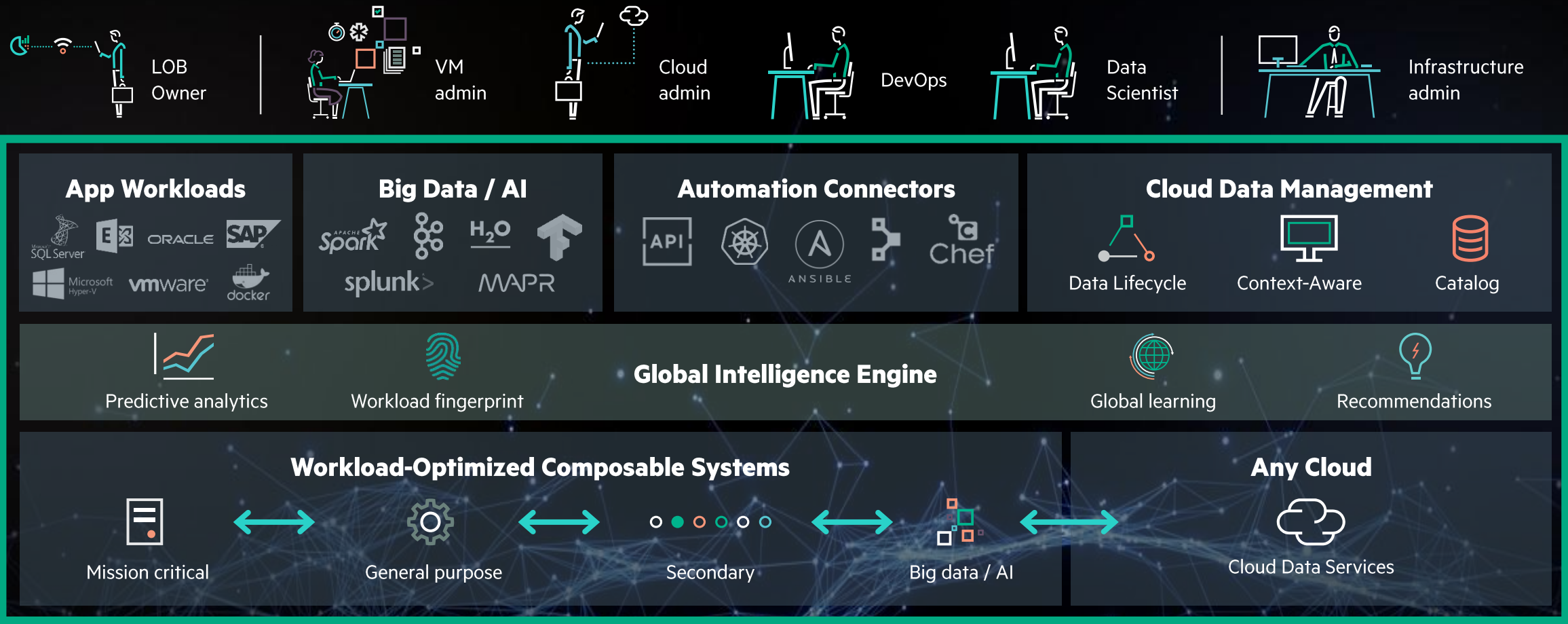


INTELLIGENCE

C H A N G E S E V E R Y T H I N G



Intelligent Data Platform



World's Most Intelligent Storage
For Mission-critical Apps

HPE Primera



**On-Demand
Experience**

**App-Aware
Resiliency**

**Predictive
Acceleration**

Enterprise storage ownership transformed

All inclusive licensing

No Forklift Upgrades

Store More Guarantee

Controller upgrade options

100% Availability Guarantee

Investments are **timeless**

HPE Nimble Storage dHCI

Flexibility of Converged. Simplicity of HCI.



**Intelligently
Simple**

**Absolutely
Resilient**

**Efficiently
Scalable**

Hyperconverged control with infrastructure out of sight and out of mind



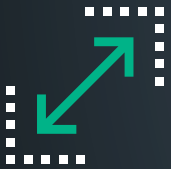
Simple to Deploy

15 min rack-to-apps with server and storage automation



Simple to Manage

VM-centric data services and resource management



Simple to Scale

Auto-discovers new resources and transparently upgrades



Simple to Support

Predictive support automation and problem prevention

HPE Nimble Storage DHCI Intelligently Simple

Simple for anyone to manage full-stack infrastructure

Software-Defined

Compute and storage abstracted and managed through vCenter

Auto-Discovery

New compute and storage resources easily add to the cluster

Virtual Volumes

LUN provisioning completely abstracted from admin



Policy-Based Automation

VM-centric snapshots, clones, and recovery and data protection

Integrated Planning

Predictive full-stack wellness and resource optimization

Transparent Upgrades

Easy to scale and upgrade with no downtime

Enterprise Capabilities without the Complexity

The industry's **broadest** and **deepest** flash portfolio



HPE MSA



HPE SimpliVity 380



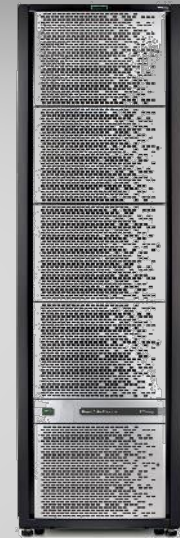
**HPE Nimble Storage
& dHCI**



HPE 3PAR StoreServ



HPE Primera



HPE XP7

Predictive

Cloud Ready

Timeless

Most common forms of ransomware

- **CryptoLocker** uses email attachments to encrypt certain types of files
- **CryptoWall** uses asymmetric encryption, where the decryption key is different from the encryption key
- **Locky** attacks Windows files
- **TorrentLocker** scans the system for programs and files and conceals the data, leaving ransom instructions to the victim
- **Virlock** is a self-reproducing ransomware and a shape-shifter that locks victims' screens



Ransomware attacks are on the rise

Are you protected against them?

Ransomware attacks are frequent—

A company is hit by ransomware every 40 seconds*

No industry is immune—At least 15% of businesses in the top 10 industry sectors have been attacked*

Rate of infection is high—71% of companies targeted have been infected*

Restoring data is not guaranteed—Despite paying the ransom, one in five businesses never get back their files*

University hit 21 times in one year by ransomware

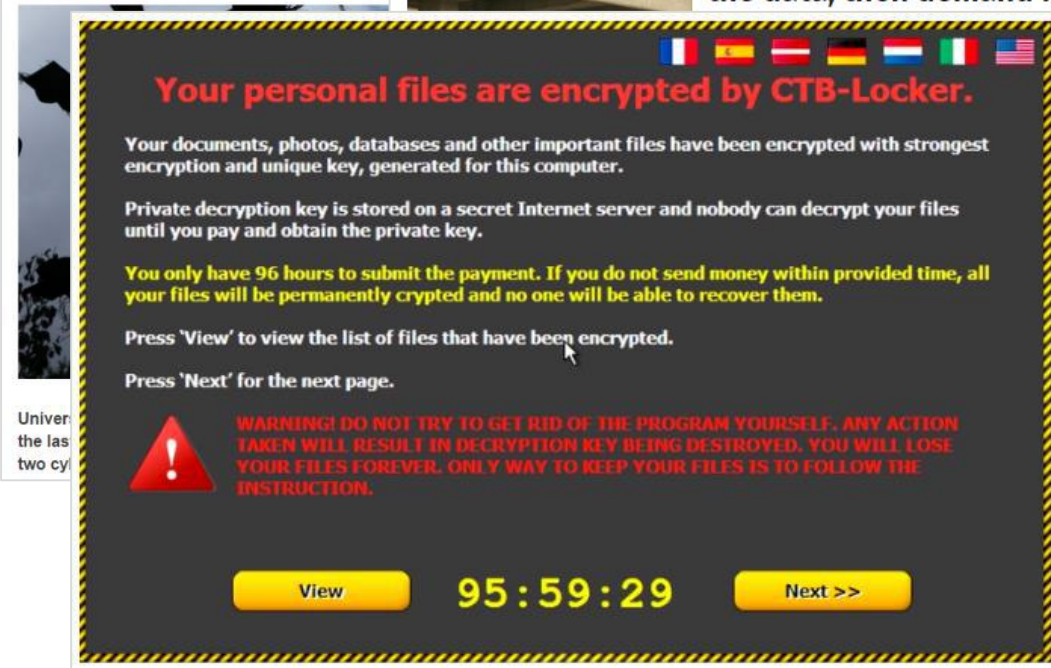
By Zoe Kleinman
Technology reporter, BBC News

