
AWS
re:Invent

MDS201

State of media content production

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AWS

AWS re:Invent

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Agenda

The state of media content production on AWS

- Overview
  - Content production in the cloud
- Method Studios
  - The challenges of on-premises rendering
  - Our journey into cloud rendering
  - What we learned along the way
- State of the art
  - Virtual workstations for content creation
  - Content production services and partners
  - AWS service and innovation areas





Content production in the cloud



Acquisition and ingest

Creative tools

Storage and compute

Fulfillment and delivery

Development | Pre-production | Production | Post-production | Distribution

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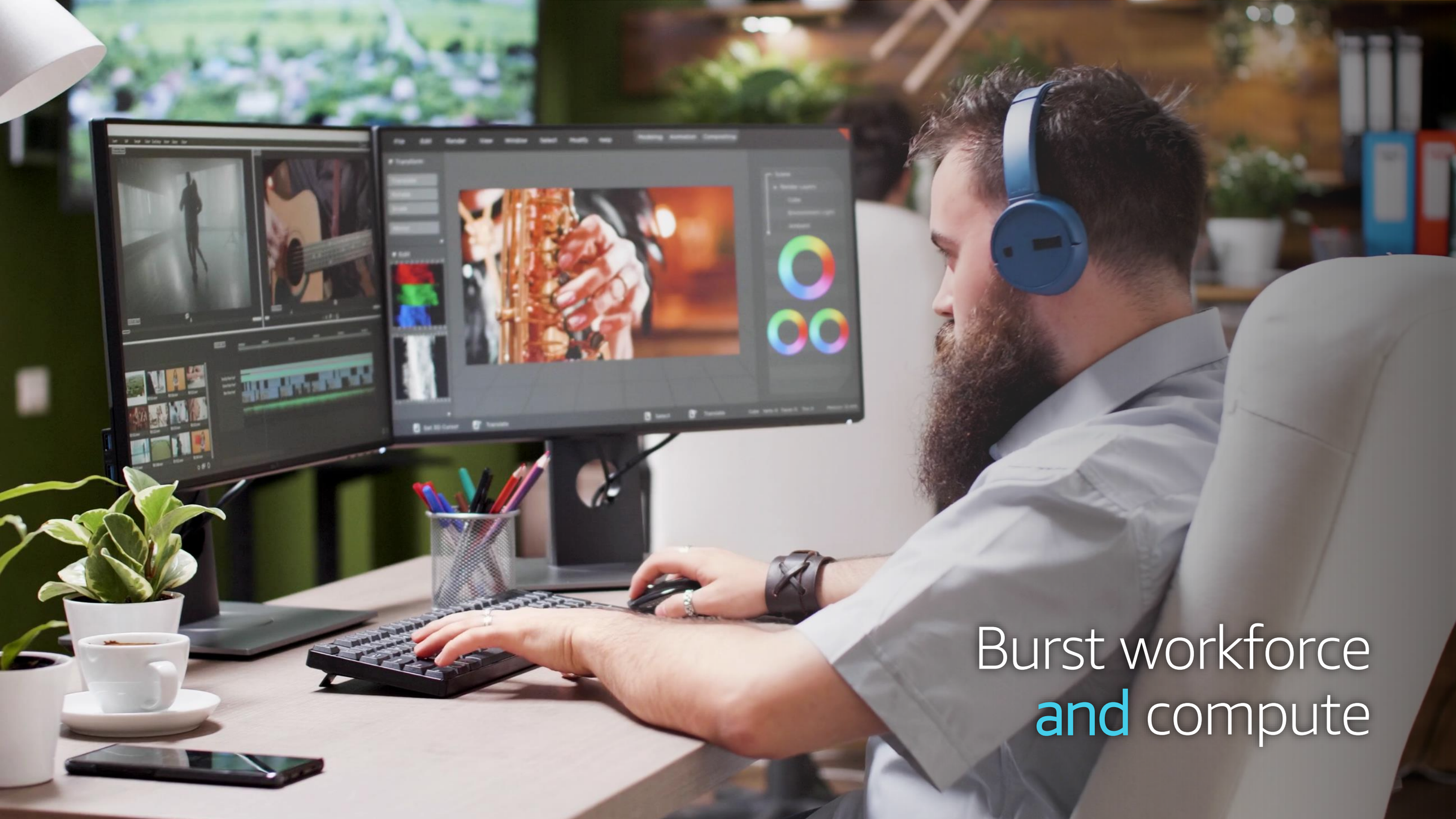
Virtual creative

