



DEVELOPERS LIVE

AEM Screens as a Cloud Service

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Case study: Re-imagining AEM Screens for the cloud

- What is the challenge?
 - Scaling architecture for digital signage
- Why does it matter?
 - Scale, delivery speed and efficiency
- Why should you care?
 - Apply some of the learnings to your projects / products



Male
Age 30

New Available



Special
Price

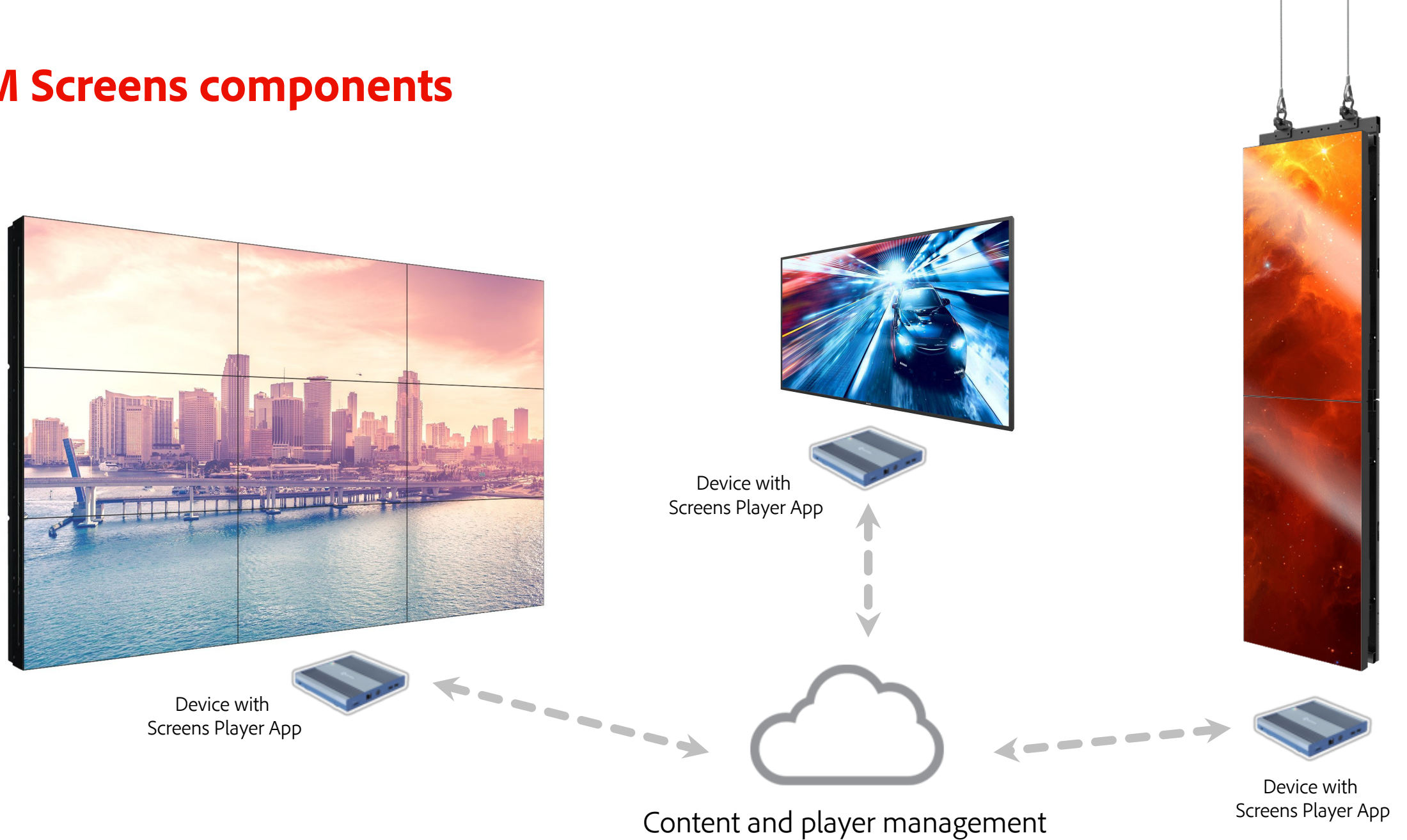


199\$

Man's Suit

★★★★★ 14.7

AEM Screens components



