Architecting for the cloud

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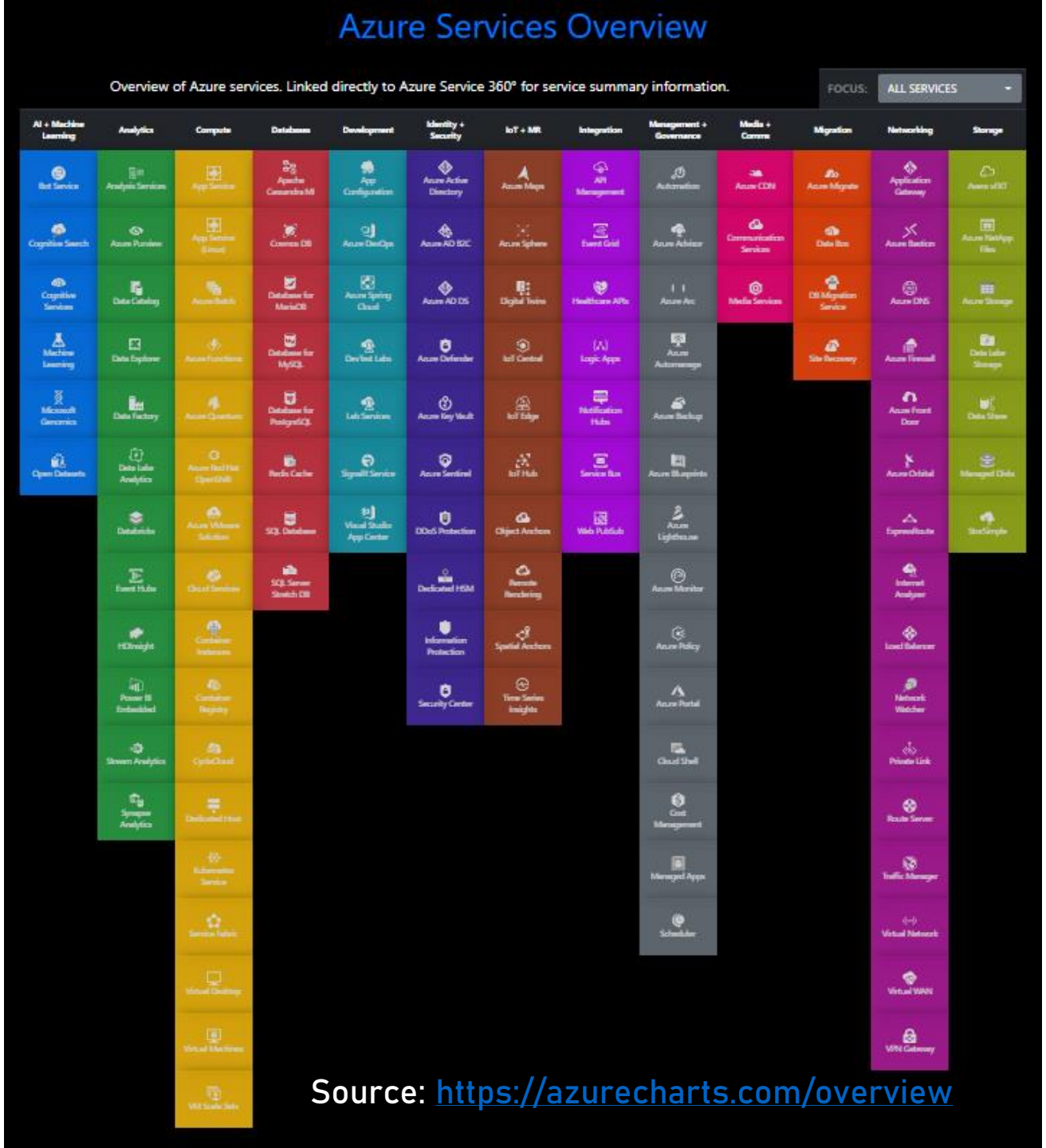
Architecting for the cloud

- Similar to classic architecture…
- …with two notable differences:
  - Emphasis on utilization of existing services
  - Emphasis on cost

