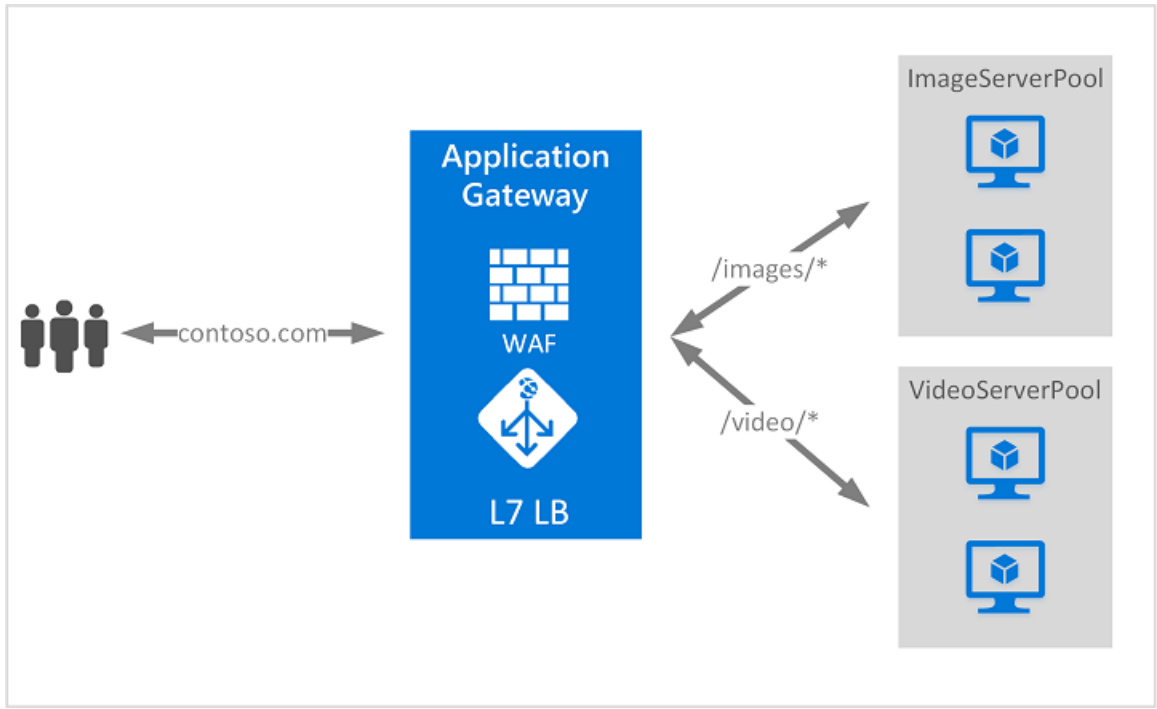
AZURE APPLICATION GATEWAY

- Proxy that can route traffic based on Layer 7 (HTTP)
  - URI path
  - host headers



