Microsoft

Azure Dev Days

for developers, by developers

Ravi Tella
MTC Houston

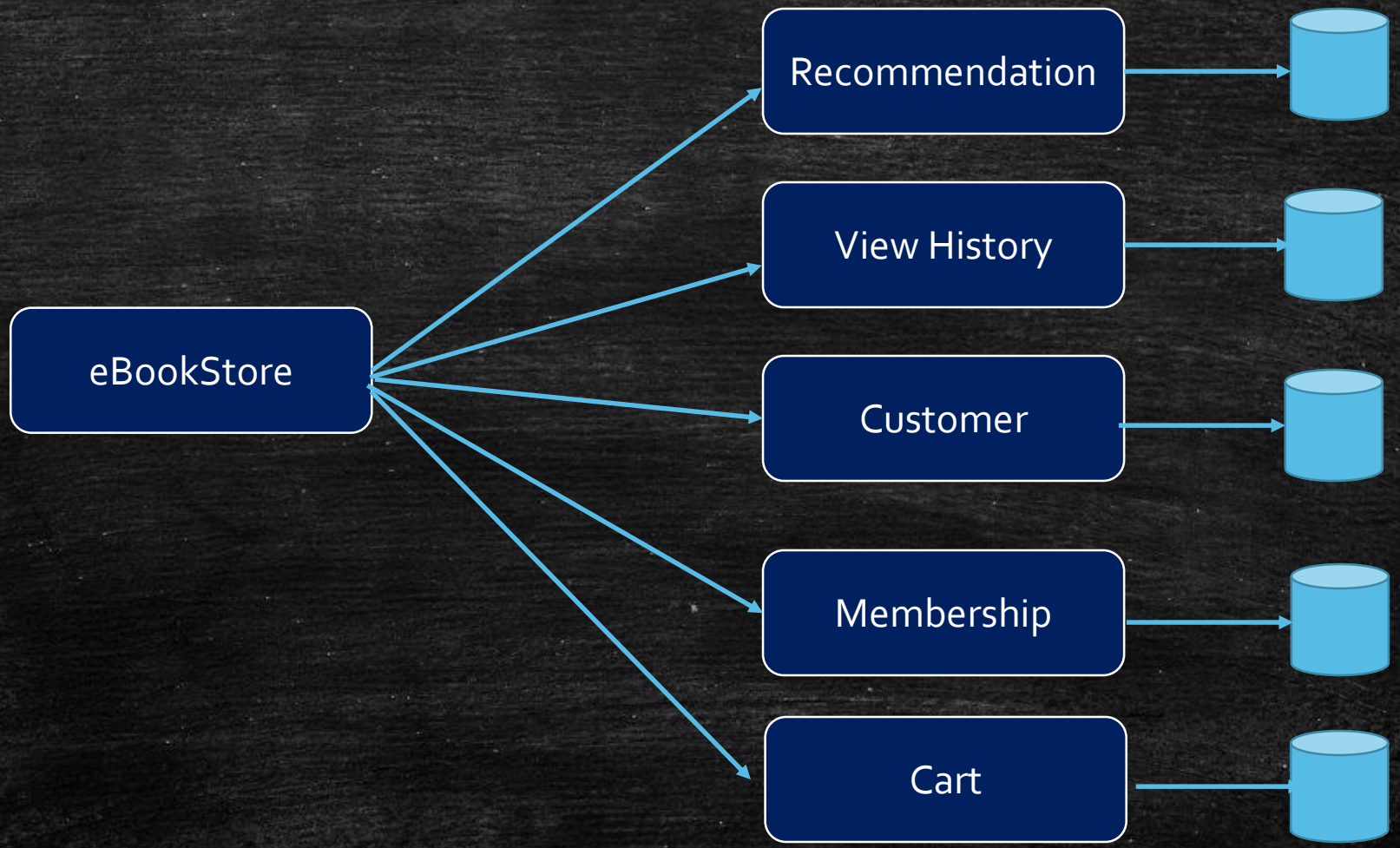
Learn.
Connect.
Explore.

