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Object Storage

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Presales - WSI

What is an Object?

File

System Metadata
Filename: ferrari.jpg
Created: 18 January 2016
Last Modified: 16 April 2017

Custom Metadata
Subject: Ferrari Berlinetta
Place Taken: Monza
Category: Supercars
Allow Sharing: Yes

OBJECT = File + Metadata

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What is Metadata?

- **Describes the object**
  - Helps you find the right file/object
  - Tells you what the object is
  - The specifications
  - Used where and when
  - Access permissions
- **Any and all objects**
  - Different attributes per objects
  - Add attributes latera

Nutrition Facts
Serving Size 1 oz (28g/About 15 chips)

Amount Per Serving

Calories 160	Calories from Fat 90

	% Daily Value*
Total Fat 10g	16%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 170mg	7%
Potassium 350mg	10%
Total Carbohydrate 15g	5%
Dietary Fiber 1g	5%
Sugars less than 1g	
Protein 2g	

Vitamin A 0%	•	Vitamin C 10%
Calcium 0%	•	Iron 2%
Vitamin E 6%	•	Thiamin 4%
Niacin 6%	•	Vitamin B6 10%
Magnesium 4%	•	Zinc 2%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Ingredients: Potatoes, Vegetable Oil (Sunflower, Corn and/or Canola Oil), and Salt.

Imagine Metadata as the Label of the Chips

- End-user self-service

- Automation

- Regulatory compliance

- Marketing

- Disposition

- Procedures

- Branding

Metadata is the new data

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Metadata is KEY to BIG DATA

- Place the data where it needs to be

- Mine the metadata

- Search the content

- Gather the metrics

- Trending

- Relate disparate objects with other objects

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Data fuels the transformation to digital enterprise
More connected people, apps, and things generating more and more data

10X
faster growth
than
traditional
business data

Human data

Sensor data

Business data

- − Enterprises facing increased storage needs from IoT/connected systems, big data, and data growth rates.

- − Companies realize that money is to be made from data and do not want to miss out.

- − Public cloud alternatives add risk and complexity – cost savings are questionable. Early adopters already pulling back from cloud deployments

- − IDC predicts that the worldwide amount of data will reach 40 zettabytes by 2020, and more than 163 zettabytes a year by

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What is Object-based Storage?

A way to store file data in the form of objects on a flat address space based on its content and attributes rather than its name and location