Challenges running player management in CMS

Content management



Unidirectional content delivery



Complex configuration



Author / Publish scaling model

Player management



Player bidirectional communication



Zero-config operations



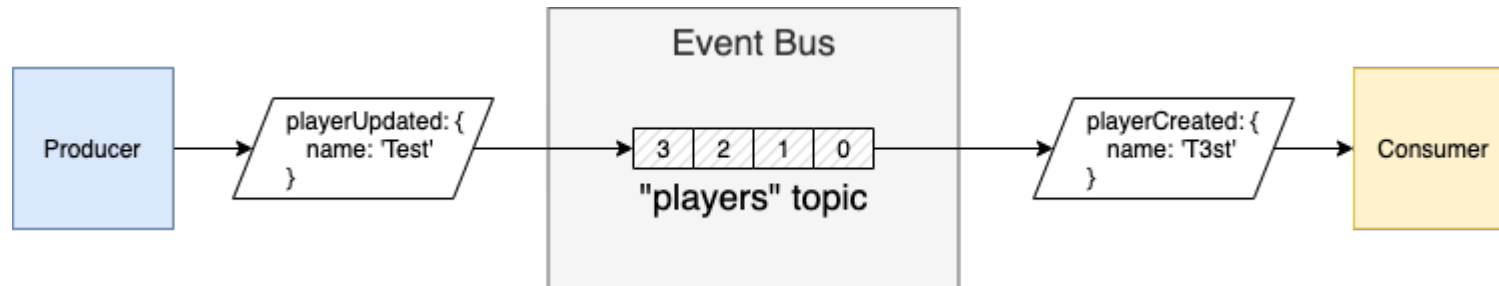
Scale with number of players

Path forward

- Write-optimized
 - Support incoming player telemetry at scale
- Elastic
 - Scale with growing player base
- Loosely coupled
 - The right tech for the right job
 - Minimize blast radius
 - Rapid delivery