Using existing services

- The cloud offers hundreds of services


Azure Services Overview
Overview of Azure services. Linked directly to Azure Service 360° for service summary information.
FOCUS:
ALL SERVICES
AI + Machine Learning
Analytics
Compute
Databases
Development
Identity + Security
IoT + MR
Integration
Management + Governance
Media + Comms
Migration
Networking
Storage
Source: https://azurecharts.com/overview

Using existing services

- It's usually a better idea to use an existing service

  instead of building one from scratch

Using existing services

- Built-in cloud services offer:
  - Better SLA
  - Automation
  - Scaling
  - Security
  - And more…

Using existing services

- Example #1: **Using SQL Server in the cloud**

Manual setup

1. Create VM in Azure 
2. Setup VM with SQL Server 

3. Configure backup
4. Configure geo-replication
5. Configure monitoring
6. Pay for VM
7. Pay for SQL Server license

Using Azure SQL

1. Create Azure SQL 

2. Use built-in backup, geo-replication, monitoring
3. Pay for DB only

Using existing services

- Example #2: **Run web API to copy data from file to DB**

Manual setup

1. Create VM in Azure
2. Install runtime
3. Install web server
4. Deploy code
5. Configure monitoring
6. Install dashboard
7. Pay for VM (~$100s / month)

Using Azure Functions

1. Create Azure Function App
2. Deploy code
3. Enjoy built-in monitoring and dashboard
4. Pay for actual use (first 1m calls free)

Using existing services

- Not always built-in services are the best option
- For example: Azure Functions won't allow registry access
- Rule of thumb:

> The more control and flexibility required – the more manual labor you'll have

Considering cost

- In the cloud you pay for what you use

CapEx

Capital Expense

Making upfront investment for future use / profit

OpEx

Operating Expense

Pay for what you actually use

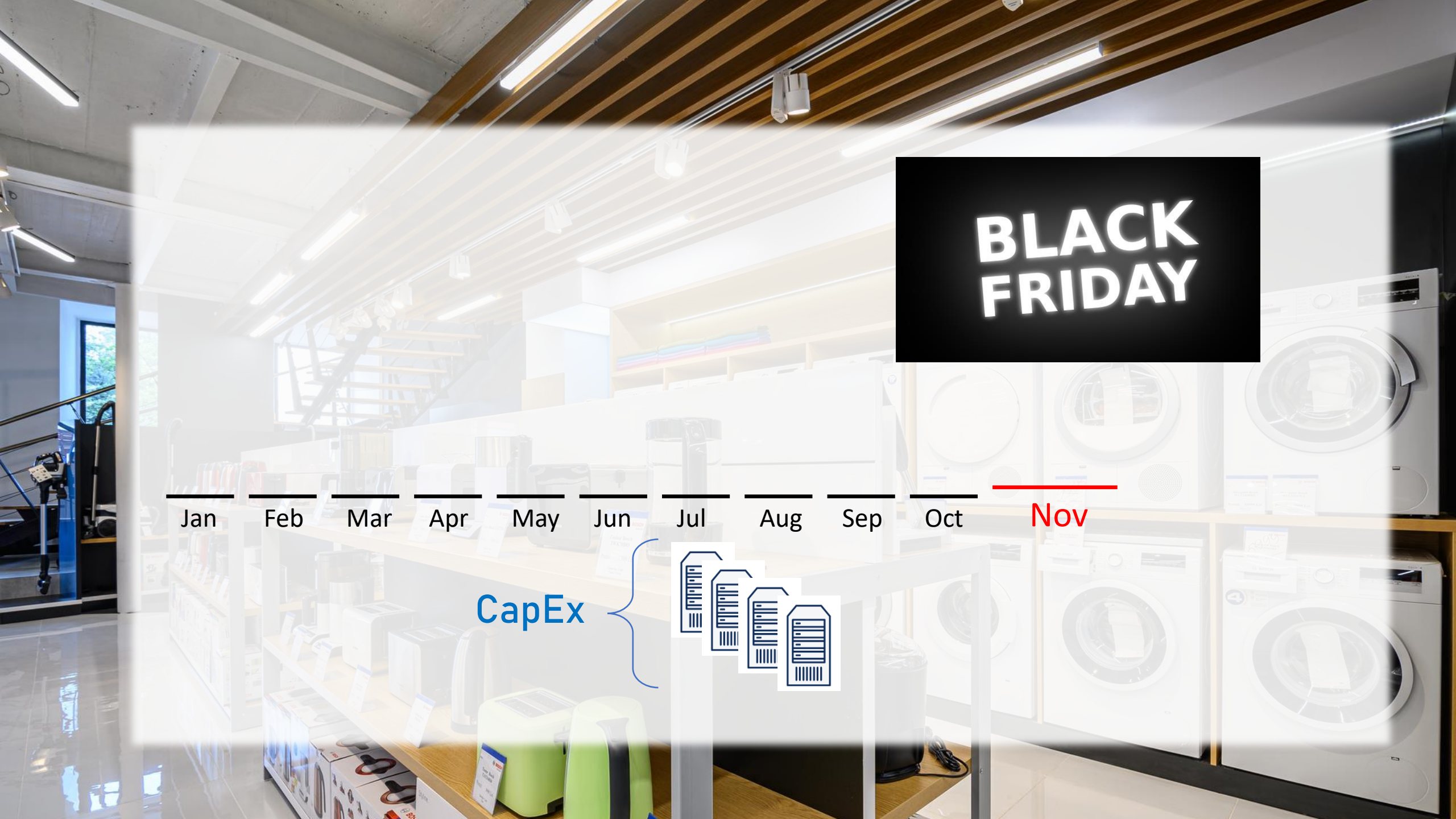
Traditional IT – CapEx Oriented

- Major investment for:
  - Building data center