Containers and Microservices

Ravi Tella
Houston MTC

Topics

- Microservice Architecture Style
- Container Services in Azure
- More About Microservice Architecture Style
- Build Announcements


eBookStore
Recommendation
View History
Customer
Membership
Cart

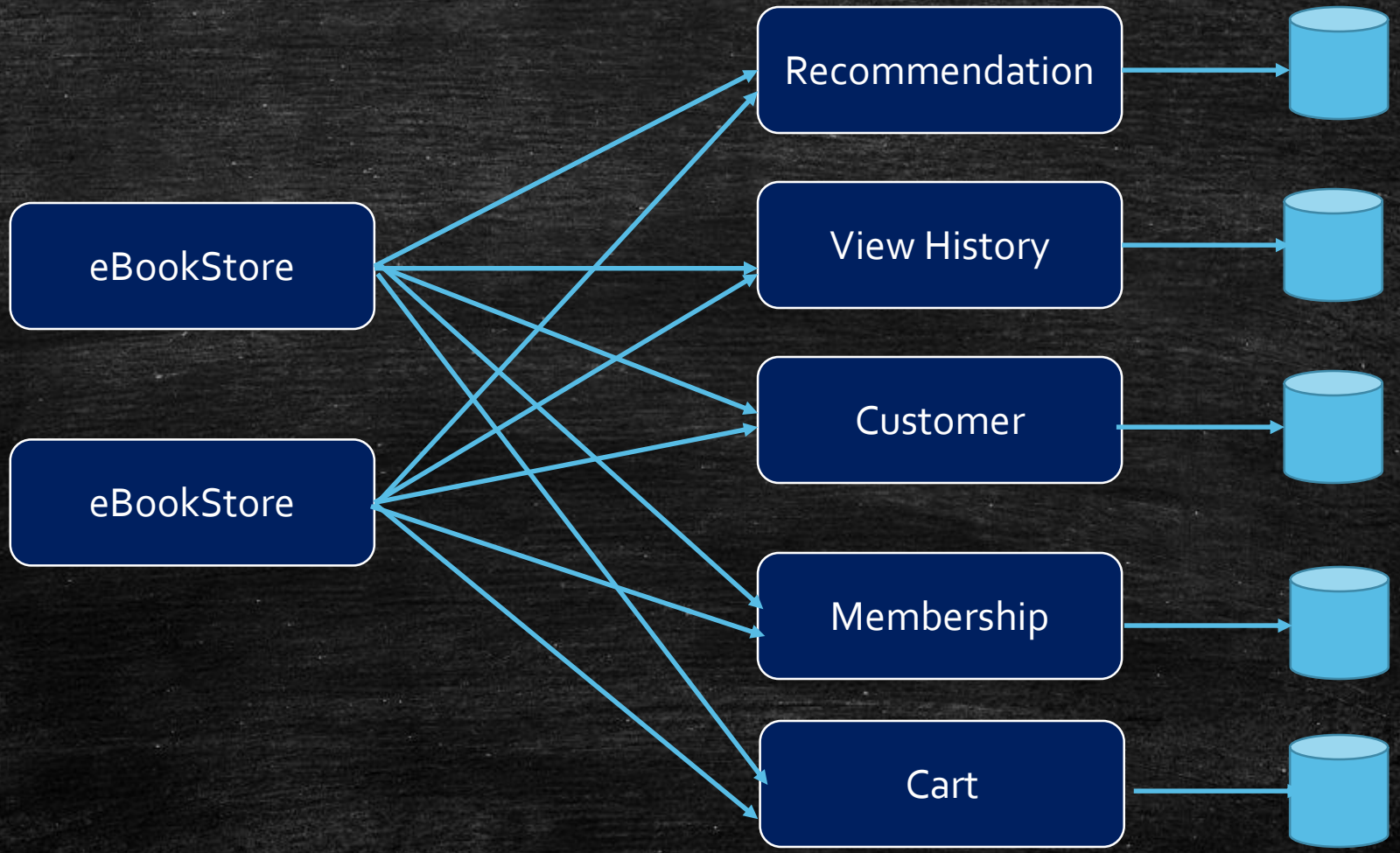
Characteristics of Microservices

- Modeled around business concepts
- Hide implementation detail
- Isolate failure
- Decentralized
- Managed independently

Microservices are a modern interpretation of service-oriented architectures used to build distributed software systems.