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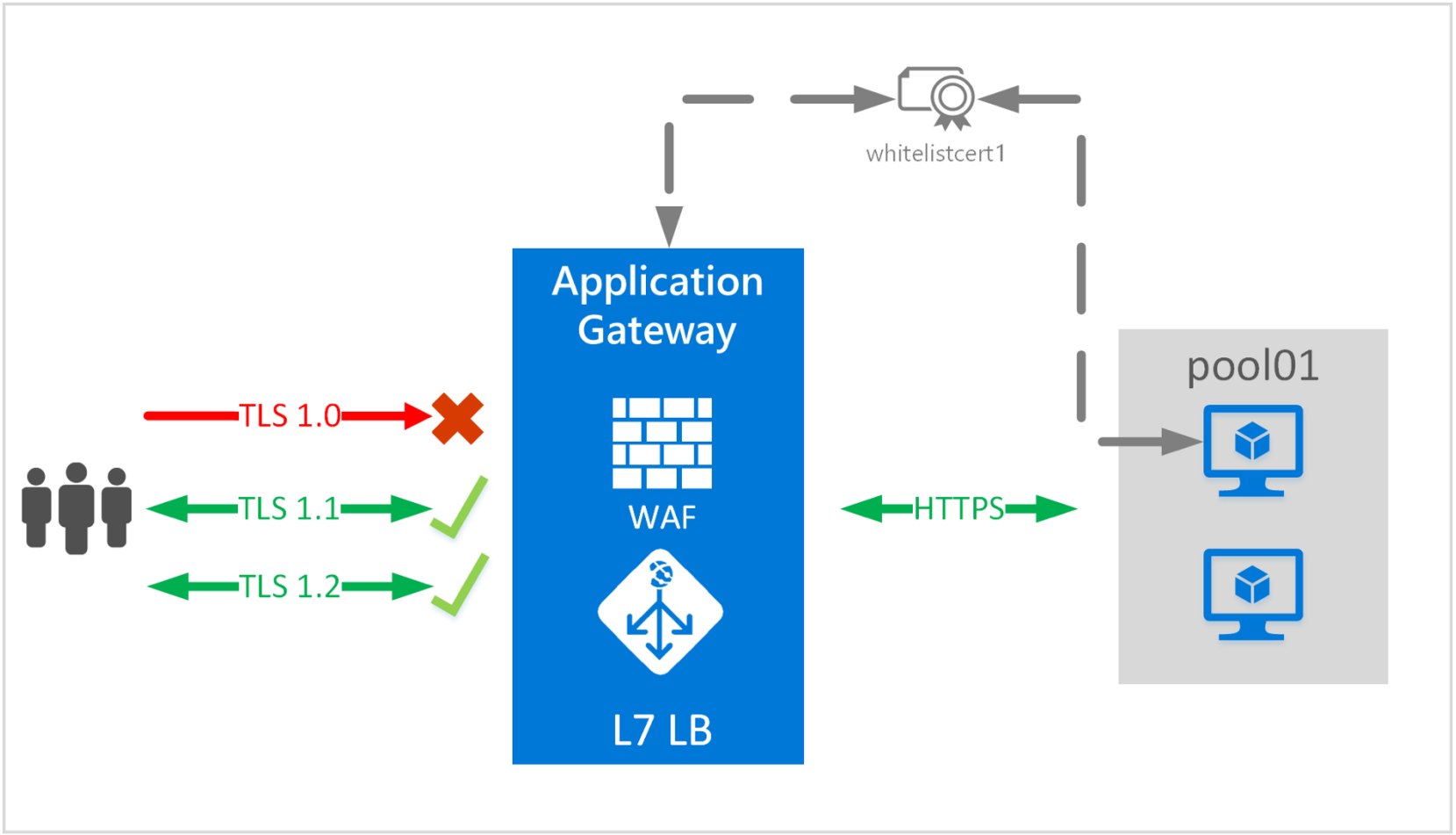
AZURE APPLICATION GATEWAY

- SSL Termination
- Web Application FW
  - up to 100 websites
- Monitoring
  - Azure Security Center