Collaboration platforms

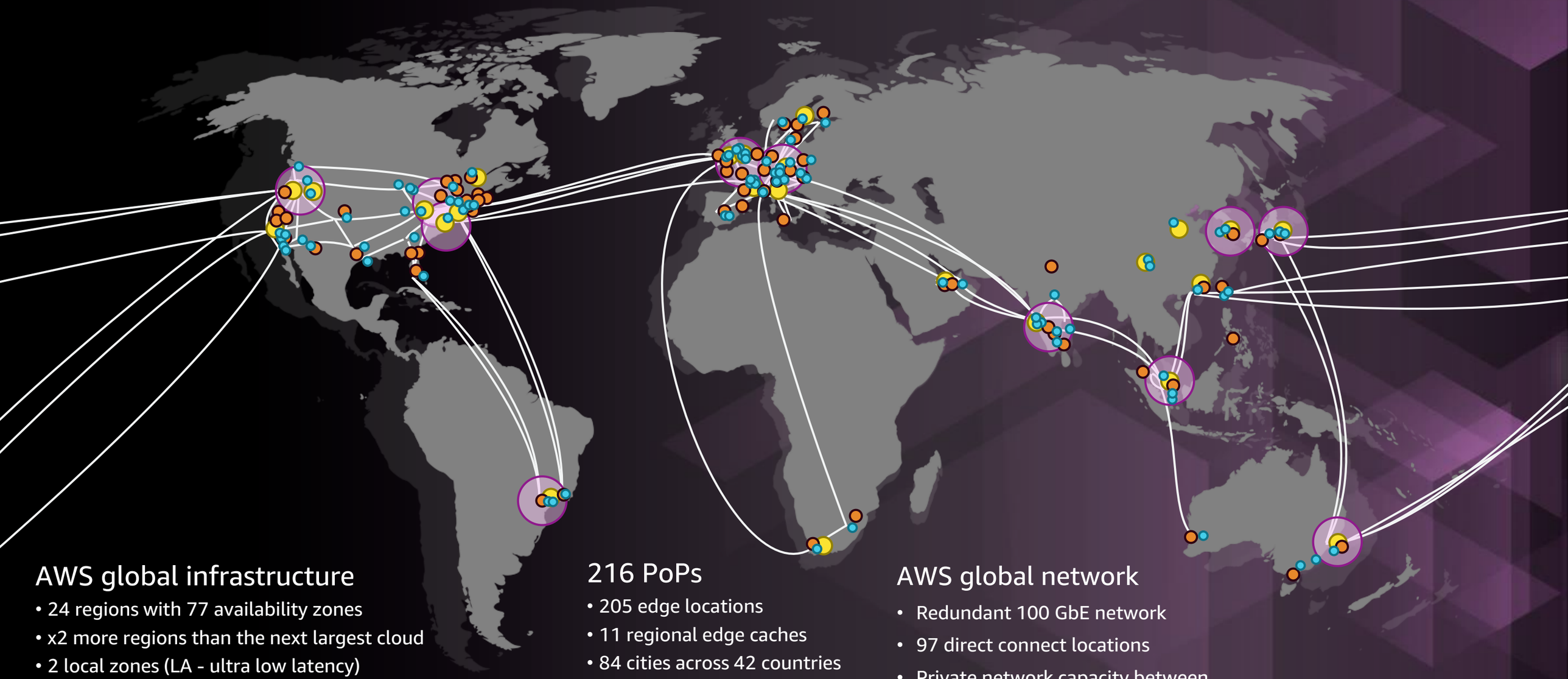
Visual effects

Infrastructure and applications

Content security


Burst workforce
and compute

Global reach for your studio



AWS global infrastructure

- 24 regions with 77 availability zones
- x2 more regions than the next largest cloud
- 2 local zones (LA - ultra low latency)
- 3 new regions (Spain, Indonesia, and Japan)

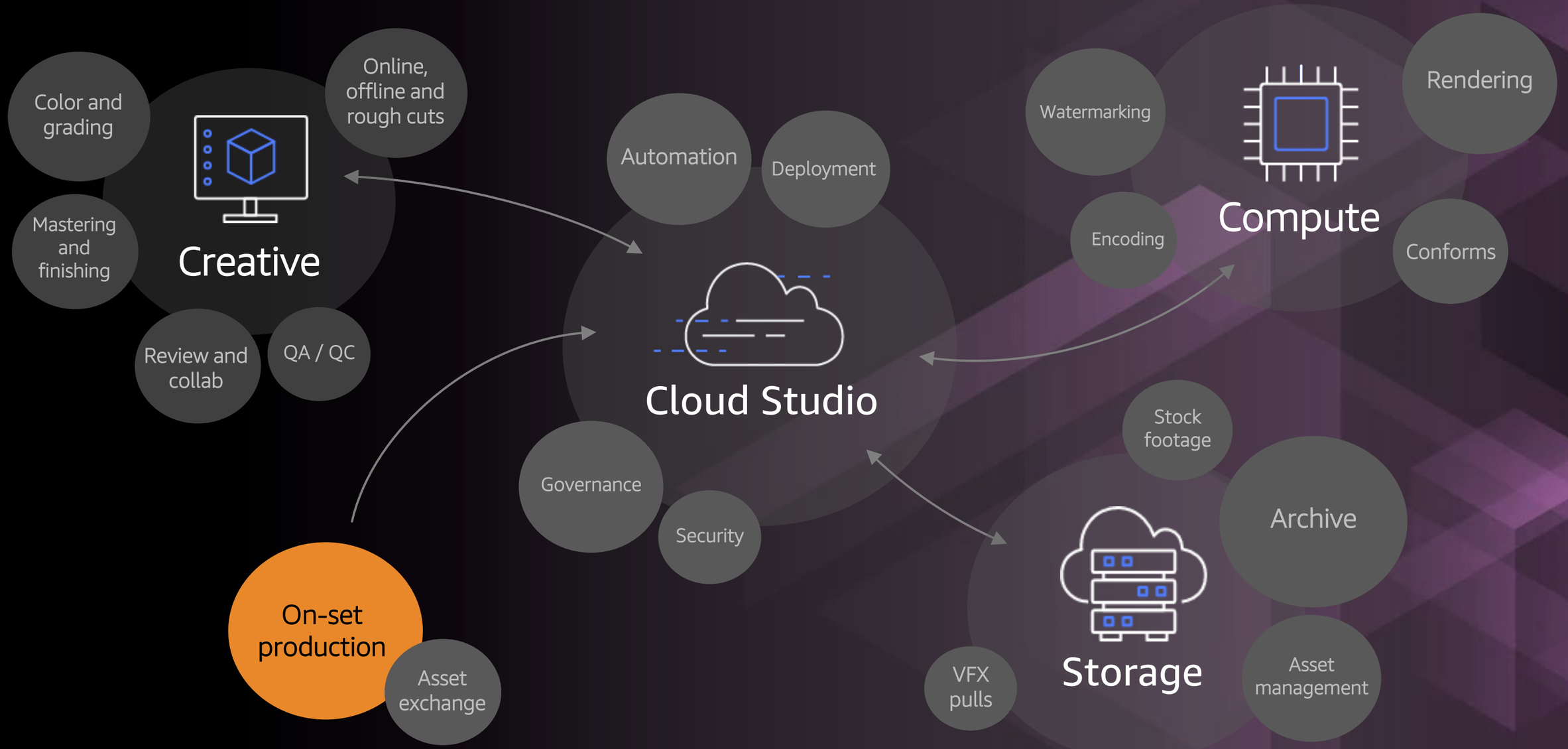
216 PoPs

- 205 edge locations
- 11 regional edge caches
- 84 cities across 42 countries

AWS global network

- Redundant 100 GbE network
- 97 direct connect locations
- Private network capacity between all AWS regions, except China