  - Purchasing servers
  - Purchasing air conditioning
  - Purchasing network devices
  - Purchasing software licenses (DB etc.)

…And only then –
it can be used…

Traditional IT – CapEx Oriented

- There's also OpEx involved:
  - Electricity
  - Salaries
  - Maintenance
  - And more…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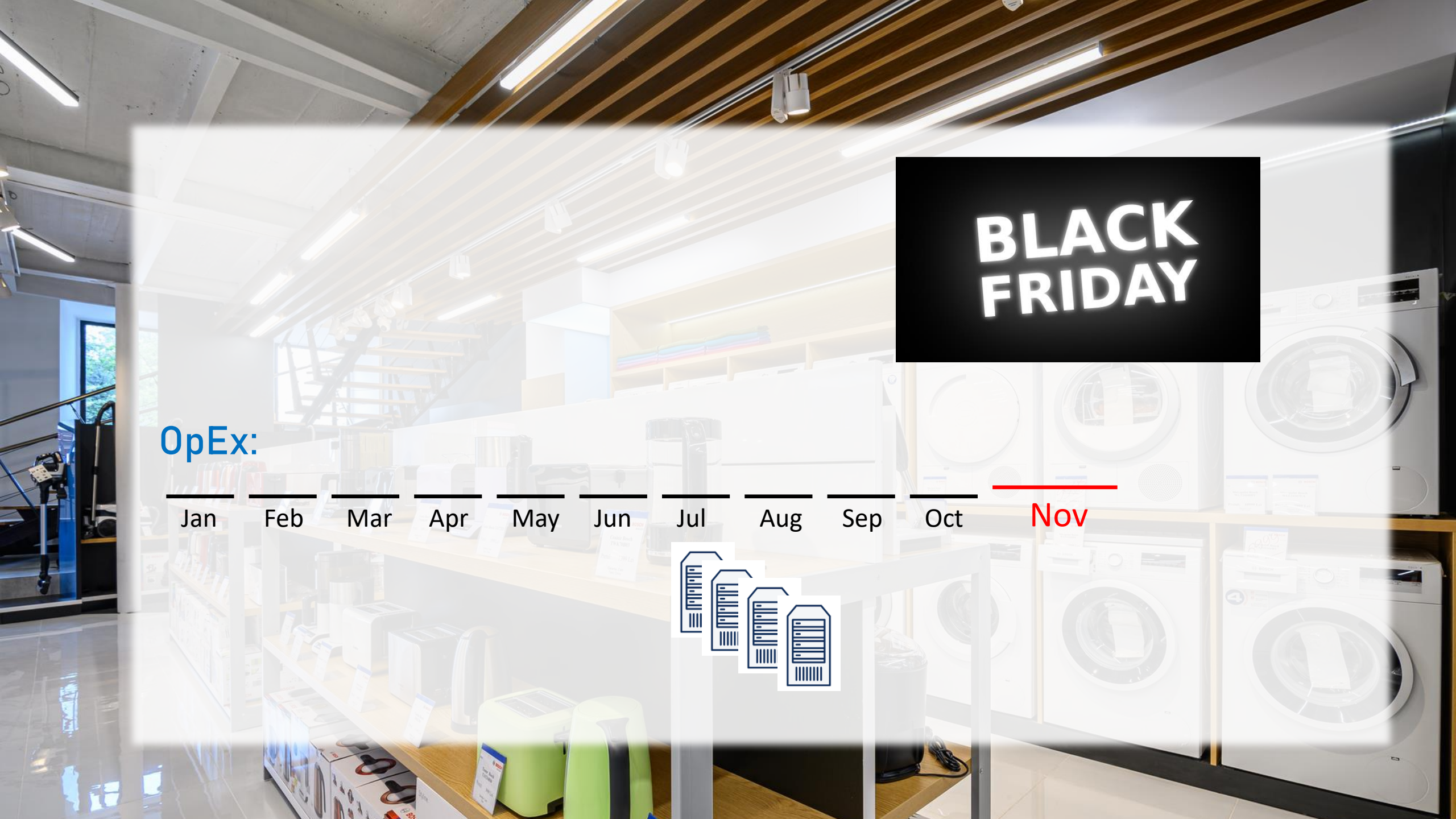
CapEx