Decentralized

Managed independently


eBookStore
eBookStore
Recommendation
View History
Customer
Membership
Cart

SOA

+

Ease of Automation

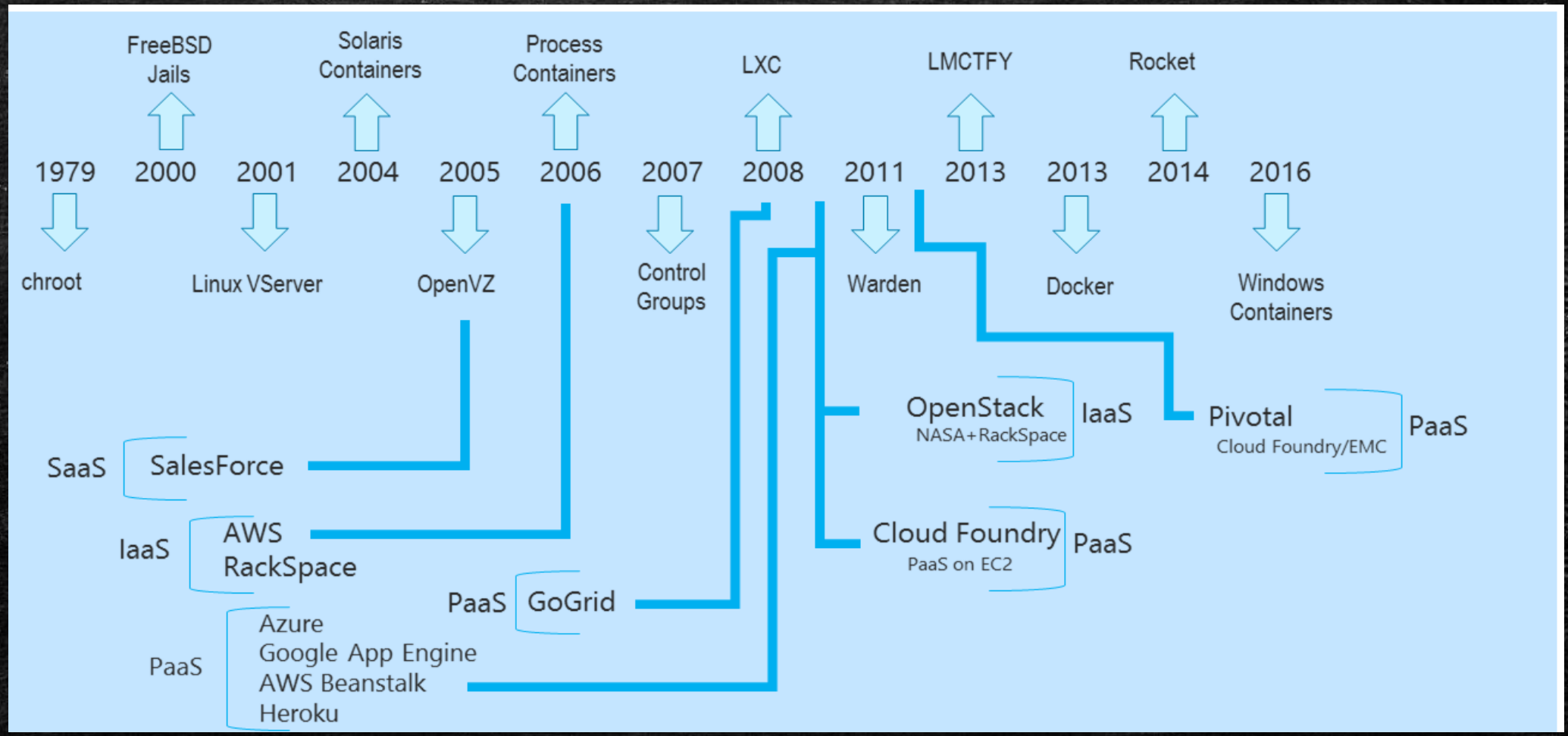
+

PaaS

=

Microservice Architecture

