DELL TECHNOLOGIES PARTNER PROGRAM

HEROES

Introducing Dell EMC PowerScale

#oneteamonedream

GLOBAL ALLIANCES PRESALES

DELL Technologies

© Copyright 2019 Dell Inc. **Internal Use Only — Confidential**

DELL Technologies PARTNER PROGRAM

PowerScale

Innovations to Unlock the Potential of Unstructured Data

Andy Zitzmann
Director, UDS Global Alliances & OEM
Joe Steiner
CTO, Dell Technologies
Tony Mack
Sr. Manager, UDS Global Alliances & OEM

June 24, 2020

DELL Technologies

Dell EMC PowerScale

Modernizing the world's leading scale-out NAS platform to help IT move at the speed of business.
PowerScale technology can now go anywhere – in the edge, the core, or in any cloud.

Support any data and any use case

Access data anywhere with seamless scale

Deliver insights and mobility to move faster

Handle any data, anywhere, with intelligent insights.

© Copyright 2020 Dell Inc.

Strength in the Unstructured Market - *Continued w/ PowerScale!*

Building on a proven heritage of Isilon and OneFS

#1 Scale-out NAS platform

IDC *Analyze the Future*

Over **23+ exabytes** in the field

Gartner

Magic Quadrant Leader

4 years in a row

Gartner peerinsights customers' choice 2020

19K+

customers

1,500

new customers in 2019

Leadership in over **22 verticals**

2,000+

Media and entertainment

18 of top 20

Top hospitals in U.S.

8 of top 10

U.S. based pharmaceutical companies

Over 70%

Driver assist and autonomous vehicle suppliers

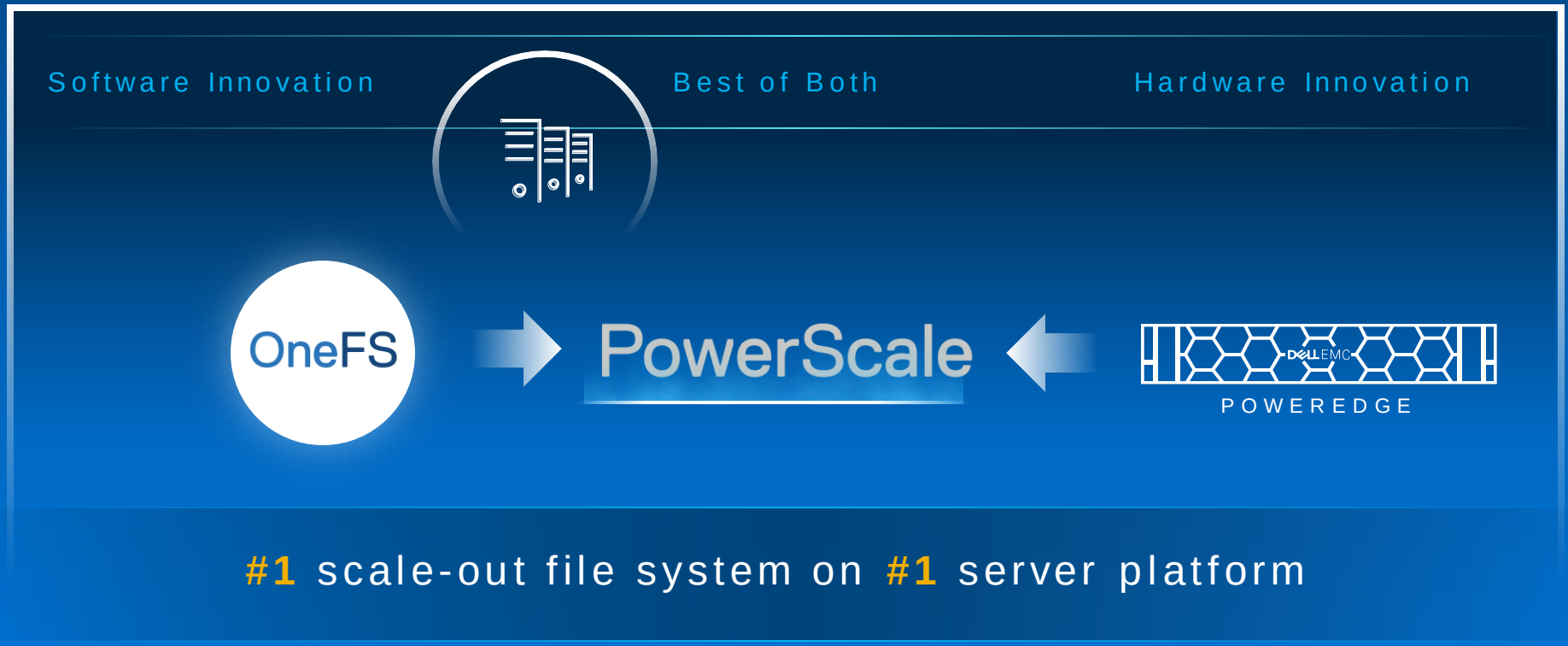
1EB+

(raw) deployed by a single customer

DELL Technologies

© Copyright 2020 Dell Inc.