© 24 August 2016 | Technology



Ransomware attackers collect ransom from Kansas hospital, don't unlock all the data, then demand more money

2016
pay the second
wise. Security experts,
mware attacks will

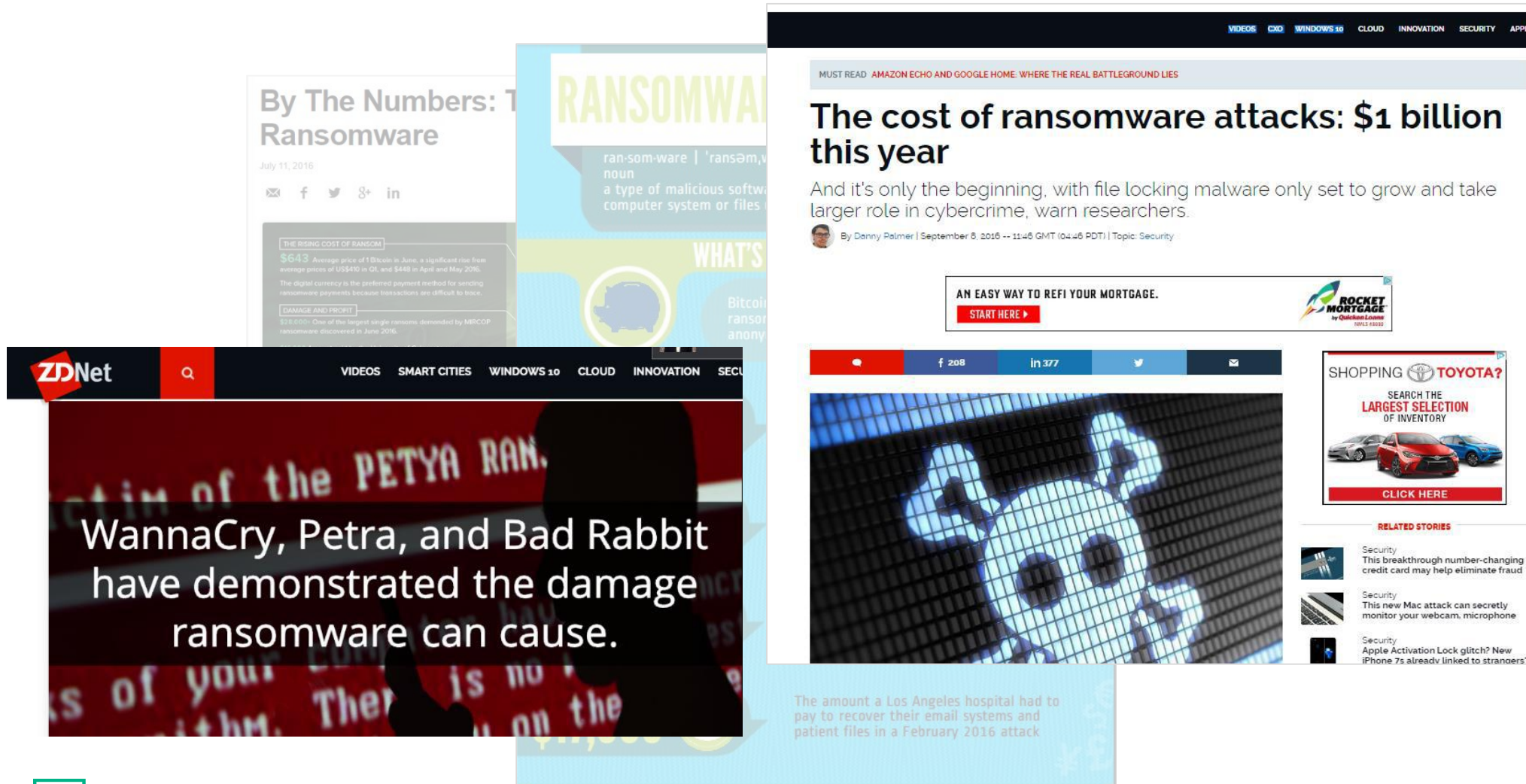


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*[Must-Know Ransomware Statistics 2017](#). Barkly, June 2017.

