Azure Functions Fundamentals

INTRODUCING AZURE FUNCTIONS

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In This Module...

Get started with Azure Functions

- A new way of architecting applications

What are Azure Functions for?

- When should I use them?

What is “serverless”?

- “Process events with serverless code”
- Benefits of serverless

Later in This Course...

Creating Azure Functions

- Use your favorite language

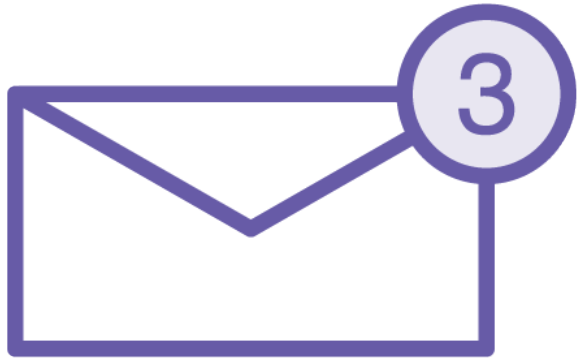
Using event triggers and bindings

Deploying your functions

Managing and monitoring your functions

Azure Functions = Events + Code

Time
Run a background task on a regular schedule



Data
Process messages in a queue or new items in blob storage

Web
Respond to a HTTP request or webhook

But Can't We Already Do That?

Azure Virtual Machines

Azure Cloud Services

Azure Web Apps & Web Jobs

Azure Virtual Machines

Install whatever you want

- Web servers, Windows services, etc

Infrastructure as a service (IaaS)

- Complete control of the server
- Choose your operating system

You are responsible

- Patching and maintaining
- Scaling

Azure Cloud Services

- Web Roles
- Worker Roles
- IIS and .NET pre-installed
- Automatic Scaling

Azure Web Applications & Web Jobs

Easy to deploy

Choice of many frameworks

Hosted in a “hosting plan”

- Combine many sites on one server
- Scale up to many servers

Web Jobs

- Simplified background tasks
- The basis for Azure Functions

Azure Functions

Simplified programming model

- Just the code to respond to the event
- No boilerplate
- Focus on the business requirements

New pricing model

- Pay as you go
- Only pay for what you use

App Service Plans

Free

Limited CPU and disk allocation

Shared

Basic

Your own dedicated server

Host many sites

Standard

Scale up to more powerful hardware

Scale out to more instances

Custom domain name

Premium

Staging environments, automated backups

Azure Functions Pricing

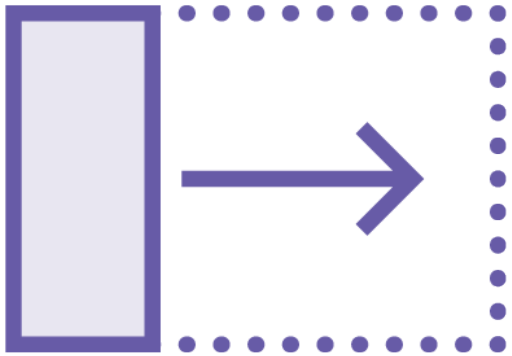
You can still use existing app service plans

- "Dedicated" service plan
- Predictable monthly costs

Or you can use the "Consumption" plan

- Also known as "Dynamic"
- Pay for what you use

Consumption Plan



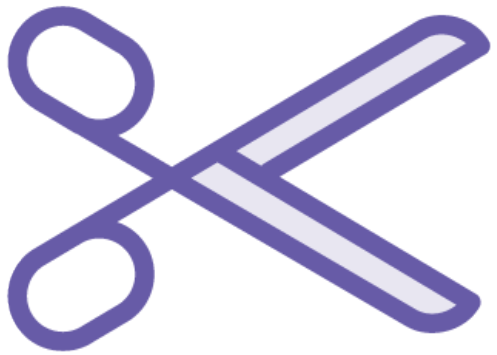
Billing Model

- Number of executions
- CPU Time (s) x RAM (GB)

Free monthly grant

- 1,000,000 executions
- 400,000 GB-s

Cutting Costs



Consumption Plan

- Limited to five minutes per execution
- Optional daily quota in GBs

Reduce your costs with

- Fewer invocations
- Faster invocation times
- Reduced memory requirements

What Are the Benefits of Azure Functions?

Rapid and simple development

- Code within the portal
- Eliminate boilerplate

All the power of Azure Web Apps

- CI, Kudu, Easy Auth, Certs, Custom Domains, Settings etc

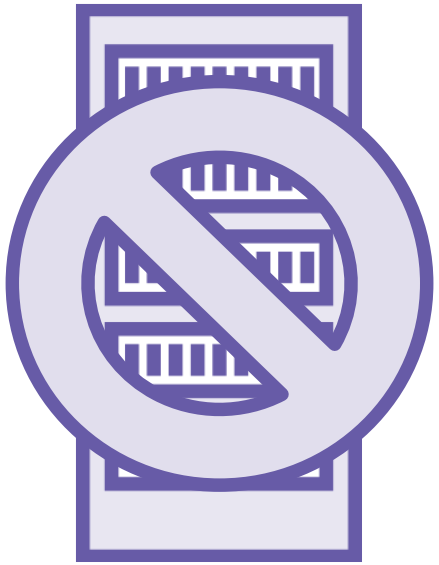
Cost effective pricing

- Pay for what you use

No servers to maintain

- Automatic scaling

What Is Serverless?



