



Storage Trends & NetApp Portfolio

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From a Box on Wheels ...



BMW Dixi 3/15 DA-1

Introduced	1927
Top Speed	45 mph
Acceleration	5-25 mph in 10s
Fuel Consumption	51 mpg

Technical Innovations

- Bosch Shock Absorbers
- Driver Controls on the Left
- Metric Fasteners

... to Sustainable Mobility



Driving Range Assistant
*Most Efficient Route, Real Time Traffic Conditions
Nearest Charging Stations, Free Parking Spaces*

BMW i Remote App
*Car Location, Lock Status
Charge Levels, Efficiency Tips*

BMW ConnectedDrive
*Driver Assistance, Weather Info
Mobile Office, Music, Social Networks*

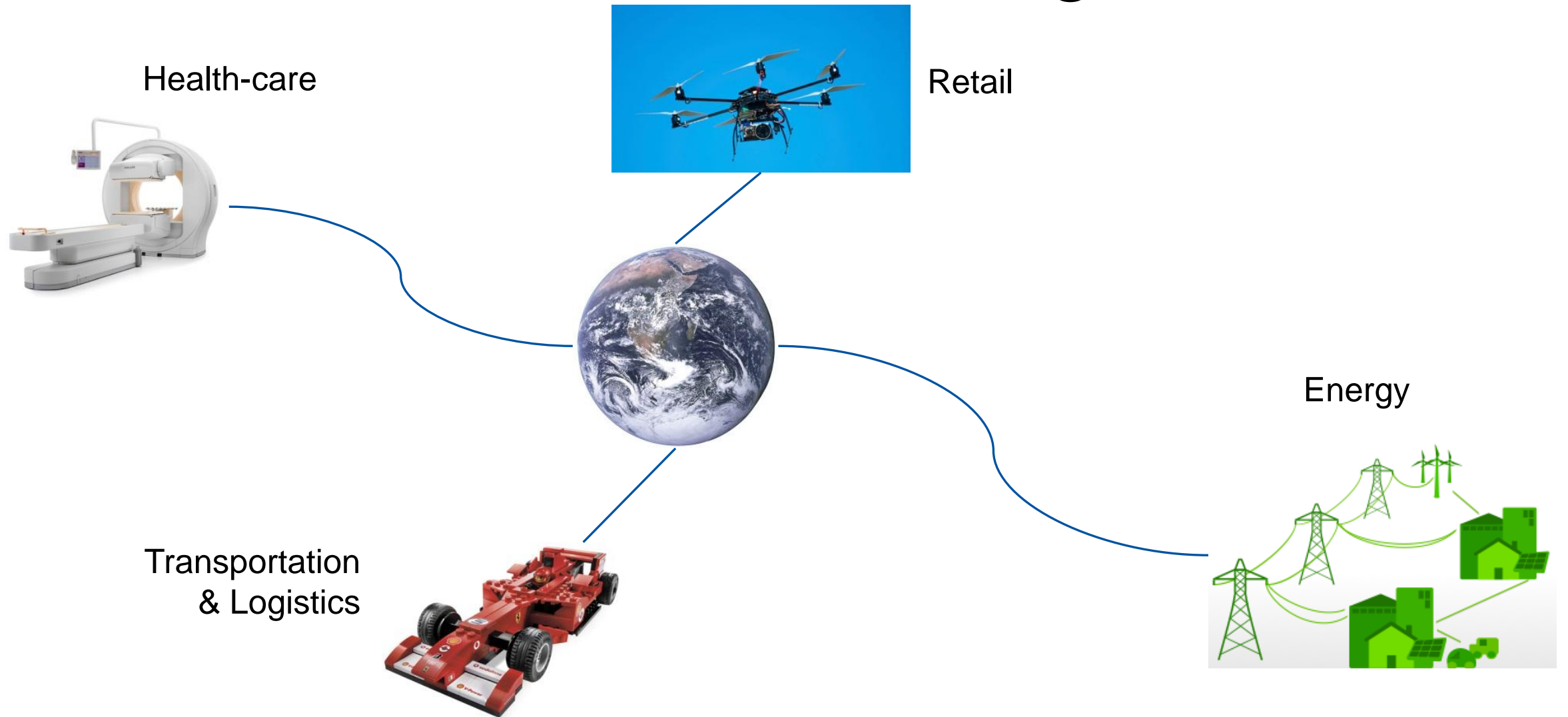


BMW i Series
2013

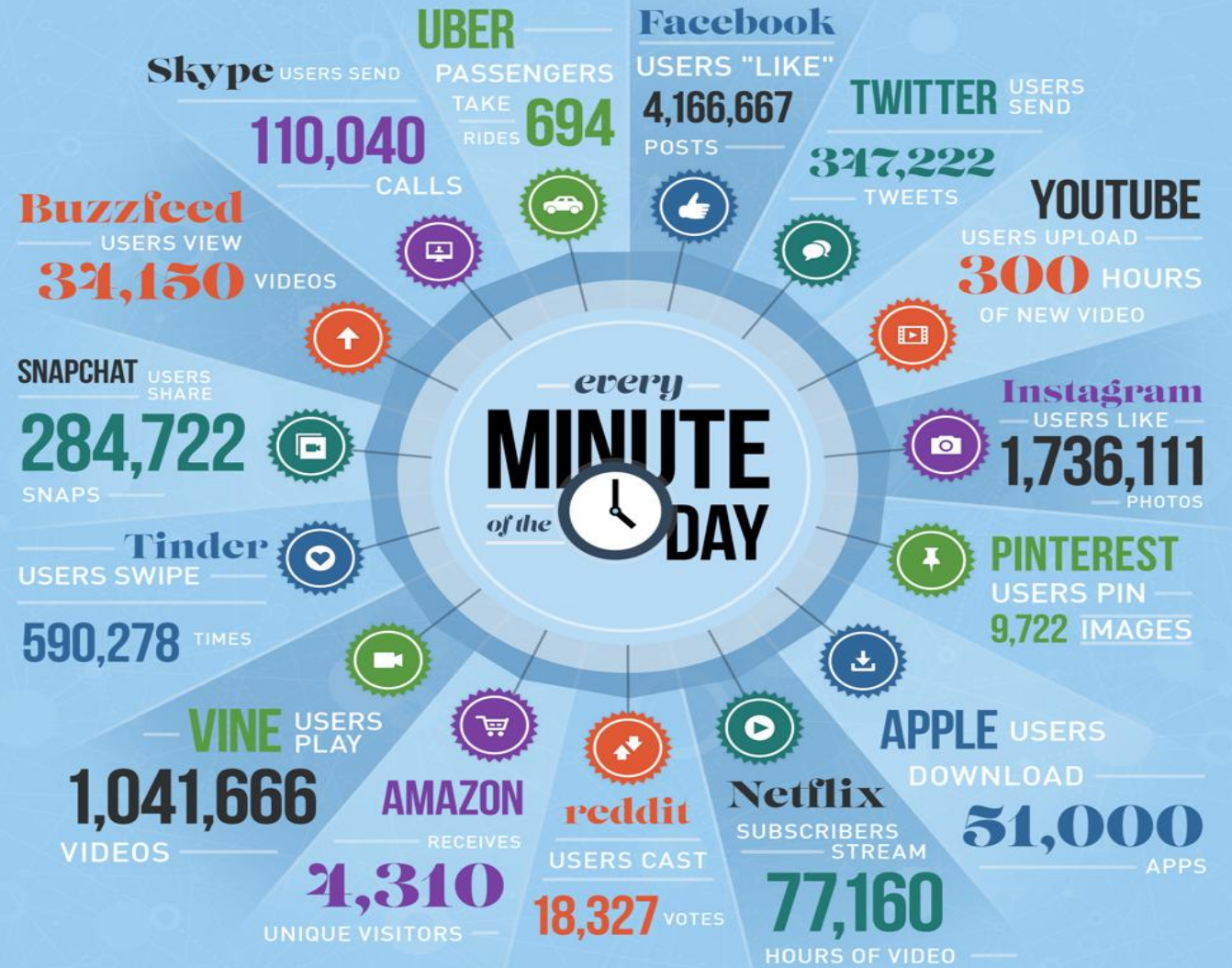