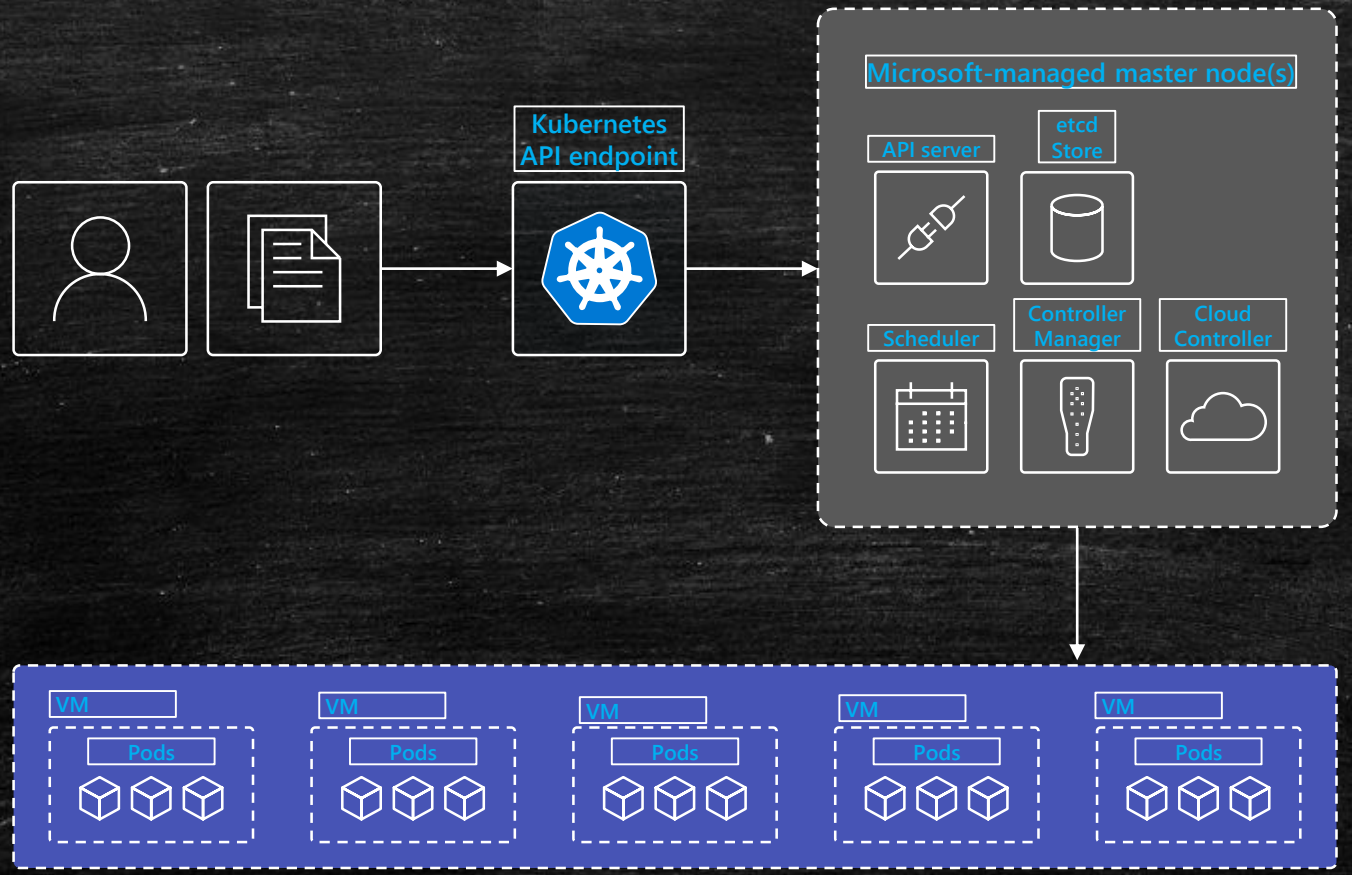
Container usage before Docker



Container Services on Azure

- Azure Kubernetes Service
- App Service
- Container instance
- Service Fabric
- Azure Red Hat OpenShift
- Container Registry
- AKS Engine