Flexible infrastructure for your applications



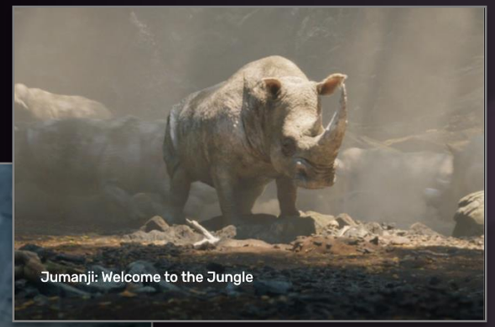
METHODSTUDIOS

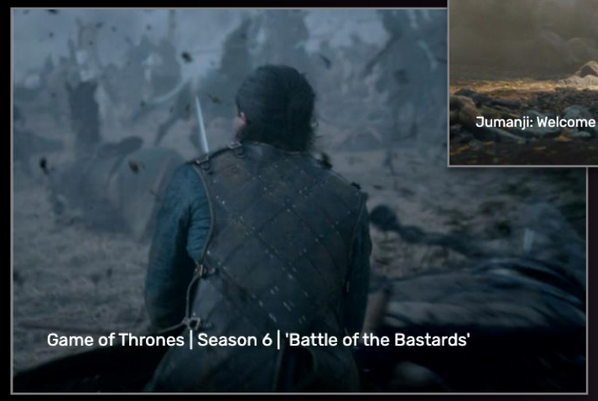
Life before AWS

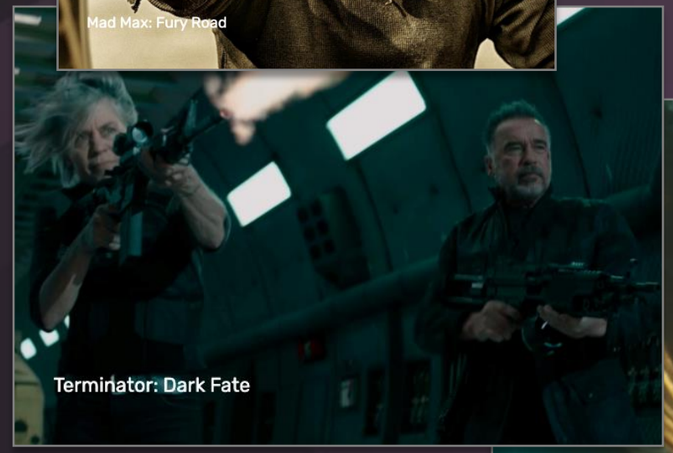
- Large on-premises render farm
- Rent compute to cope with busy periods
- High operational cost