The evolution of OneFS software: 2020 and beyond



#1 scale-out file system on **#1** server platform

Introducing

PowerScale

WORLD'S MOST COMPLETE
SCALE-OUT FILE SOLUTION

SIMPLICITY AT SCALE

Simple non-disruptive scaling of performance and capacity ***across product generations***

ANY DATA ANYWHERE

Deploy on PowerEdge servers or in the cloud with ***seamless mobility*** and ***automation***

INTELLIGENT INSIGHTS

Intelligent and actionable insights into your data and storage ***wherever they maybe***

DELL Technologies

© Copyright 2020 Dell Inc.

New PowerScale nodes

PowerScale F200

1U

ALL-FLASH | 25Gb CONNECT | 4 DRIVES PER NODE
STARTS AT 11.5 TB | 23 TB | 46 TB RAW
ENTRY ALL-FLASH FILE SOLUTION

PowerScale F600

1U

ALL-NVME | 100Gb CONNECT | 8 DRIVES PER NODE
STARTS AT 46 TB | 92 TB | 184 TB RAW
OUR FIRST NVME ALL-FLASH FILE SOLUTION

BENEFITS @ SCALE

- ↑ 5X Performance Gain[1]
- ↓ 50% Operational Costs[2]
- >2X Inline Data Reduction[3]
- $30K Starting Price[4]

[1] QLC drives are currently more expensive and offer lower performance compared to the NVMe value TLC that F600 offers. When QLC drives become more economical, we will offer those in the F600.

© Copyright 2020 Dell Inc.

The New PowerScale Family

ALL-FLASH

Isilon F800 | F810

PowerScale F600 All-NVMe
OneFS on PowerEdge

PowerScale F200 All-Flash
OneFS on PowerEdge

HYBRID

H600 | H500 | H400 H5600

ARCHIVE

A200 | A2000

CLOUD

MULTI-CLOUD
Azure, AWS, Google

NATIVE CLOUD
PowerScale OneFS
for Google Cloud

PowerScale can join existing Isilon nodes in the same OneFS 9.0 cluster

© Copyright 2020 Dell Inc.

PowerScale – Technology & Lower Cost to Deliver

SMB | NFS | S3 | FTP | HTTP | HDFS | REST | NDMP

Industry leading scale-out NAS platform running the
#1 software on Dell EMC hardware

Intelligent Insights

CloudIQ: Infrastructure insights
DataIQ: Data insights

Scalable 7TB to 60+ PB in single cluster	Manage PBs with less <1 FTE	Seamless expansion in 60 seconds w/ AutoBalace	Flexibility of hardware and media	Multi-Cloud Software Defined	No Data Migrations	Single Filesystem

INTELLIGENT INSIGHTS

© Copyright 2020 Dell Inc.

Power to Scale Features

ALWAYS EFFICIENT | ALWAYS MULTI-PROTOCOL | ALWAYS ON

ALWAYS BALANCED | ALWAYS NO MIGRATIONS | ALWAYS PROTECTED

© Copyright 2020 Dell Inc.

S3 REST API Support

MULTI-PROTOCOL ACCESS

File and Object Apps share same dataset

Write data over NFS and perform analytics over S3, write backups over S3 and read to tape, and more

RICH DATA SERVICES[1]

Inline efficiency, async replication, and more

Objects written over S3 take advantage of most of the data services that PowerScale OneFS offers

ALL NVME PERFORMANCE

Ideal for high performance object access

Analytics and other applications requiring high performance access can take advantage of NVMe flash

S3 FEATURES

Create, Delete and List Buckets
Create, Delete and List Objects
Put and Get Objects
Put and Get Bucket ACLs
Get Bucket and Object Metadata (Head)
Multipart Uploads

READ PERFORMANCE[2]

F600: Up to 7K TPS per node
F810: Up to 13K TPS per node

CREATE PERFORMANCE[2]

F600: Up to 1200 TPS per node
F810: Up to 1800 TPS per node

SHARE DATA BETWEEN TRADITIONAL AND CLOUD NATIVE APPLICATIONS

[1] Accessing data that is tiered to secondary cloud / object with CloudPools is not possible
[2] Performance numbers are for 10KB object size

 © Copyright 2020 Dell Inc.

