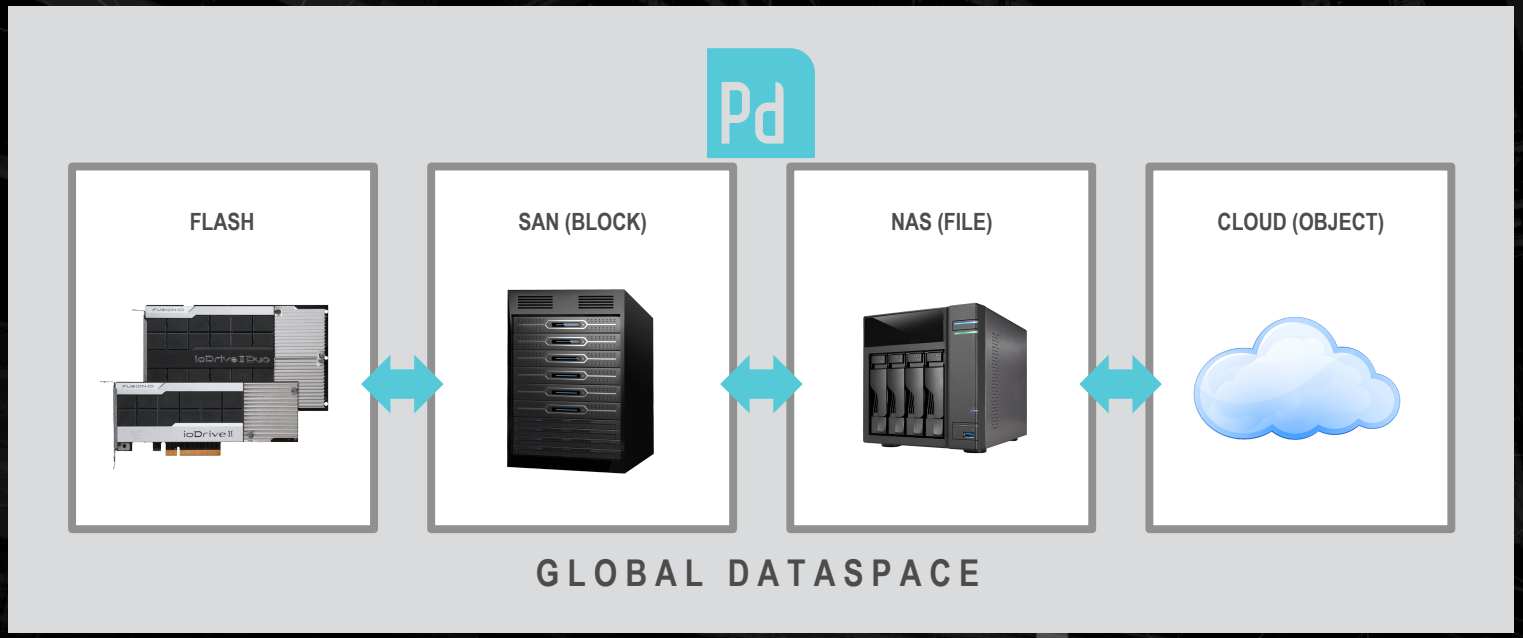
Making New Storage-Class Memories Easier to Adopt

