SELF-DRIVING STORAGE

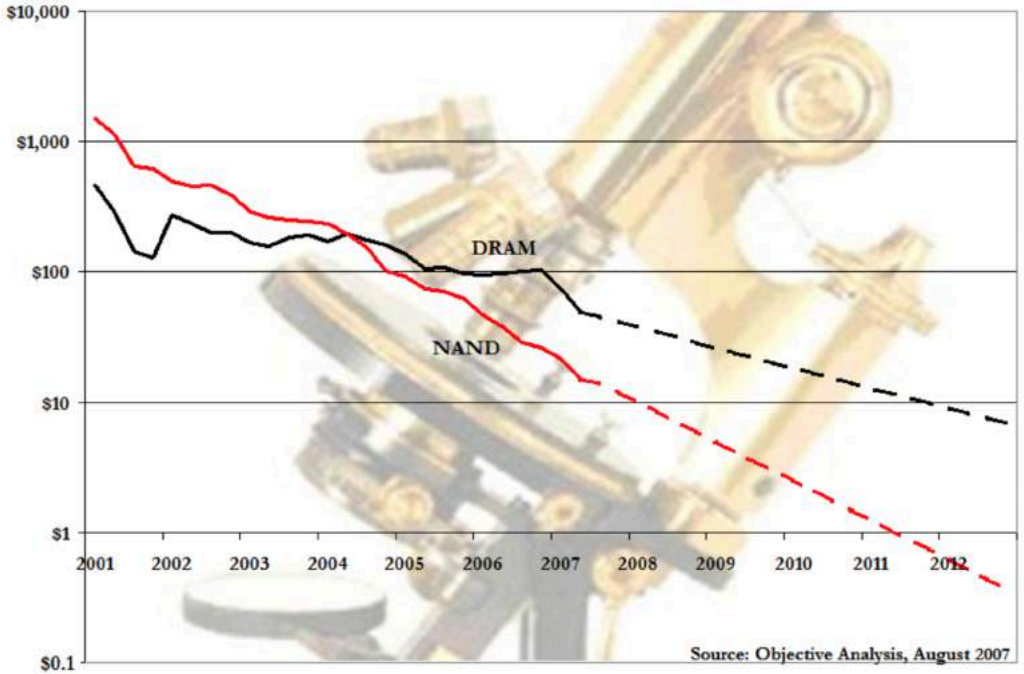
全球第一座自動駕駛全快閃儲存設備

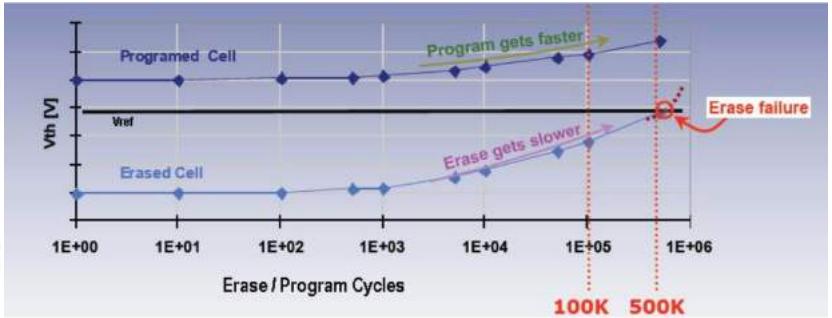
Andrew Ho
Pure Storage TAIWAN

PURESTORAGE®

WHAT WORRIES YOU

PRICE, ENDURANCE





Source:
Left: Objective Analysis, August 2007
Right: SLC flash memory cell endurance characteristics, Copyright Samsung