Event streaming

- Asynchronous
- Decoupled
- Easy scaling



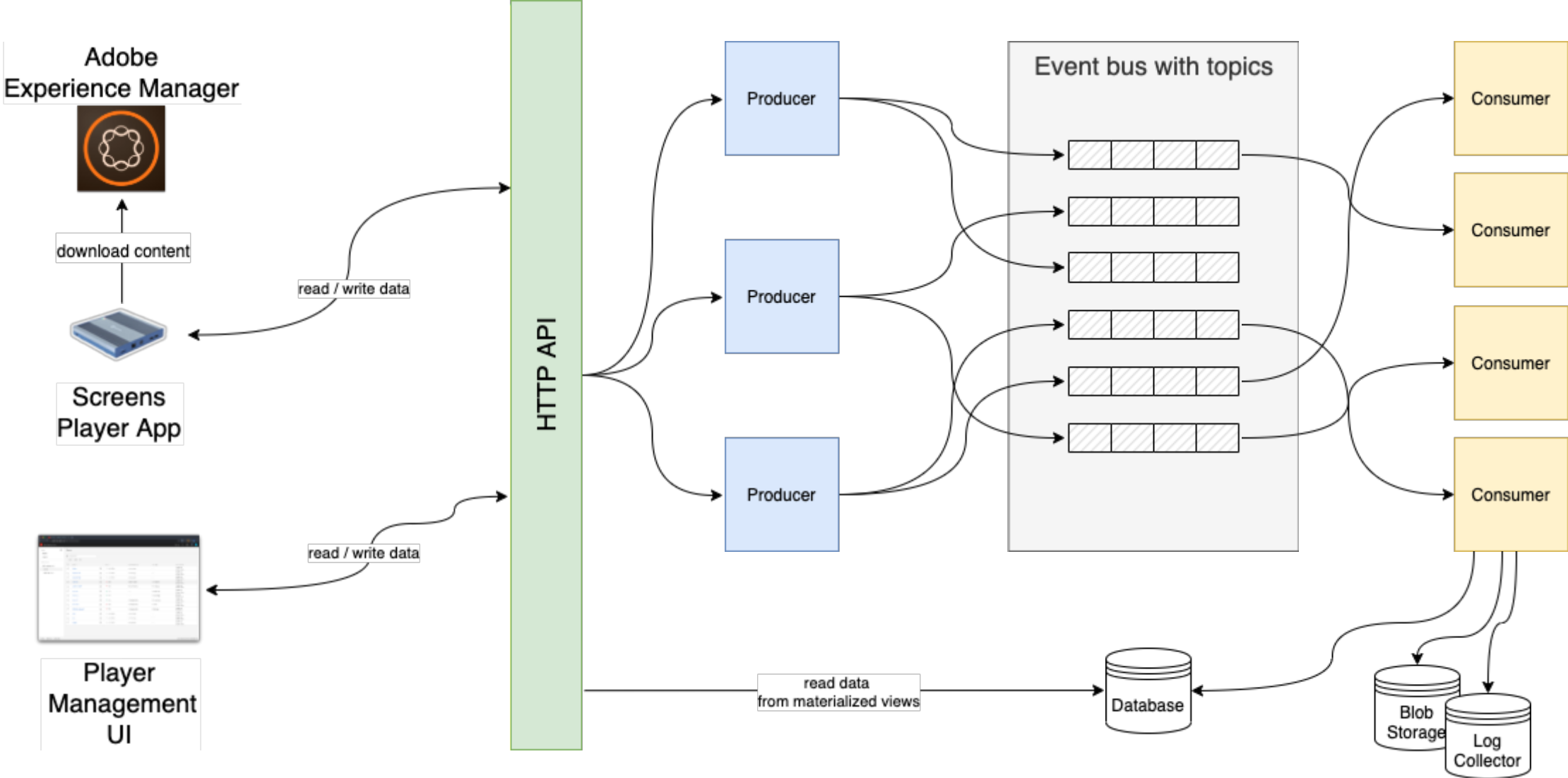
Event sourcing

- Immutable log of state changes
- Derive current state from immutable log

- Know where you are, but also how you got there
 - Experience intelligence
 - Audit / Replay / Actionability

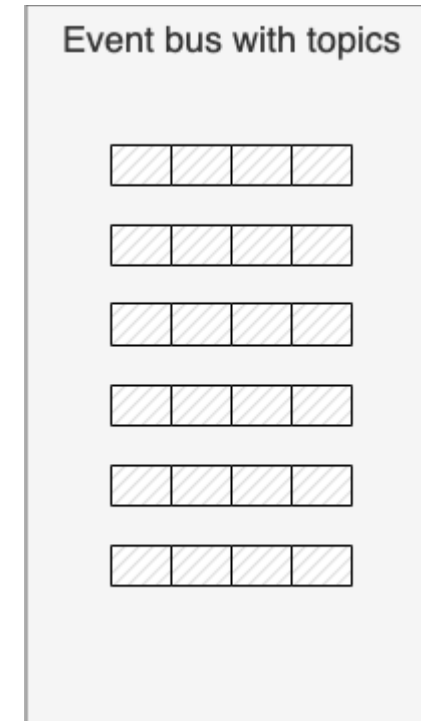
- Benefits Command-Query Responsibility Segregation (CQRS)