From a Network of Computers ...



... to an Internet of Things



20 years of a world gone digital



THE GLOBAL INTERNET POPULATION GREW 18.5% FROM 2013-2015 AND NOW REPRESENTS

3.2 BILLION PEOPLE.

https://web-assets.domo.com/blog/wp-content/uploads/2015/08/15_domo_data-never-sleeps-3_full_v4.png

The Internet of Things Is Exploding

The “Internet of Things” is fueled as analog functions managing the physical world migrate to digital functions

It consists of adding computerization, software, and intelligence to things as varied as cars, toys, airplanes, dishwashers, turbines, and dog collars

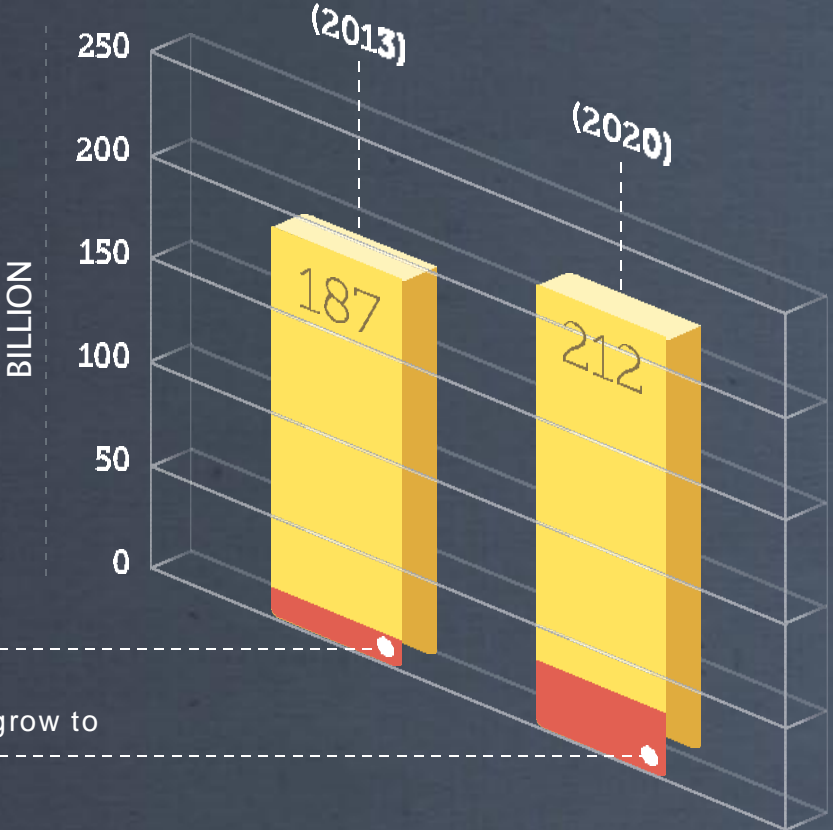
While not all “things” are connected to the Internet, 20 billion of them were in 2013, and 32 billion will be by 2020