Lance Smith, Primary Data CEO

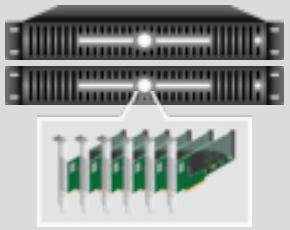
August 8, 2016

@Primary_Data

How We Got Here



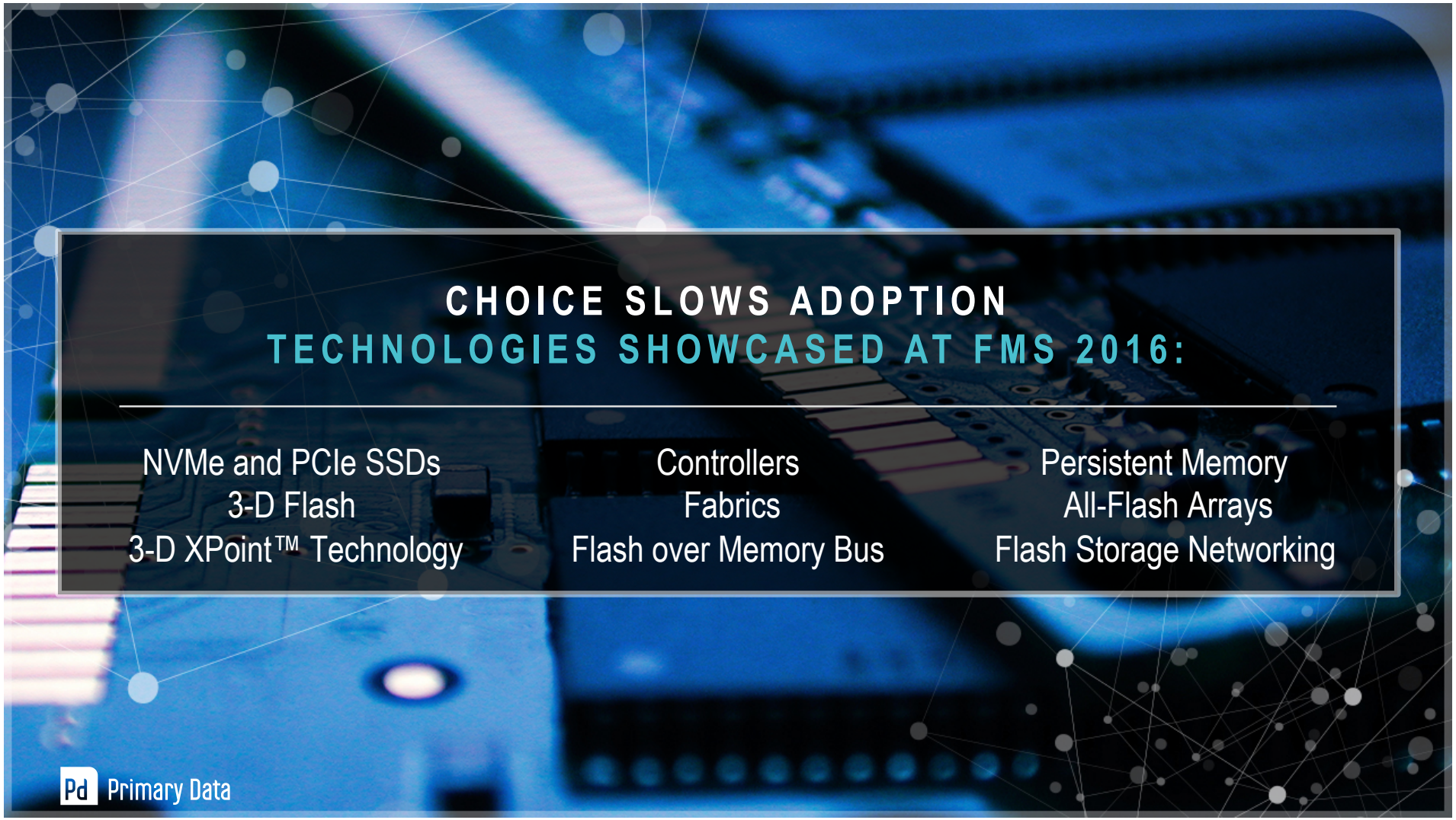
Three Uses of NVM Today



SERVER CACHE

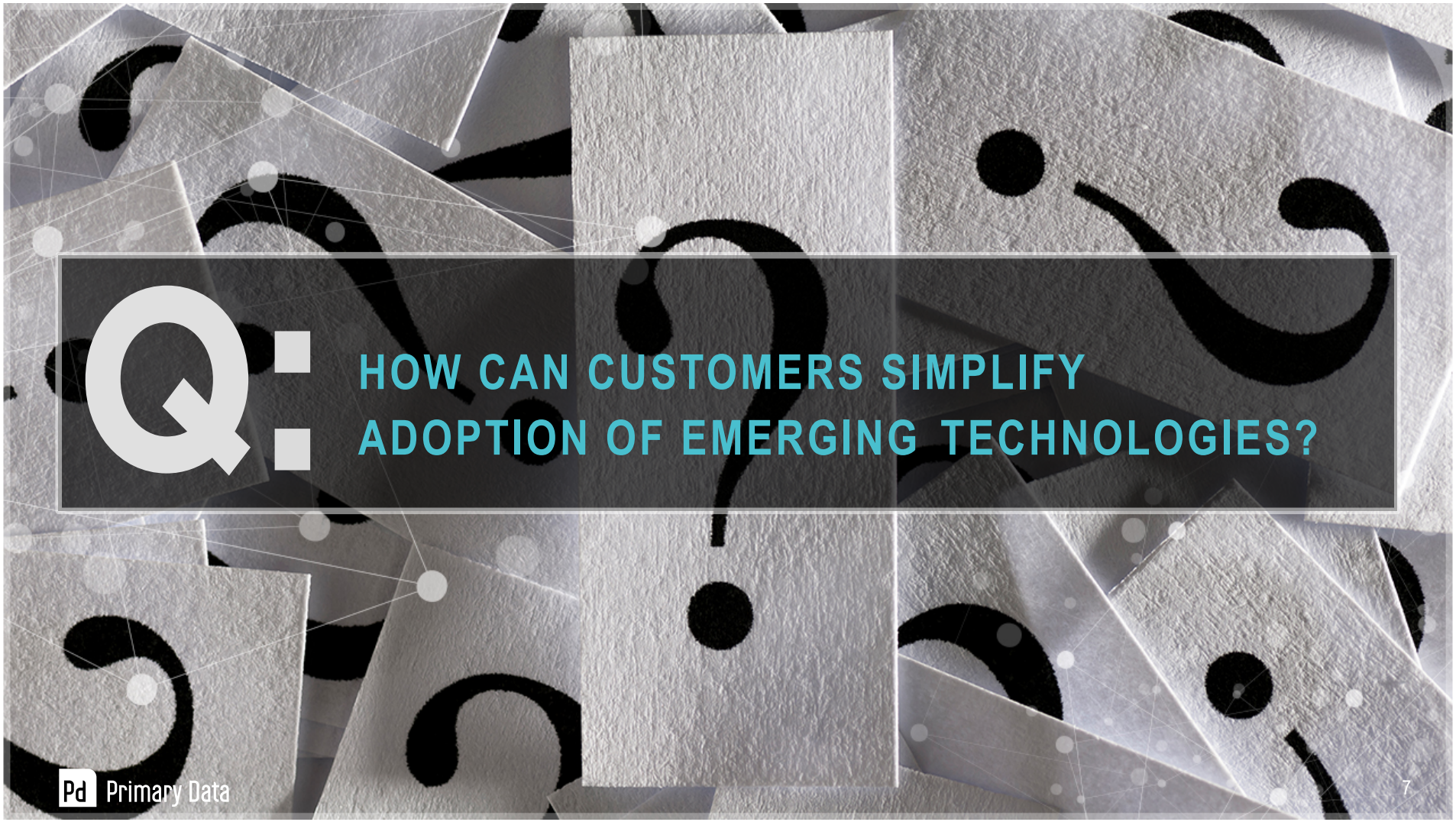
ALL FLASH ARRAYS

HYPERCONVERGED


CHOICE SLOWS ADOPTION
TECHNOLOGIES SHOWCASED AT FMS 2016:
NVMe and PCIe SSDs
3-D Flash
3-D XPoint™ Technology
Controllers
Fabrics
Flash over Memory Bus
Persistent Memory
All-Flash Arrays
Flash Storage Networking
Pd Primary Data


INTEGRATING EMERGING TECHNOLOGIES
REMAINS A HURDLE
451 Research finds 57% of enterprises adding all-flash *arrays*
to consolidate applications (57%),
42% of enterprises accelerating individual apps with AFAs.
Pd Primary Data


51% OF ENTERPRISES MANAGE 10 OR MORE STORAGE SYSTEMS,
34% MANAGE 20 OR MORE
Primary Data
Source: Primary Data Storage Census, 2016


Q:
HOW CAN CUSTOMERS SIMPLIFY
ADOPTION OF EMERGING TECHNOLOGIES?
Pd Primary Data


DATA VIRTUALIZATION
Any piece of data
On any storage
Movable at any time
Without interruption
Pd Primary Data


DATA VIRTUALIZATION SEAMLESSLY INTEGRATES
EXISTING AND NEW STORAGE RESOURCES
Pd Primary Data

Converging Data Across a Single Global Dataspace

LOGICAL VIEW

Primary Data

PHYSICAL VIEW

VM

COMMERCIAL APPS

AUTODESK.