DELL Technologies

PowerScale OneFS 9.0 – A New Foundation in Automation

Touchless PowerScale OneFS deployment and configuration

Now

Task automation with Ansible playbooks

Persistent shares for Containers

PowerEdge based nodes for seamless end to end experience

+6M

2021

Independently licensed and supported PowerScale OneFS on compatible servers

© Copyright 2020 Dell Inc.

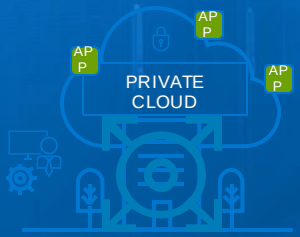
Power to Scale & Manage Resources In A Private Cloud

Phase 1
Infrastructure and Software Automated Deployment

Phase 2
Deliver Automated Services For End Users

Phase 3
Monitor & Manage End User Offerings

Phase 4
Hardware, Software & Data Life Cycle Management



Enabling Automation

- PowerScale APIs (PAPI/RAN)
- Python SDK
- Powershell
- Ansible
- CSI Drivers

[1] Limited configs at GA, more later. Subject to business approval.

© Copyright 2020 Dell Inc.

Introducing

PowerScale

WORLD'S MOST COMPLETE
SCALE-OUT FILE SOLUTION

SIMPLICITY AT SCALE

Simple non-disruptive scaling of performance and capacity ***across product generations***

ANY DATA ANYWHERE

Deploy on PowerEdge servers or in the cloud with ***seamless mobility*** and ***automation***

INTELLIGENT INSIGHTS

Intelligent and actionable insights into your data and storage ***wherever they maybe***

DELL Technologies

Internal Use - Confidential

© Copyright 2020 Dell Inc.

Many Ways to Deploy … One Powerful Experience

PowerScale

Isilon

Software Defined[1]

Cloud

[1] Limited configs at GA, more later. Subject to business approval.

© Copyright 2020 Dell Inc.

The nature of cloud is evolving

The promise of cloud

Flexibility and Scale

Agility and Innovation

Consumption Models

On-prem investments continue

have cloud strategies inclusive of on-prem data centers[1]

report cloud repatriation activities[2]

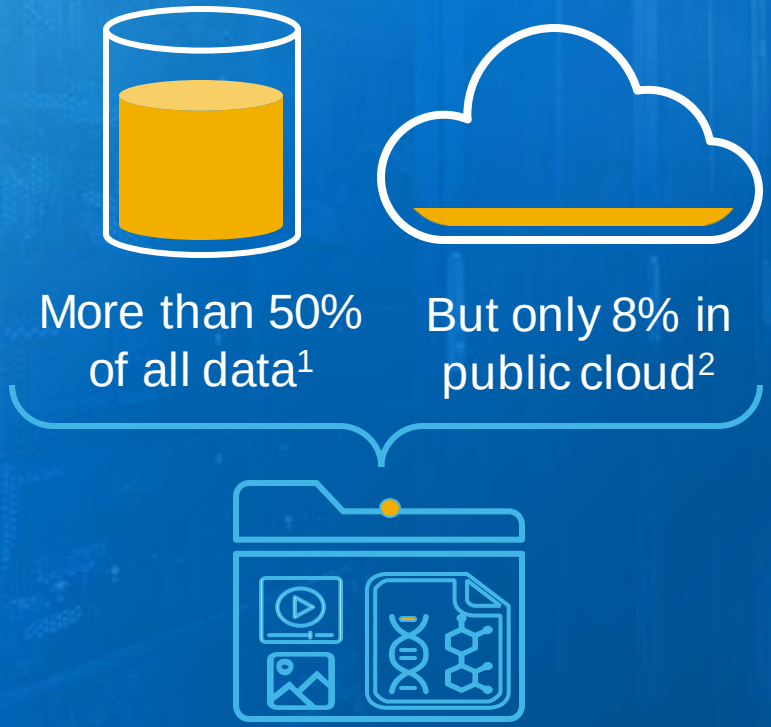
of public applications expected to repatriate within 2 years[2]

CLOUD IS NOT A DESTINATION, IT'S AN OPERATING MODEL

[1] ESG, "Hybrid Cloud Tipping Point," June 2018
[2] IDC, "Cloud Repatriation Accelerates in a Multi-Cloud World," July 2018

© Copyright 2020 Dell Inc.