Total Number of Connectable Things

In 2013, connected “things” were 7% of the total

By 2020, that number will grow to 15%

Source: IDC, 2014



Today's Environment

2.9
million

e-mails
sent every
minute

312
terabytes

World's
largest
unique
database

24
petabytes

Data
processed
by Google
everyday

1.5
exabytes

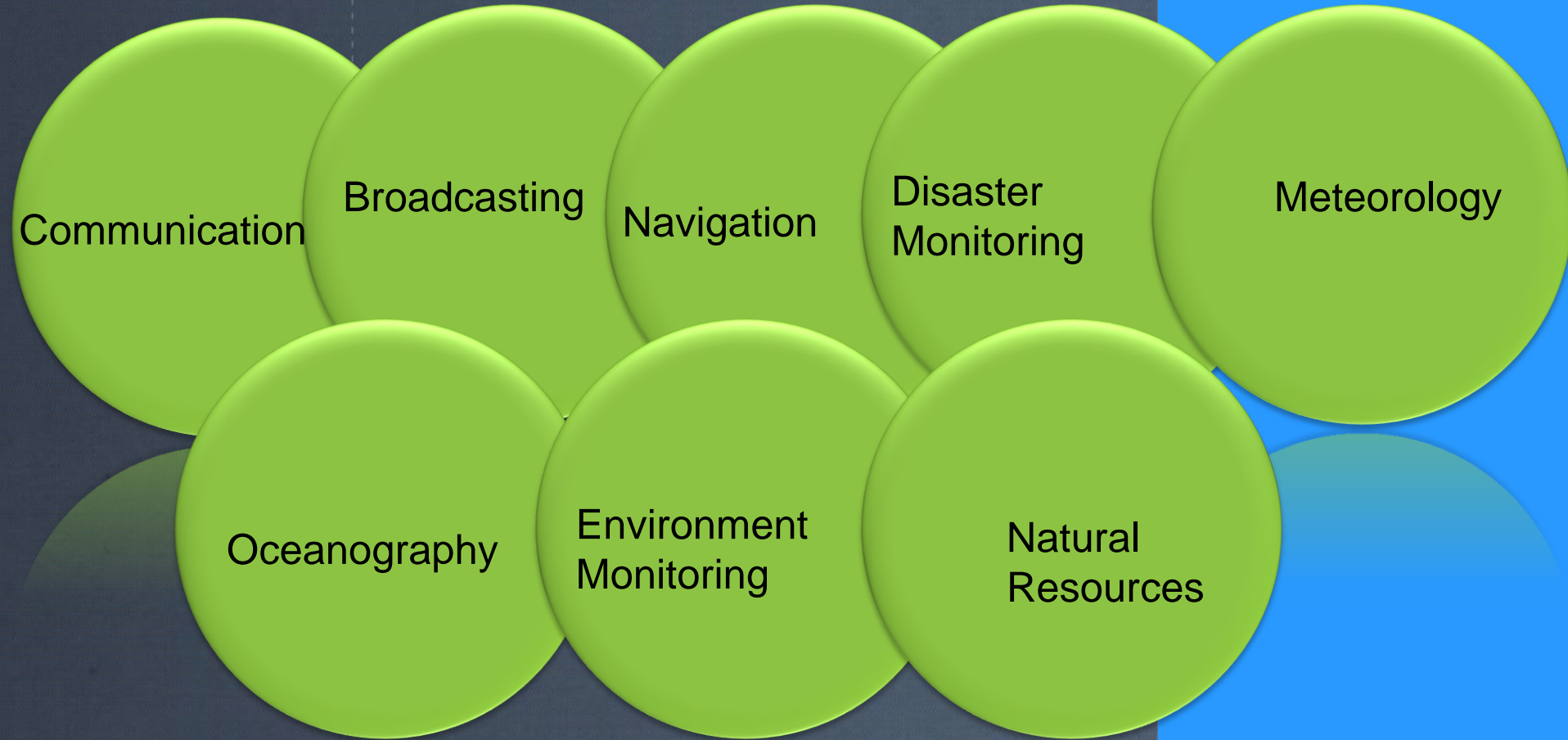
Data
transfers
over mobile
networks
each month

"From the dawn of civilization until 2003, humankind generated five Exabyte's of data. Now we produce five Exabyte's every two days...and the pace is accelerating."

Eric Schmidt,
Executive Chairman,
Google

The Data imperative

Every vertical, its operations, technology, and management is a subset of data. More data.



What do you want to do with your data?

What do you want to do with Data?

Store
Integrate
Replicate
Back up
Virtualize
Manage
Convert

What do you want to do in Architecture?

Virtualize DC
Virtualize
Desktops
Cloud
Unstructured
Data
Mobility
Analytics

How do you want to deploy Infrastructure?

Converged
Hyper-converged
OpenStack
HPC Clusters
Standard

What Workloads?

Hadoop
LustreFS, GPFS
File Services
RDBMS
Object Stores
Productivity Apps
Business Apps
Industry specific Apps
EDA Apps

...

Implement organisation-wide data **governance policy.**

Select the right **software tools.**

Execute a plan for acquiring the right **skills and talent.**

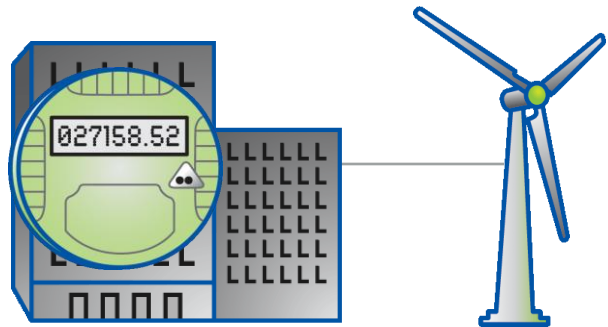
So, the Next Generation of IT...



Has to deal with a Deluge of Data

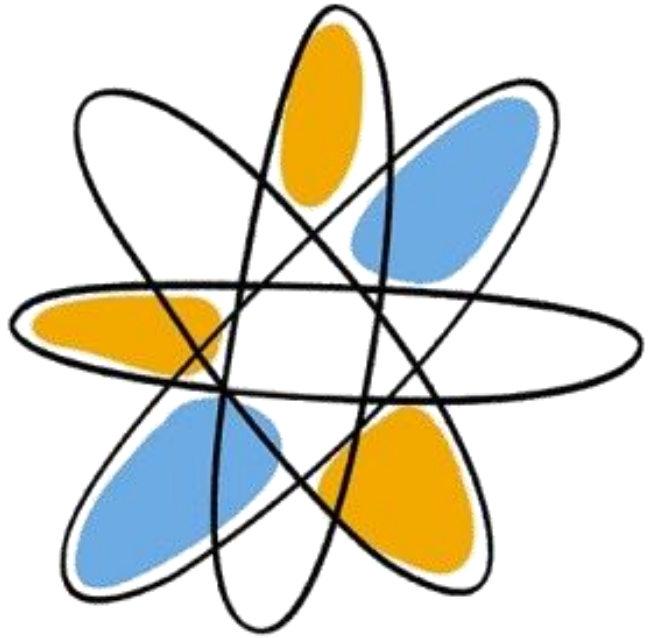


Has to deal with a Deluge of Devices



Has to be Sustainable

So, the Next Generation of IT needs to adapt...