There are still servers (of course!)

- You delegate the management of them

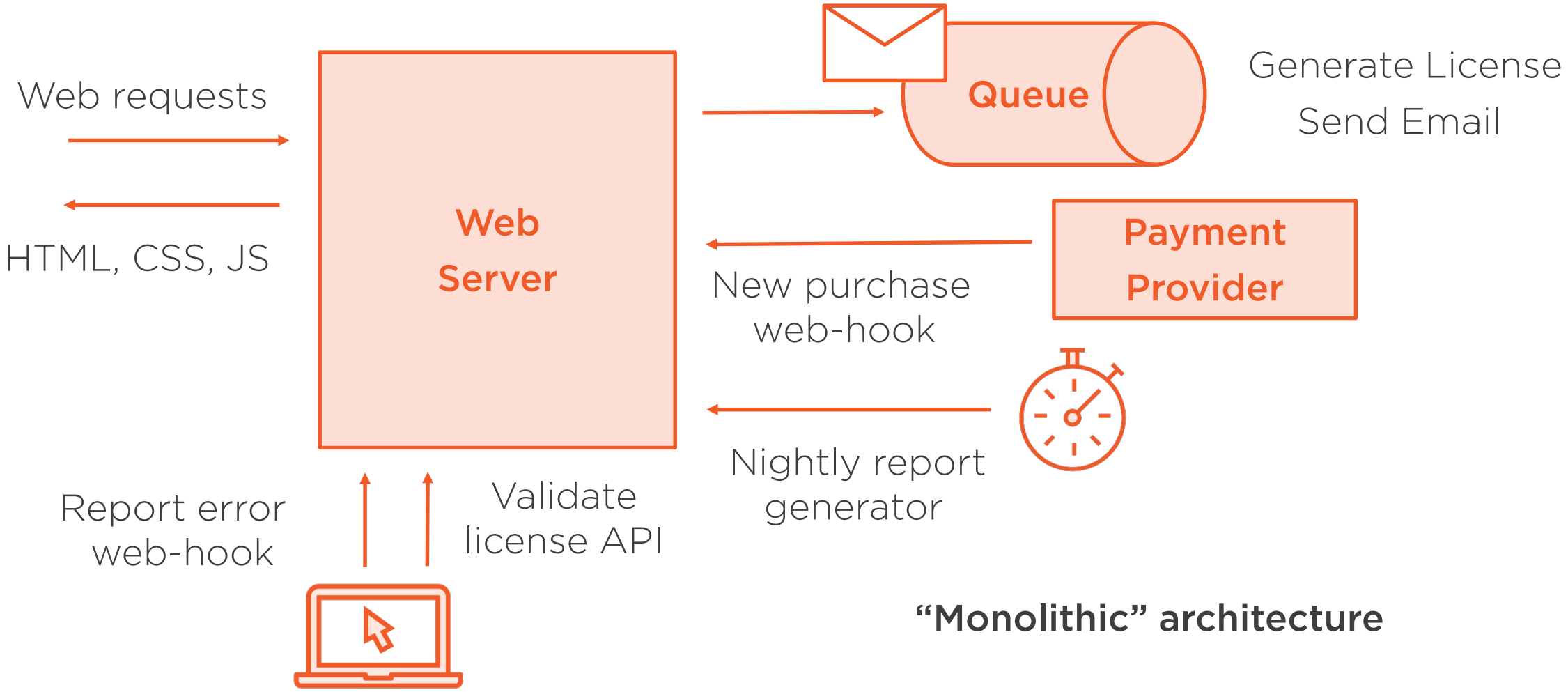
Use third party PaaS wherever possible

- e.g. DocumentDb, Auth0

Run your custom code on Azure Functions

- Respond to events
- Functions as a Service (FaaS)

A Real-World Example



“Monolithic” architecture

Refactoring to Functions

"Function App"

Payment Provider Web-hook → Message in Queue

Generate License Message → License File in Blob storage

License File → Send email to customer

Report error web-hook → New row in table storage

Validate license API → Database lookup

Nightly scheduled task → Generate report

Web Server

Azure Function Use Cases

- Experiments and prototyping
- Automating development processes
- Decomposing or extending monolithic applications
- Independent scaling
- Adapters for integrating systems
- Go serverless!

Summary

Azure Function = Event + Code

Built on Web Apps and Web Jobs

- Functions reside in a “Function App”

App Service Plans

- Dedicated plans – predictable cost
- Consumption plan – pay as you go
- Free monthly grant

Serverless Programming

- Focus on the business needs
- It’s not all or nothing

Next Up...

Creating our First Azure Function