Datasets, small and large, are stored efficiently in a self-healing structure

Metadata and other user-definable attributes are attached to each data item

Each completed object has a unique object ID, generated using a specialized algorithm
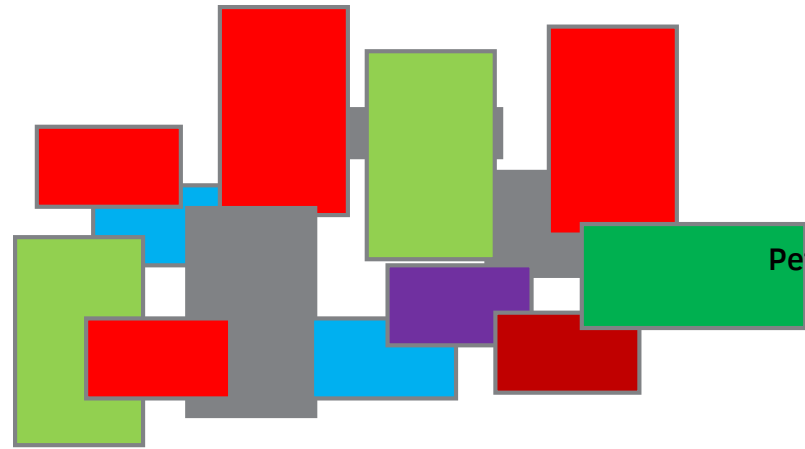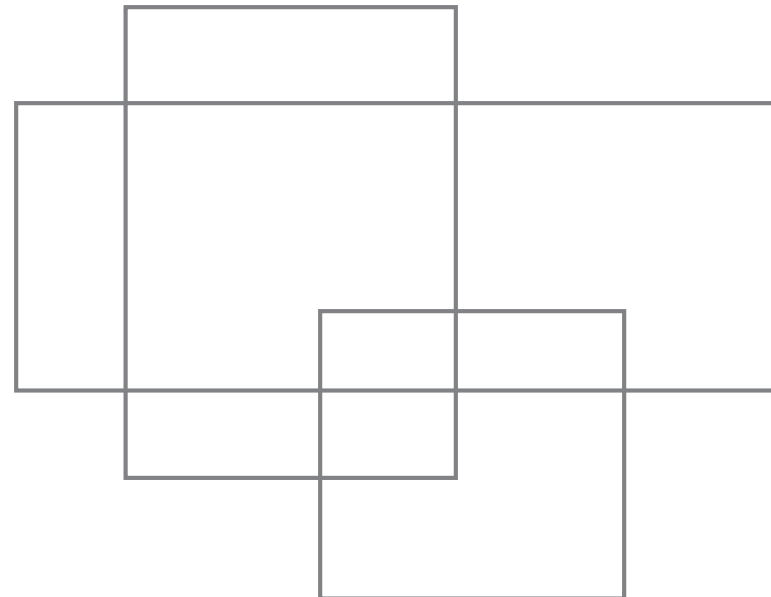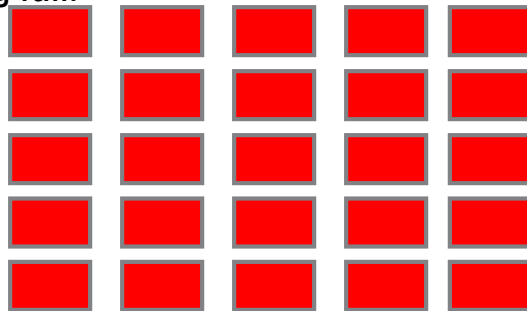
Data + **Metadata** + **Unique Identifier**
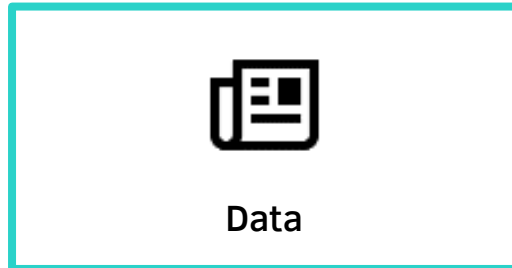
Flat Namespace

Object Storage
Valet Parking Analogy

This is big data.
Petabytes of vehicles of different shapes and sizes

A **traditional file-system** is like a self-service parking lot. You have to find a slot that fits. No one is going to protect your car from damage. And you worry about the lot getting full.

Object store is valet parking. Someone parks the car for you. All size vehicles fit, your car is protected and the lot can grow as needed.

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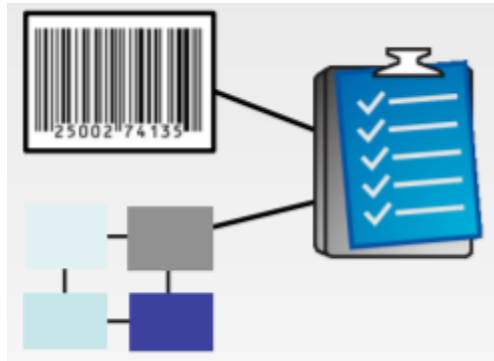# Block, File and Object Storage
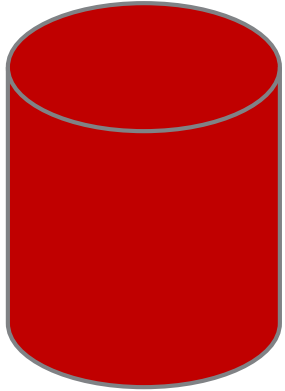
Block Storage