Kubernetes Service (AKS)

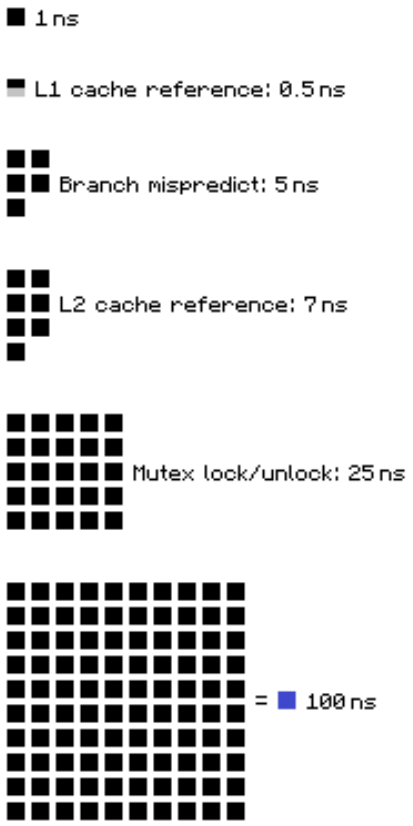


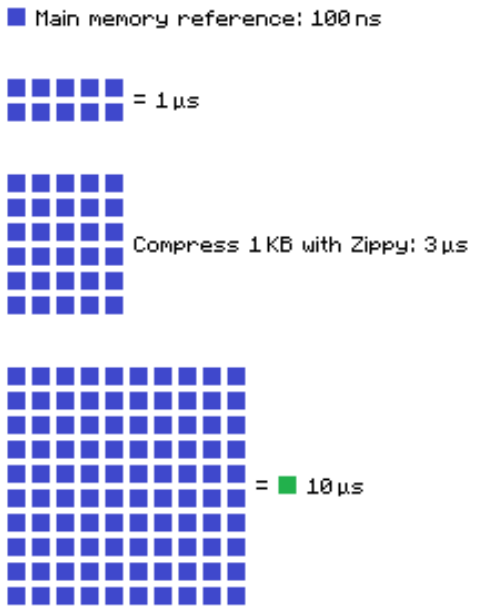
	OS	VNet	Orchestrator	Deployment	Resource limits	Volumes
App Services	Windows, Linux	Yes	App Services	Docker Compose, Kubernetes Deployment		Yes
ACI	Windows, Linux	Yes	ACI	Azure CLI, Power Shell	4 CP, 16 GB	Yes (Linux)
ACI(Groups)	Linux	Yes	ACI	ACI YAML ARM Template		Yes (Linux)
AKS	Linux, Windows	Yes	Kubernetes	Kubernetes Deployment		Yes
Azure Red Hat OpenShift	Linux	Yes	Kubernetes	Deployment Config, Kubernetes Deployment		Yes
ACS Engine	Windows, Linux	Yes	Kubernetes	Kubernetes Deployment		Yes
Service Fabric	Windows, Linux	Yes	Service Fabric	Service Fabric, Docker Compose		Yes