File Storage Challenges in Public Cloud



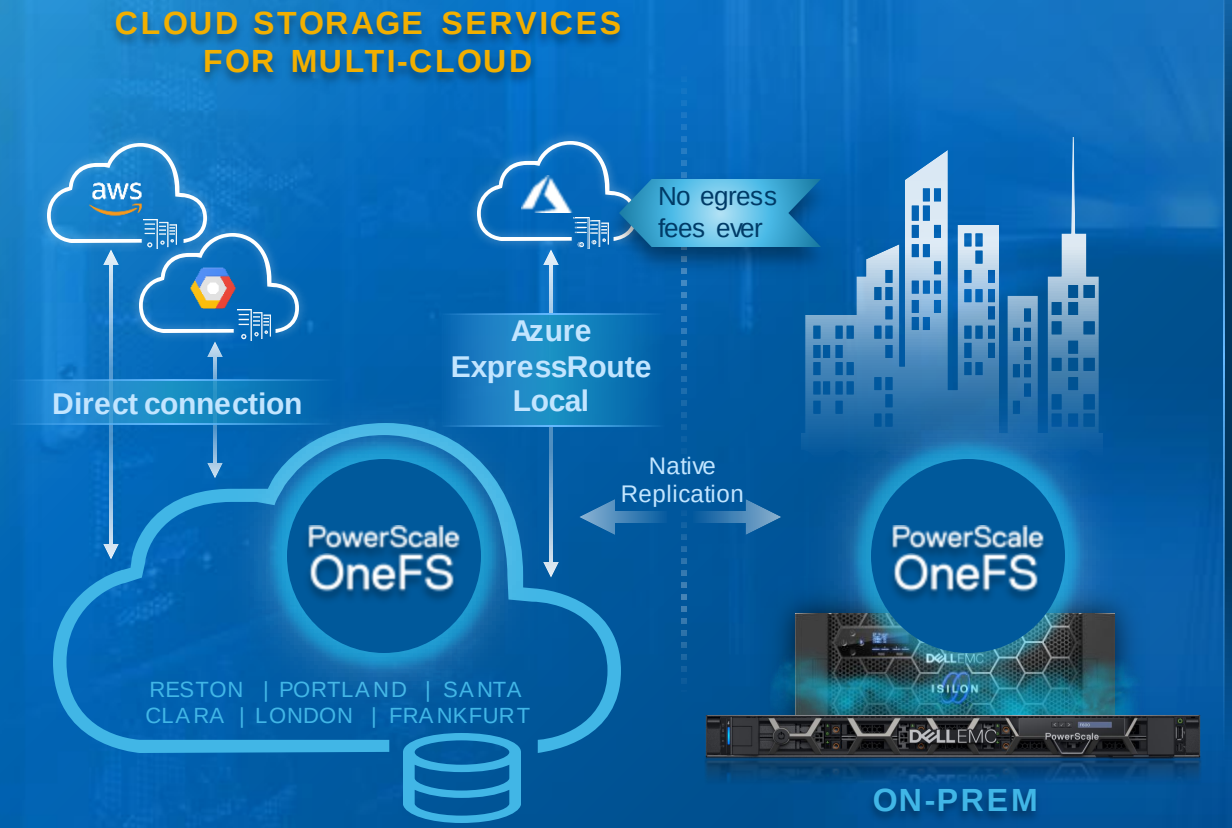
CHALLENGES

- Scale and performance limitations of file storage in public cloud
- Lack of enterprise features and capabilities
- No easy way to replicate data between on-prem and cloud
- Expensive to move large volumes of data out of the public cloud

[1] Source: ESG, Performance Testing of Dell Technologies Cloud OneFS for Google Cloud, May 2020
[2] Source: IDC, "4Q19 Storage Software and Cloud Services Qview Update Presentation," March 2020

© Copyright 2020 Dell Inc.

PowerScale OneFS for Multi-Cloud



BENEFITS

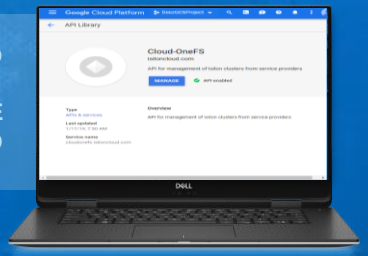
- As a service for agile multi cloud
- Built on PowerScale with Enterprise Services, low latency, high bandwidth
- Replicate between on-prem and cloud with no egress fees
- Avoid cloud vendor lock in – no need to migrate data

© Copyright 2020 Dell Inc.