Microsoft Exchange

VM

DATABASE

ORACLE

SAP

VM

VIRTUAL MACHINES

vmware

VM

USER FILES

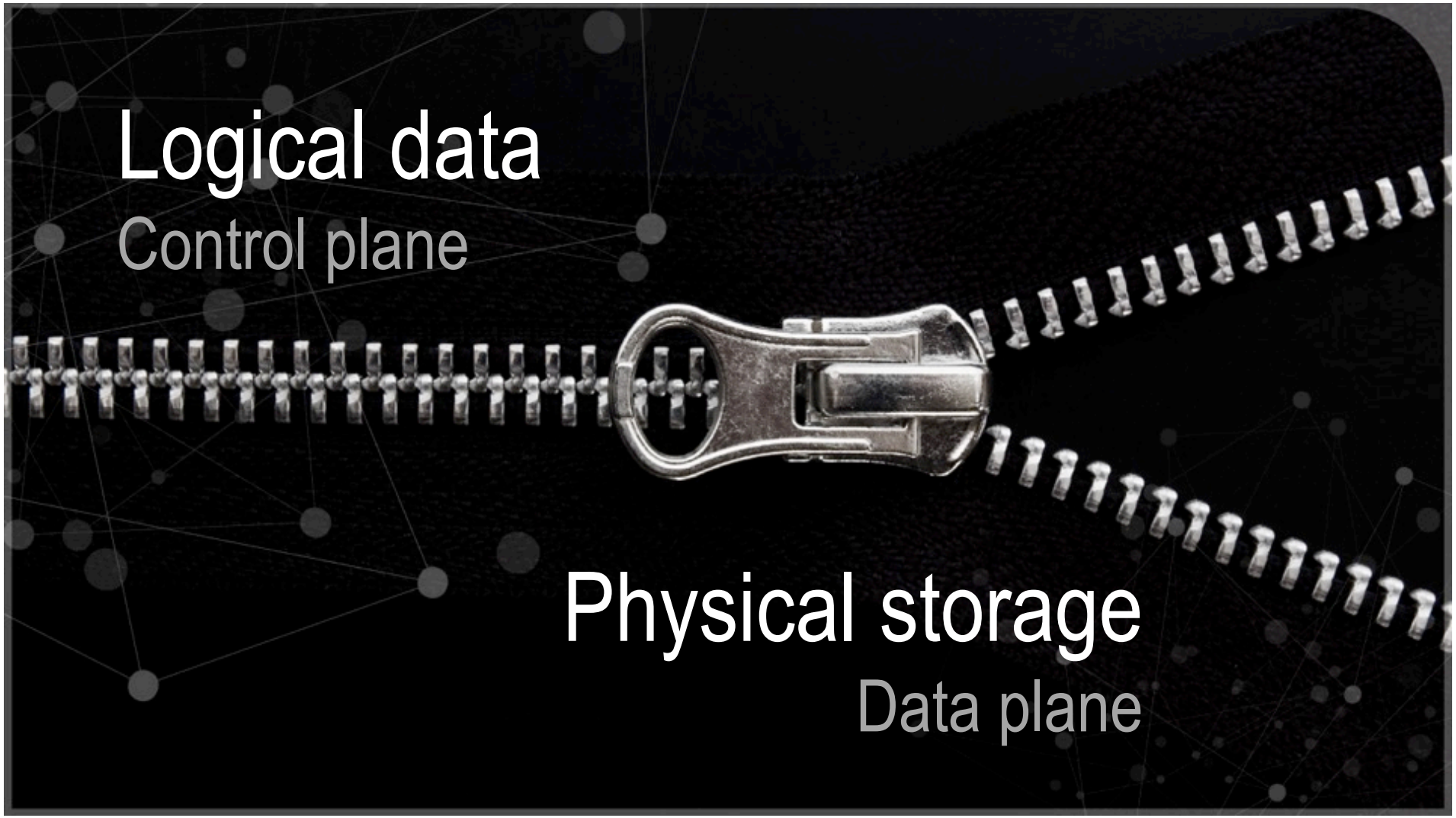
GLOBAL DATASPACE

IN-SERVER (FLASH)

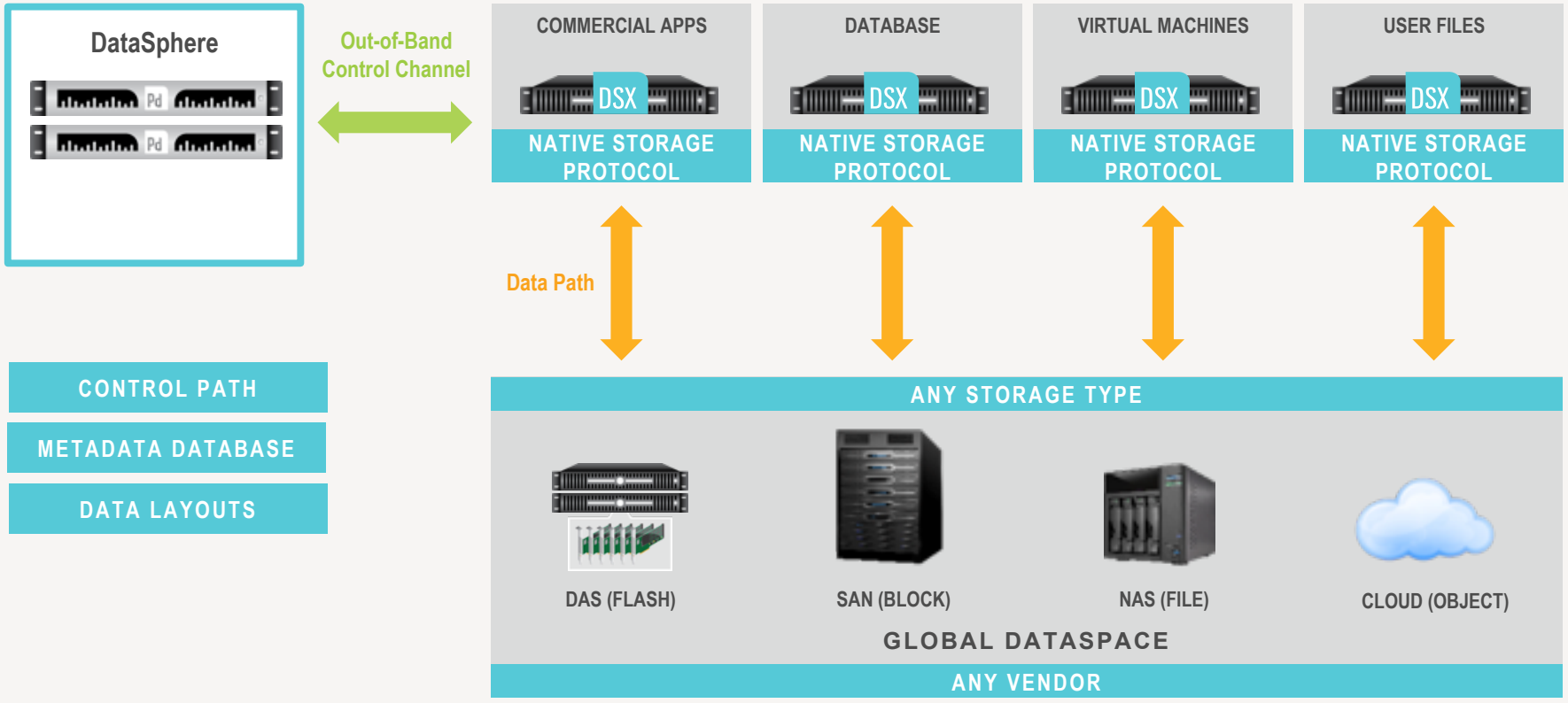
SAN (BLOCK)