Architecture



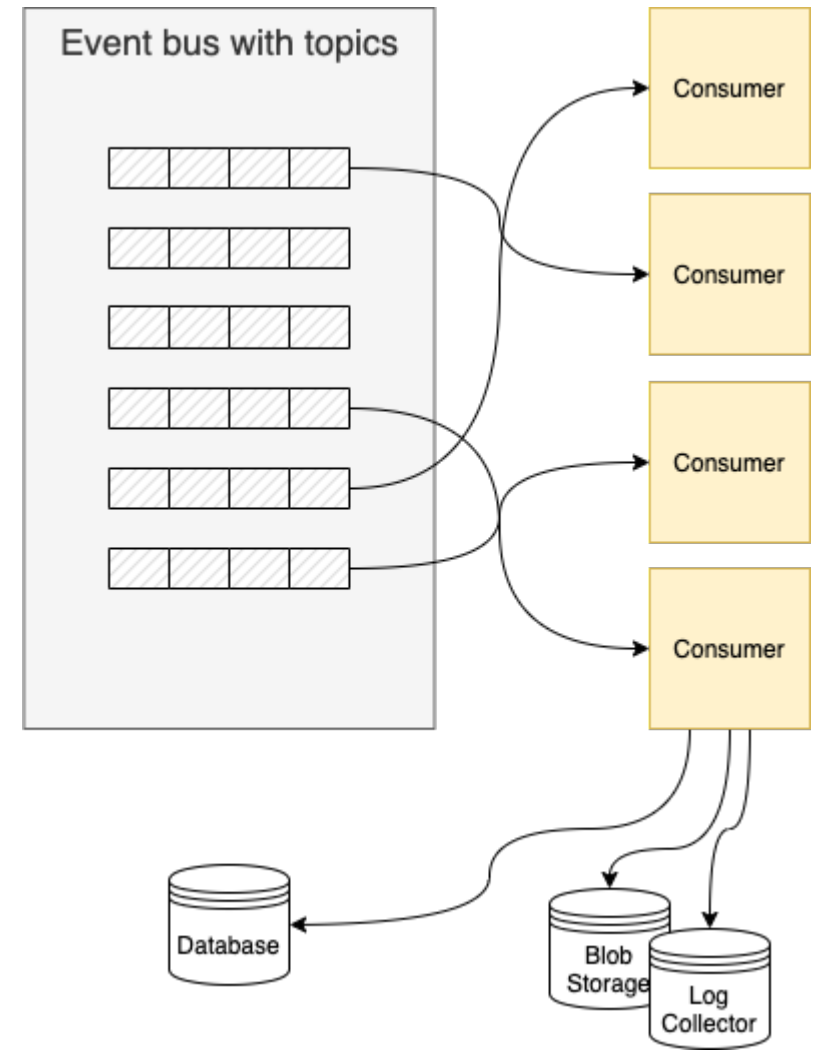
Apache Kafka | Event Bus

- Event streaming
- Event storage
- Kafka as a cloud service



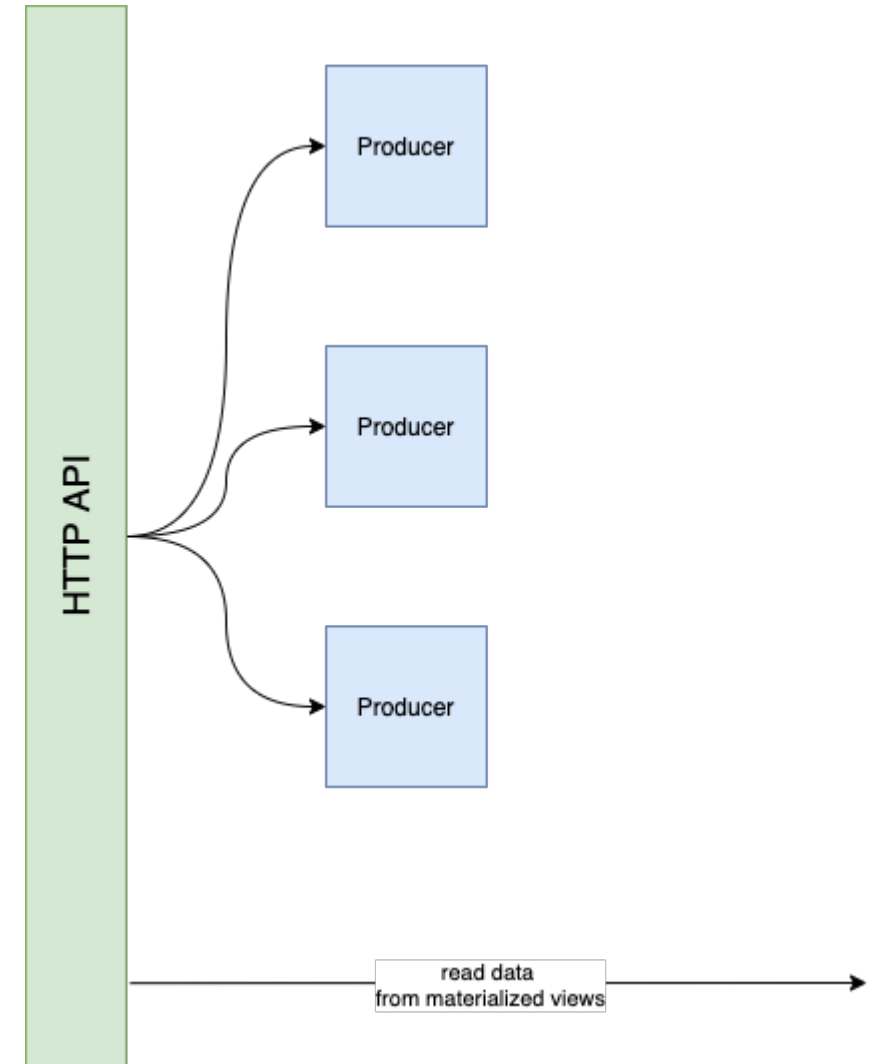
Adobe Ethos | Container as a Service (CaaS)