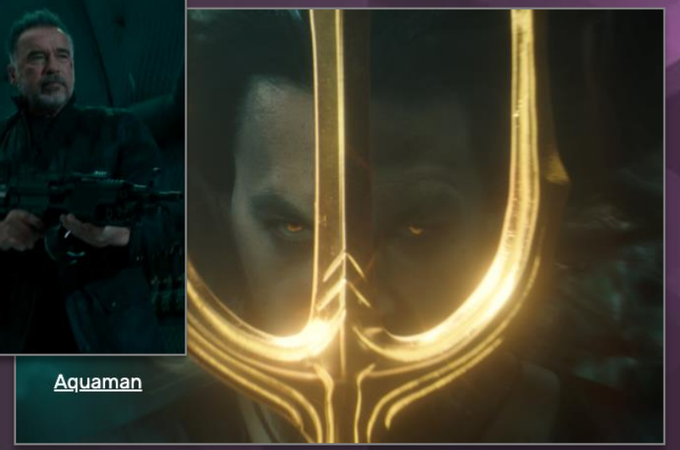






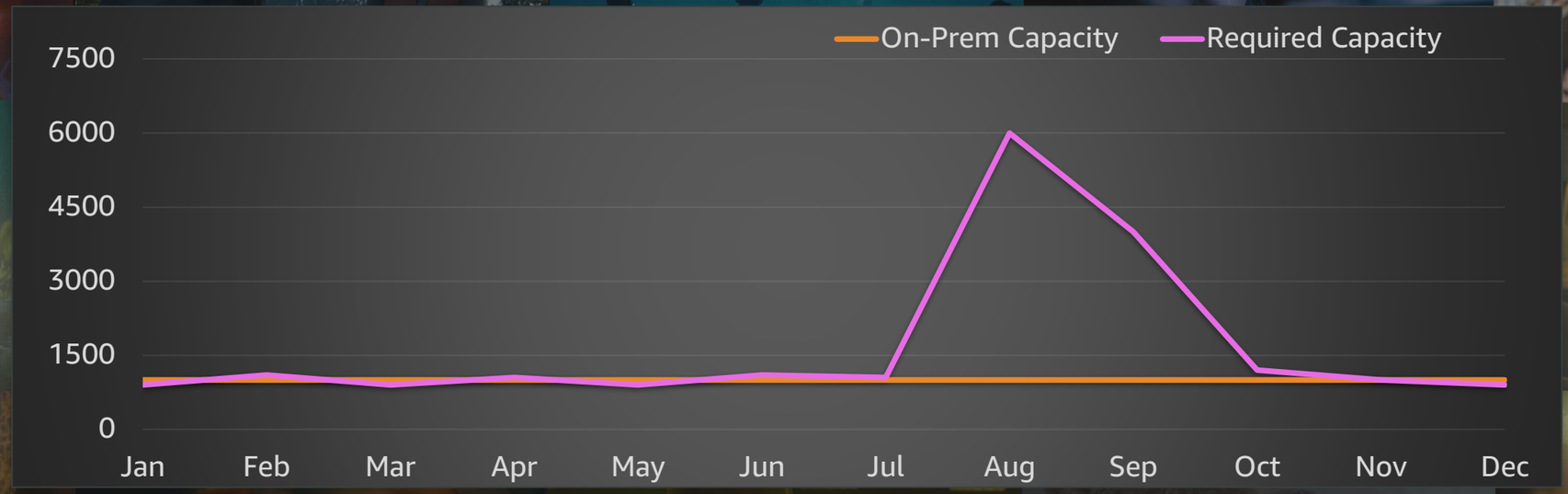






Workload forecasting

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On-premises

Key challenges

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Data movement



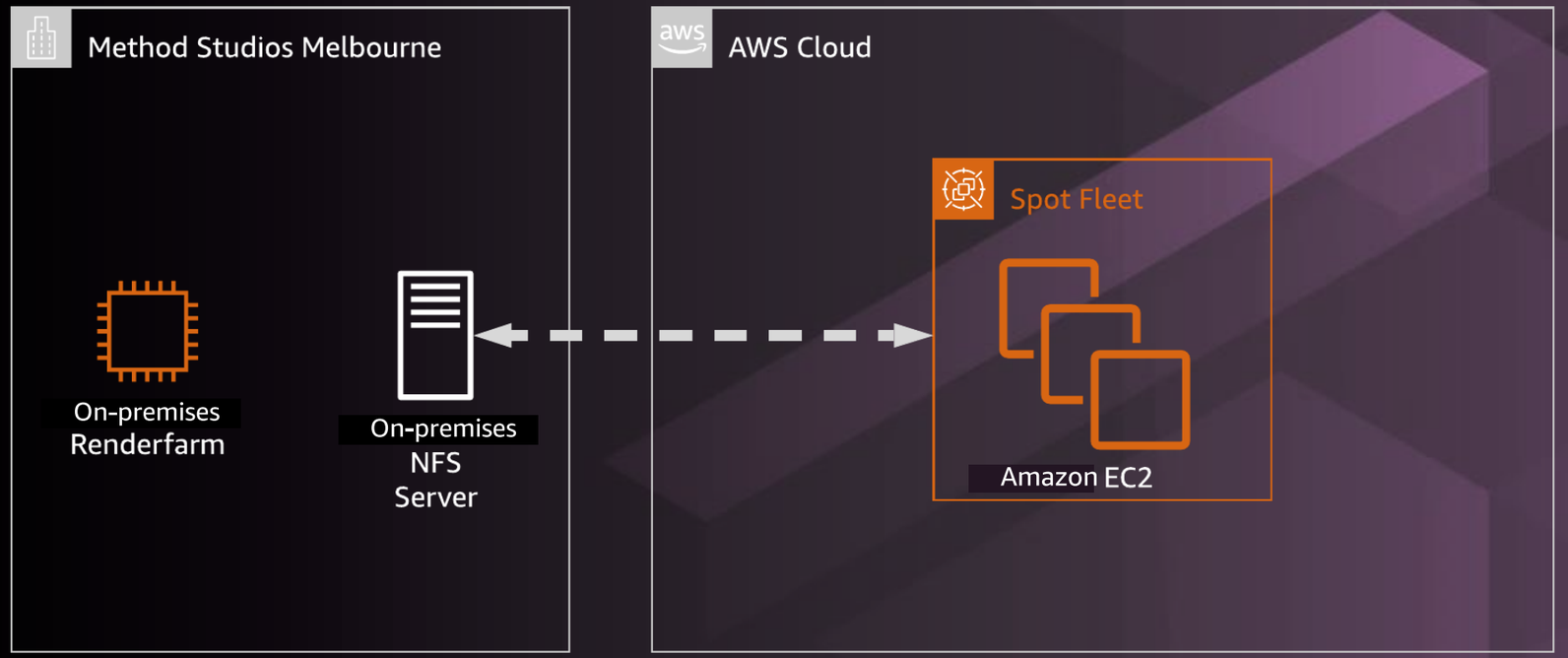
Media storage



Compute scale-out

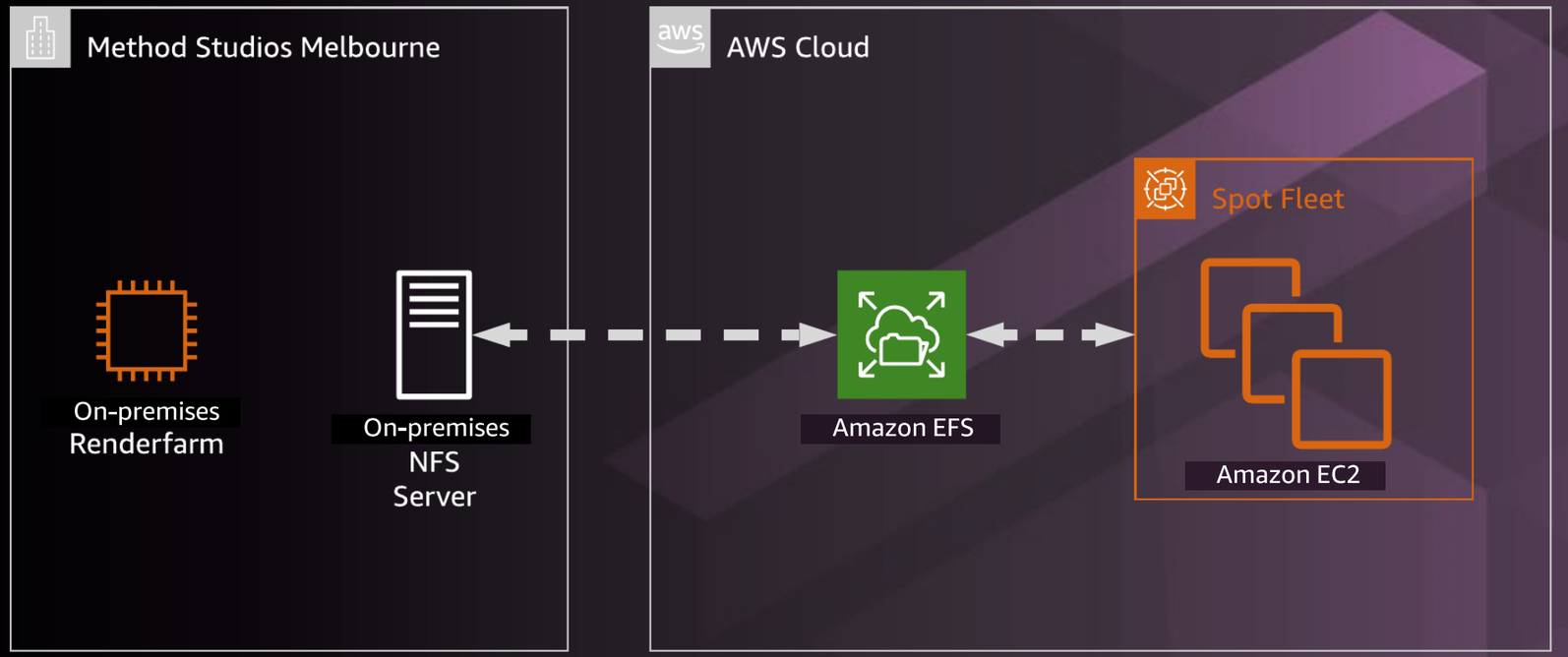
System architecture

On-premises NFS



System architecture

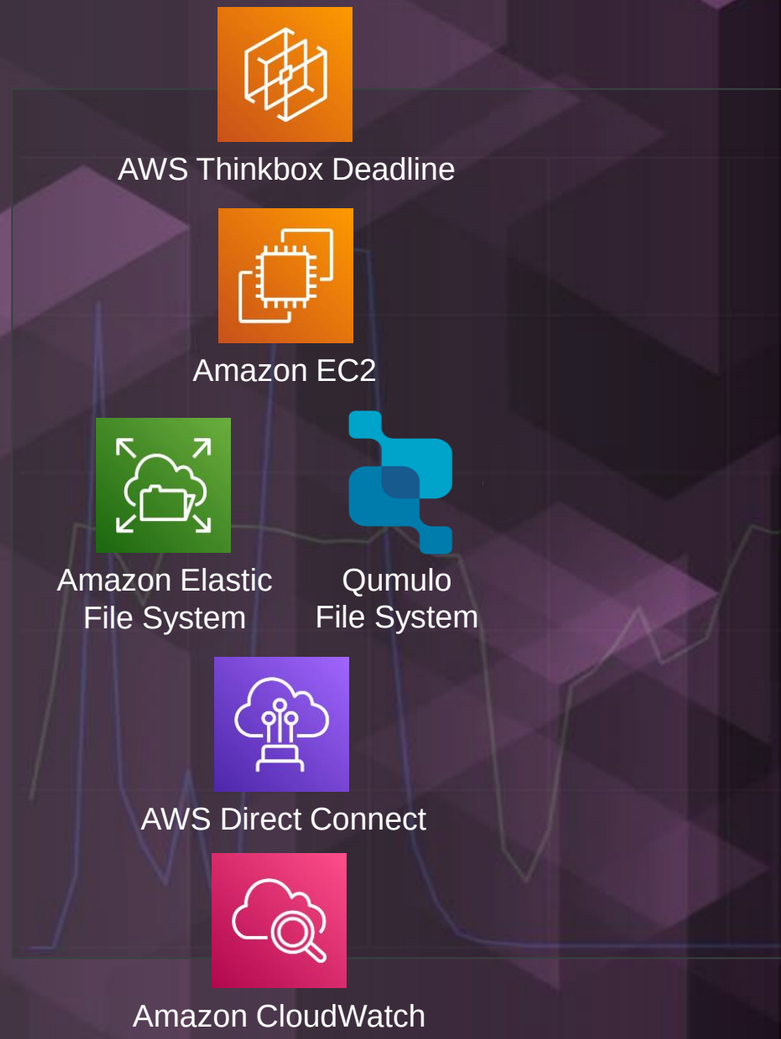
Amazon EFS-based synchronization



Key metrics

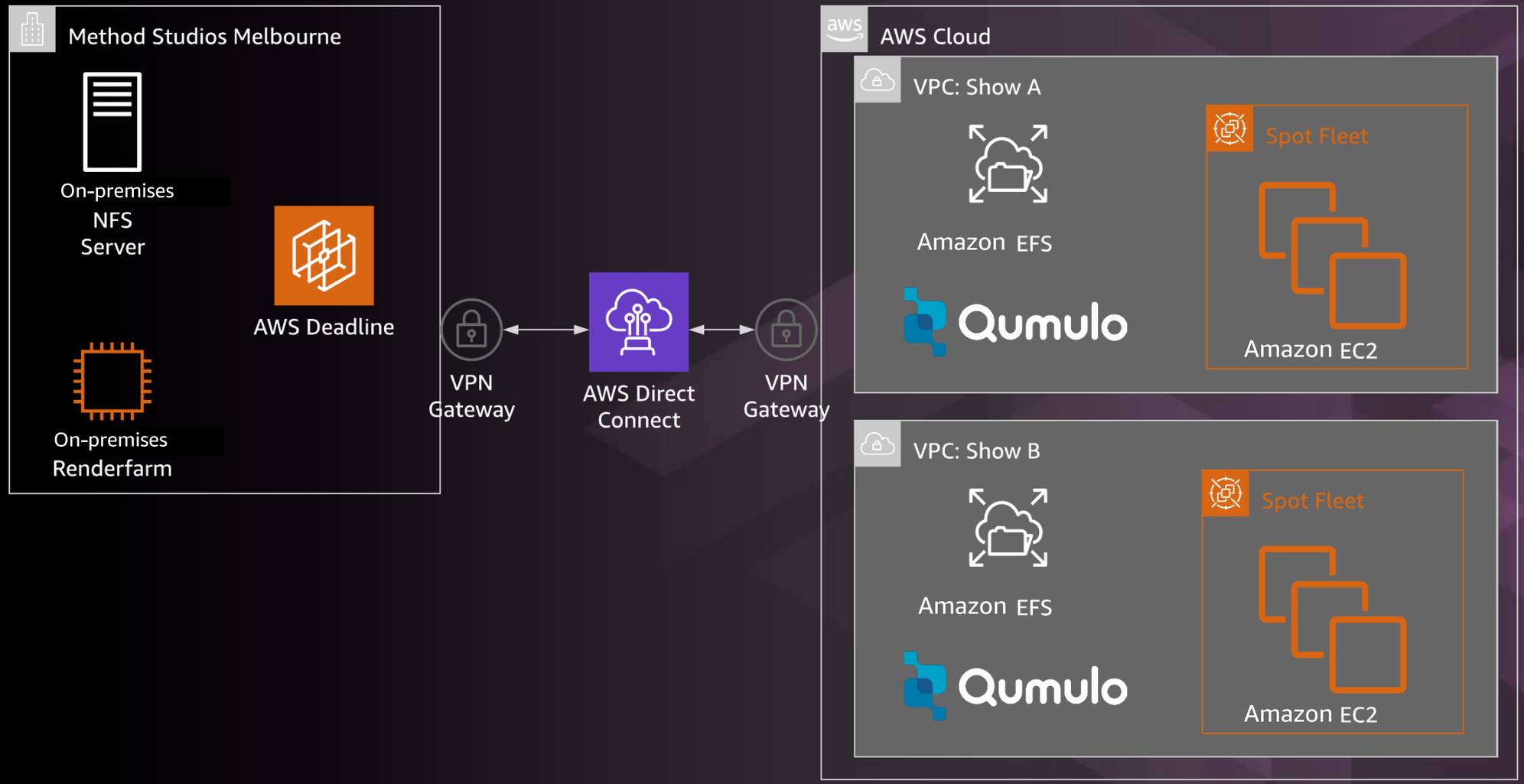
- Tasks
  - ~4.5k resolution render jobs , heavy RAM requirements
  - Ideally suited to cloud-based instances with high core count and ample RAM
- Infrastructure
  - Amazon EC2 spot-based using M5, M4, R4, R5 and C4 instances
  - Qumulo and Amazon EFS centralized storage
  - AWS Thinkbox deadline render management
  - Connectivity via Megaport and AWS Direct Connect
  - Amazon CloudWatch, Grafana, and custom tooling for monitoring
- Utilization
  - Cloud rendering reduces on-premises peak loads
  - Allows more consistent artist workstation performance
  - Compute per-node density optimization via concurrent rendering