NAS (FILE)

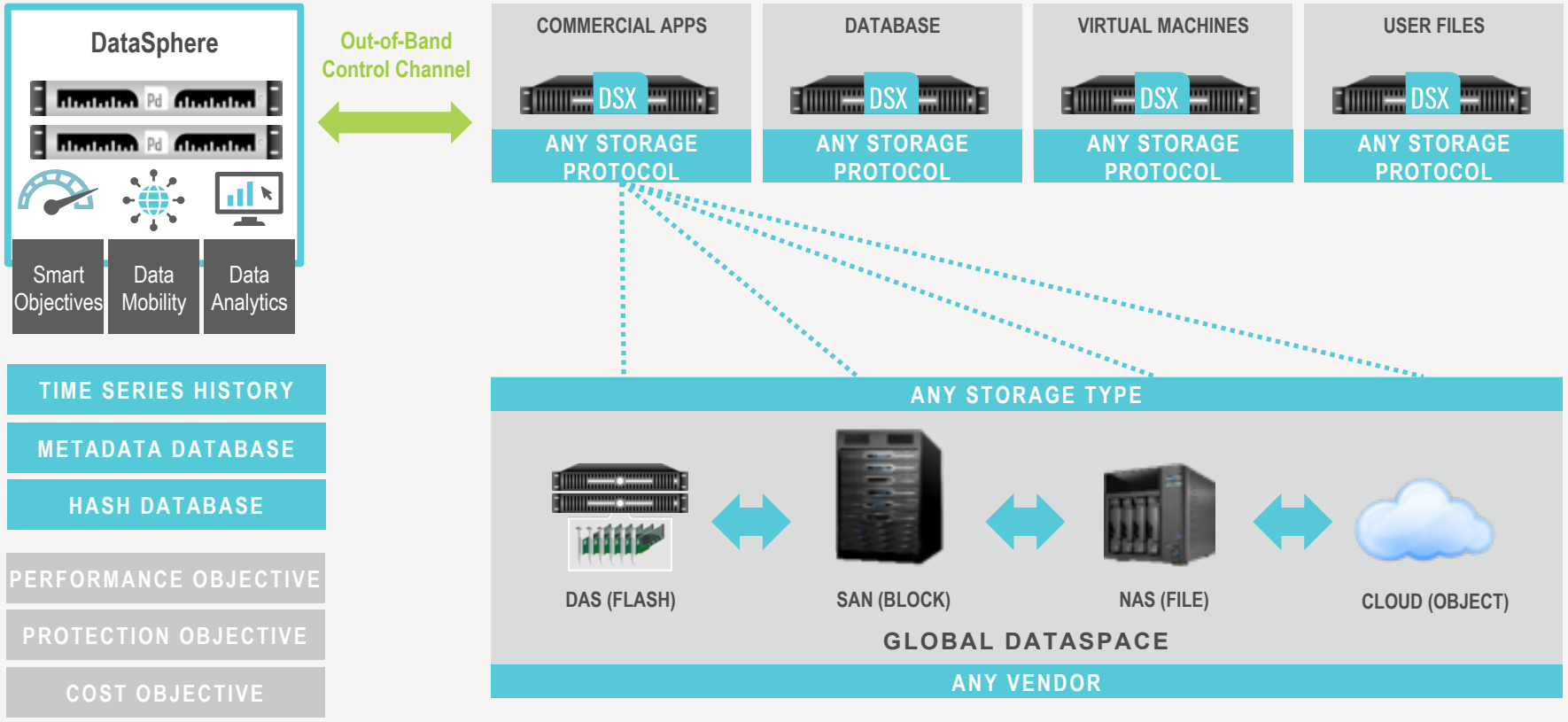
CLOUD (OBJECT)


Logical data
Control plane
Physical storage
Data plane

Data Virtualization: Out-of-Band Scalability and Performance



Data Orchestration: Puts the Right Data in the Right Place




Primary Data
CLOUD
SHARED
LOCAL
Automatically Aligning Data to Storage Resources


What Applications Want:
PERFORMANCE
IOPS, bandwidth, latency
PROTECTION
Durability, availability, priority, recoverability, and security
Pd Primary Data

Application Services MENU

HOUSE SPECIALS

Customize Any Dish

Fit your application's unique performance, price and protection needs!