- Specific location on disks or memory

- Blocks within sectors and tracks

File Storage

- Specific folders in a specified heirarchy

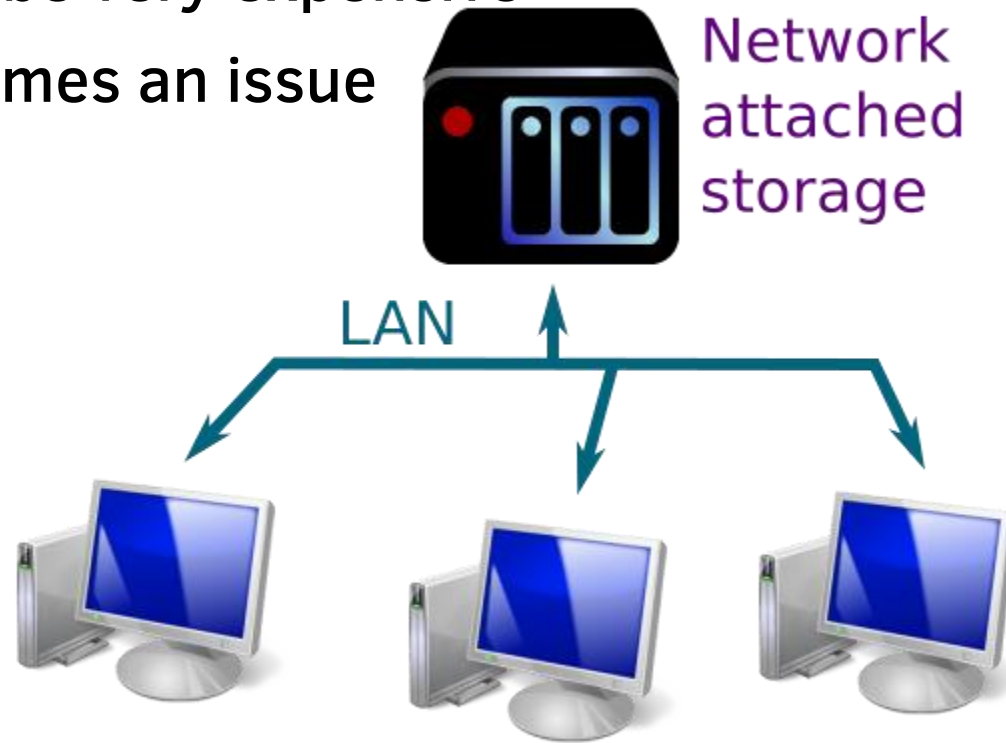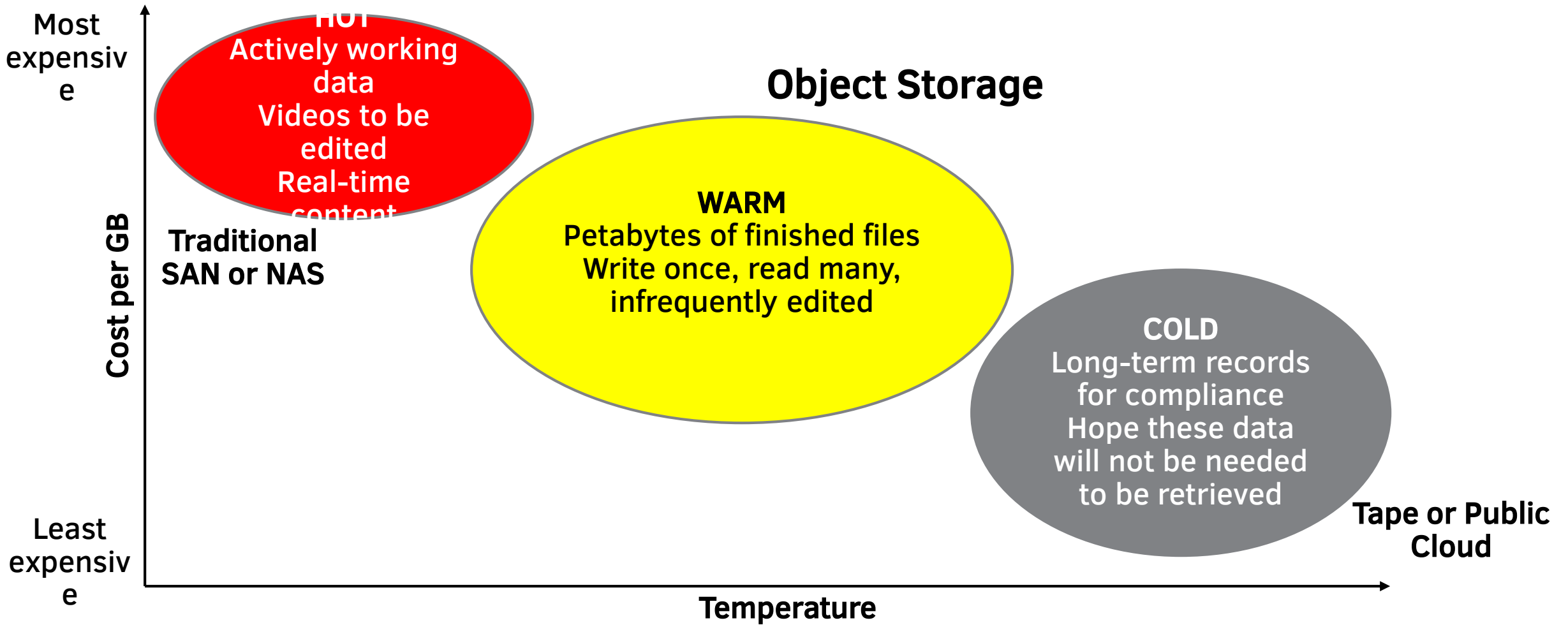- Blocks within sectors and tracks