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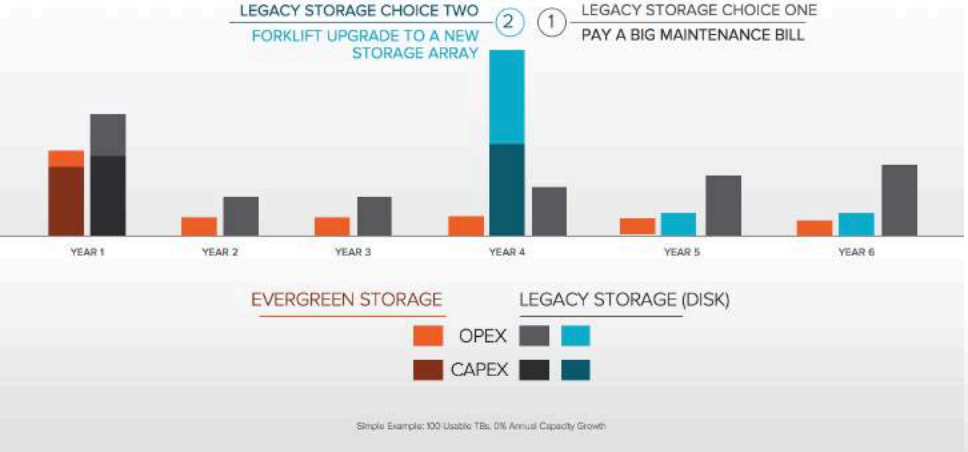
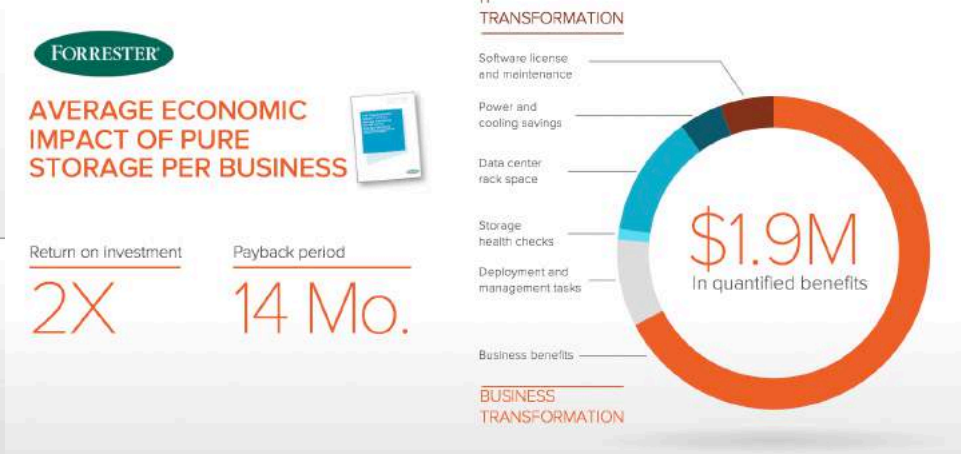
WE BRING TO YOU

EVERGREEN STORAGE





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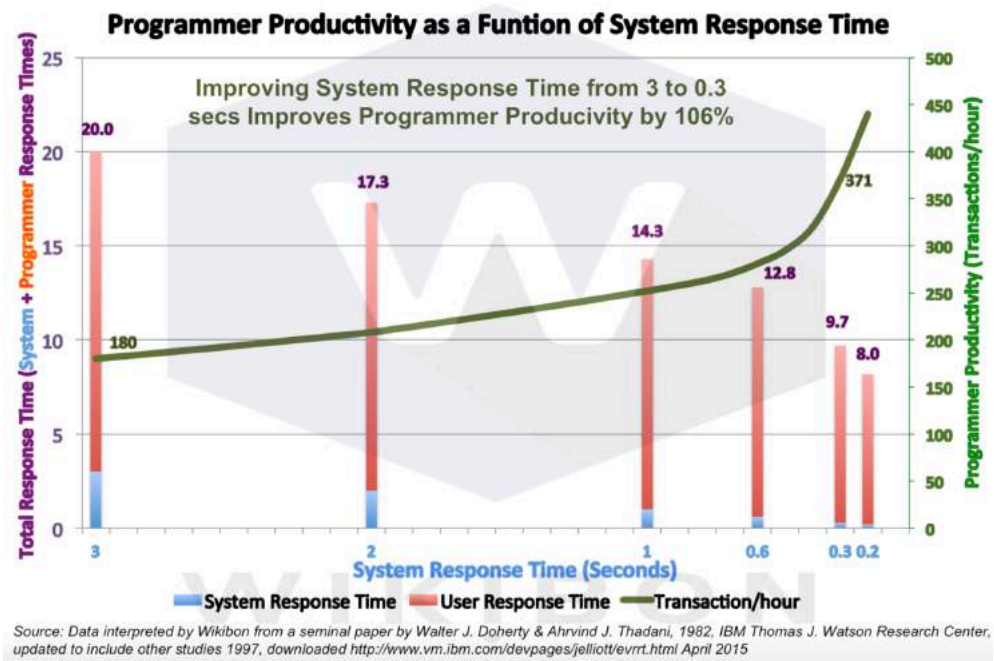
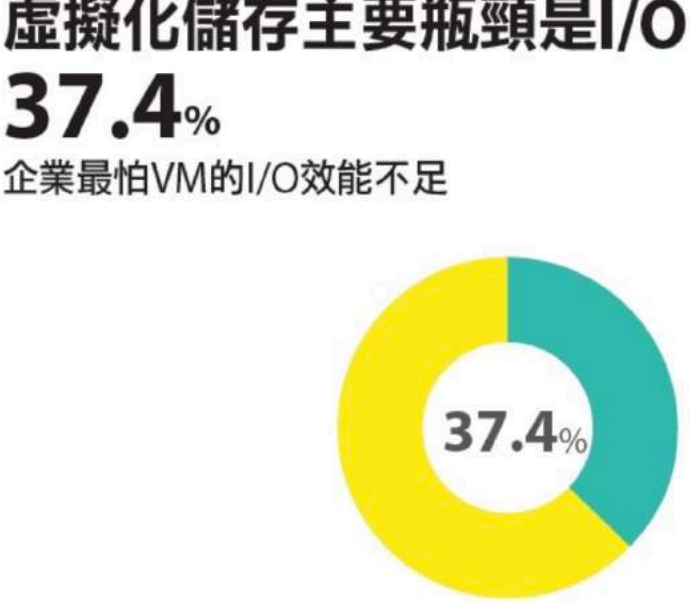
WHAT WORRIES YOU