MAIN DISHES

Platinum — Highest Performance, Lowest Latency, Low Capacity.....$$$$$

Gold — Highest Performance, Low Latency, Medium Capacity.....$$$$

Silver — Mid-Performance, Some Latency, Large Capacity.....$$$

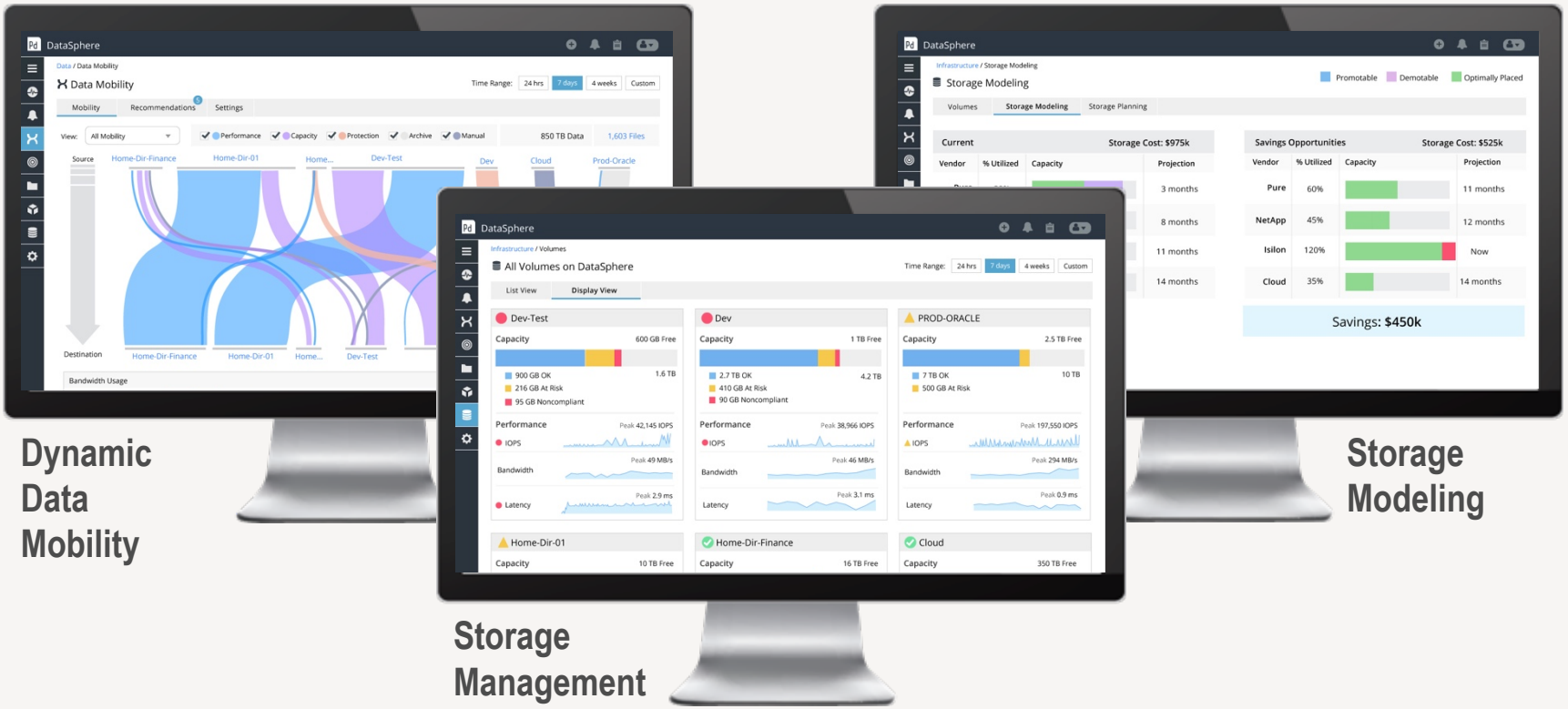
Bronze — Slower Performance, More Latency, Various Capacity.....$$

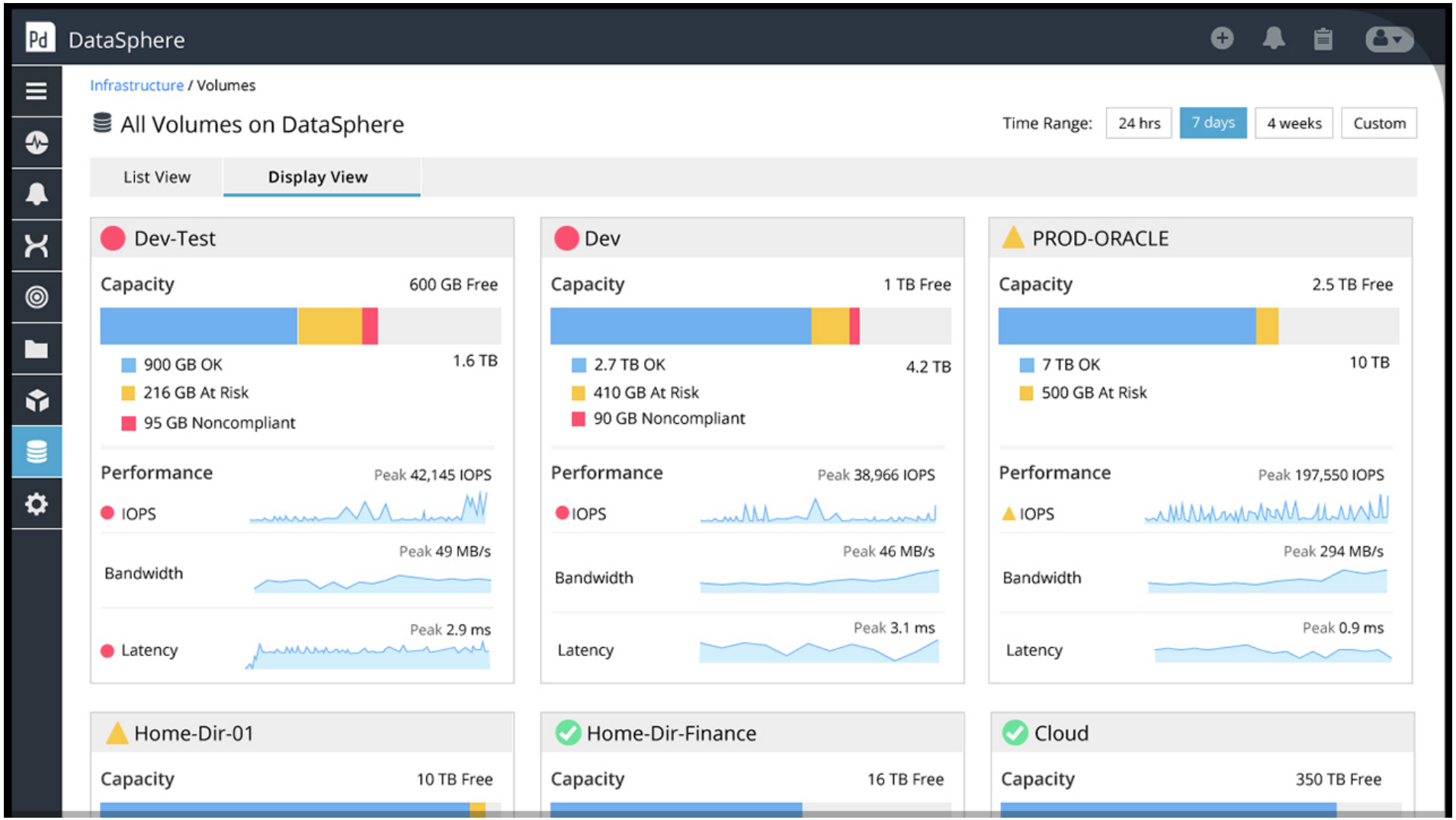
Cloud — Slowest Performance, Highest Latency, Huge Capacity.....$