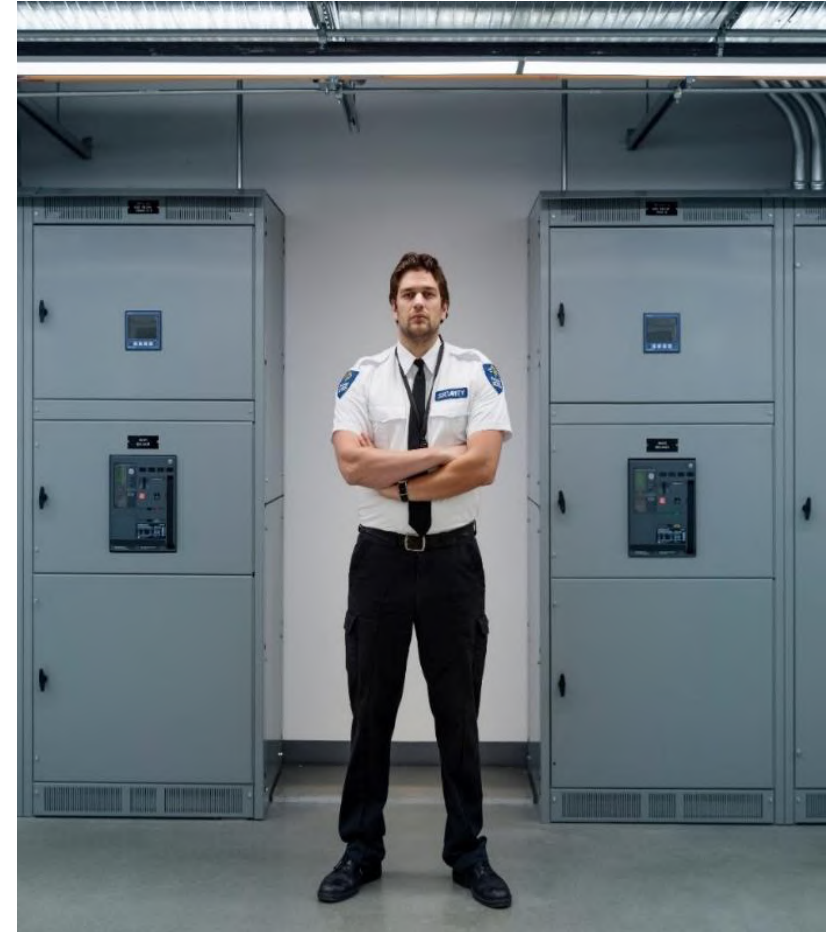
The cost of ransomware attacks

Not only financial hits, but also IT setbacks and damaged company brand



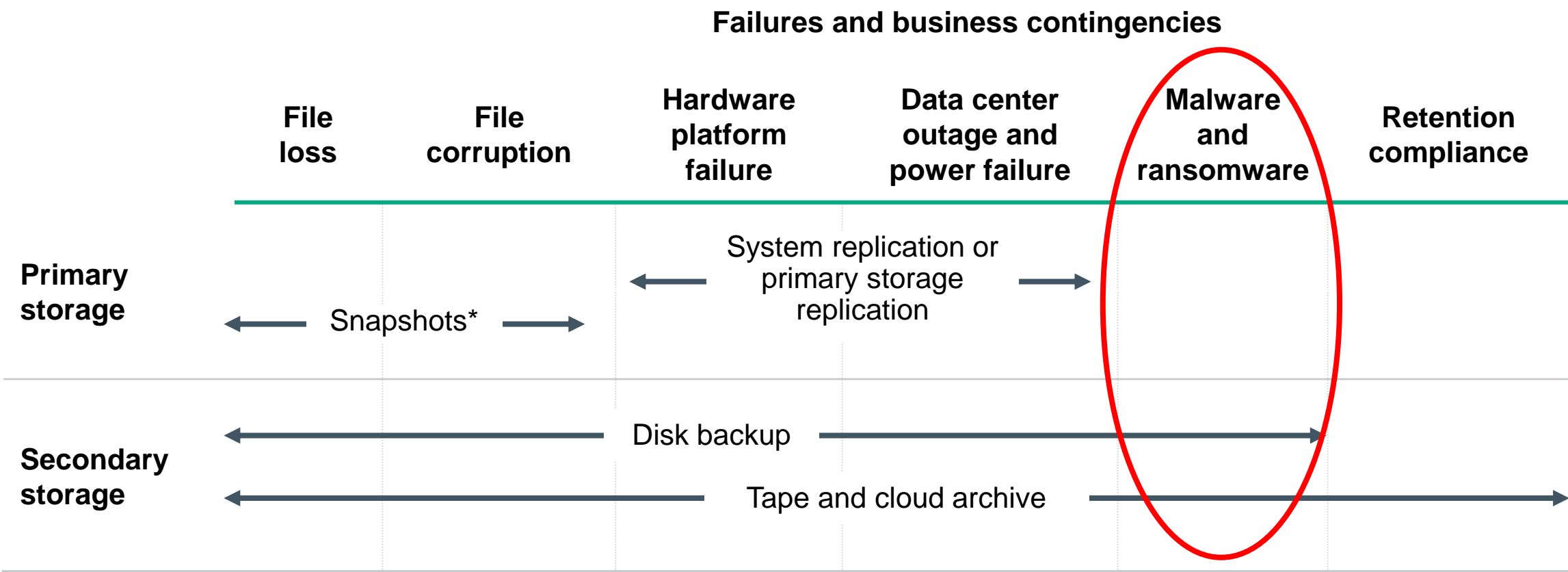
How you can avoid ransomware attacks

- 1 Keep all software up to date
- 2 Perform a threat analysis with your security team
 - Complete penetration testing to find vulnerabilities
- 3 Train staff on cyber security practices
 - Tell staff not to open attachments or links from unknown sources
 - Inform employees if a virus reaches the company network
- 4 Back up all information every day
- 5 Back up all information to a secure, off-site location



Source: [How to avoid ransomware attacks: 10 tips](#). TechRepublic, 27 July 2016.

Snapshots and replication are not enough to protect you against ransomware



*Only for recent file loss or file corruption

Cloud backup made simple

Simplify Operations

Deliver on SLAs

Protect your data, your way



HPE StoreOnce + Cloud Bank Storage

Native cloud integration

Seamlessly cloud-enable your storage and apps

Optimize your cloud investment

20X reduction in cloud storage costs with efficient de-duplicated data transfer

Secure cloud backup and DR

Encrypted, self describing backup data in the cloud

Empowering your app owners

Simplify Operations

Deliver on SLAs

Protect your data, your way



Source-side dedupe



HPE StoreOnce
Catalyst Plug-Ins

Application direct
data path



HPE StoreOnce

Self-service

DBAs can backup directly to StoreOnce - using familiar native user interfaces

More efficient

Faster backup, 95% less network utilization, 20X less backup storage

Lower cost

Reduce cost and complexity by removing traditional backup application

Take control of data growth

Simplify Operations

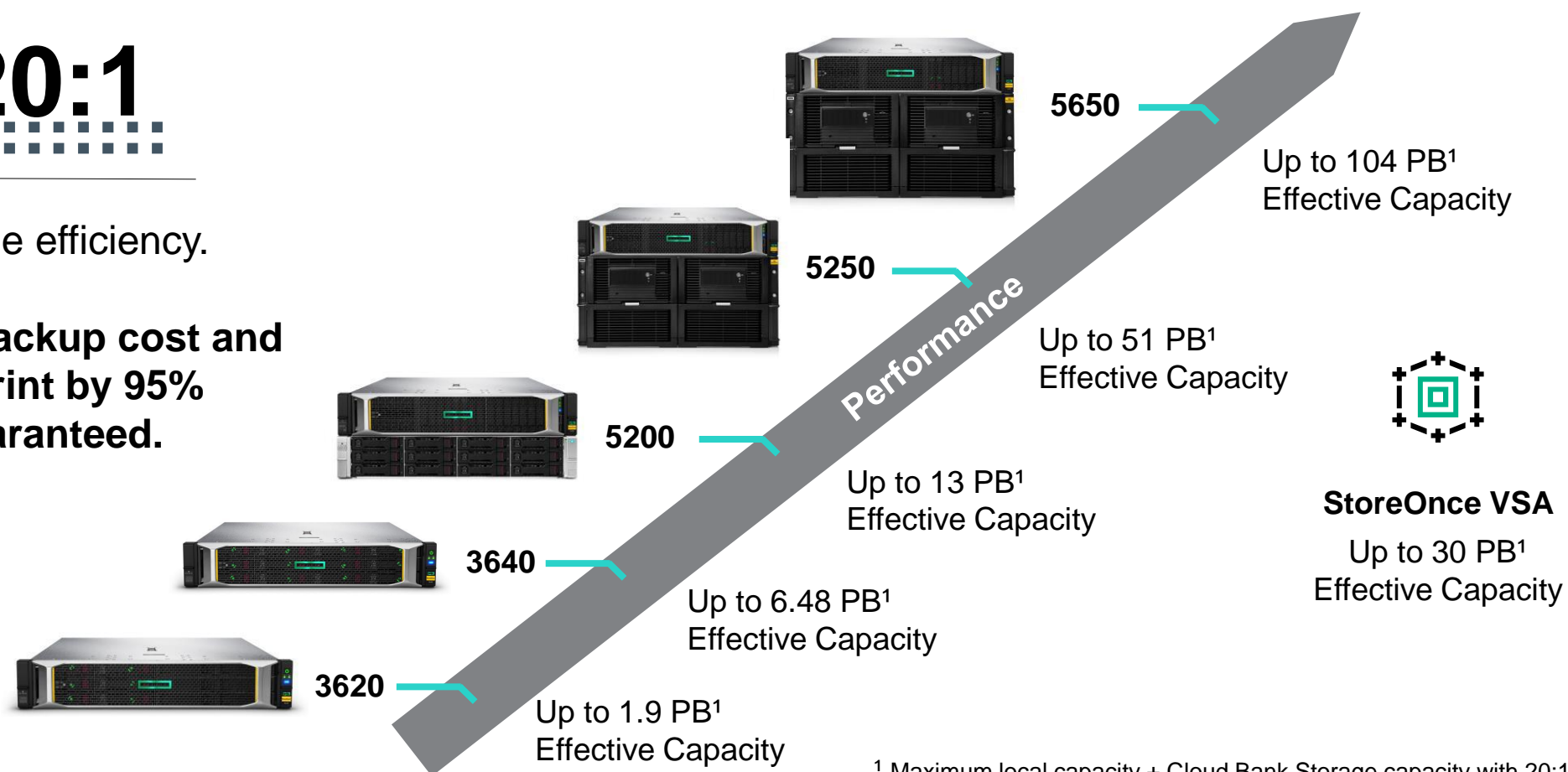
Deliver on SLAs

Protect your data, your way

20:1

Storage efficiency.