LATENCY, IOPS



Source: Data interpreted by Wikibon from a seminal paper by Walter J. Doherty & Ahrvind J. Thadani, 1982, IBM Thomas J. Watson Research Center, updated to include other studies 1997, downloaded http://www.vm.ibm.com/devpages/jelliott/evrrt.html April 2015



Source:
Left: Wikibon, Case Study: The Hunting of the RARC, Apr 13 2015
Right: iThome【2017臺灣企業儲存現況總論】

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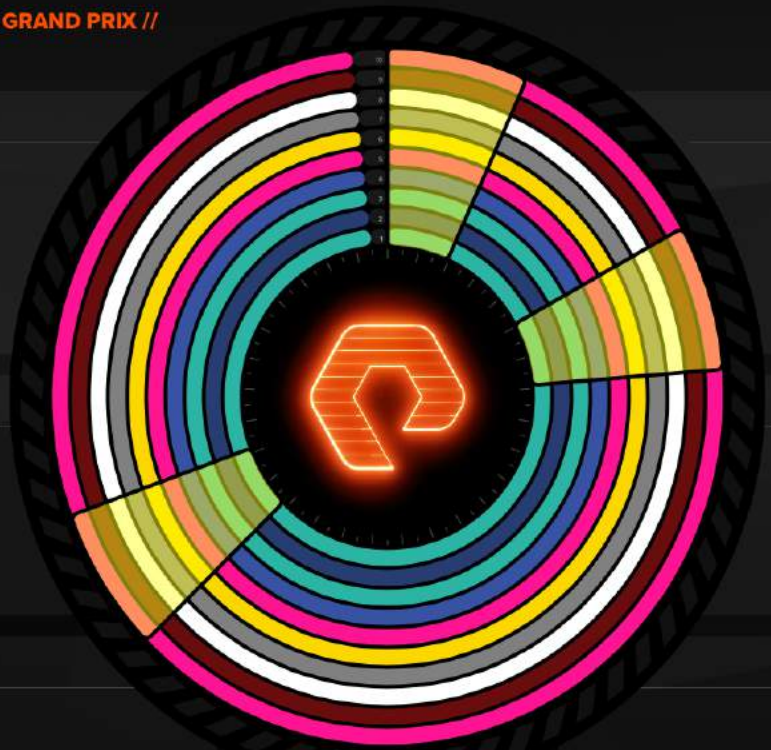
2017 FORMULA 1 SINGAPORE AIRLINES SINGAPORE GRAND PRIX // SINGAPORE

TIME 22:11:58

PREDICTED PIT STRATEGIES



TYRE COMPOUNDS

SETS USED

- 19 ULTRA SOFT
- 01 SOFT
- 20 X-WET
- 01 SUPER SOFT
- 28 INTERMEDIATE

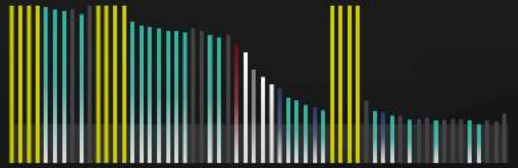
WEATHER

31°C
TRACK TEMPERATURE

29°C
AIR TEMPERATURE

HAM 1:45.008

FASTEST LAPS 34/58



SAFETY CAR LAPS

12

02
THIS RACE LAST YEAR

57
YEAR TO DATE

TOTAL OVERTAKES

02
WITH DRS

00
FOR LEAD

46

TYRE SELECTION
TOP 10
SHOW SAFETY CAR

WE HAVE SEEN SOME OF THAT LEARNING APPLIED HERE IN SUZUKA AND WE WILL CONTINUE TO DO THE SAME FOR THE REMAINDER OF THE YEAR.