- Long-running mini-applications
- Kubernetes-based
- Node JS container
- Consume events
- Apply events to materialized view



Adobe I/O Runtime | Functions as a Service (FaaS)

- Short-running mini-applications
- Node JS functions on OpenWhisk
- Process HTTP requests
- Produce events
- Read from materialized views





- React JS
- Spectrum Design System
- Optimized UX for digital signage
- Unified access to Adobe Experience Cloud
- Deployed as Project Firefly application



The image shows two overlapping screenshots of the Adobe Experience Cloud interface. The top screenshot displays the 'Displays' management page, and the bottom screenshot displays the 'Devices' management page.

Displays Management Page:

- Header: Adobe Experience Cloud, Tech Cafe, [User Profile]
- Left Sidebar: Project (Displays, Channels), Network Admin (Device management)
- Main Content: 'Displays' section with a 'Create' button, a search bar, and a table of displays.
- Table Data:

NAME	ASSIGNED DEVICE(S)	ASSIGNED CHANNELS	LAST MODIFIED
Bucharest display	Lionel Android 9	3 channels	4 months ago By API
London display	Kevin Test	2 channels	4 months ago By API
Hamburg display	Manuel 9 1, Manu...	3 channels	4 months ago By API

Devices Management Page:

- Header: Adobe Experience Cloud, Tech Cafe, [User Profile]
- Left Sidebar: Project (Displays, Channels), Network Admin (Device management: Devices, Registration Codes)
- Main Content: 'Devices' section with a search bar and a table of devices.
- Table Data:

NAME	STATUS	ASSIGNED DISPLAY	LAST PING	LAST MODIFIED
Manuel 8 1	Live	—	2 minutes ago	2 weeks ago By Manuel Nilsson
Manuel 9 1	Live	Hamburg display	45 seconds ago	2 weeks ago By Manuel Nilsson
Manuel 8 2	Live	—	43 seconds ago	last week By Damien Antipa
Kevin Test	Error	London display	2 months ago	3 weeks ago By Manuel Nilsson

Bottom of the Devices page shows: 1 selected, [Dashboard], [Edit], [Assign Display], [Delete]. Footer: © 2021 Adobe Incorporated. All Rights Reserved.

Conclusion



Read vs write

- Event streaming and sourcing
- Command-Query
Responsibility Segregation



Scaling

- Independent scaling of consumers and producers
- Independent scaling of functions / services
- High throughput event bus



Decoupling

- Event-based architecture
- Functional decomposition

Resources

- [AEM Screens Introduction](#)
- [Adobe I/O Runtime](#)
- [Project Firefly](#)
- [React Spectrum](#)
- [Adobe Ethos](#)
- [Event Sourcing](#)
- [CQRS](#)