Reduce backup cost and footprint by 95%
Guaranteed.



Break the backup window and deliver on recovery SLAs

Simplify Operations

Deliver on SLAs

Protect your data, your way



3PAR



Nimble



RMC²



23x Faster backup³

15x Faster restore³



StoreOnce



Cloud Bank Storage



Self service
Protection

Automated intelligent, policy-based
copy automation



Flash speed
protection

with minimal
app impact



Less cost
and complexity

Eliminates need for
traditional backup



Built
for cloud

Seamless cloud backup for long term
retention, archive and DR

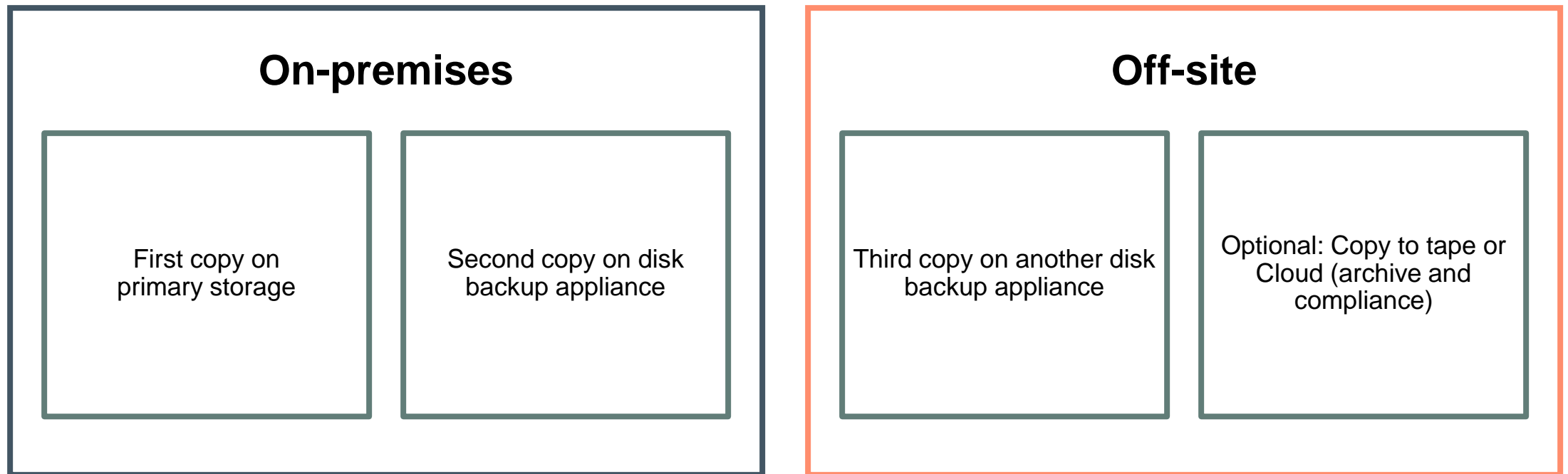
¹RMC is available as standard with every 3PAR & Nimble system as part of the array all-inclusive license

²for VMware environments compared to traditional backup environments

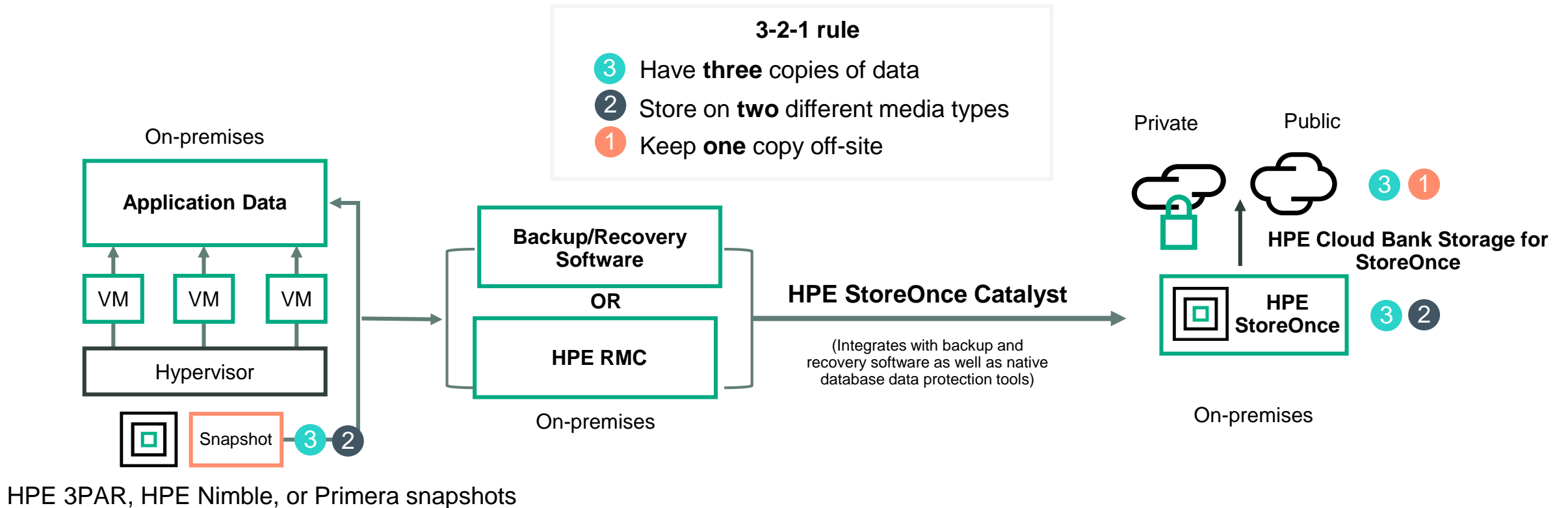
The 3-2-1 rule for best practice data protection

Protecting data against any failure...wherever it lives

3-2-1 best practice: **Three** copies of data, **two** copies on **two** different types of media, **one** copy off-site