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System architecture

Method Studios Melbourne cloud render



Asset synchronization

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Dependencies

Find assets required to render any given shot



Database

Track assets currently stored in Amazon EFS



Queue

Manage assets waiting to be copied to or from the cloud



Deadline

Catch errors from missing assets, trigger sync, and re-queue tasks

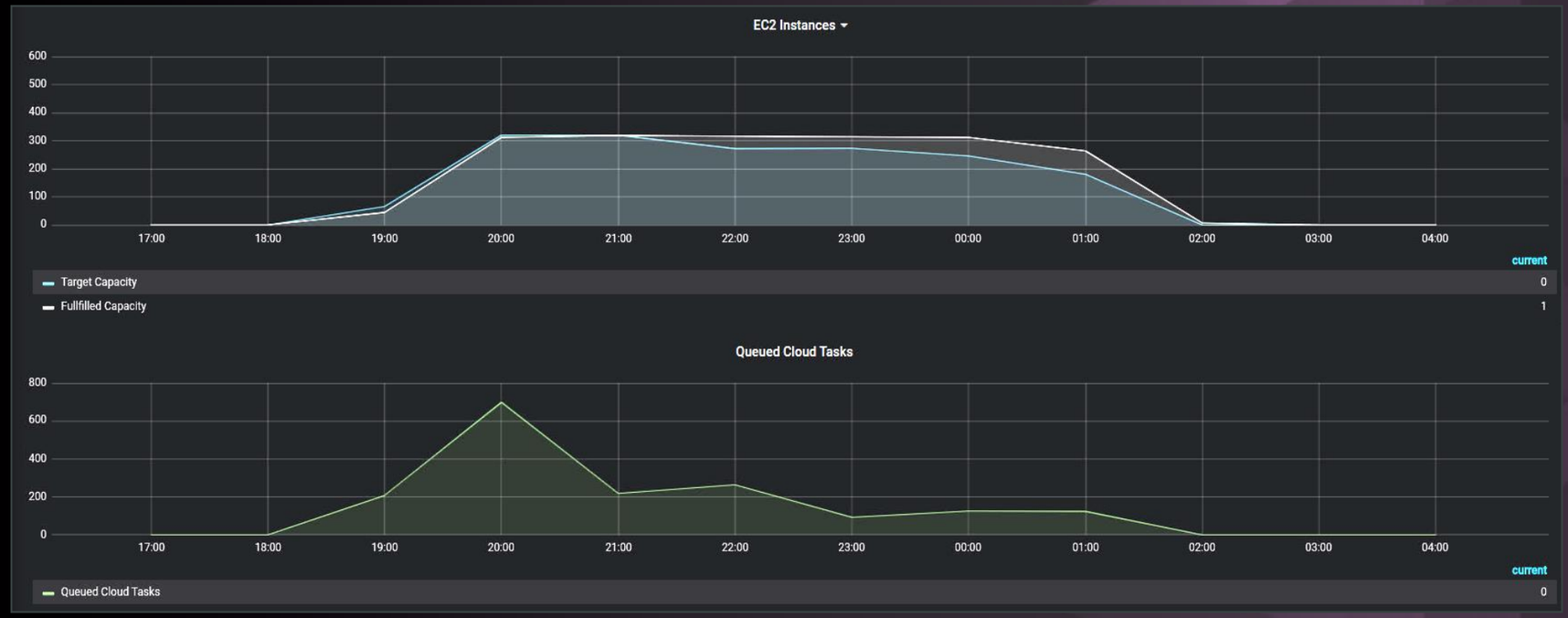


Monitoring

Provide web-app based monitoring of sync queue

Optimization

- Criteria for selecting cloud jobs
- Ensuring resources only running when required
- Tracking cost