- Simplicity
- Availability
 - Any Time
 - Any Where
- Efficiency

NetApp Portfolio



NetApp Enterprise Portfolio

Hybrid Unified



All Flash

Hybrid SAN

Cloud & Integrated



ONTAP Edge

NPS
For AWS, MSA

ONTAP 9, ONTAP Select

Element

SANtricity

OpenStack based

StorageGRID Webscale Object storage

Converged Infrastructure - FlexPod portfolio
Data Centre | Express | Select

Integrated Backup Appliances
Commvault | Veritas

AltaVault - Open, Efficient and Secure Cloud-Integrated Data Protection solutions

OnCommand Software Suite & Management Integration Tools
For NetApp | For Multivendor | Integrated Management & Data Protection | Access & Control | On Prem & On Cloud

Software
Defined

Cloud
Enabled

Flash
Accelerated

Converged &
Complimentary

Portfolio Highlights

Focus Areas

- World's broadest All Flash portfolio
 - EF Series
 - All Flash FAS
 - Solidfire
- World's only and truly cloud integrated enterprise data platforms
 - Cloud ONTAP
 - ONTAP Edge
 - NPS
 - AltaVault
- World's No. 1 Storage Operating System - ONTAP
 - End-to-end efficient data management
 - Cloud enabled
 - Flash Accelerated
- World's broadest end-to-end Data Protection solutions
 - Async DR
 - Sync DR
 - Backup to Cloud
 - Flash/Disk to Disk (to cloud)

NetApp Flash Leadership

325+

PB of flash

7,500+

all-flash controllers

#2

In All Flash Systems

89,500+

hybrid controllers

~200

Flash related patents

TCO quickly becoming the major driver for flash

16% Maintenance savings*

76% Power and cooling cost savings*

63% Rack space savings*

48% Simplicity of administration savings*

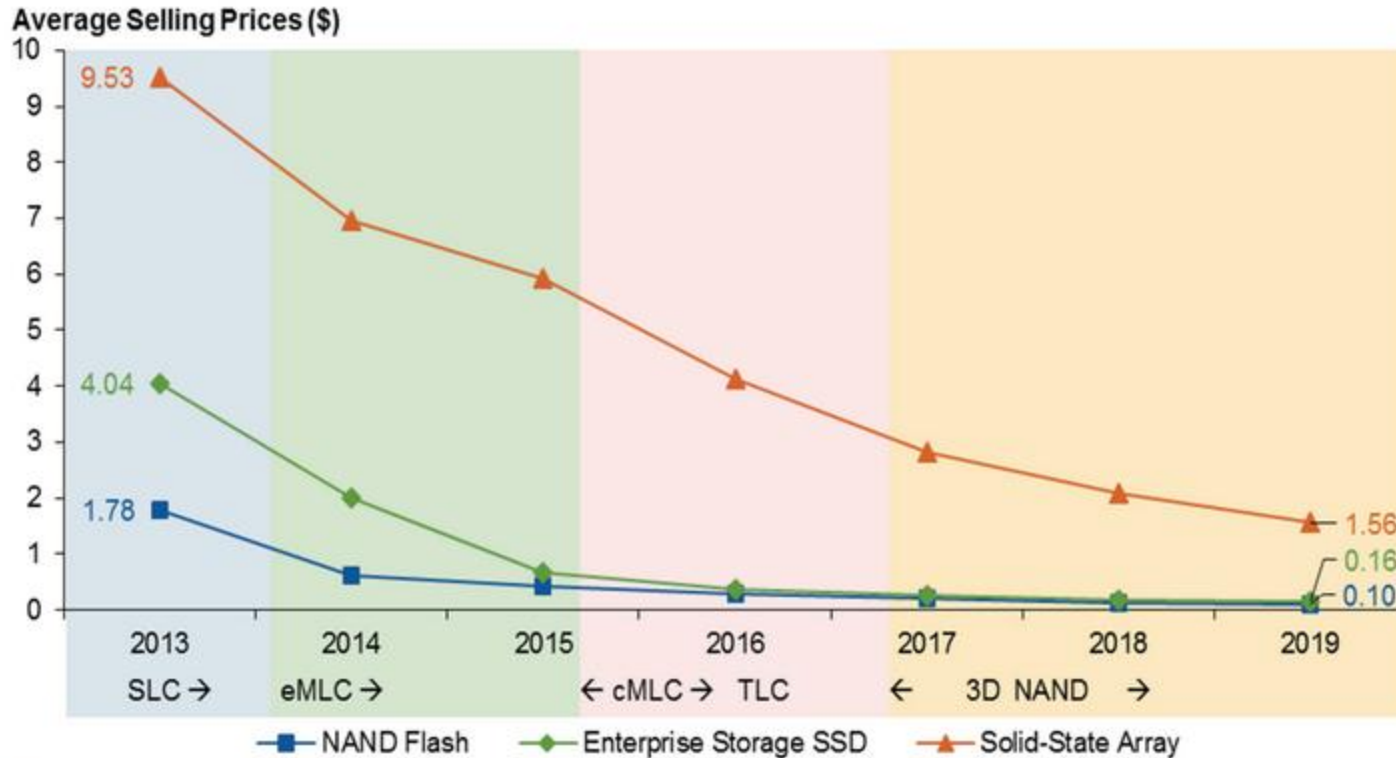


***Savings in terms of time and money compared with previously installed HDD-based ECB storage systems.*

**Source: Gartner, Solid-State Array TCO Reality Check, Joseph Unsworth and Arun Chandrasekaran, January 22, 2016*

Price Erosion Will Drive Flash Into Capacity Market Segments

Figure 2. Flash Storage Price Erosion, 2013-2019 (Raw ASP per Gigabyte in Dollars)