HPE solution overview for data protection against ransomware



Services



HPE Pointnext and partners
Consulting, support, and education

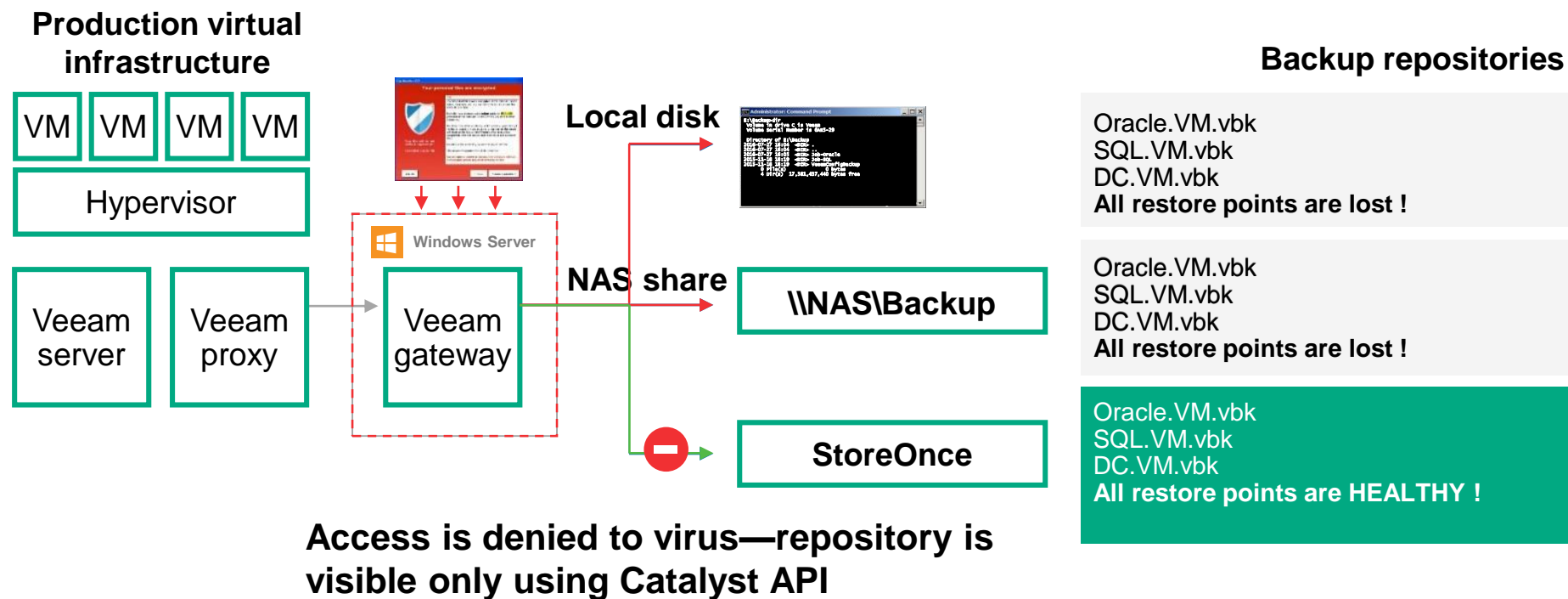


HPE Financial Services
Flexible capacity and technology refresh

HPE StoreOnce Catalyst denies access to backups

Example: Veeam backup and recovery software

Benefit: Your backup repository is protected against viruses



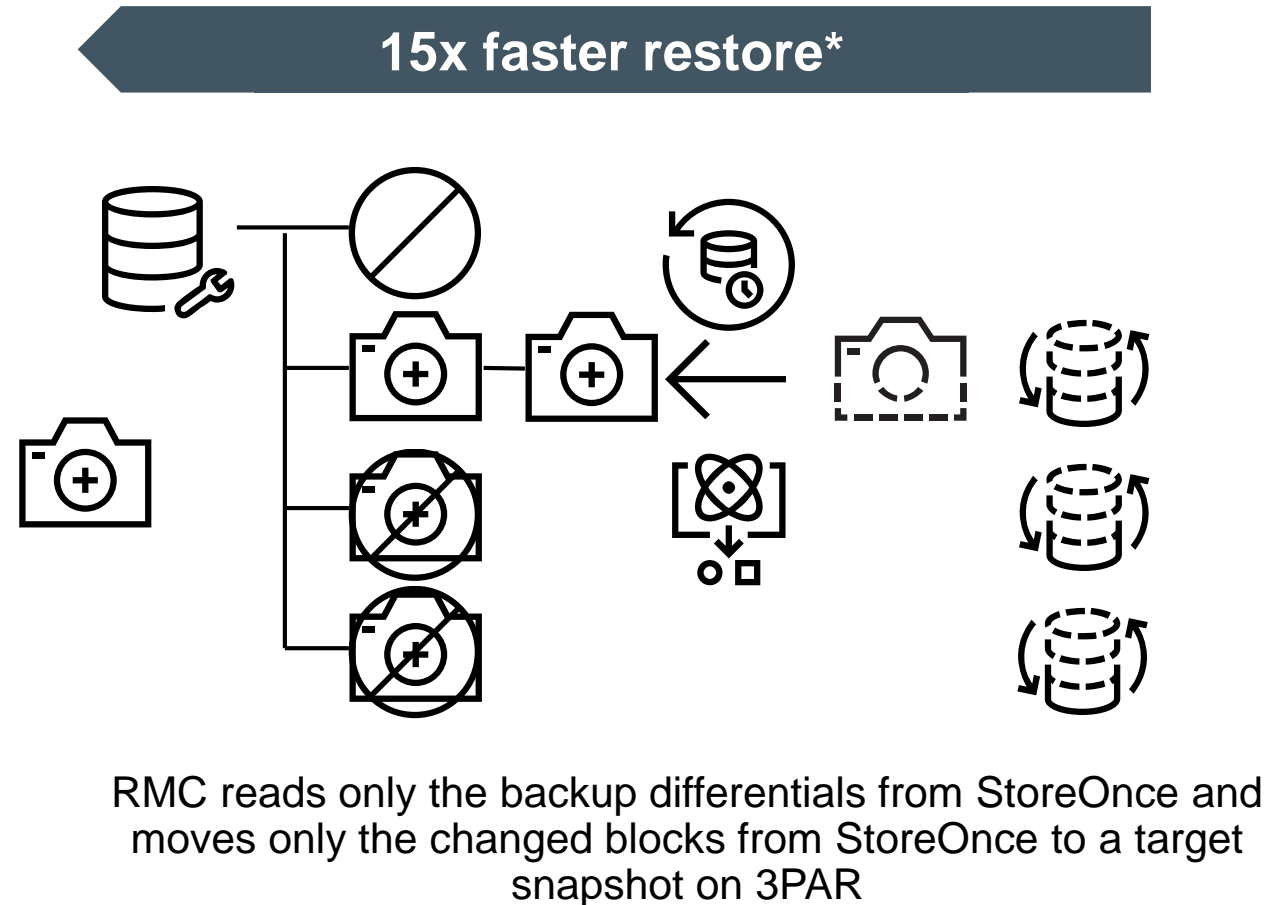
RMC restores data quickly after a ransomware attack to meet stringent RPOs and RTOs

Recover at the speed of flash by only sending unique changed data from StoreOnce to 3PAR, Nimble, or Primera

Deliver on SLAs with 15x faster recovery* than traditional backup applications

Reduce cost and complexity of traditional recovery approaches with direct restore from 3PAR to StoreOnce

*Compared to traditional server-based backup environments



HPE RMC 5.0 and HPE Cloud Bank Storage

Optional cloud backup



Retain 100 PB¹ + data from \$0.001/GB/month²



Economic

Low-cost, scalable, long-term retention



Efficient

Ability to send, store, and retrieve **only unique** data for lower TCO



Flexible

Automated, native tiering of backup data to the cloud platform of your choice



Secure

Simple, encrypted, and reliable cloud disaster recovery

¹Assuming dedupe ratio of 20:1 and the maximum logical capacity of StoreOnce 6600 of 34 PB