PowerScale OneFS for Google Cloud

POWERSCALE ONEFS FOR GOOGLE CLOUD

MANAGED FROM GOOGLE CLOUD



PowerScale OneFS

RESTON | SYDNEY | SINGAPORE

Native Replication

PowerScale OneFS

ON-PREM

BENEFITS

- Fully integrated management in the Google cloud portal for a native cloud experience
- Built on PowerScale with Enterprise Services, low latency, high bandwidth
- Replicate between on-prem and cloud with no egress fees
- Game changing file performance in cloud – 46x read , 96x write and 500X capacity compared to current cloud offer

*Based on a May 2020 ESG Report commissioned by Dell EMC, "Performance Testing of Dell Technologies Cloud OneFS for Google Cloud", estimate based on comparison of publicly available specifications and performance benchmarking results for a competing vendor's NAS solution and Dell Technologies Cloud OneFS both on Google Cloud. Actual results may vary. Full report: https://www.delltechnologies.com/resources/en-us/asset/analyst-reports/products/storage/white-paper-esg-technical-review-performance-testing-onefs-google-cloud.pdf

Internal Use - Confidential

Introducing

PowerScale

WORLD'S MOST COMPLETE
SCALE-OUT FILE SOLUTION

SIMPLICITY AT SCALE

Simple non-disruptive scaling of performance and capacity ***across product generations***

ANY DATA ANYWHERE

Deploy on PowerEdge servers or in the cloud with ***seamless mobility*** and ***automation***

INTELLIGENT INSIGHTS

Intelligent and actionable insights into your data and storage ***wherever they maybe***

DELL Technologies

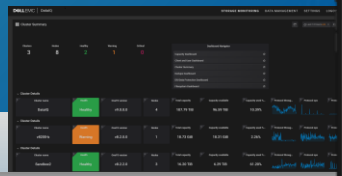
Internal Use - Confidential

© Copyright 2020 Dell Inc.

Intelligent Insights

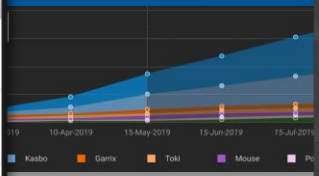
CloudIQ

Multi cluster monitoring public or private cloud



CloudIQ Supported!

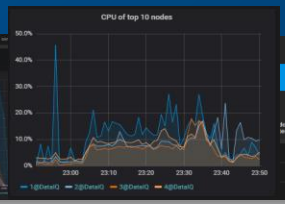
Predictive capacity analytics



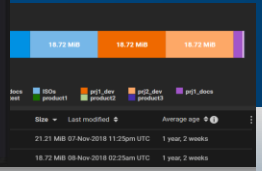
User facing capacity management

Multi-workload tracking

Real time performance hottest files and users



User Facing Capacity Management



Performance

CPU

Throughput

External network

Per protocol

Per directory

Per client

Capacity

Predictive capacity projections

Per cluster

Per node type

Scale

Monitors up to 252 nodes as one

Monitor multiple clusters globally

In public or private Cloud

Analytics

Point in time

Comparisons of points in time

© Copyright 2020 Dell Inc.

DELL Technologies

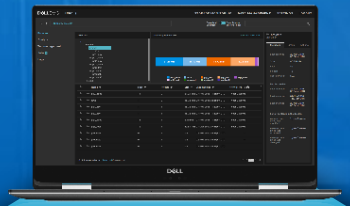
Intelligent insights into your data

DataIQ makes it easy for anyone to find and understand data across file & object stores

DataIQ

Included with PowerScale

No additional purchase
required for Dell EMC products



Discover | Understand | Act

Tag, track, analyze and report on data
Act on unique insights

EDGE

CORE

CLOUD

PowerScale

ECS

3rd Party & Cloud

DELL Technologies

© Copyright 2020 Dell Inc.

Introducing

PowerScale

WORLD'S MOST COMPLETE
SCALE-OUT FILE SOLUTION

SIMPLICITY AT SCALE

Simple non-disruptive scaling of performance and capacity ***across product generations***

ANY DATA ANYWHERE

Deploy on PowerEdge servers or in the cloud with ***seamless mobility*** and ***automation***

INTELLIGENT INSIGHTS

Intelligent and actionable insights into your data and storage ***wherever they maybe***

DELL Technologies

Internal Use - Confidential

© Copyright 2020 Dell Inc.

PowerScale – Industry Verticals & Use Cases

HOME DIRECTORIES

DATA ANALYTICS

FILE SHARES

INTERNET OF THINGS

ARCHIVING

AI / ML

VIDEO FILES

BLOCK CHAIN

to drive innovation
to get to market faster
to create differentiation

ENERGY

MANUFACTURING

EDA

ANY DATA-DRIVEN BUSINESS

LIFE SCIENCES

MEDIA & ENTERTAINMENT

FINANCIAL SERVICES

Leadership in over 22 verticals… more to come w/ PowerScale!