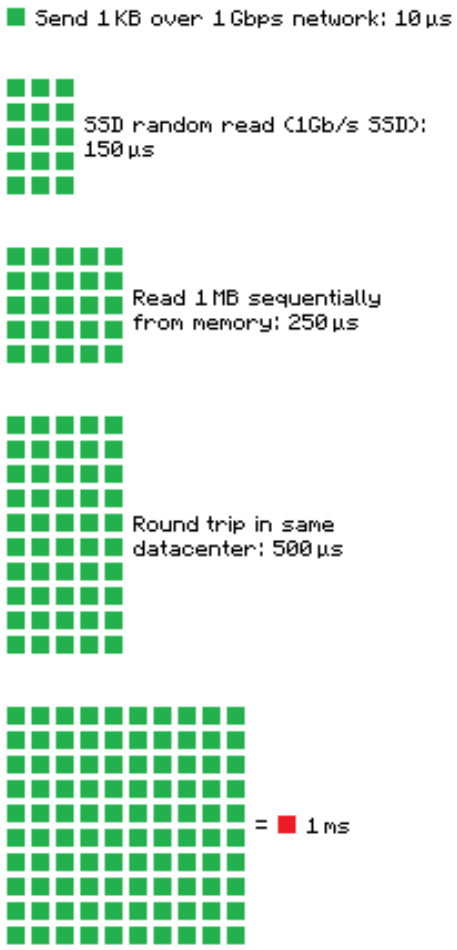
Challenges

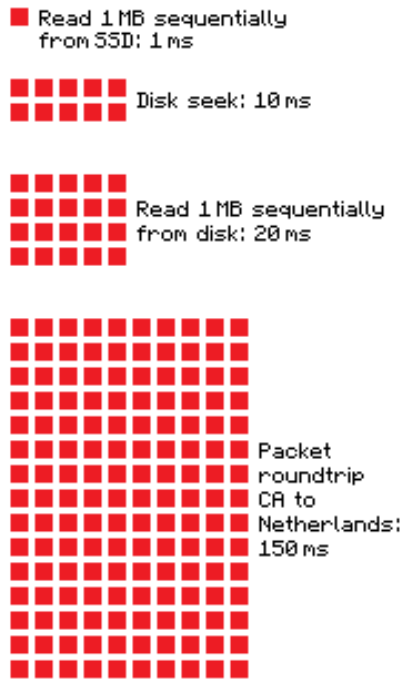
- Performance
- Cascading Failures
- Eventual Consistency