ASP = average selling price

cMLC = consumer multilevel cell

eMLC = enterprise multilevel cell

SLC = single-level cell

Source: Gartner (January 2016)

Source: Gartner, Solid-State Array TCO Reality Check, Joseph Unsworth and Arun Chandrasekaran, January 22, 2016

The Industry's Broadest All-Flash Portfolio

EF

Streamlined architecture optimized for low-latency workloads



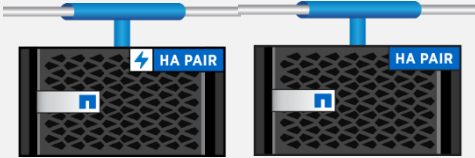
Speed

Standalone apps

Infrastructure buyer /
App owner

AFF

Performance plus robust data management optimized for shared general IT



Data Services

Virtual infrastructure

Storage/Infrastructure
architect

SolidFire

Scale out service oriented flash storage for next gen architectures



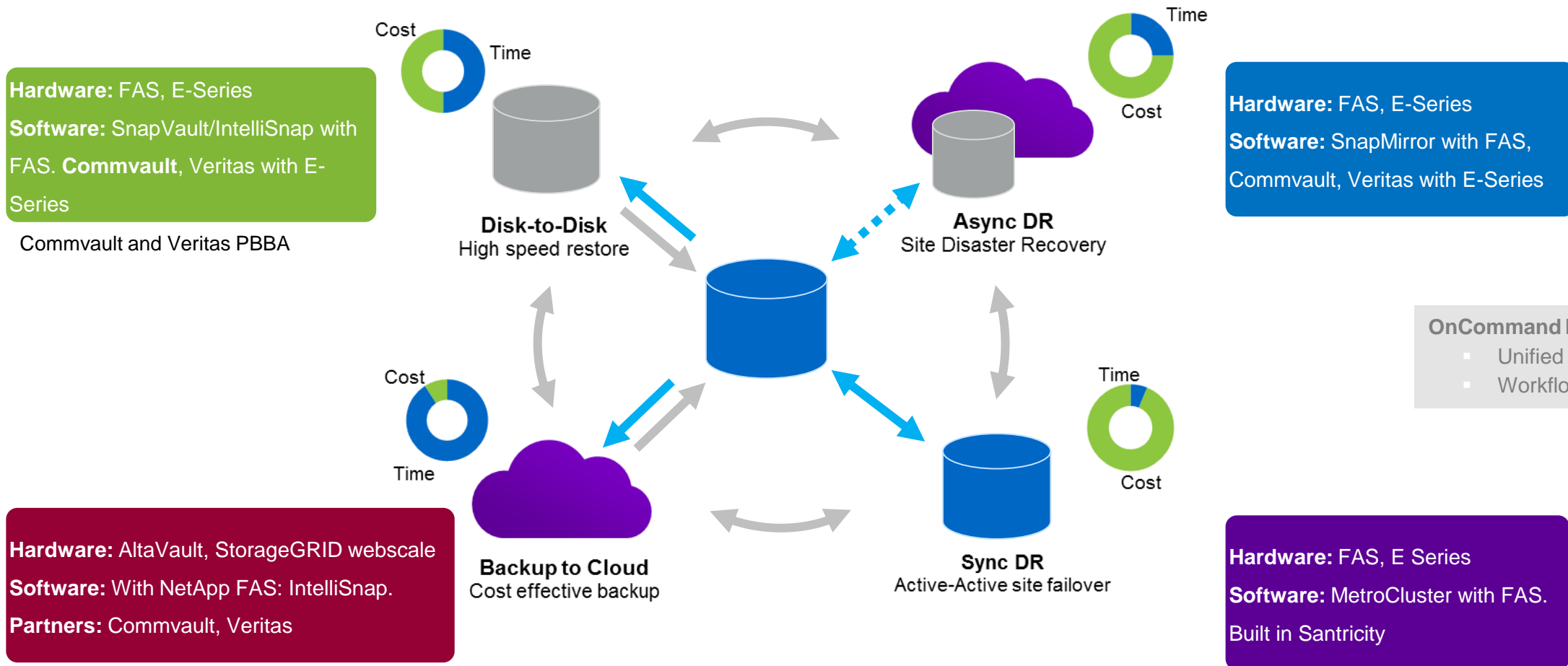
Scale

Cloud-like infrastructure

Cloud/Services architects

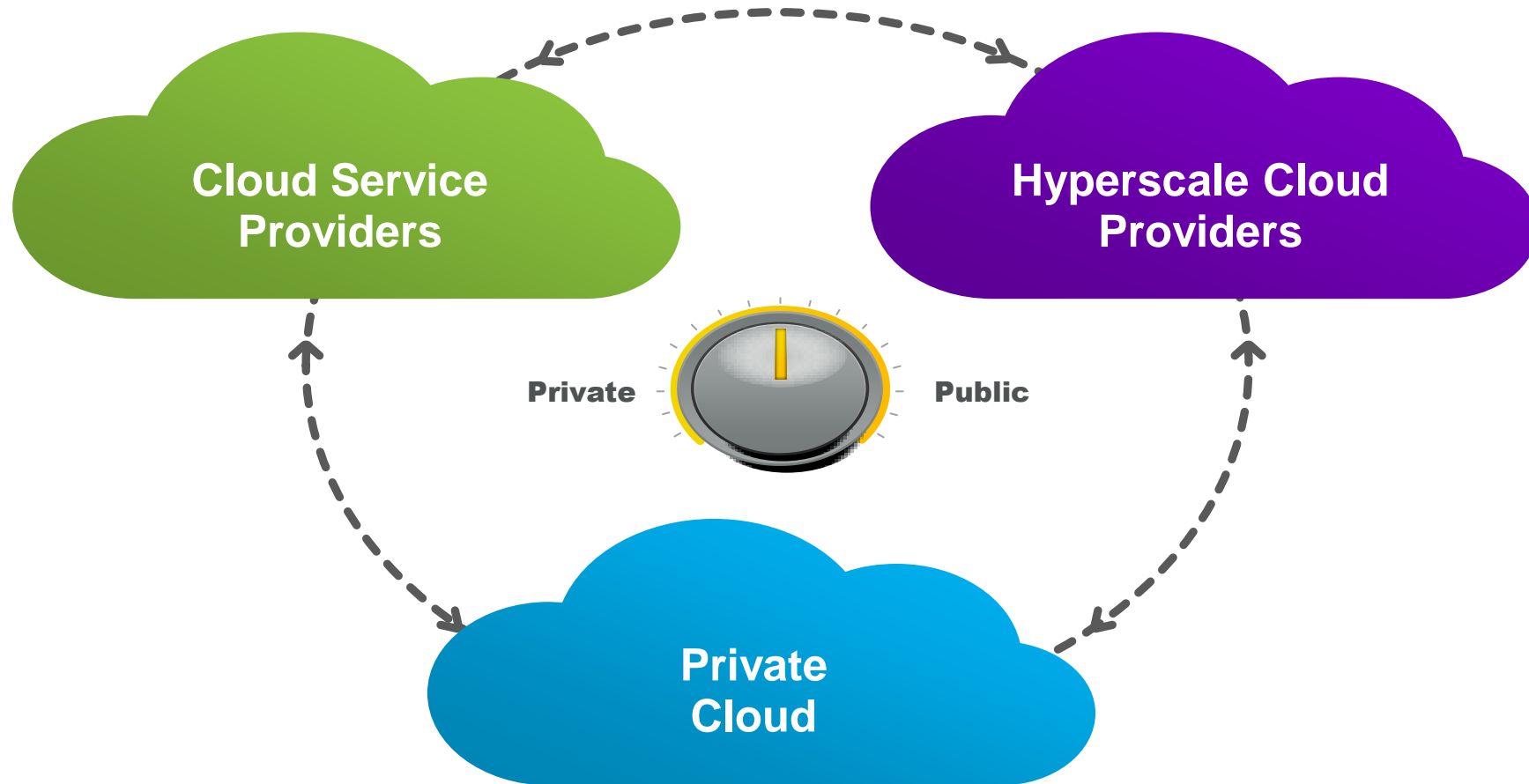
World's broadest end-to-end Data Protection solutions : NetApp