© Copyright 2020 Dell Inc.

DELL Technologies

Positioning PowerScale for Predictive Healthcare

Thermal Imaging & EDGE Screening Solution

@Edge

Extended to Core

Edge Station for Temperature Monitoring

Dell Workstation Tower

Video

Thermal Camera*

Black Body*`

Responder Mobile App

Alerts

Centralized Processing Modules

Person Tracking & Dashboards

PowerEdge Server

F200 F200 F200

PowerScale NAS

Meta data

Video

Edge Station for Temperature Monitoring

1 2 n

Add On Optical Cameras

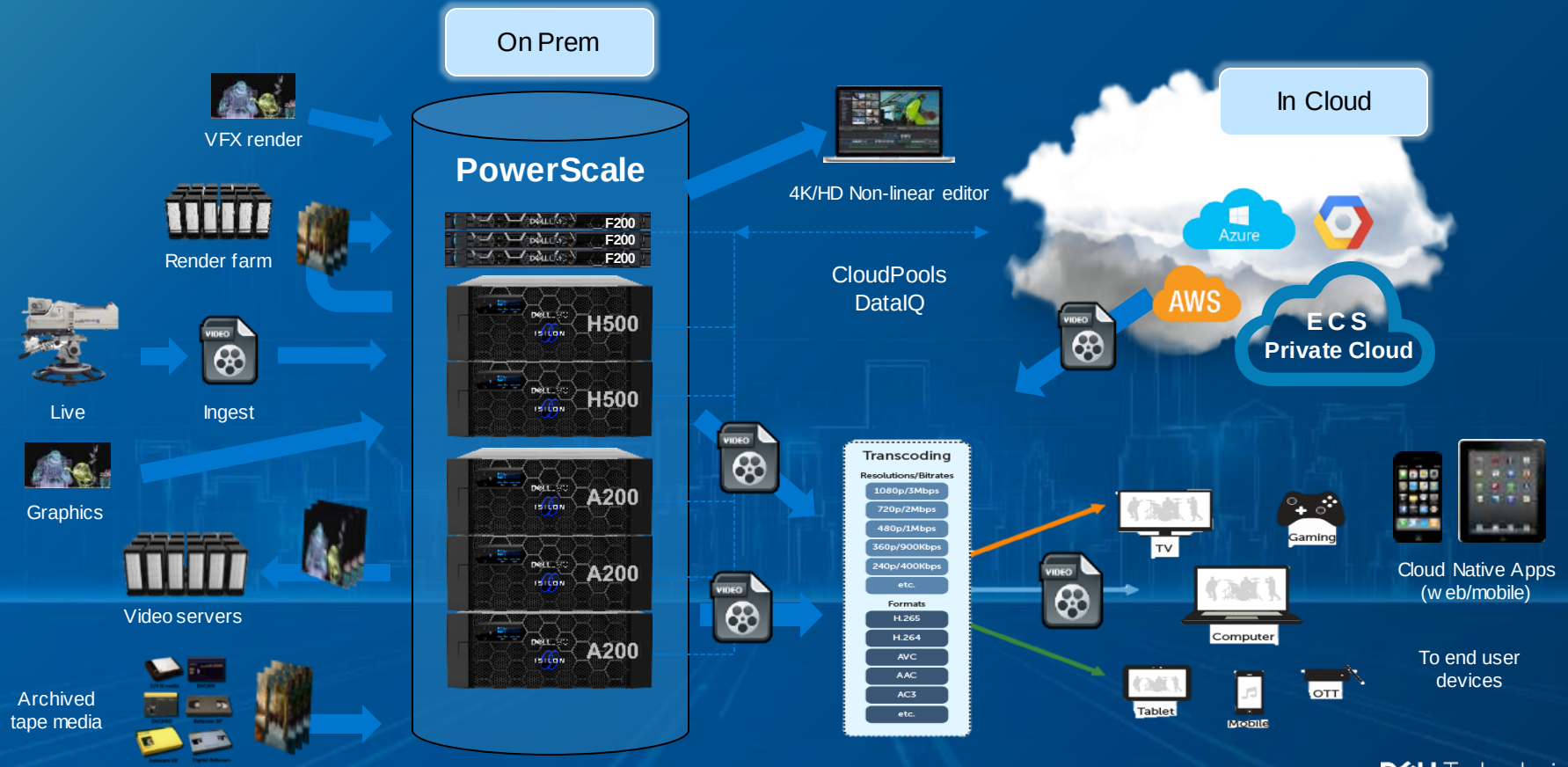
* 3rd Party Components

1. Edge temperature checking of large crowds using thermal cameras
2. Rules for Alerting base on temperature threshold
3. People Search: Use Video Analytics to perform FR for searching the person
4. Mobile App to receive real-time alerts for Responder
5. Camera with Thermal and Optical lens
6. Only metadata transferred to Core. Bandwidth Optimized

© Copyright 2020 Dell Inc.