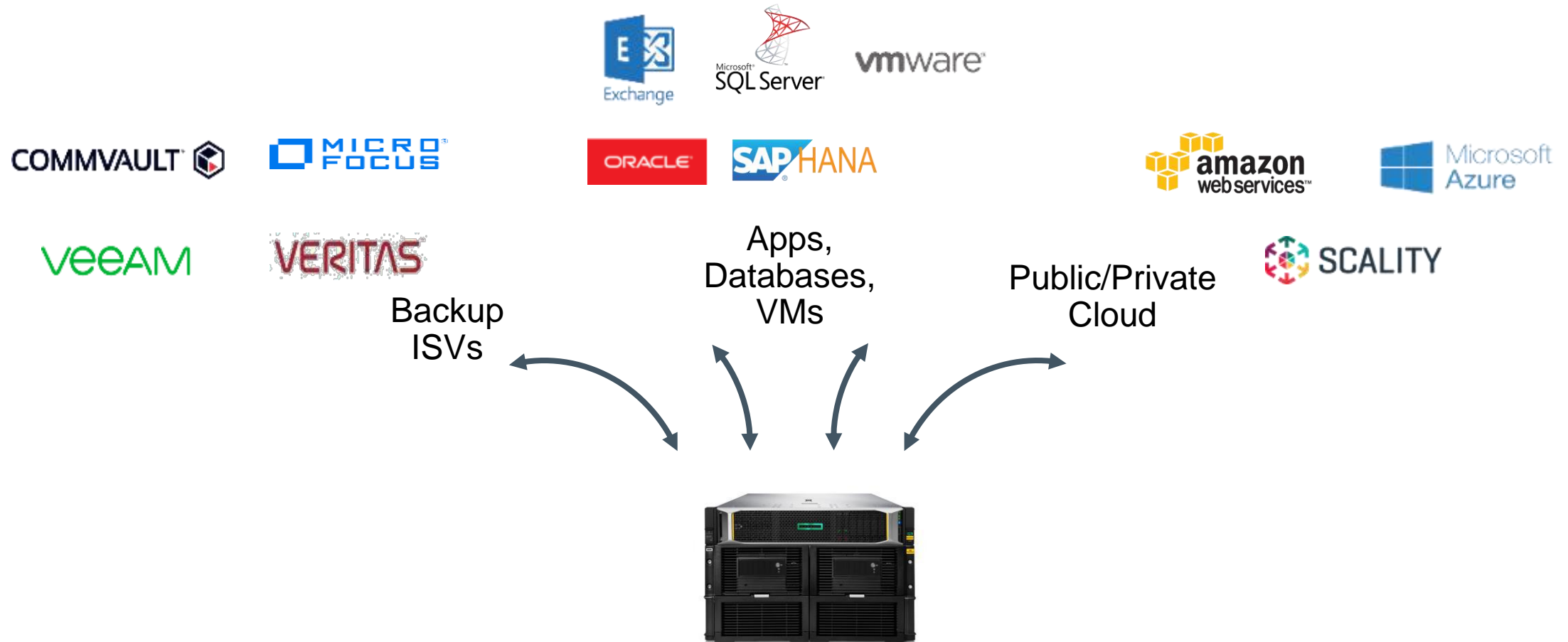
²Assuming dedupe ratio of 20:1 and AWS (S3) standard object storage pricing of \$0.02 per GB per month

Eliminate lock-in with best of breed partner ecosystem

Simplify Operations

Deliver on SLAs

Protect your data, your way

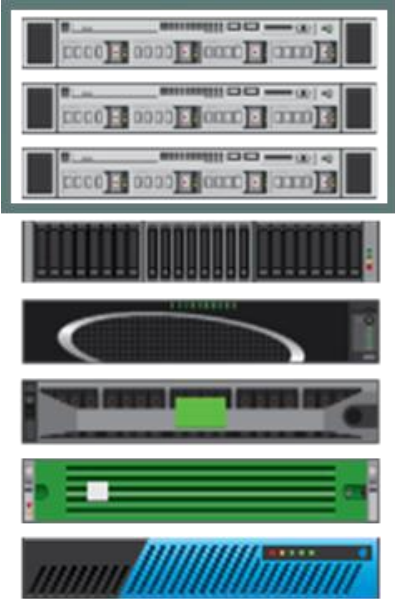


Best of breed partner integration

HPE SimpliVity 380: The powerhouse in hyperconvergence

The industry's most powerful hyperconverged platform uniting best-in-class data services with the world's bestselling server

Other
Hyperconverged
Solutions



HPE SimpliVity



Powerful

All IT infrastructure and advanced data services in a single building block

Simple

Intuitive per-VM management with rapid deployment and scale

Efficient

69% TCO savings compared to traditional infrastructure and up to 55% cheaper than AWS

HPE SimpliVity Data Virtualization Platform

A modern data architecture

Global VM-Centric Management and Mobility

Built-in Resiliency, Backup, and Disaster Recovery

Guaranteed Data Efficiency



INTRODUCING HPE INFOSIGHT



Leading AI for Hybrid Cloud

COLLECTING AND ANALYSING MILLIONS OF SENSORS PER SECOND

CUSTOMER IMPACT



PREDICTIVE SUPPORT AUTOMATION



PREEMPTIVE RECOMMENDATIONS



PROACTIVE MANAGEMENT



CONTINUOUS IMPROVEMENT

CLOUD-BASED AI PLATFORM



PREDICTIVE ANALYTICS ENGINE



GLOBAL LEARNING



RECOMMENDATION ENGINE

CROSS-STACK TELEMETRY

vmware



ORACLE

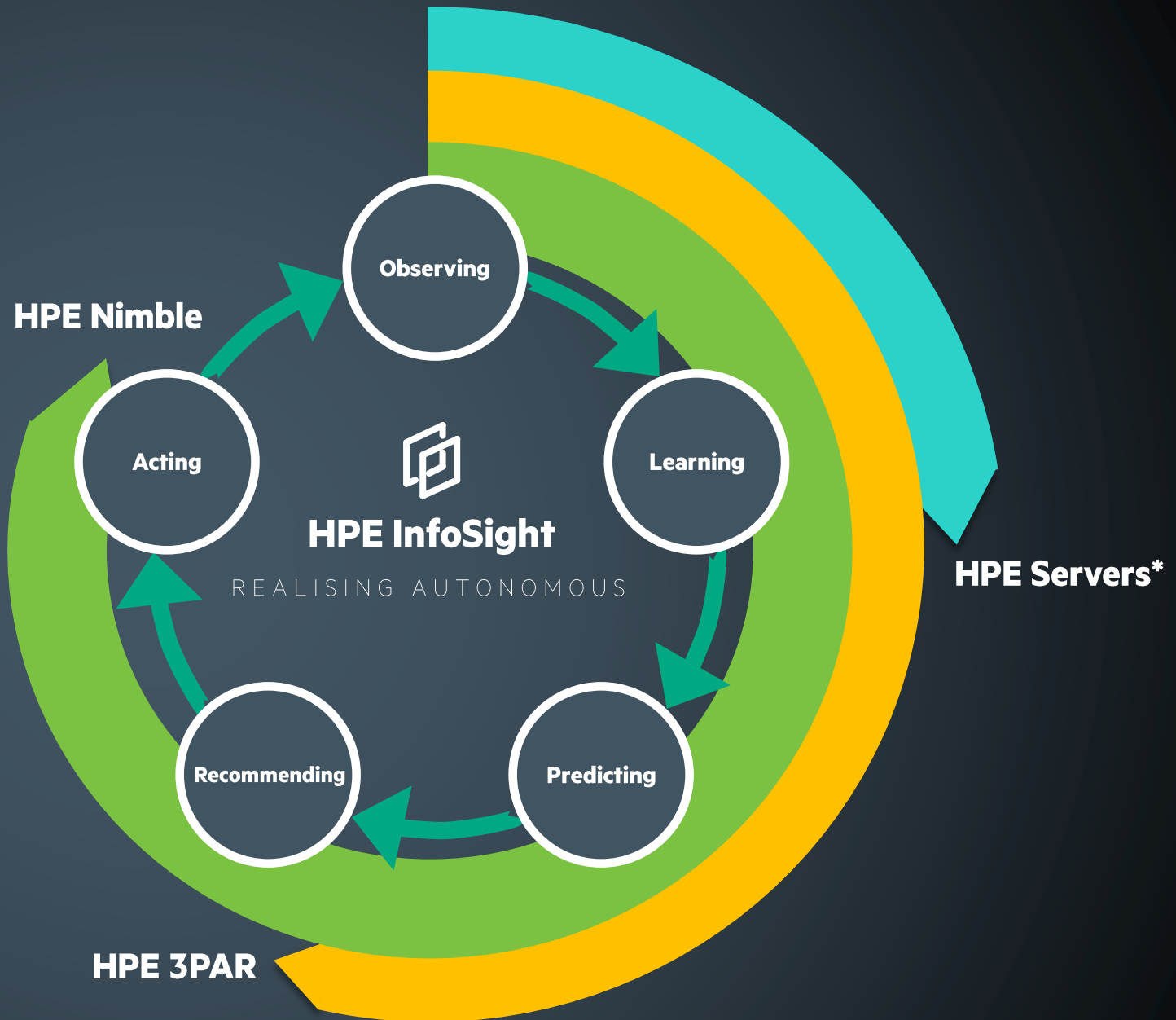
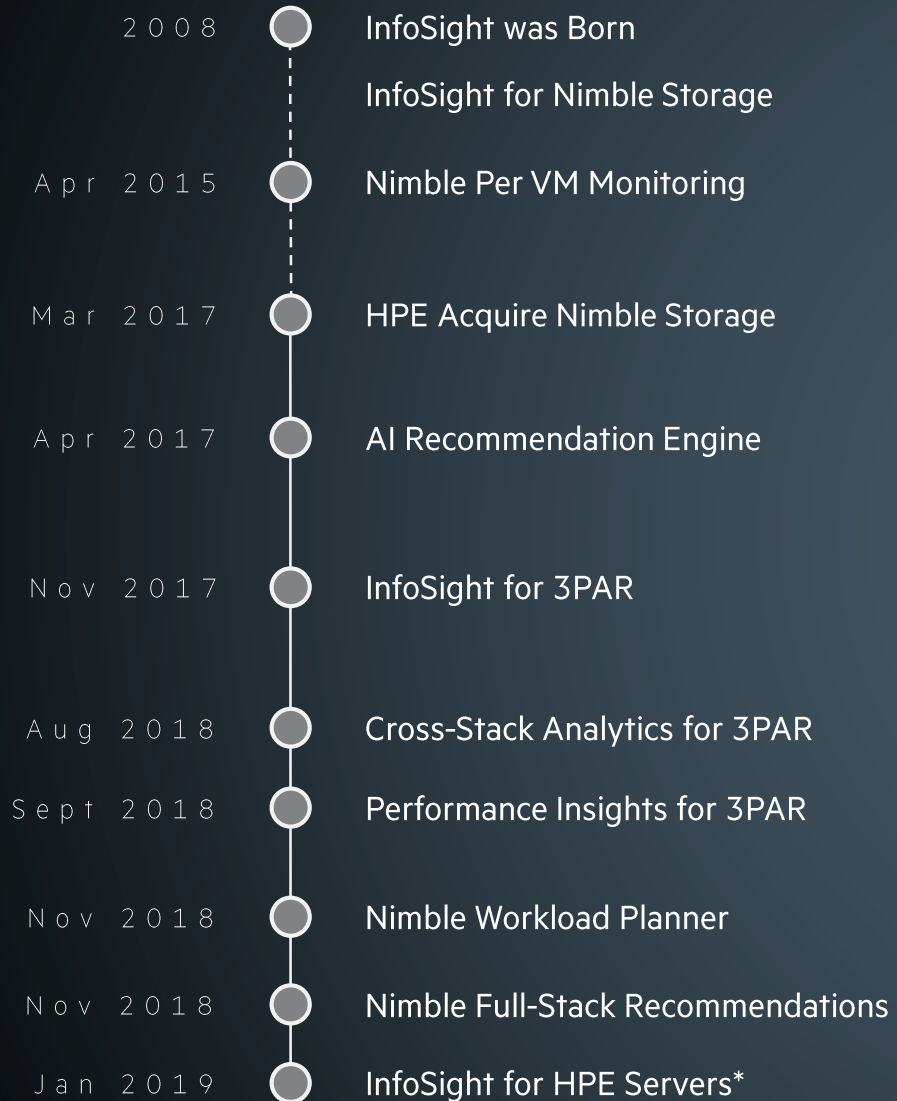