OpEx:

Jan Feb Mar Apr May Jun Jul Aug Sep Oct **Nov**

CapEx

Capital Expense

Making upfront investment for future use / profit

- Non optimal
- Not flexible

This is what you get with the cloud →

OpEx

Operating Expense

Pay for what you actually use

- Extremely flexible
- Most optimal

Considering cost

- Always consider the cost of the architecture
- A constant tradeoff

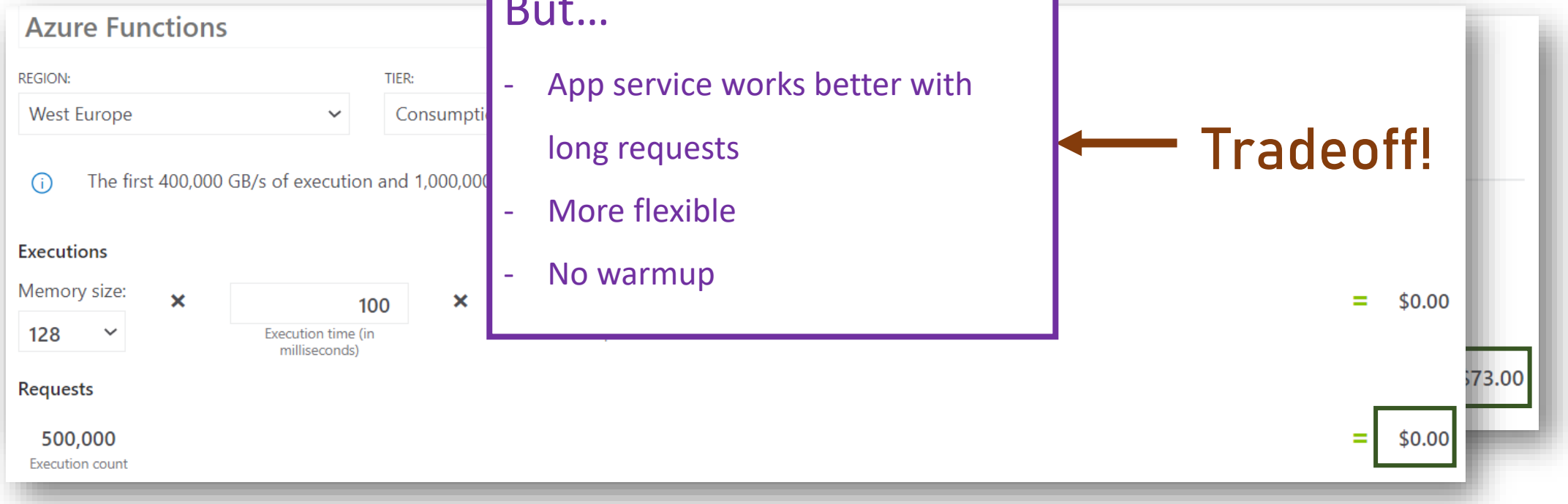
Considering cost

- Example #1:

Expose REST API to write logs

App service

Azure function



But…

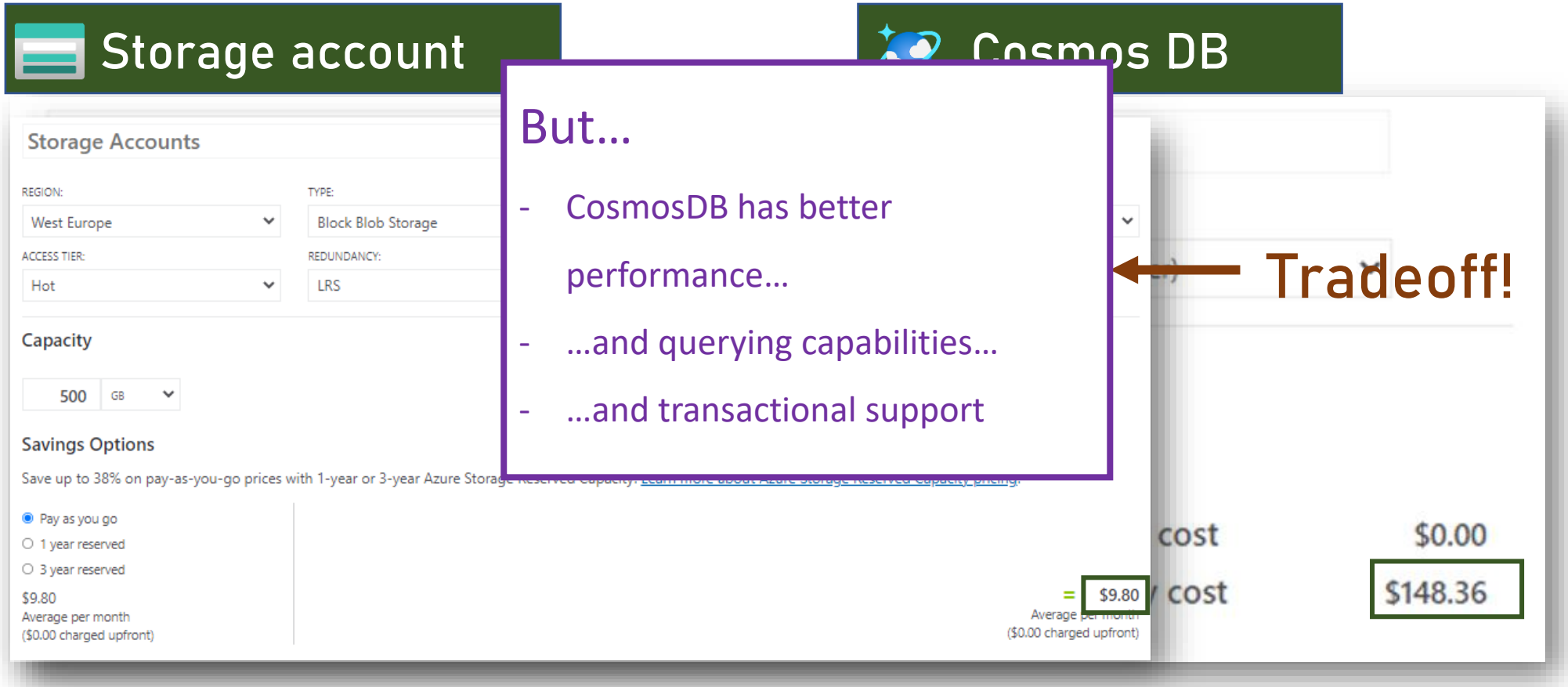
- App service works better with long requests
- More flexible
- No warmup

← Tradeoff!