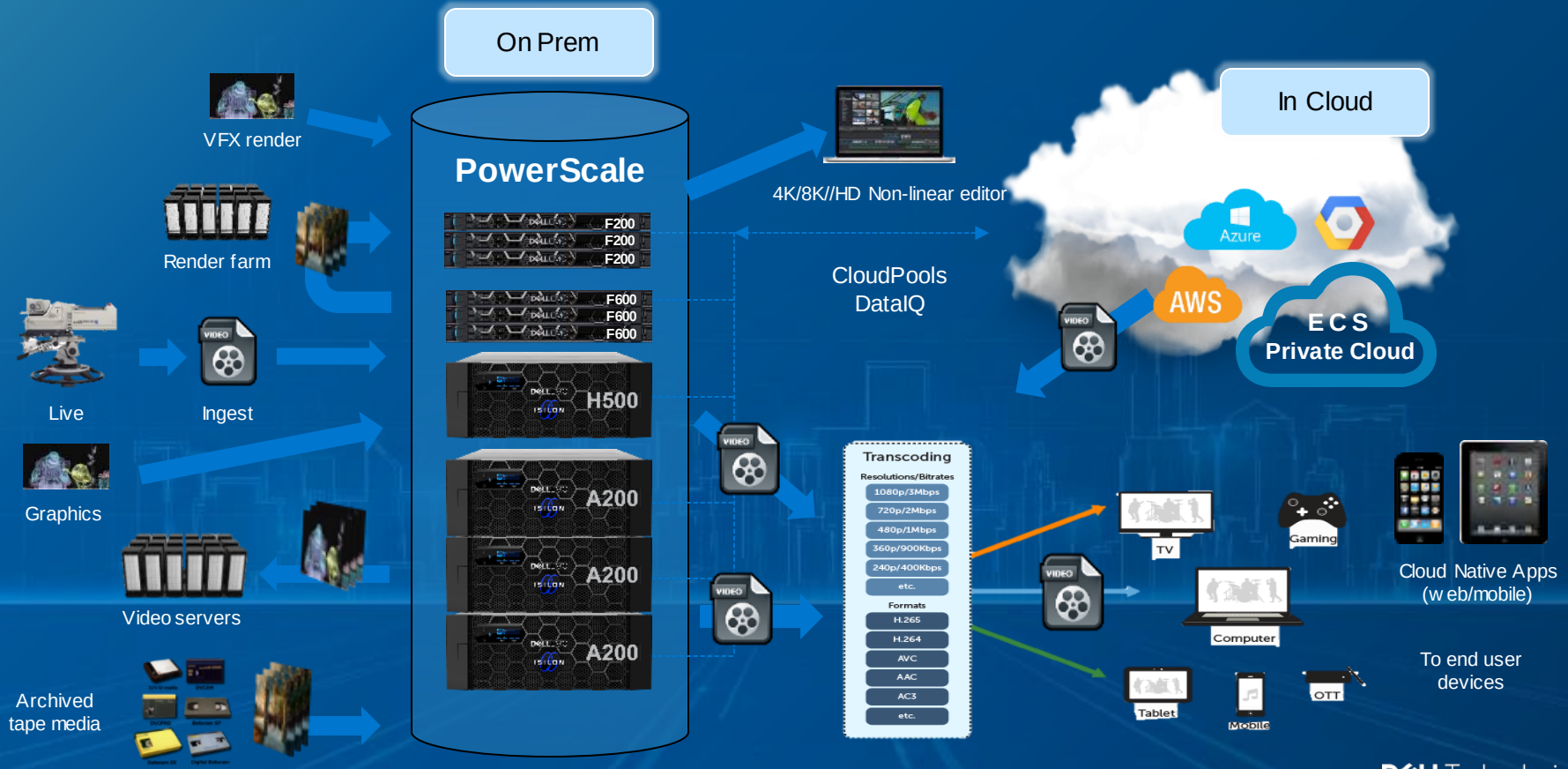
DELL Technologies

Positioning PowerScale for Media & Entertainment



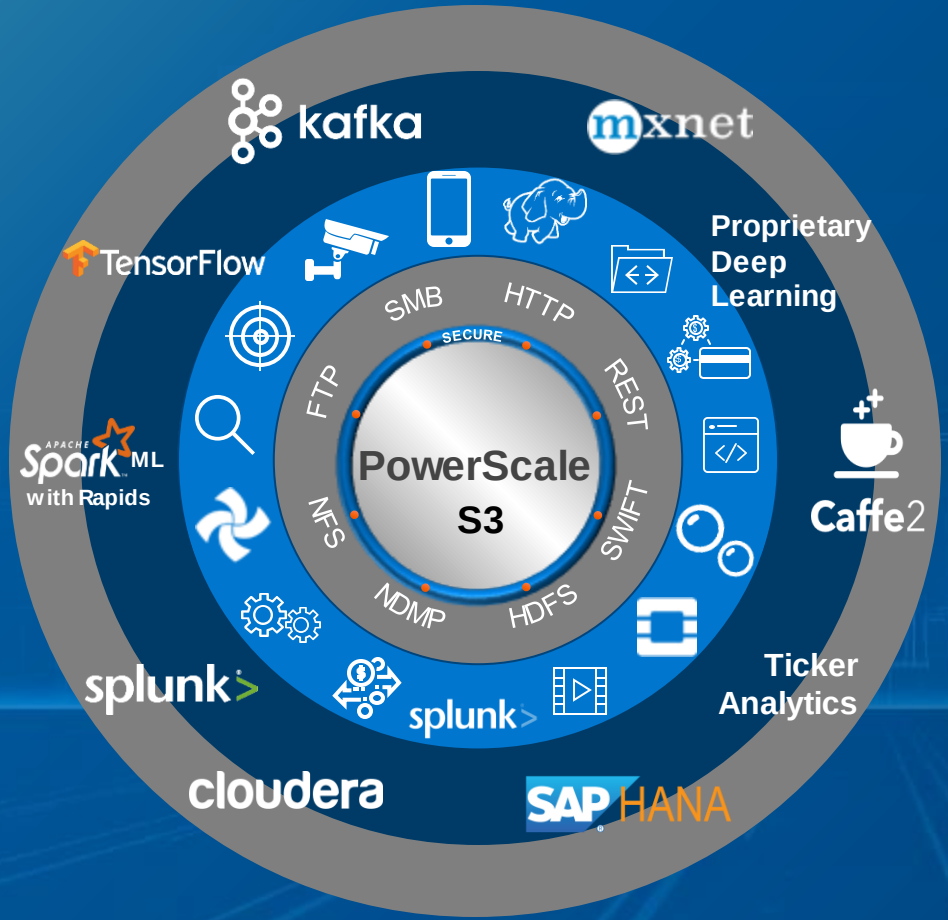
© Copyright 2020 Dell Inc.

Positioning PowerScale for Media and Entertainment



© Copyright 2020 Dell Inc.

Positioning PowerScale for Edge Analytics, AI & IoT



- Multiple data interfaces
- Performance and capacity tiers
- Scale storage economically
- Scale storage independently of compute
- Robust Data Governance
- Multi-tenancy with Access Zones

© Copyright 2020 Dell Inc.

Streaming Data Platform

Ingest and analyze streaming data

Faster action

Utilizing real-time data for immediate action

Unlimited scale

Elastic ingestion and effortless historical scaling

Deeper insights

Tiered storage with historical retention and playback

© Copyright 2020 Dell Inc.

Dell EMC PowerScale

Modernizing the world's leading scale-out NAS platform to help IT move at the speed of business. PowerScale technology can now go anywhere – in the edge, the core, or in any cloud.

Support any data and any use case

Access data anywhere with seamless scale

Deliver insights and mobility to move faster

Handle any data, anywhere, with intelligent insights.

 © Copyright 2020 Dell Inc.

DELL Technologies

PowerScale Partner Benefits

OEM READY & PARTNER BUNDLES PRICED FOR VELOCITY

$33K

New All-inclusive bundles start at $33K with software, switches, and support included.

INDUSTRY-FOCUSED OPPORTUNITIES FROM EDGE TO CLOUD

Edge: Streaming data, real-time analytics.
Core: Growth industries healthcare, M&E, government, education.
Cloud: File-archives, DR, and bursting.

#1 TECHNOLOGY TO COMPETE & TAKE SHARE

#1 Scale-out NAS platform

4 Year Leader Magic Quadrant

Take-out the competition. Tech refresh Isilon where it makes sense.

JOINT GTM WITH DELL SALES

Partner with GA Teams & 700+ Dell UDS Sales Teams

© Copyright 2020 Dell Inc.

Q&A

Innovations to Unlock the Potential of Unstructured Data

DELL Technologies

Thank You

© Copyright 2020 Dell Inc.