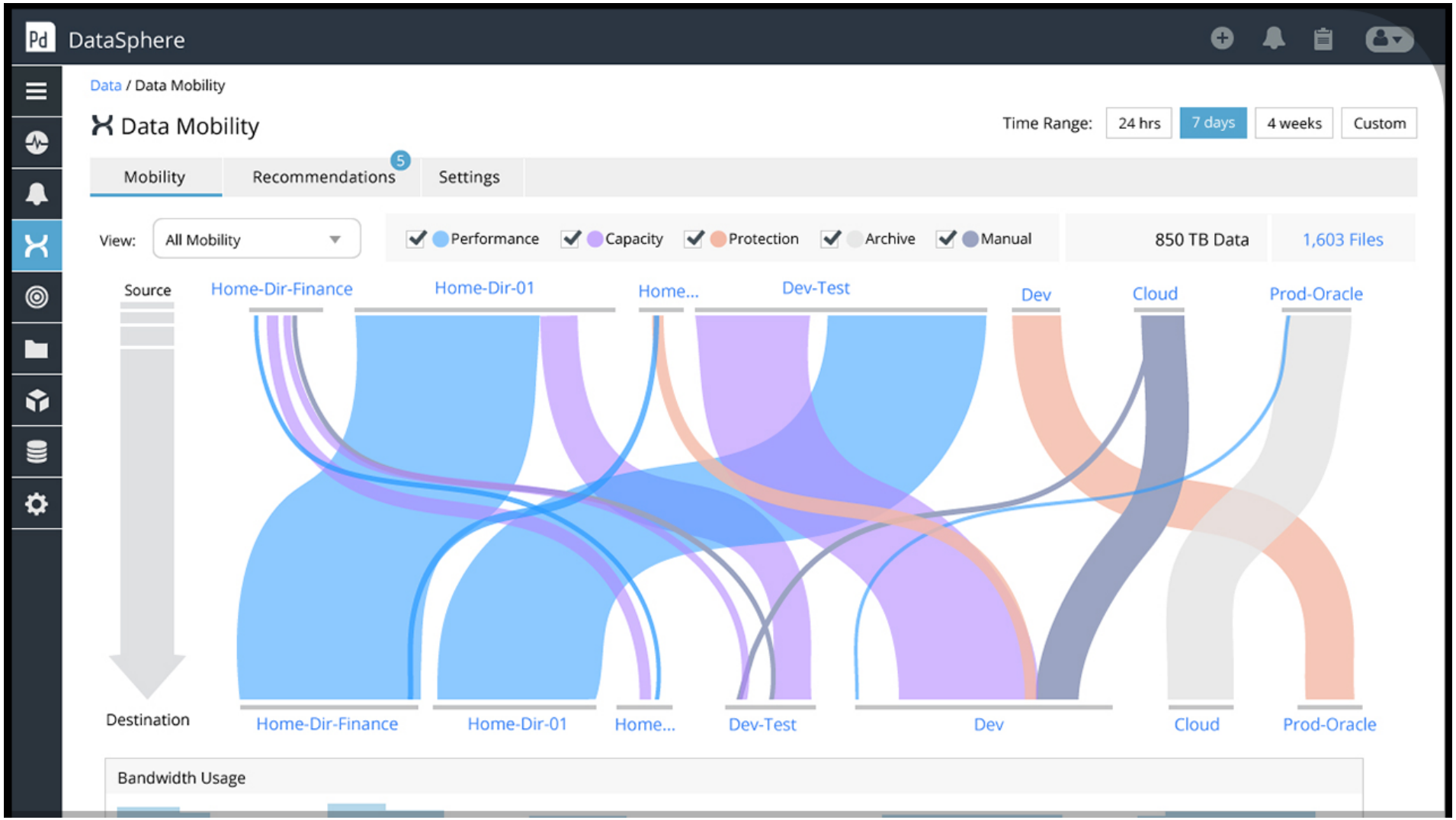

PLATINUM
GOLD
SILVER
BRONZE
SMART OBJECTIVES
AUTOMATE DECISION-MAKING,
MAXIMIZE EFFICIENCY OF BASIC OBJECTIVES
Pd Primary Data