Object Storage

- Data stored as objects

- Scalable containers

- File + Metadata

Why not NAS?

–Legacy NAS devices cannot scale to meet the demands

–Modern NAS can scale but can be very expensive

–Cost and/or performance becomes an issue

Network attached storage

LAN

Using Object Storage in tiered storage systems

Most expensive

Cost per GB

HOT
Actively working data
Videos to be edited
Real-time content

Traditional SAN or NAS

Object Storage

WARM
Petabytes of finished files
Write once, read many, infrequently edited

COLD
Long-term records for compliance
Hope these data will not be needed to be retrieved

Tape or Public Cloud

Least expensive

Temperature

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Data Protection: Replication and Erasure Coding

Replication

- Keep multiple copies of the object on separate hardware

- Customize number of replicas per object

- Manage replica lifecycle

Erasure Coding

- Data is broken into fragments, then they are expanded and encoded with redundant data pieces and stored across different media

- RAID-5 and RAID-6 are examples of erasure codes.

- Useful with large quantities of data and any applications or systems that need to tolerate failures, such as disk array systems, data grids, distributed storage applications, object stores and archival storage.

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When is object storage the right choice?

Do you want to get more business insights and make money out of their data?	
Current storage cannot handle the size of your content	Flat namespace, unlimited scale, built-in data protection-all for less cost.
Needs an alternative to long-term storage on tape	Tape latency causes them to miss SLAs? Can tape scale to the data sizes that needs to be stored and searched?
Needs answers from static data	Is data readily available? Can it be monetized? Is tape latency a hindrance? Can the current storage provide performance at scale?
Needs simpler storage for their customers and lines-of-business	Will they pay for self-service storage and on-demand retrieval? Are the LOB data in the cloud? How about file-sync-and-share? Is it secure?

Object Storage Use Cases

Backup Storage Integration with Commvault, Symantec, Veeam, etc.	**Email Storage Open-source**	**Private Cloud Storage**	**Medical Imaging Repository**
Web-Scale Applications	**Media Asset Management**	**Archiving for Compliance**	**File Sync-and-Share**
	IaaS, PaaS, Hosting Services	**Content Delivery Network Stores and Video-on-Demand**	**Video Surveillance Storage**

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Business Benefits of Object Storage

– Petabyte-scale storage, practically unlimited number of users

– Reduced data center footprint

– OPEX reduction

– Less number of admins managing multiple petabytes

– Compliance and reduced risk through integrated data protection

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HPE Scalable Object Storage with Apollo

