Working in Production

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Overview

How can I monitor my functions?
- Invocation history, log output and cost

How can I secure my functions?
- Manage function keys

How can I configure CORS?

Integrating with other Azure Services
- Proxies
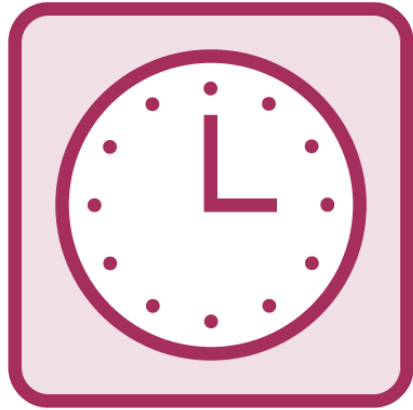- Key Vault
- API Management

How can I build workflows?
- Durable Functions

How can I learn more?

How Can I Monitor My Functions?

Invocations

When did my functions run?

Logs

LOGS

What did they output to the logs?

Cost

How much am I spending?

Application Insights

Azure Portal

Demo

View invocation history in Application Insights

Demo

Monitoring Cost

How can I secure my
functions?

Most Azure Function
triggers are already secure

But what about HTTP triggered functions?

Function Keys

Authorization Levels
- Anonymous, Function & Admin

Function level authorization
- Specific code per function
- "code" query string parameter
- "x-functions-key" HTTP header

Admin level authorization
- One code for all functions

Manage keys in the Azure Functions portal
- Cycle and revoke keys
- Generate keys per client

Suitable for securing server to server calls

Alternative Ways to Secure HTTP Triggered Functions

Enable "Easy Auth"

- Applies to the entire Function App

- Integrates with Azure AD, Google, Facebook and others

- Redirects unauthorized users to login page
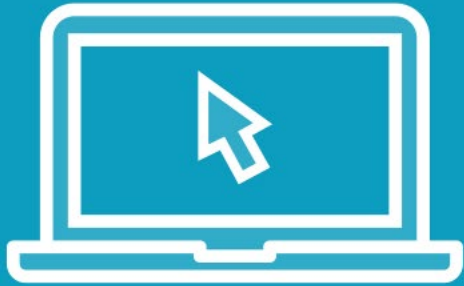
Perform your own validation

- E.g. Validate a JWT bearer token

- Danger! High risk of mistakes!

Azure API Management

- Offers many authorization features

- Proxies traffic to your Function App

Demo

Working with function keys

Demo

Configuring CORS

- Calling functions from JavaScript

What Other Services Can I Integrate With?

Azure Functions Proxies
> Redirect incoming HTTP requests
> Implement a "SPA"

Azure API Management
> Acts as an API gateway
> Can add security
> Caching, usage quotas, rate limiting
> Serverless pricing tier

Azure Key Vault
> Store secrets securely
> Access with a "Managed Identity"

Azure DevOps Pipelines
> Automate Function App deployment
> Deploy ARM templates

Azure Event Grid
> Subscribe to any Azure resource
> e.g. deployment completed

Demo

Azure Functions Proxies
- proxies.json

Demo

Accessing Secrets in Key Vault

- System Assigned Managed Identity

@Microsoft.KeyVault(SecretUri=
https://my-key-vault.vault.azure.net
/secrets/my-secret/
29e8f1b62cb34f3aa40f0757aea0388d)

"Key Vault References"

Demo

Integrating with Azure API Management

How Can I Build Reliable Workflows?

Payment Provider
Web-hook

Message in
Queue

License file
in Blob Storage

Send email
to customer

How far through are we?

How can we handle errors?

How can we retry transient failures?

How can we wait for external events?

How can we execute steps in parallel?

Durable Functions

Orchestrator function – defines the steps in your workflow

Activity function – implements a step in your workflow

Demo

Durable Functions

Summary

Monitoring functions

- Application Insights
- Metrics

Function security

- Function keys
- CORS

Integrating with other Azure services

- Proxies
- Key Vault
- API Management

Durable Functions

How can I learn more?

Azure Functions on Pluralsight

What to watch next?

Keep in touch!

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