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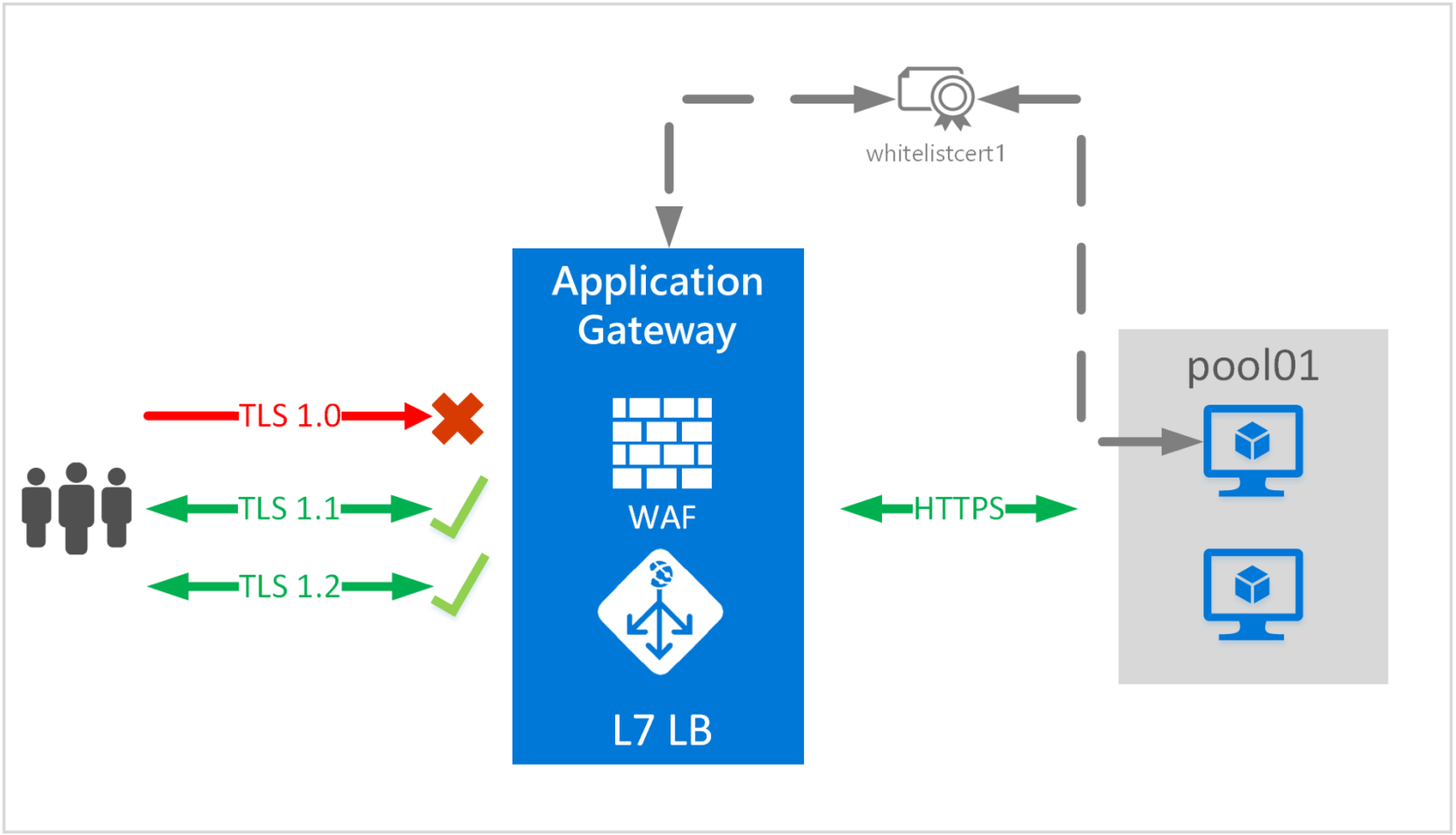
AZURE APPLICATION GATEWAY

- Redirect HTTP -> HTTPS
  - Global or by URL
- Rewrite HTTP headers



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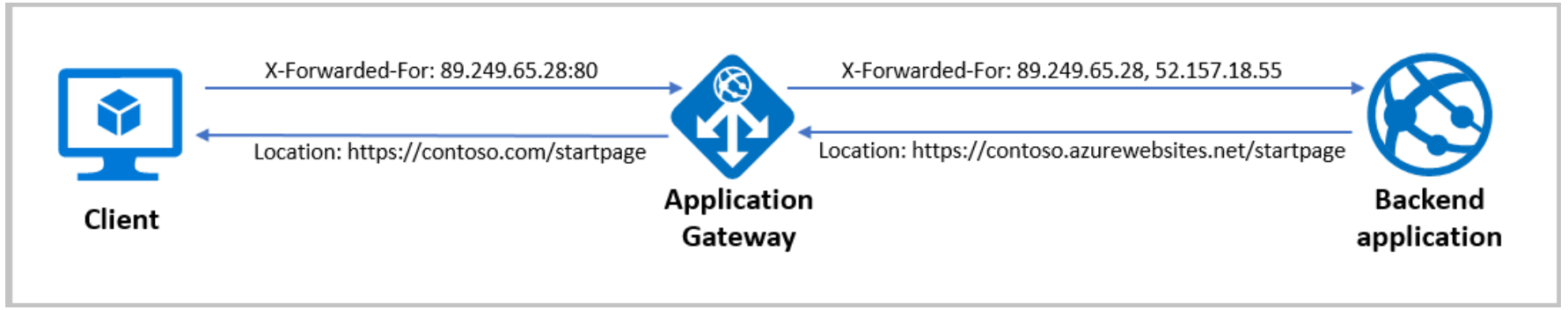
AZURE APPLICATION GATEWAY