Latency Numbers Every Programmer Should Know







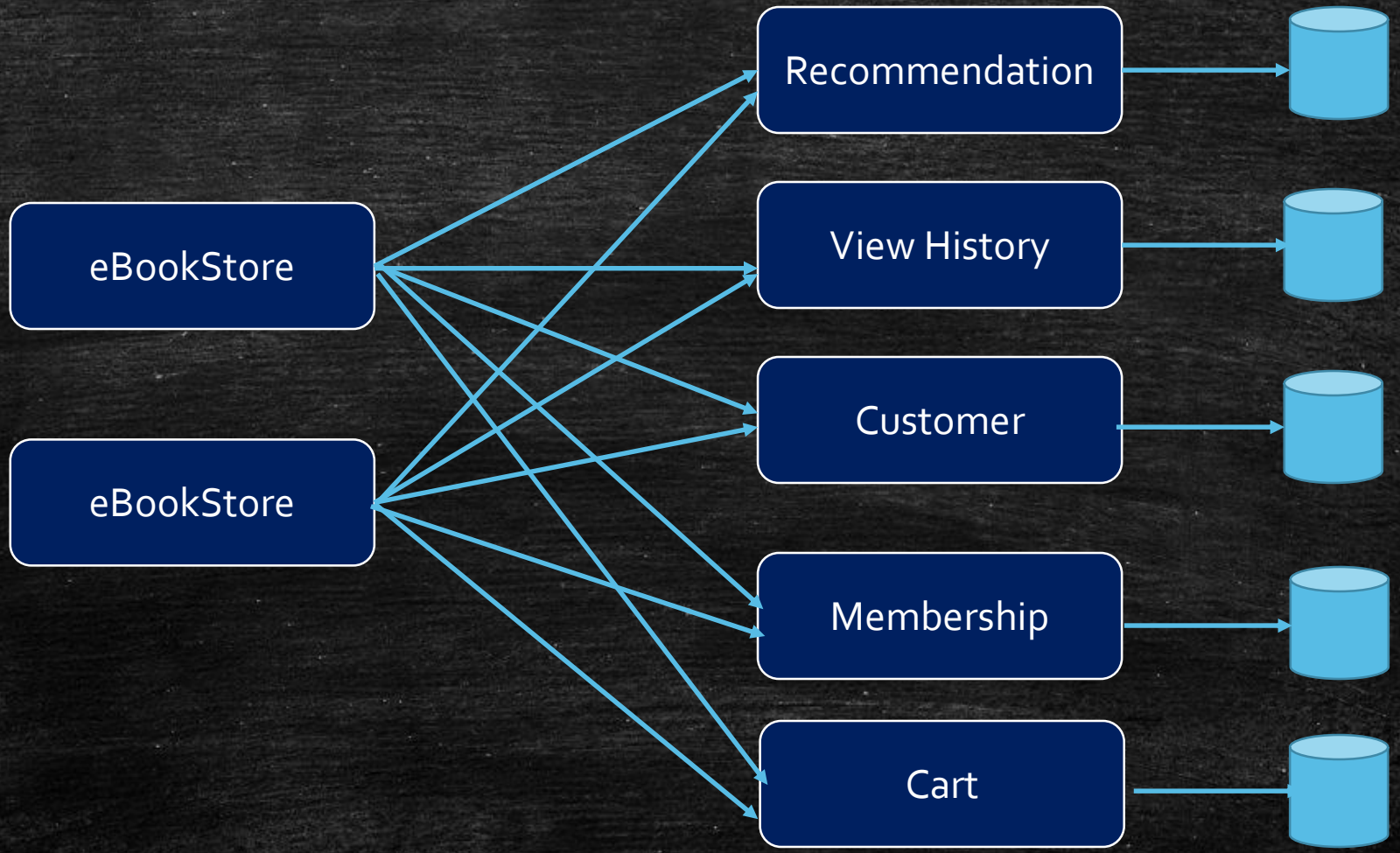


Source: https://gist.github.com/2841832

What can you do today?

- Scale Better
- Prevent Cascading Failures

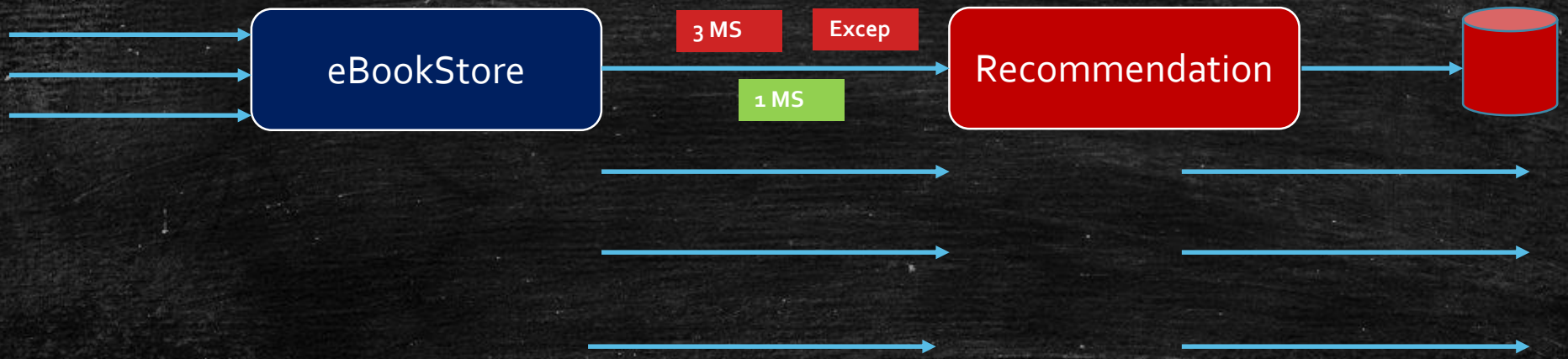
- Asynchronous & Non-Blocking
- Bulk Head
- Circuit Breaker