Microsoft
SQL Server

Exchange




InfoSight Evolution



InfoSight collects and analyzes more sensor data points every four hours, than there are stars in our galaxy


Nimble collects, in just 8 hours, the same amount as a much larger competitor has collected since the inception of their telemetry years ago



>250B

SENSOR VALUES


+



>2B

LOG EVENTS

+




>100MM

CONFIGURATION VARIABLES

=

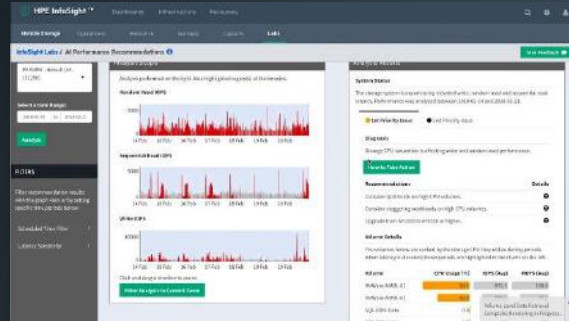
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DATA POINTS SINCE 2010

HPE InfoSight Sees and Predicts Behind the Scene

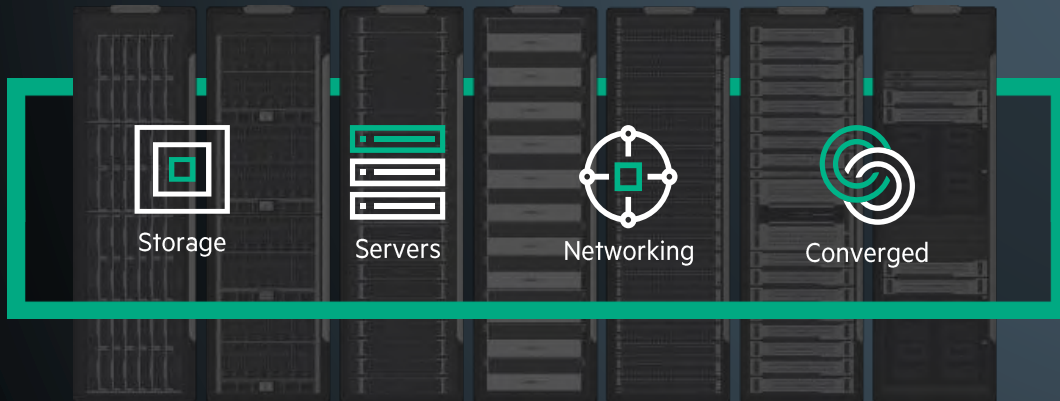
Customer Portal



ADVANCED VISUALISATIONS

DASHBOARDS

AI for the Data Centre



BLACKLISTING

MACHINE LEARNING

GLOBAL LEARNING

CASE AUTOMATION

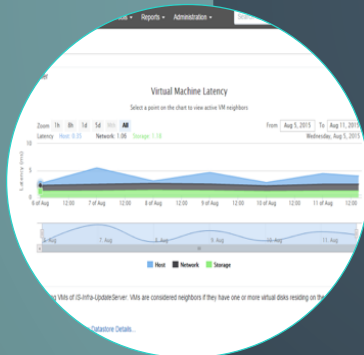
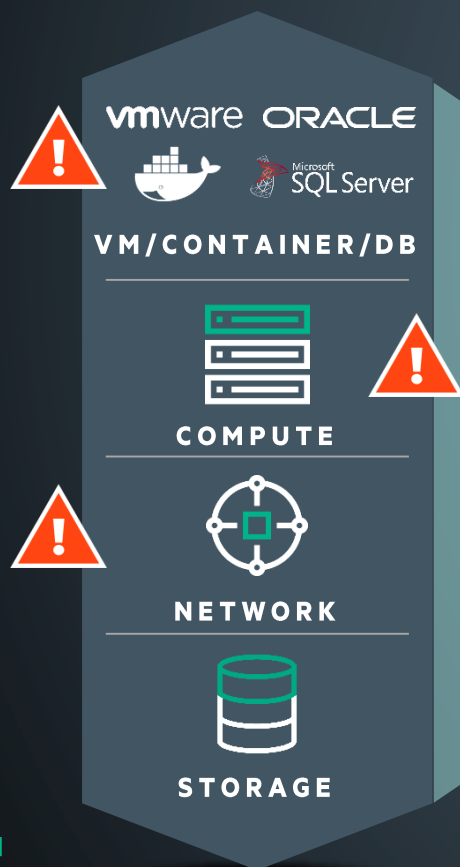
CLOUD-BASED ANALYTICS