- Rewrite HTTP headers



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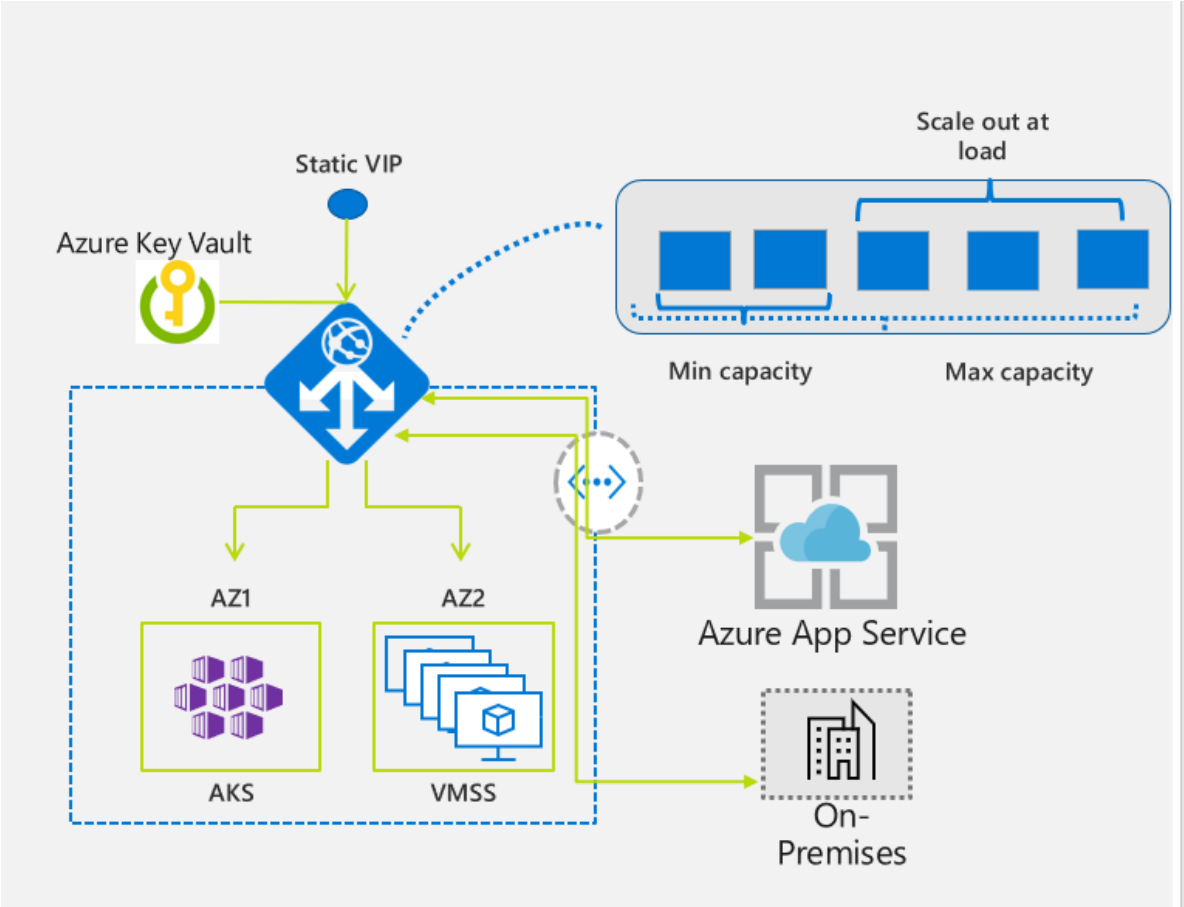
AZURE APPLICATION GATEWAY