NetApp Data protection Model: Manage data from F2D2C



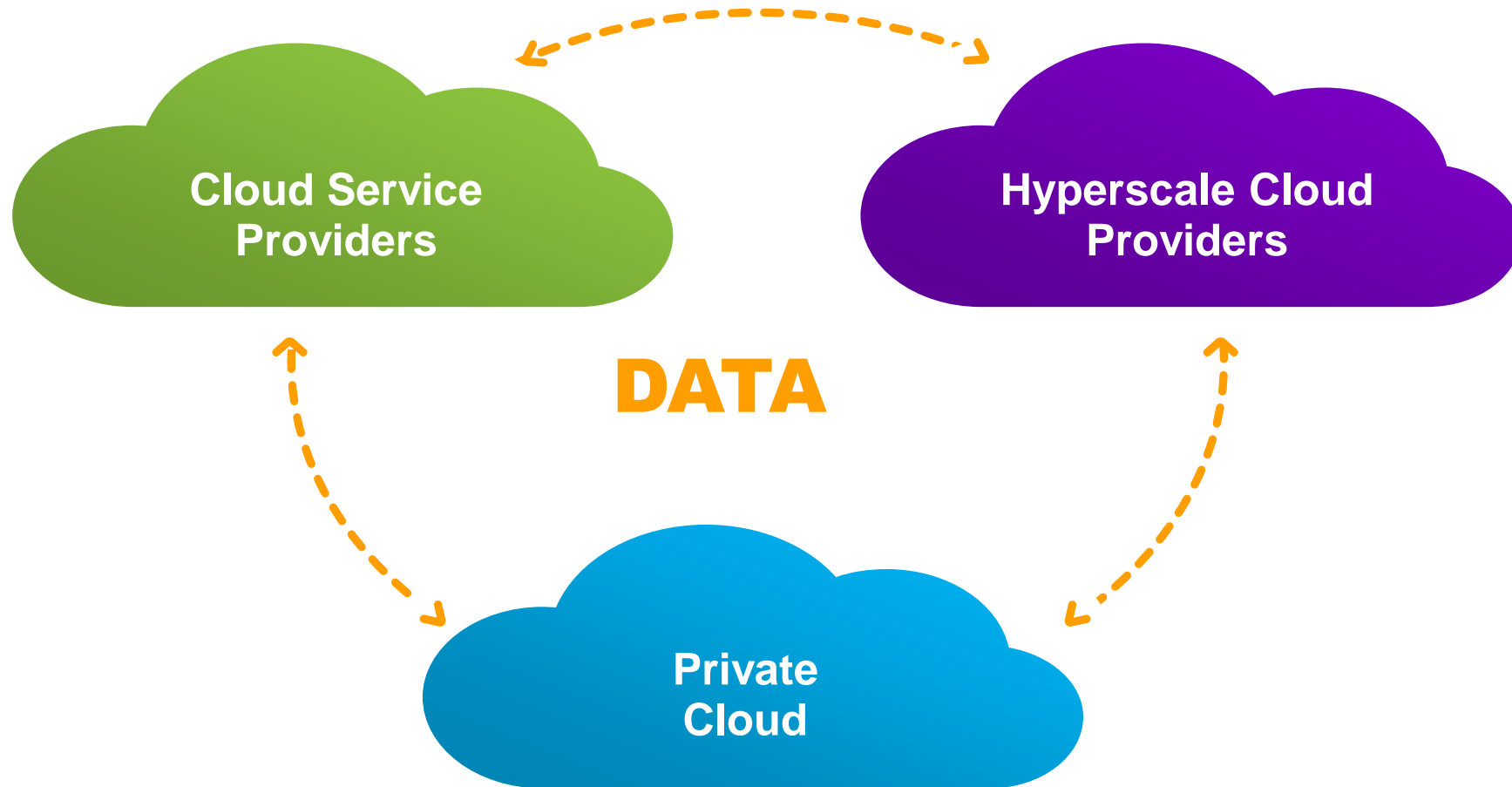
Hybrid Cloud: Fundamental Trend for IT

Promises efficiency and flexibility, but has risks of loss of control



Data and the Hybrid Cloud

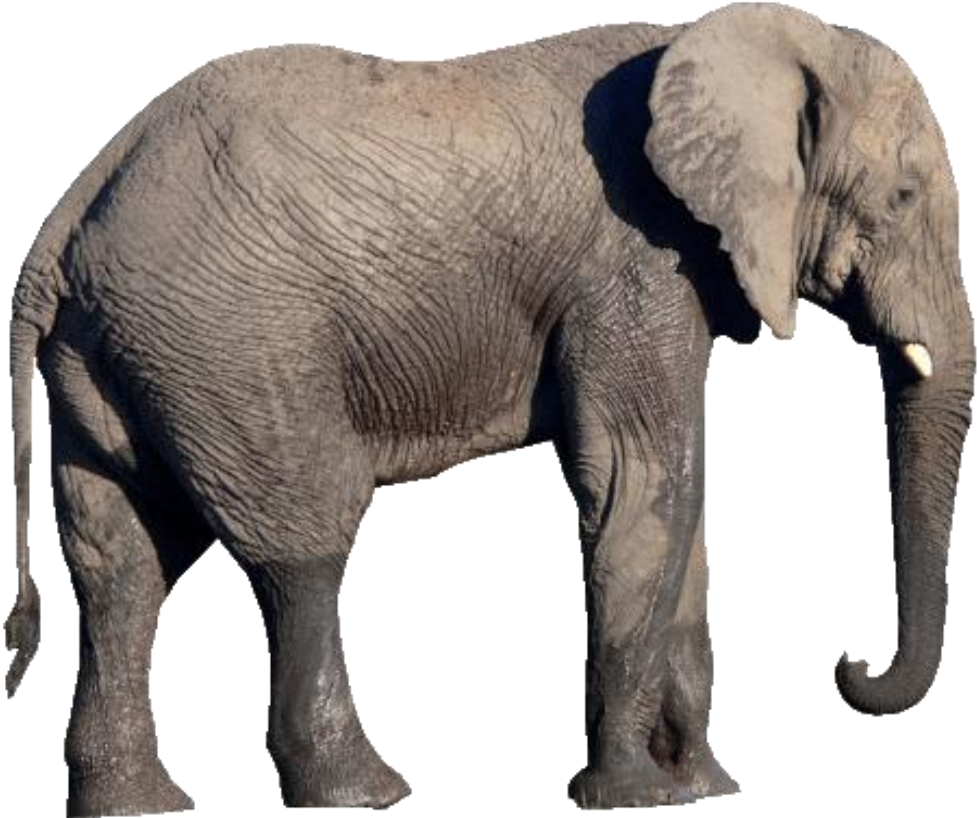
Unique requirements