Initiatives

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Virtual workstations

Load scenes using cloud data-set to diagnose source issues



Rendering visualization

Web view of in-progress renders with thumbnails



Enhanced monitoring

Dashboards to show cloud utilization, cost, and efficiency

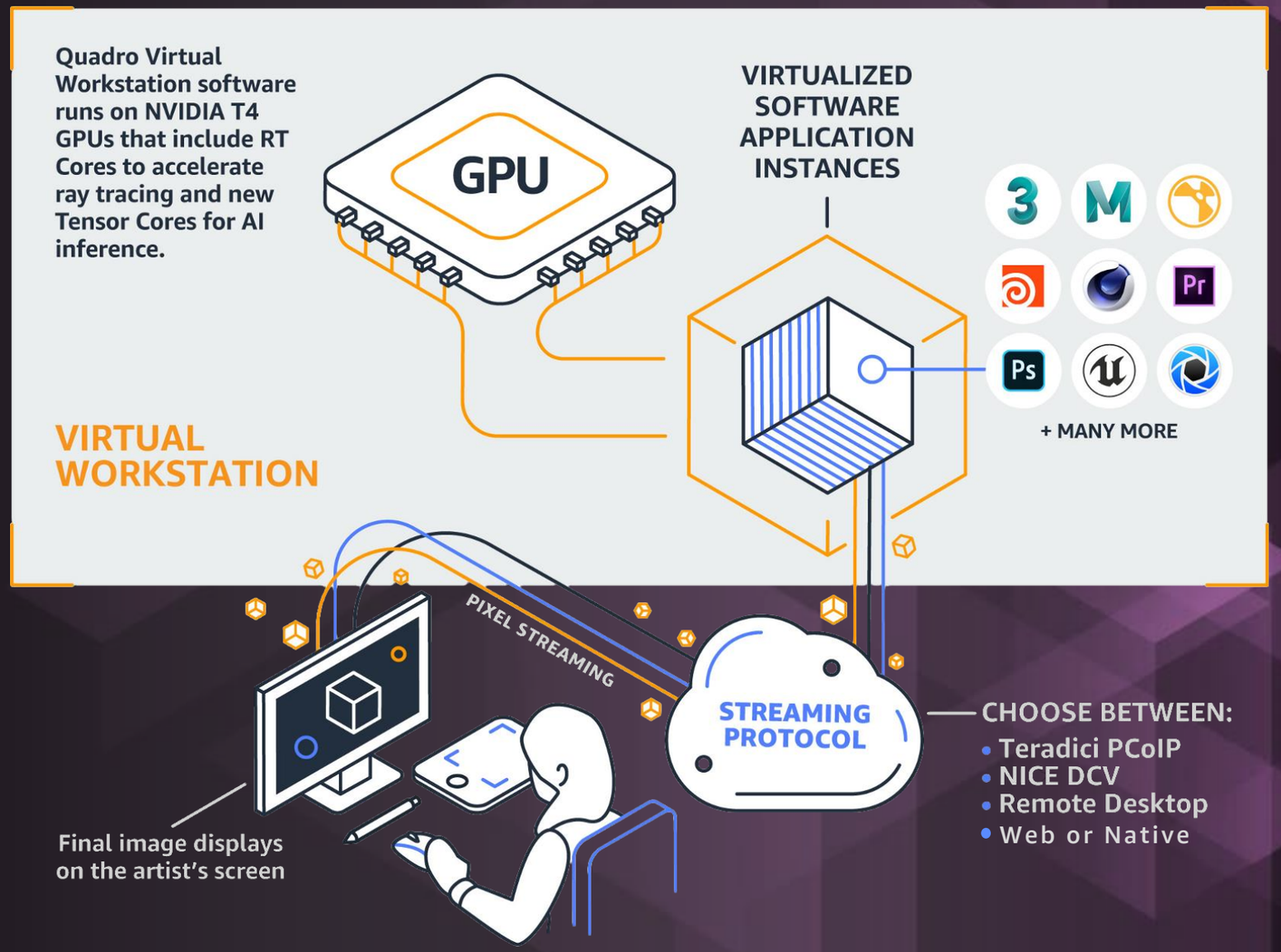
METHOD STUDIOS


aws
Content production
state of the art


Location and device strategy
End user experience and expectations
Application requirements
Tooling, Infrastructure, and security

Virtual workstations on AWS

- Personas and workflows
- Media and access requirements
- Network and storage
- Amazon EC2 instance types
- Pixel streaming protocols
- Native or web clients
- Client-side peripherals

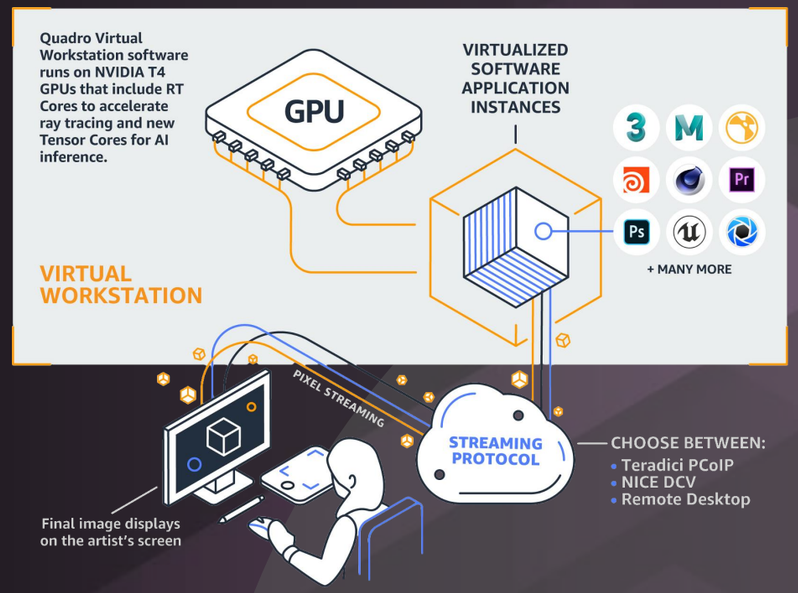


G4

NVIDIA T4 Tensor Core GPUs
Up to 1.8 TB of Local NVMe storage
Up to 100 Gbps of networking throughput

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Flexible storage for your infrastructure