- Supports autoscaling
- Spans multiple zones



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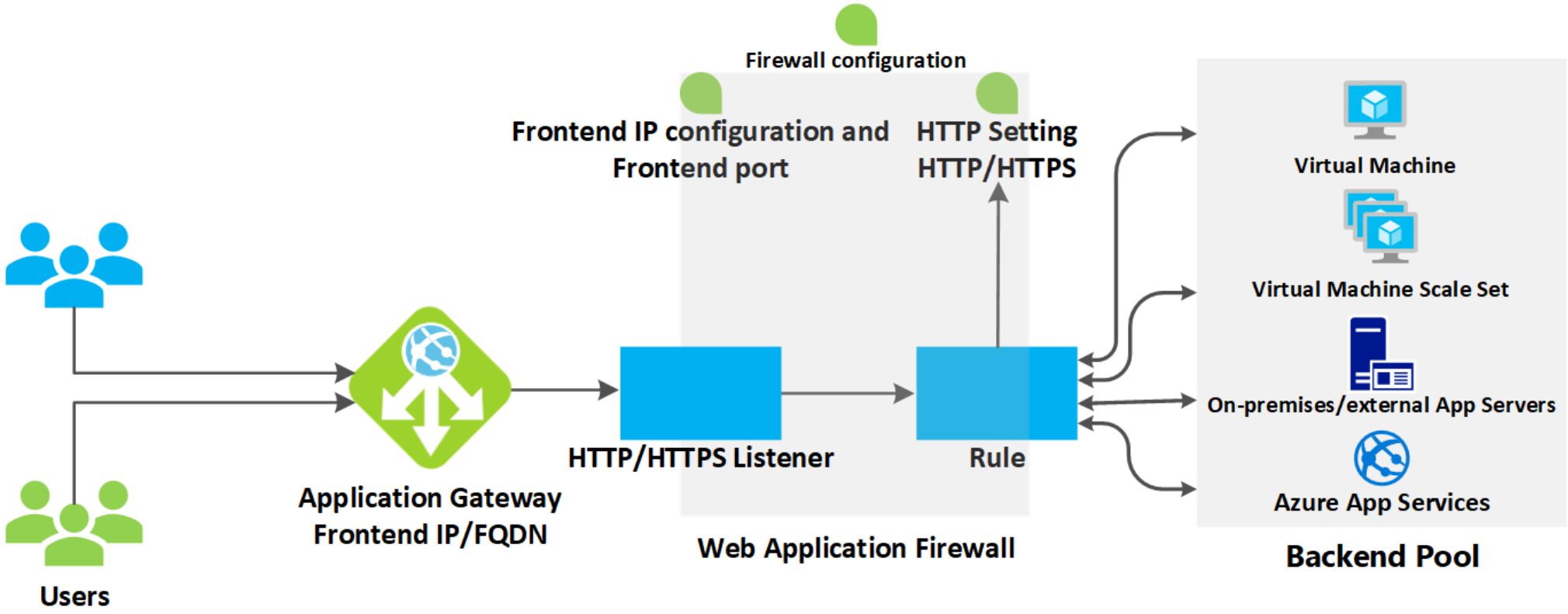
AZURE APPLICATION ARCHITECTURE



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POP QUIZ:

Which approach most directly prevents “configuration drift” in production environments?

A. Periodic manual audits of server settings
B. Storing VM images in a shared blob container
C. Defining all resources in version-controlled ARM/Bicep or Terraform code
D. Using Azure Policy to enforce tags on resources

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POP QUIZ:

In a Canary deployment you want to route 10% of traffic to a new version and monitor errors before full rollout. Which combo of Azure services is *best*?

A. Traffic Manager + two App Service slots with weighted endpoints
B. Azure Front Door + single App Service with staging slot swap
C. Azure Load Balancer + VM Scale Set with health probes
D. Application Gateway + Service Fabric upgrade domains

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COURSE REVIEW

This course has equipped you with the end-to-end skills needed to architect, build, and operate production-grade solutions on Azure. Continue to refine these patterns in your own projects, keep exploring new Azure features, and leverage Azure's rich ecosystem to drive innovation in your organization.

- Azure Core Infrastructure & IaC
  Mastered the portal, VNets, storage, and defined environments with ARM/Bicep
- Compute Scaling & Resiliency
  Explored VMs (Availability Sets, Scale Sets), Containers (AKS), and serverless compute
- Identity & Access
  Integrated on-premises AD with Entra ID, secured apps/APIs via app registrations
- Monitoring & Geo-Resiliency
  Implemented Azure Monitor, App Insights, autoscale rules; designed multi-region failover
- Production Deployment Patterns
  Applied best practices: IaC pipelines, blue/green & canary, Service Fabric, LB/Traffic Manager, App Gateway

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INDIVIDUAL KEY TAKEAWAYS

Write down three key insights from today's session.

Highlight how these take aways influence your work.

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Q&A AND OPEN DISCUSSION

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YOU