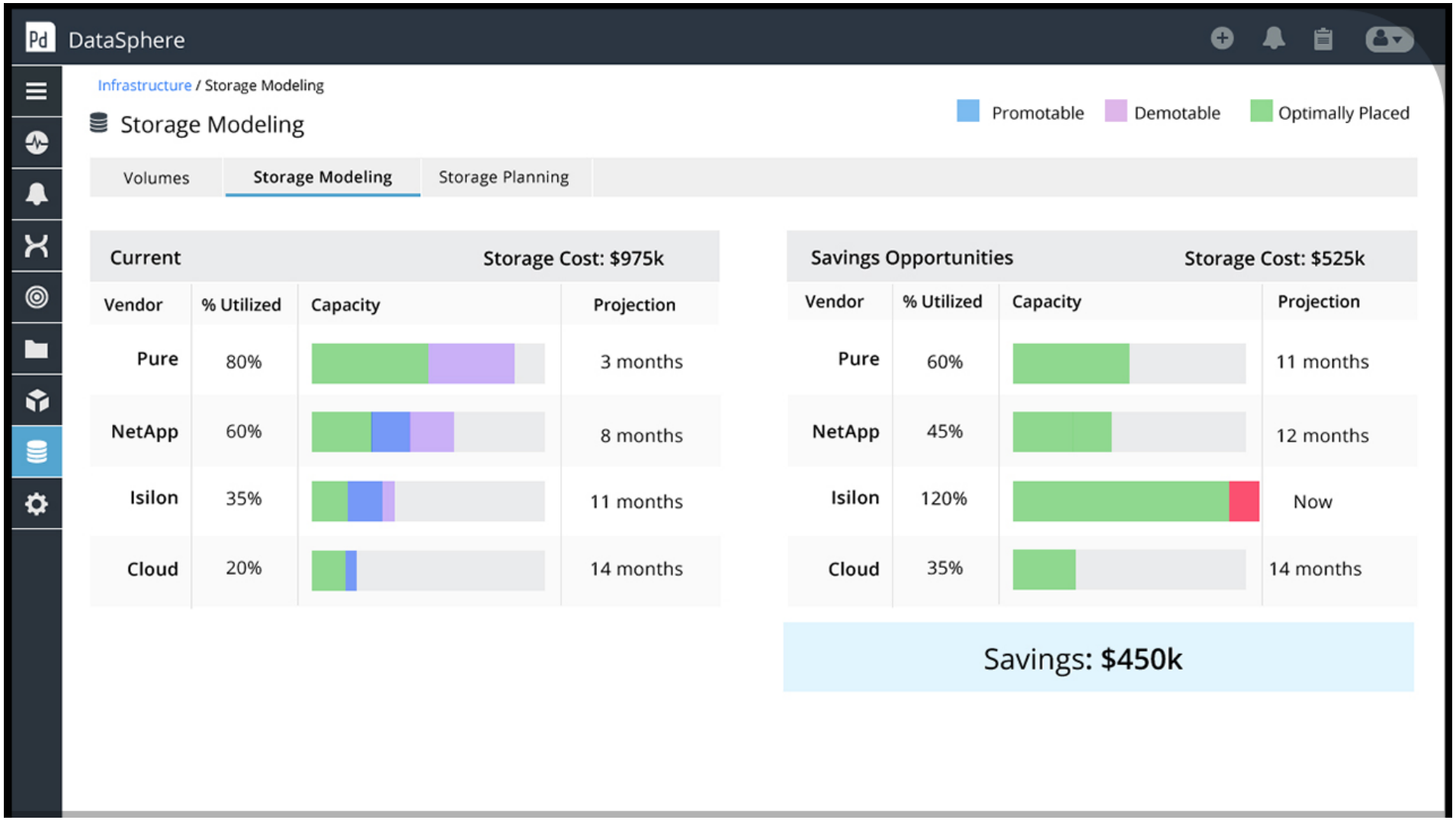

SMART OBJECTIVES AUTOMATICALLY ALIGN THE
HOTTEST DATA WITH THE
HIGHEST PERFORMANCE
Primary Data

Manage By Objectives Across Application and Infrastructure




DataSphere
Infrastructure / Volumes
All Volumes on DataSphere
Time Range:
24 hrs
7 days
4 weeks
Custom
List View
Display View
Dev-Test
Capacity
600 GB Free
900 GB OK
216 GB At Risk
95 GB Noncompliant
1.6 TB
Performance
Peak 42,145 IOPS
IOPS
Bandwidth
Peak 49 MB/s
Latency
Peak 2.9 ms
Dev
Capacity
1 TB Free
2.7 TB OK
410 GB At Risk
90 GB Noncompliant
4.2 TB
Performance
Peak 38,966 IOPS
IOPS
Bandwidth
Peak 46 MB/s
Latency
Peak 3.1 ms
PROD-ORACLE
Capacity
2.5 TB Free
7 TB OK
500 GB At Risk
10 TB
Performance
Peak 197,550 IOPS
IOPS
Bandwidth
Peak 294 MB/s
Latency
Peak 0.9 ms
Home-Dir-01
Capacity
10 TB Free
Home-Dir-Finance
Capacity
16 TB Free
Cloud
Capacity
350 TB Free


DataSphere
Data / Data Mobility
Data Mobility
Time Range:
24 hrs
7 days
4 weeks
Custom
Mobility
Recommendations
5
Settings
View:
All Mobility
Performance
Capacity
Protection
Archive
Manual
850 TB Data
1,603 Files
Source
Destination
Home-Dir-Finance
Home-Dir-01
Home...
Dev-Test
Dev
Cloud
Prod-Oracle
Bandwidth Usage


DataSphere
Infrastructure / Storage Modeling
Storage Modeling
Promotable
Demotable
Optimally Placed
Volumes
Storage Modeling
Storage Planning
Current
Storage Cost: $975k
Vendor
% Utilized
Capacity
Projection
Pure
80%
3 months
NetApp
60%
8 months
Isilon
35%
11 months
Cloud
20%
14 months
Savings Opportunities
Storage Cost: $525k
Vendor
% Utilized
Capacity
Projection
Pure
60%
11 months
NetApp
45%
12 months
Isilon
120%
Now
Cloud
35%
14 months
Savings: $450k

Customer Results: Integrating New & Existing Systems

Global Travel Provider: ROI Benefit w/ Primary Data

COST	WITHOUT PRIMARY DATA	WITH PRIMARY DATA	SAVINGS
VMAX	$1,950,820	$0	$1,950,820
VNX	$1,750,820	$710,400	$1,040,420
Isilon	$655,738	$393,600	$262,138
EMC FAST/FAST VP	$716,393	$0	$716,393
Object Storage	$0	$220,800	<$220,800>
Scale Out NVME	$0	$385,000	<$385,000>
Pd Subscription	$0	$867,000	<$867,000>
Total	$5,073,771	$2,576,800	$2,496,971

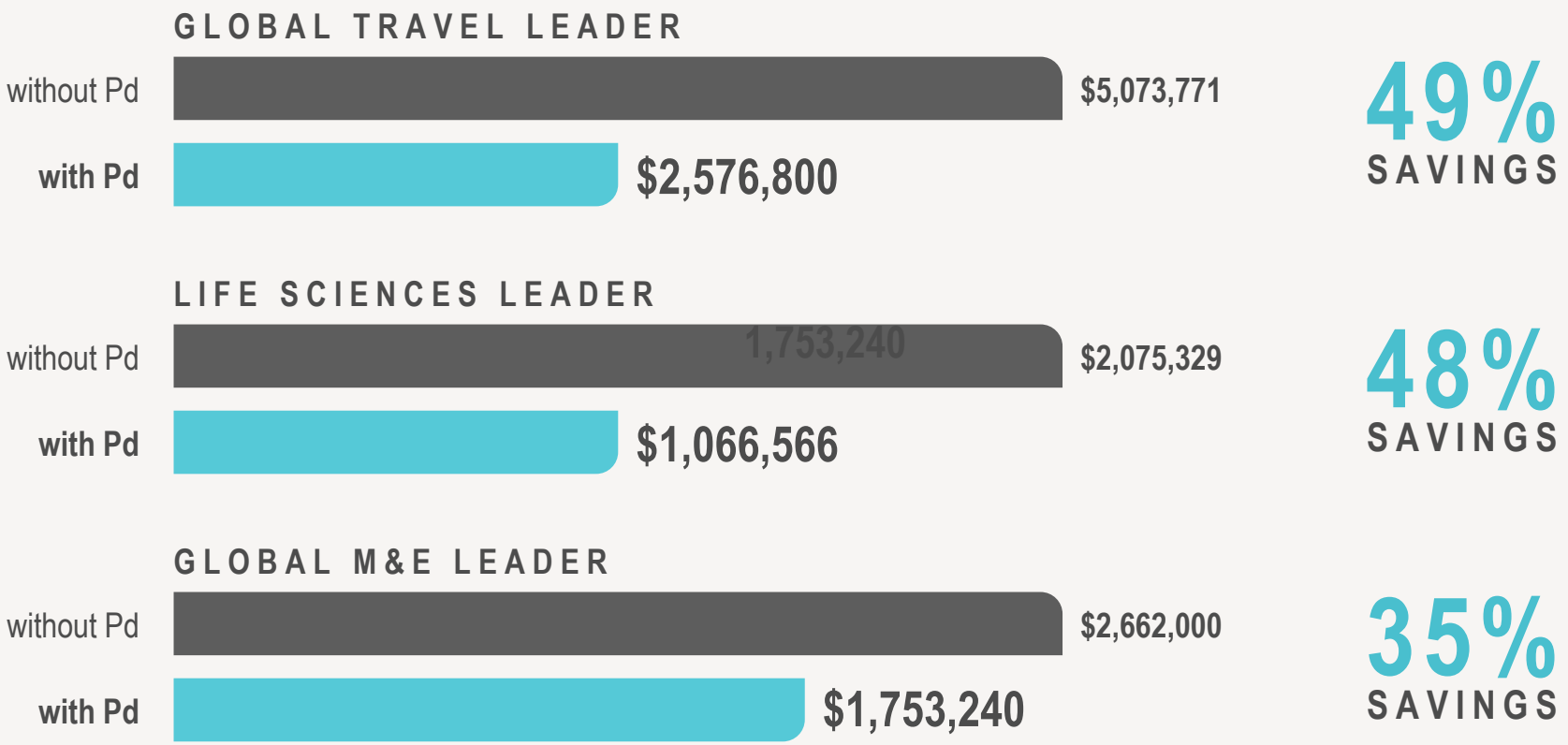
Life Sciences Leader: ROI Benefit w/ Primary Data