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HPE Scalable Object Storage

More data from the edge means more storage in the core

Apollo 4000 Cluster

Hot

Warm

Cold

Data lake

Process

Train

Tiered storage for Big Data Analytics

Data storage for AI workflows
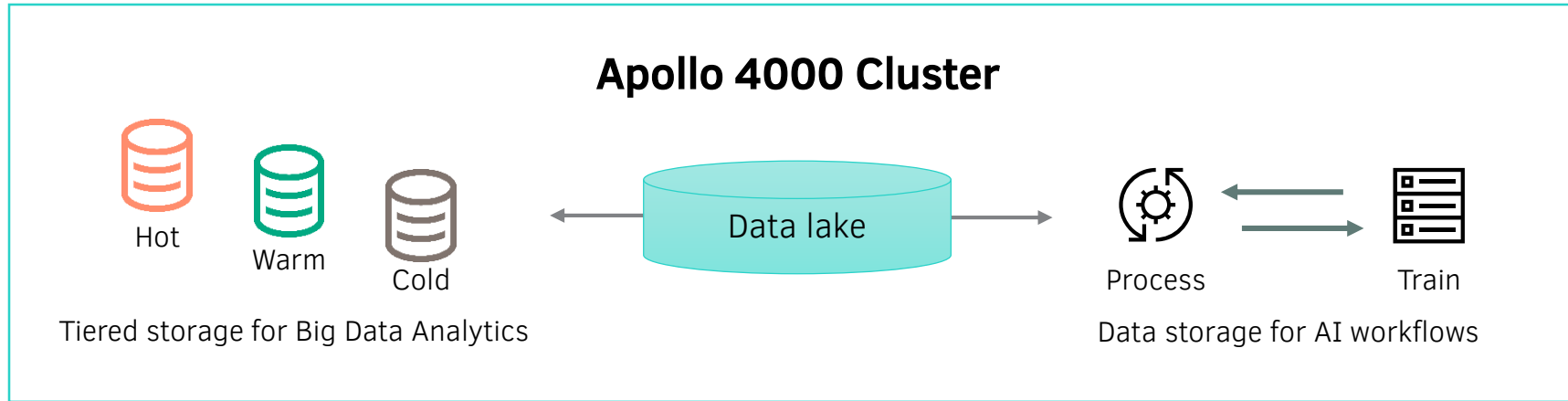
Apollo 4200 Gen10
– 2U platform;
28 LFF or 54 SFF

Apollo 4510 Gen10
– 4U platform; 60 LFF

HPE's platform for Big Data and Scalable Object Storage

Density-optimized Apollo 4000 for software-defined storage

– The HPE Apollo 4000 density-optimized x86 servers are ideal for all scale-out object storage workloads

– Apollo 4000 servers have the same built-in management and many of the same options as HPE ProLiant series servers

– Apollo 4000 servers can be customized with CPU, memory, bulk storage HDD, solid state storage SSD, and network capability to tune for every customer's requirements

– HPE takes the guesswork out of configurations by calculating the ideal BOM based on user's capacity and workload needs

HPE Apollo 4200 Gen10

– Up to 288TB of bulk storage in just 2U
– All front-accessible hot-plug LFF
– Ideal for many-node geo-deployments with small fault zones


HPE Apollo 4510 Gen10

– Next-generation 4U density-optimized
– Up to 720TB of bulk storage
– 1 node in 4U rackmount
– Improved design puts 4U density into standard depth 1075mm racks
– Easier to service – twin front-accessible disk drawers