The Fundamental Truth About Data

Compute

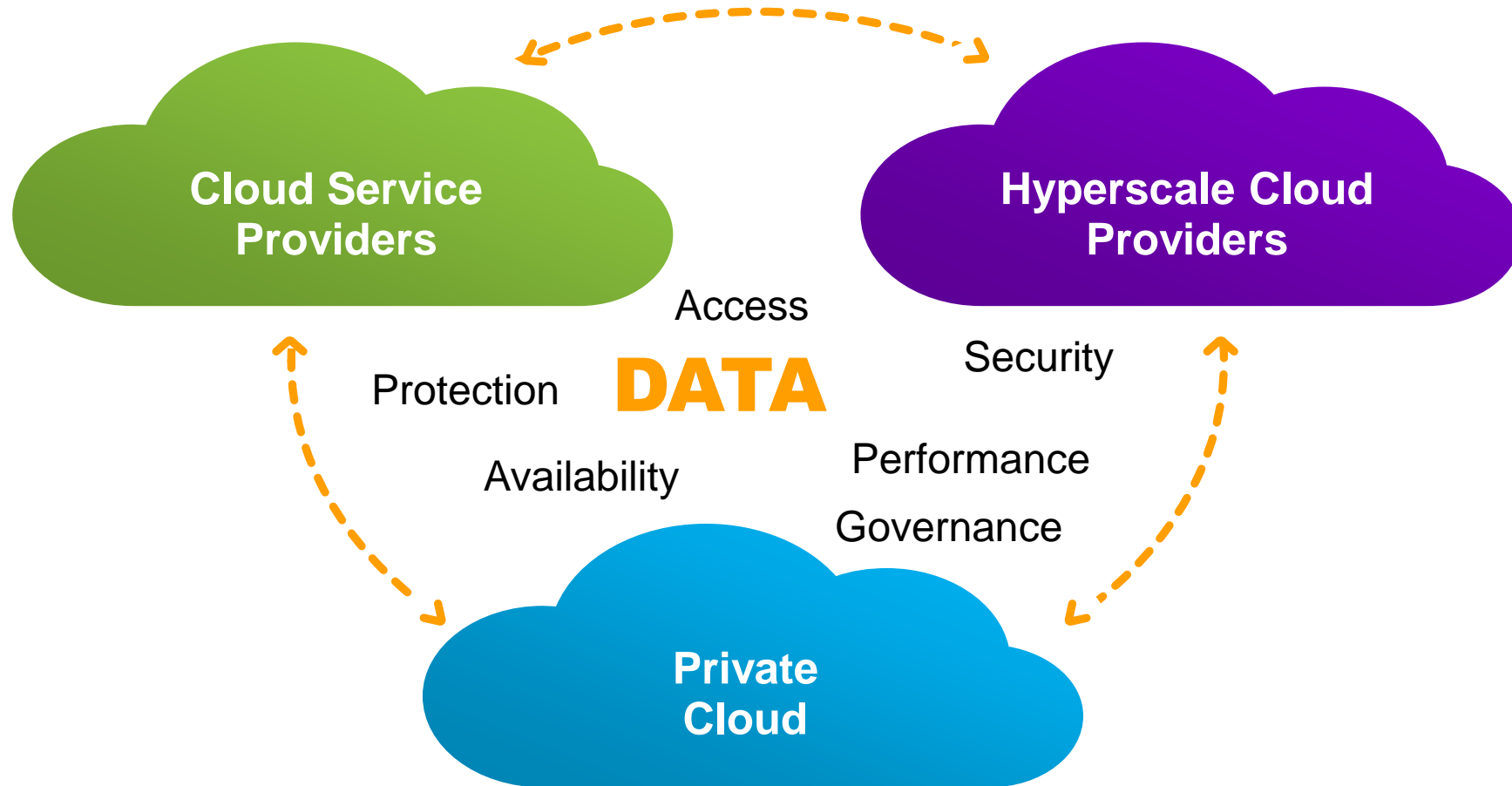
Data



Compute is agile. Data is not.

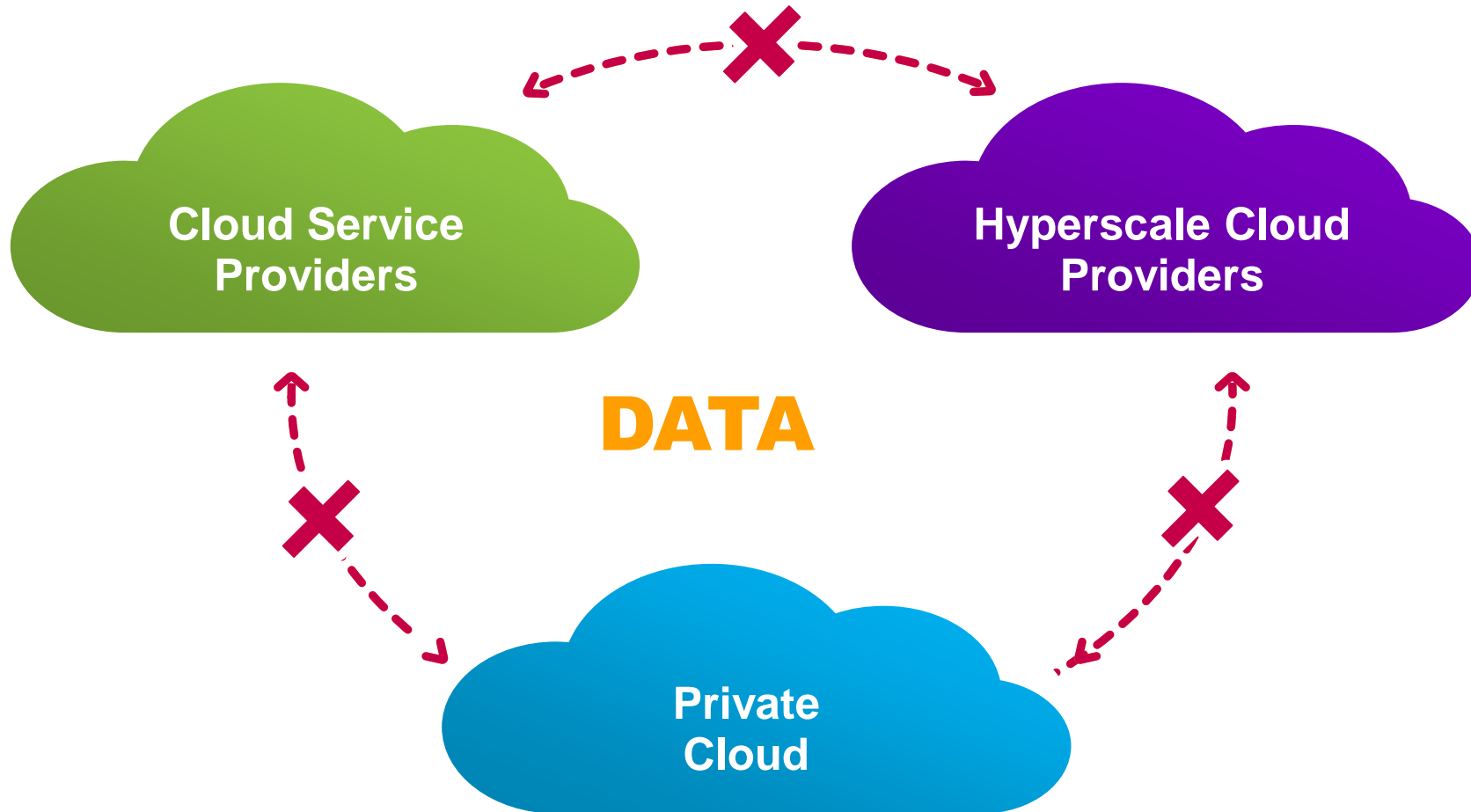
Can't Lose Control

Forever the steward of enterprise data



Data and the Hybrid Cloud

The problem: isolated, incompatible data silos



Data and the Hybrid Cloud



The Data Fabric



What Does a Data Fabric Do?



**The Data Fabric
Creates Control and Choice**



NetApp Support Structure



- 8 Technical Support Centers
- 5 Escalation Centers

NetApp customers worldwide

Energy



Financial



Government



Healthcare



Tech



Telco & Hosted