COST	WITHOUT PRIMARY DATA	WITH PRIMARY DATA	SAVINGS
Planning - Capacity & Archive	$84,375	$781	$83,594
Movement – Capacity & Archive	$70,313	$781	$69,532
Isilon Extended Maintenance	$120,000	$0	$120,000
Isilon	$800,000	$0	$800,000
SAN & Synology	$1,000,000	$600,000	$400,000
Archive – Oracle Cloud	$0	$300,000	<$300,000>
Data Movement Cost per TB	$641	$4	$637
Pd Cost	$0	$165,000	<$165,000>
Total	$2,075,329	$1,066,566	$1,008,763

Media & Entertainment Leader: ROI Benefit w/ Primary Data

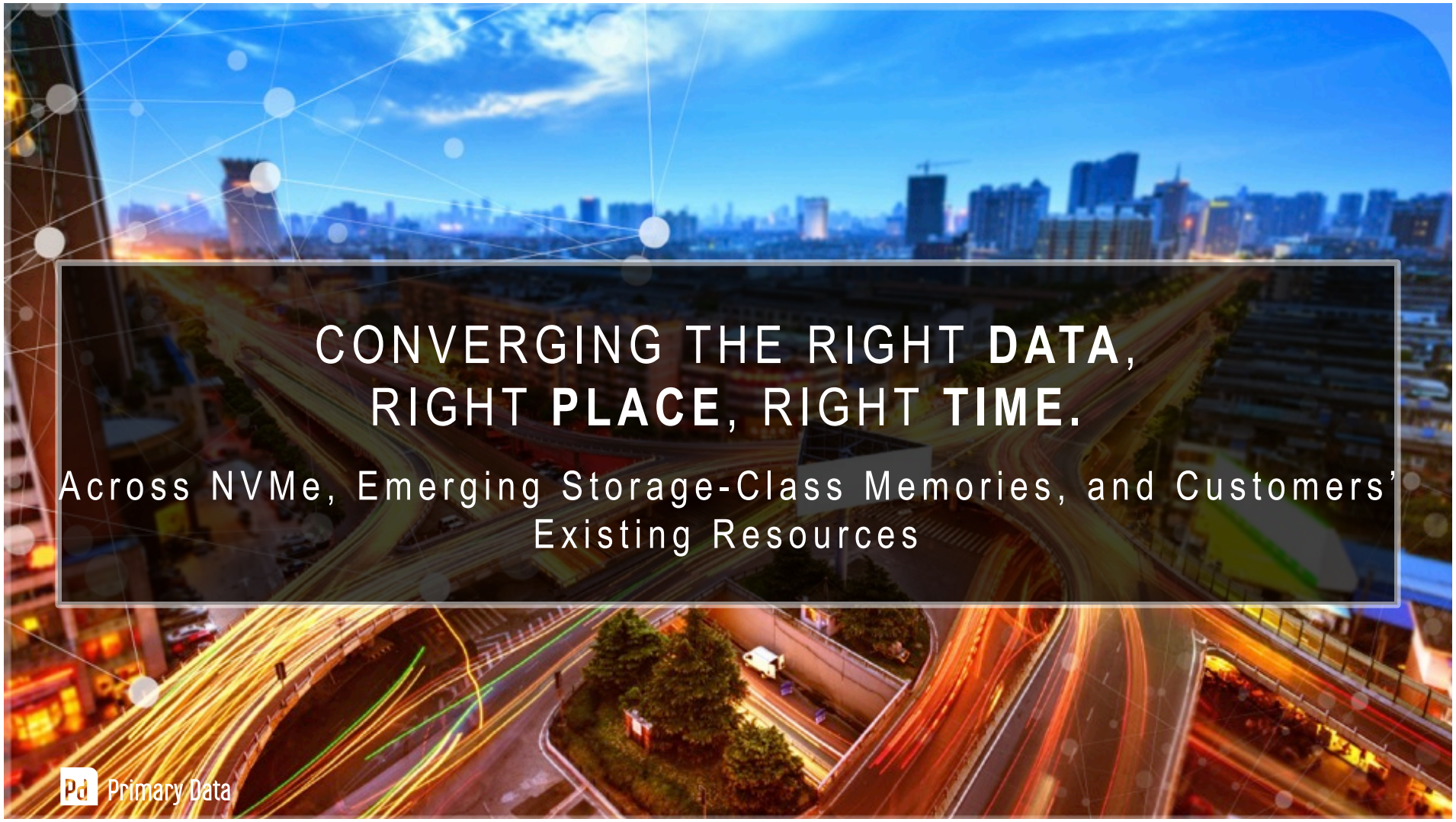
COST	WITHOUT PRIMARY DATA	WITH PRIMARY DATA	SAVINGS
Reduce Overprovisioning from Storing Cold Data on Active Storage (500TB)	$1,000,000	$250,000	$750,000
Reduce the Cost to Store Preserved Movie Assets – Adopt New Technology	$1,500,000	$450,000	$1,050,000
Reduce the Cost to Migrate to Cheaper Storage – Adopt New Technology	$162,000	$3,240	$158,760
Pd Cost	$0	$1,050,000	<$1,050,000>
Total	**$2,662,000**	**$1,753,240**	**$908,760**

Aligning Data to the Right Resources Delivers Significant Savings




DATA VIRTUALIZATION IMPROVES:
UTILIZATION - less stuff
80% underutilization of Performance
80% underutilization of Capacity
MANAGEABILITY - less staff
Service and decommission storage without turning off the application
Know when/what to buy
PERFORMANCE - fewer stalls
Use DAS Flash even SCMs and DRAM without network hops
Pd Primary Data


DATA VIRTUALIZATION EASILY CONNECTS NVMe & EMERGING TECHNOLOGIES TO EXISTING STORAGE INFRASTRUCTURE
Pd Primary Data


CONVERGING THE RIGHT DATA,
RIGHT PLACE, RIGHT TIME.
Across NVMe, Emerging Storage-Class Memories, and Customers' Existing Resources
Primary Data


Q & A