eBookStore
eBookStore
Recommendation
View History
Customer
Membership
Cart

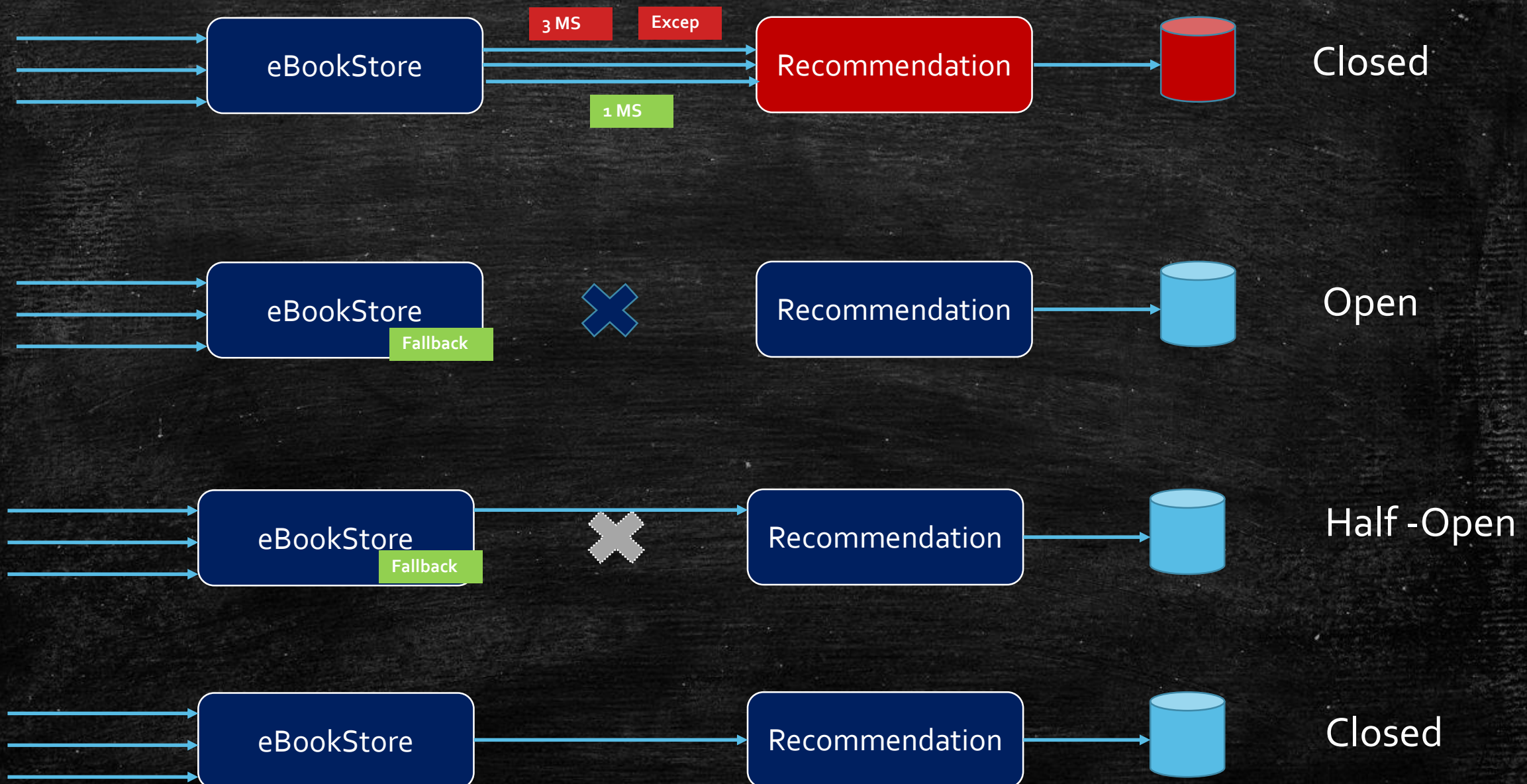
Blocking

Non-Blocking

Functional Reactive Programming


eBookStore
3 MS
Excep
1 MS
Recommendation

Circuit Breaker to the rescue


eBookStore
3 MS
Excep
1 MS
Recommendation
Closed
eBookStore
Fallback
Recommendation
Open
eBookStore
Fallback
Recommendation
Half -Open
eBookStore
Recommendation
Closed

There is Help

Service Mesh

Eventual Consistency ?

Build 2019 - Now available

- User-defined network policy in Azure Kubernetes Service (AKS) is now available
- Azure Kubernetes Service (AKS) virtual node is now available
- Azure Dev Spaces for Azure Kubernetes Service (AKS)

Build-In preview

- Azure Container Registry virtual network and firewall rules support
- Authenticated IP for Azure Kubernetes Service (AKS)
- Azure Kubernetes Service (AKS) multi node pools
- Windows Server containers support in Azure Kubernetes Service (AKS)

RaviTella/Microservices