Object Storage Use Cases for Media and Entertainment

Object storage fits best into two areas: in Post-Production with Video Transcoding, Active Archive and Media Asset Management; and in Content Distribution with Video-On-Demand and CDN/Origin Server
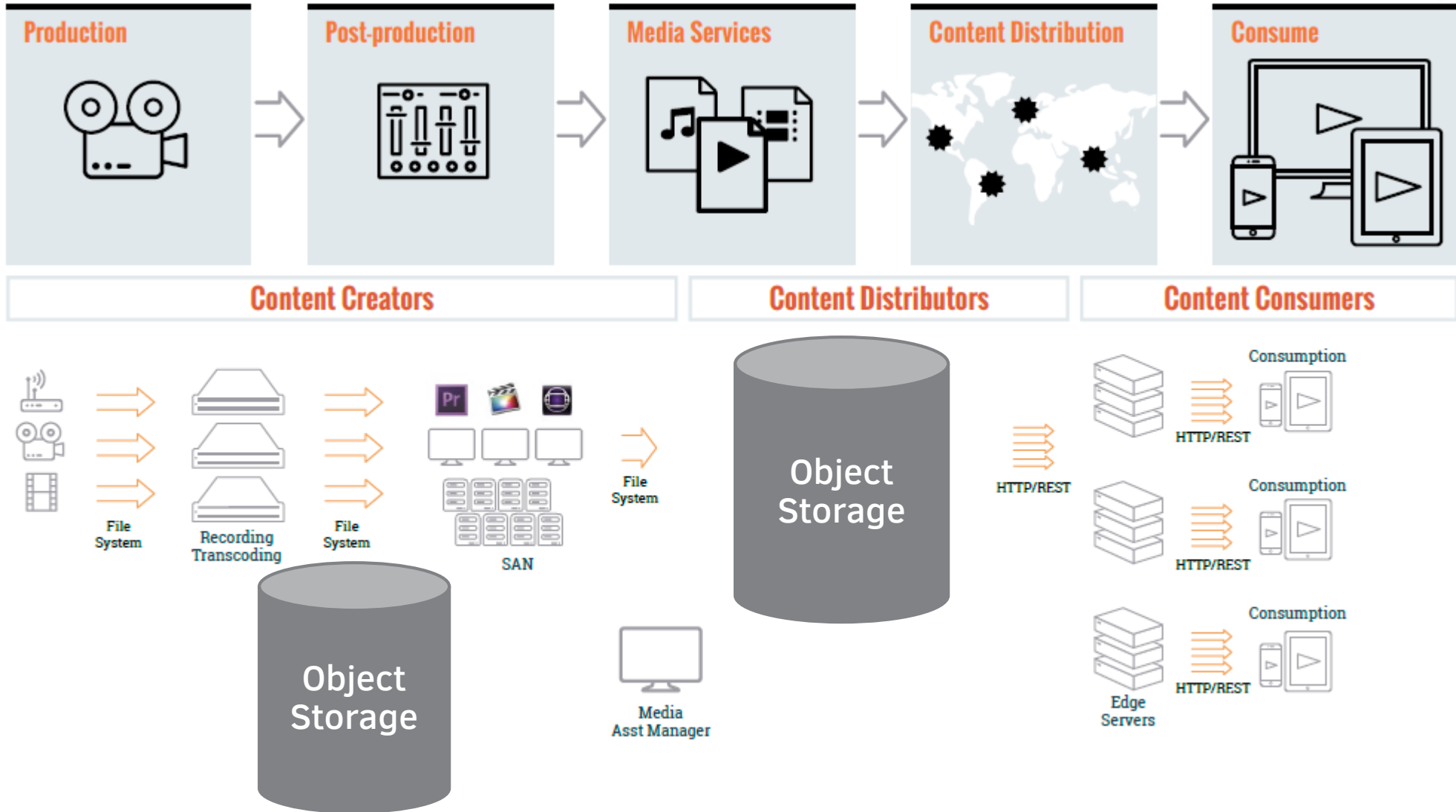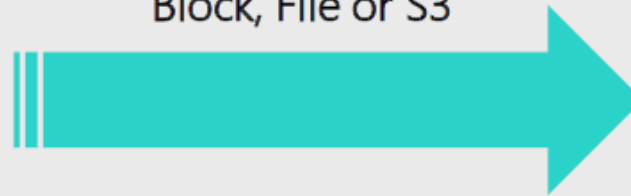
Object Storage Use Case for Medical Imaging
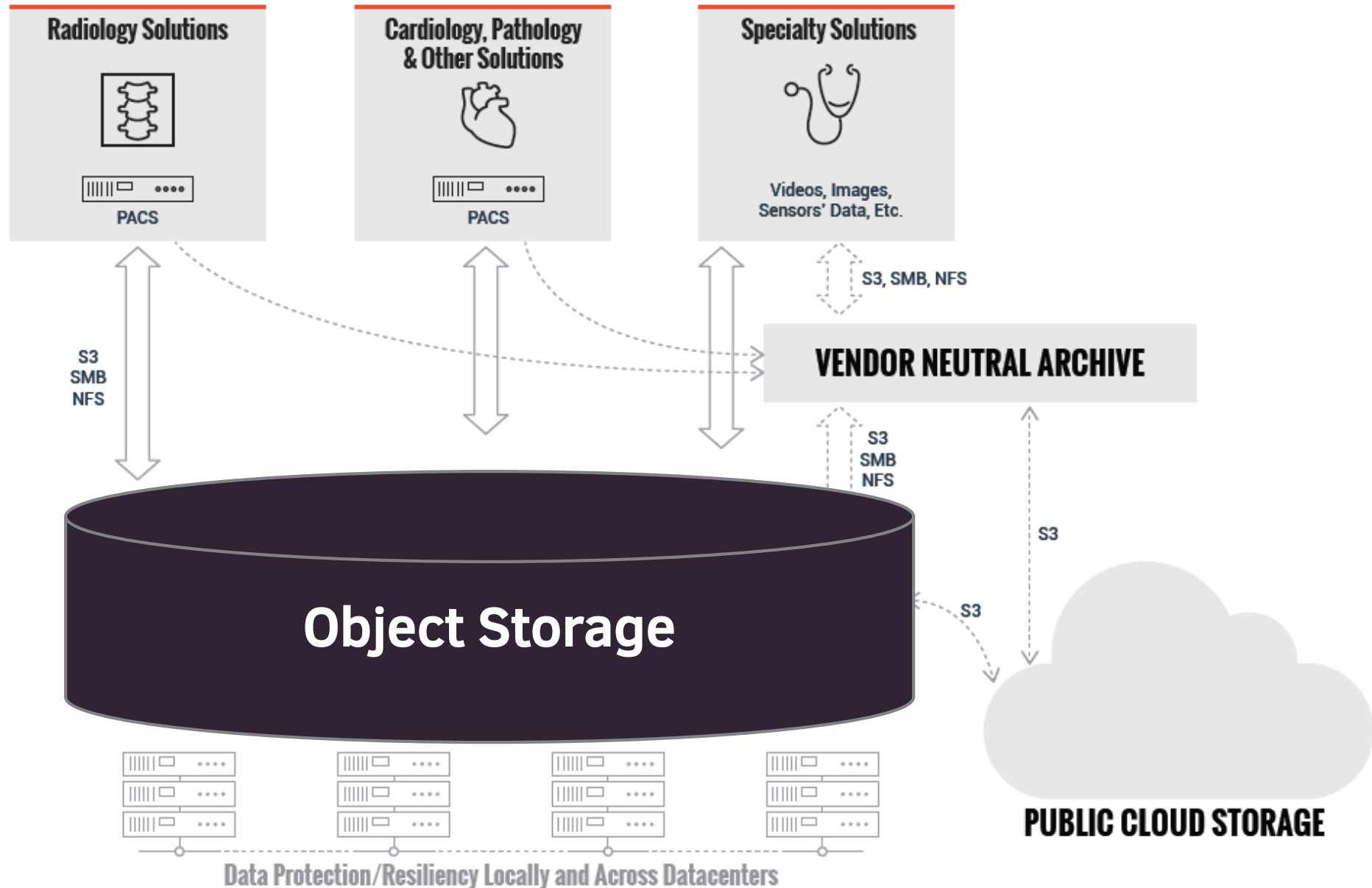
Archiving with Object Storage

Why HPE?

Intelligence changes everything

Unlock your data's full potential with **HPE's storage portfolio**
for every use case across edge and hybrid cloud

AI-driven

HPE Infosight delivers
AI-driven infrastructure automation
and enables context-aware data
management

Built for cloud

HPE Cloud Volumes and
HPE Cloud Bank Storage provide
native cloud integration

HPE Pointnext services to help
you with your cloud journey

As-a-Service experience

HPE GreenLake is
consumption based IT

Flexibility to test and migrate
with investment models from
HPE Financial Services

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Thank You!

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