PRE-EMPTIVE RECOMMENDATIONS

Manage Beyond the Storage

CROSS-STACK ANALYTICS FOR VMWARE ENVIRONMENTS

Look beyond, and gain insights from, more than just your storage infrastructure



Noisy Neighbour

DETERMINE IF VMS ARE HOGGING RESOURCES FROM ANOTHER VM



Host & Memory Analytics

VISIBILITY INTO HOST CPU AND MEMORY METRICS



Latency Attribution

IDENTIFY ROOT CAUSE ACROSS HOST, STORAGE, OR SAN



Inactive VMs

VISIBILITY INTO INACTIVE VMS TO REPURPOSE/RECLAIM RESOURCES



Top Performing VMs

VISIBILITY INTO TOP 10 VMS BY IOPS AND LATENCY

A new Compute experience

Agility

A better way to deliver
business results

Security

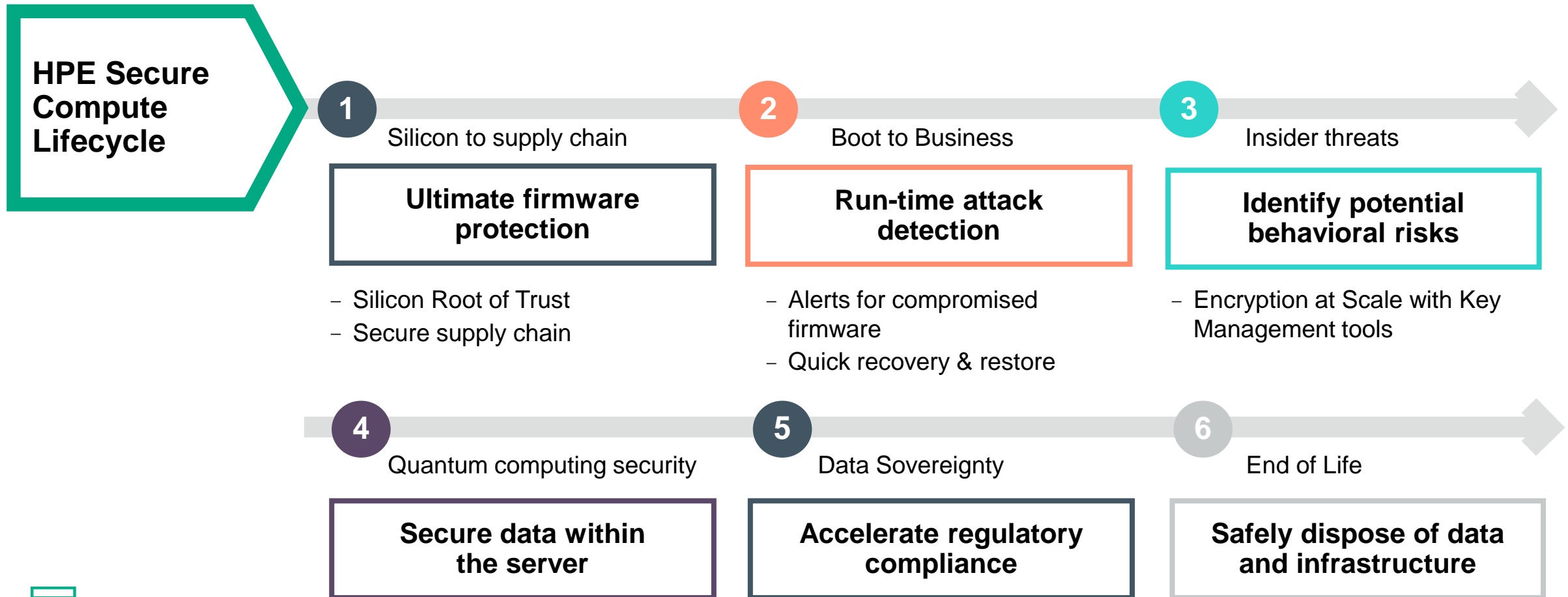
A better way to protect
your business and data

Economic control

A better way to consume and
pay only for what you use

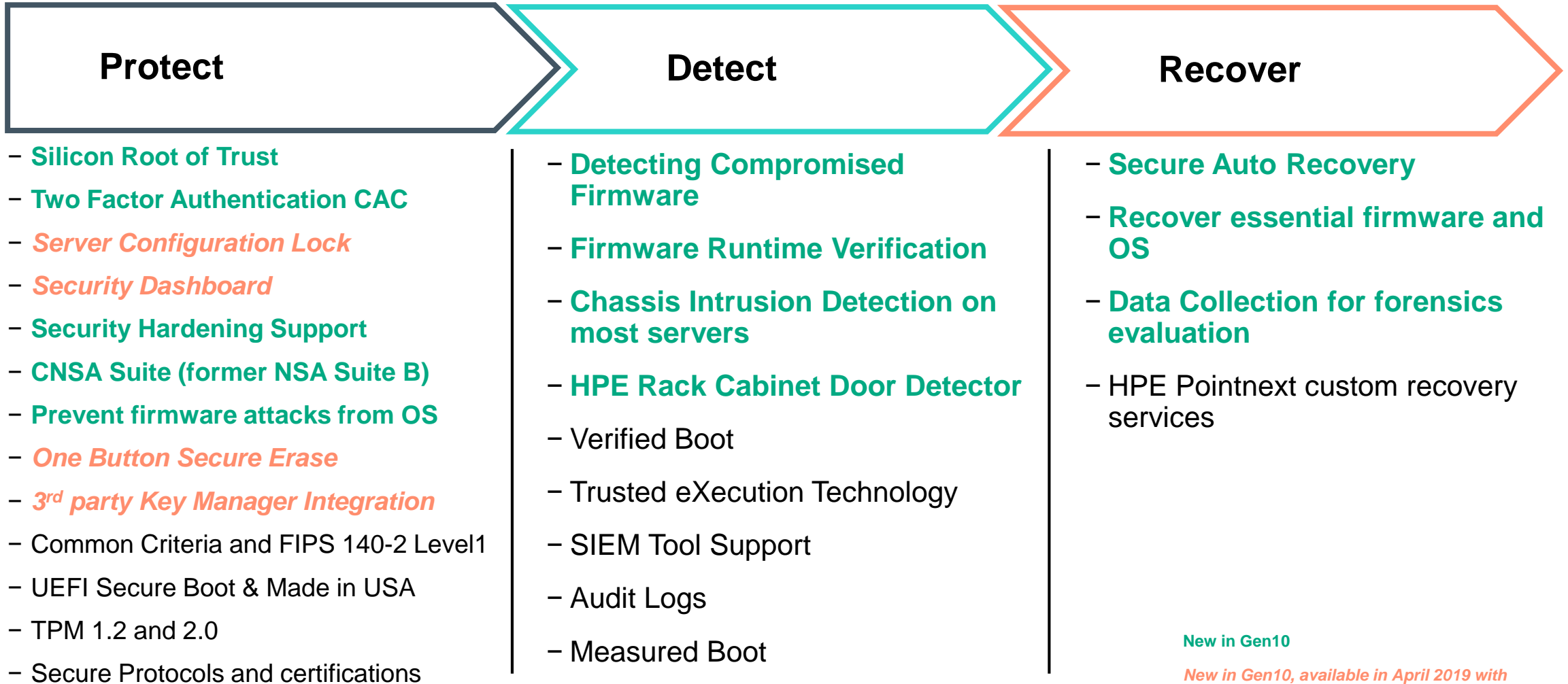
Powered by the world's most secure industry standard servers¹

Data Protection and Security from Cradle to Grave



HPE Secure Compute

The world's most secure industry standard servers*



New in Gen10

New in Gen10, available in April 2019 with iLO 5 v1.40



**Hewlett Packard
Enterprise**

Thank You

aj.fitzgerald@hpe.com

ENGAGE WITH HPE STORAGE



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