Amazon FSx

Fully managed service
Windows File System for SMB
Lustre file system for NFS



High-performance
Amazon S3 synchronization

Partner

Mix of Windows/Linux clients
Scales to billions of files
Programmable APIs



High-performance
cloud file system

Partner

High performance for HPC
Can leverage Amazon S3
or Amazon Glacier



High-performance
cloud file system



Bring workstations to your artists

AWS Local Zones

- Extend your regional creative footprint to the edge
- For demanding applications that require single-digit latencies
- Places compute, storage, database, and other services closer to artists
- Deploy common AWS services, solutions, and AWS partner offerings



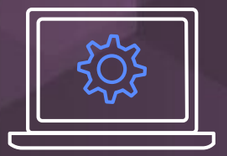
AWS, partner infrastructure, and at the edge



Local compute, storage, database, and other services

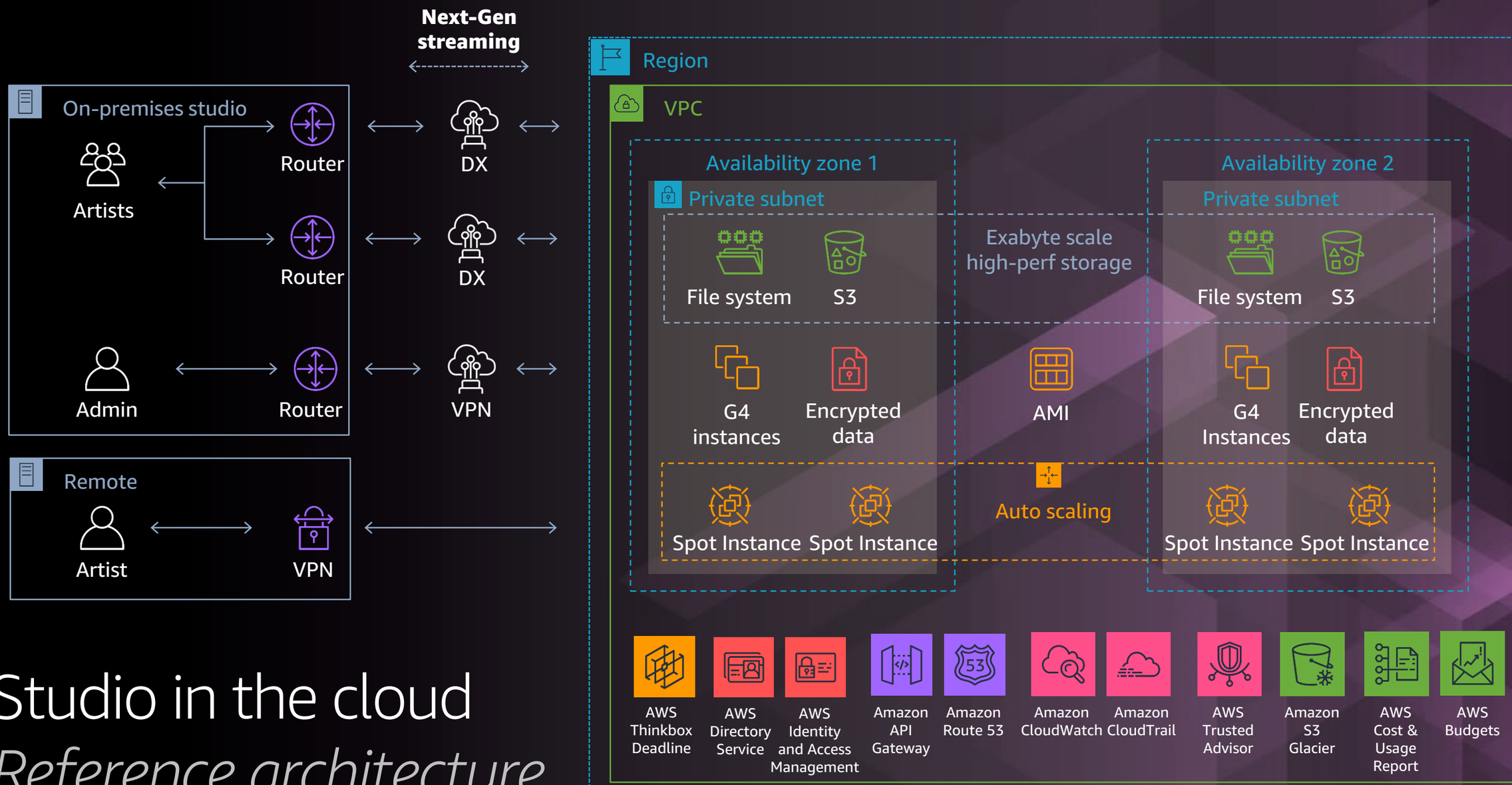


Connect and scale using services in AWS regions



Low latency application and artist experiences

ftrack
Frame.io
teradici
Blackmagicdesign
5thKIND
Qumulo
LEOSTREAM
Megaport
EditShare
NVIDIA
arch platform technologies
moxion
aspera an IBM company
WEKA
AMD
SIGNIANT
opendrives
colorfront
sohonet



Studio in the cloud

Reference architecture

State of the art

- AWS Thinkbox Deadline – RFDK and CDK, SQS notifications, cost controls, RCS HA
- AWS Network Firewall – Managed VPC firewall service
- NICE DCV – Session management, QUIC, advanced USB support
- AWS Local Zones – LA1, LA2
- AWS Thinkbox Marketplace – Renderman for AWS
- Amazon EC2 – Hibernate for T3/T3a instances
- Cloud innovation – Virtual production, TVIPS and RAW edit, partners



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MDS201: Learn more about content creation on AWS

Content hub: Studio in the cloud for content production

Tutorials: Studio in the cloud for digital content creation tutorials

Development: The AWS Render Farm Deployment Kit

Webcast: Digital content creation on AWS series

E-book: Innovate quickly

E-book: Media and entertainment customer magazine

Webcast: Demos and use cases from APN and consulting partners

AWS Media Blog: Content creation posts

Webcast: AWS Insights Online Conference 2020



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Thank you!

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