Considering cost

- Example #2:

Store 500GB of unstructured data

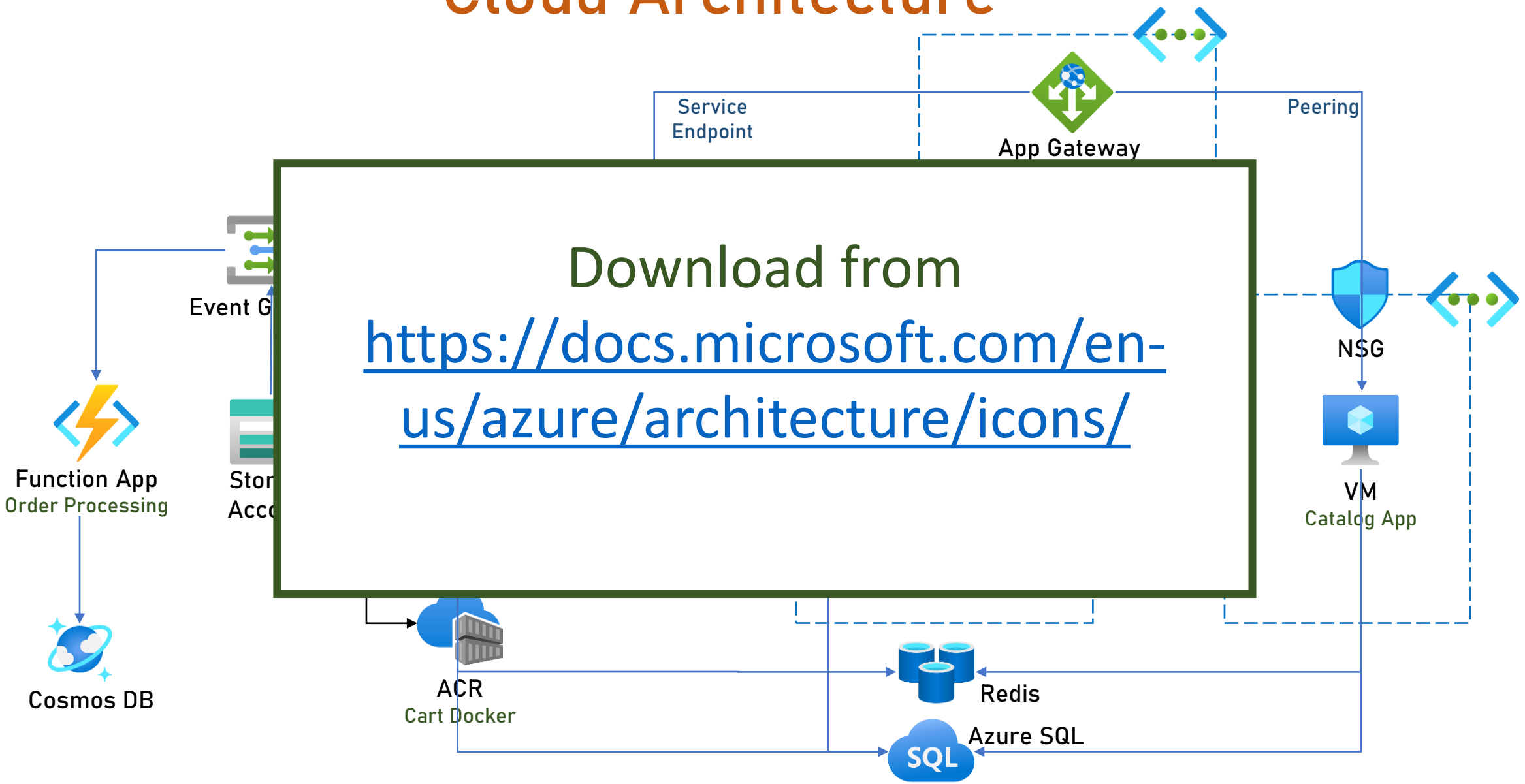


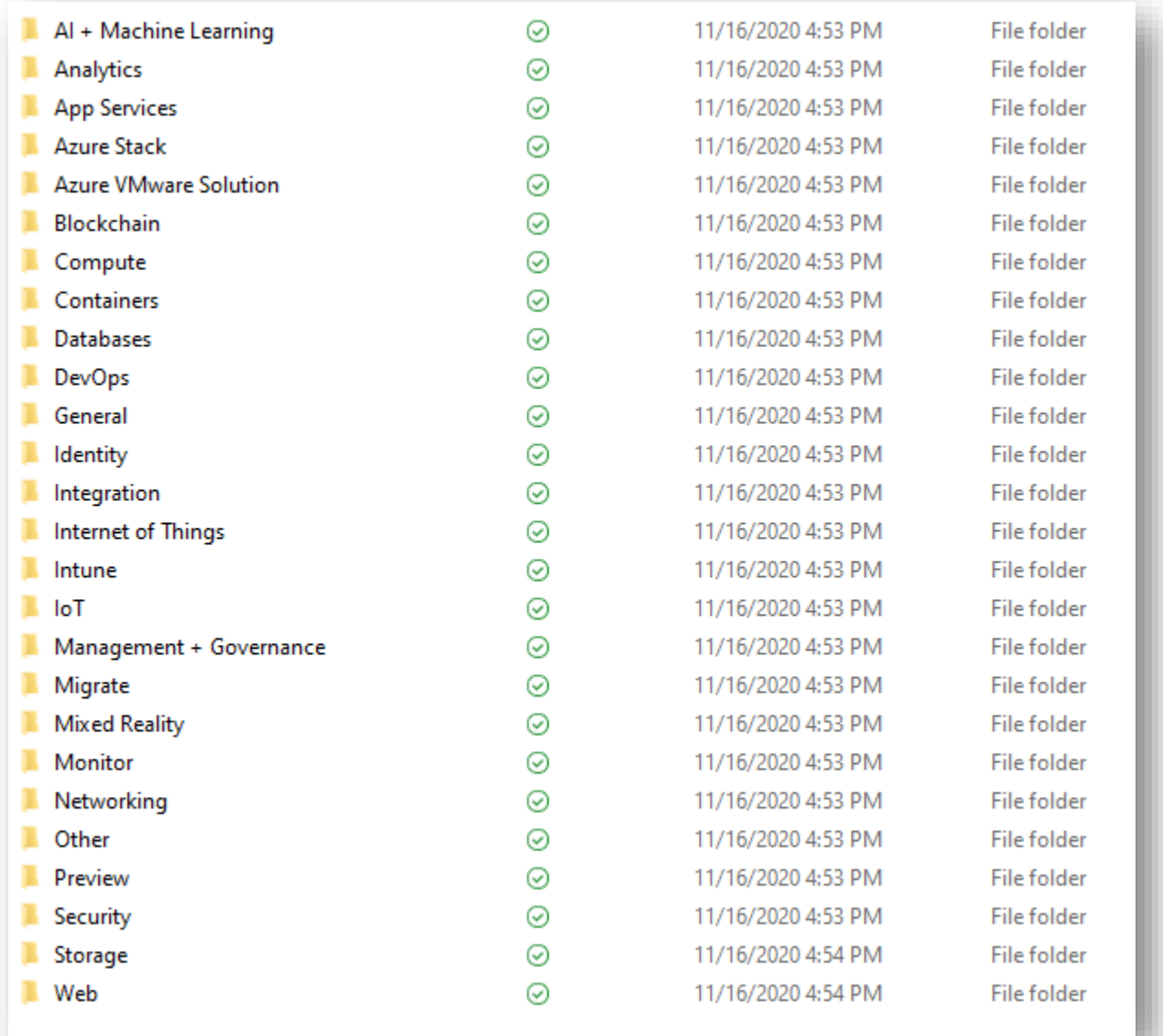
Using Azure icons

- Use Azure icons in the architecture diagram
  - Universal
  - Easily understandable
  - Aesthetic

ReadIt!

Cloud Architecture

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Other 11/16/2020 4:53 PM File folder
Preview 11/16/2020 4:53 PM File folder
Security 11/16/2020 4:53 PM File folder
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Web 11/16/2020 4:54 PM File folder