- JAMES ALLISON
MERCEDES-AMG PETRONAS MOTORSPORT TECHNICAL DIRECTOR

Official Team Partner

PURESTORAGE

AMG PETRONAS MOTORSPORT

FlashArray //X

NVMe/F

50 Gb/s Ethernet

RoCE v2

DirectFlash SHELF

28 x DirectFlash Modules

Up to 512TBs Raw (1.5 PBs usable)

With 18.3 DirectFlash Modules

NEW INTRODUCING

DirectFlash SHELF

NATIVE NVMe/F
EXPANSION SHELF

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WHAT WORRIES YOU

MANAGEMENT, RELIABILITY, SUPPORT

Source:
iThome,【2017臺灣企業儲存現況總論】

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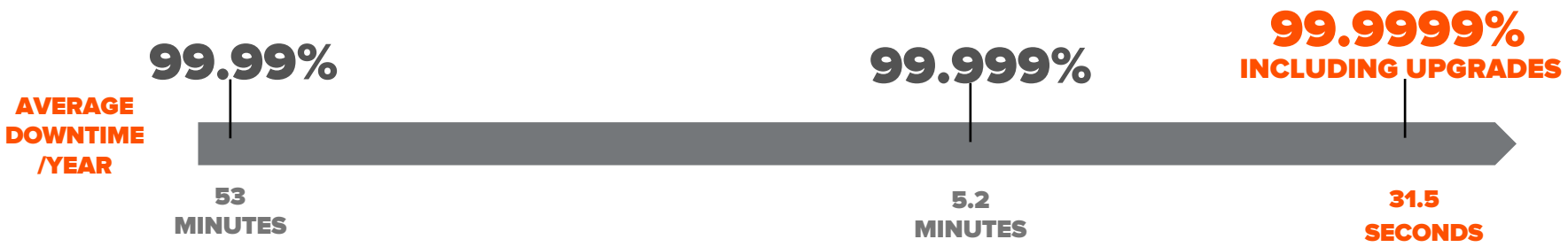
GLOBAL 10 BANK

5 PB, 50+ ARRAYS

ONE ADMIN

WE BRING TO YOU

RELIABILITY



END-TO-END AVAILABILITY

- A/A CLUSTERING
- DUAL-PARITY RAID
- FLASH ERROR RECOVERY

NO PLANNED DOWNTIME

- NDU HW & SW UPGRADES
- NPIV
- FULL PERF THROUGH FAILURE/UPGRADE

FlashArray//M global availability average over first year of production //M shipments

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WE BRING TO YOU

EFFORTLESS IS

+

Pure1™

SIMPLE WEB-BASED MANAGEMENT

CLOUD-BASED ALERTING, REPORTING, SUPPORT & ANALYTICS

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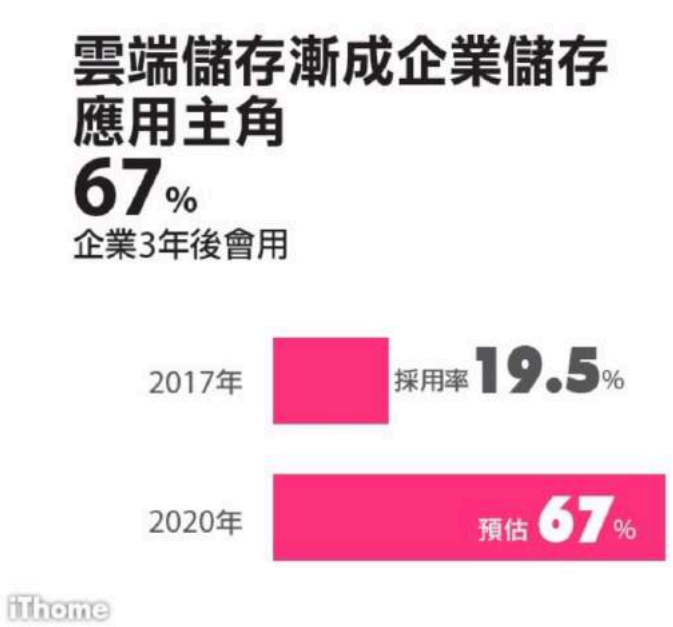
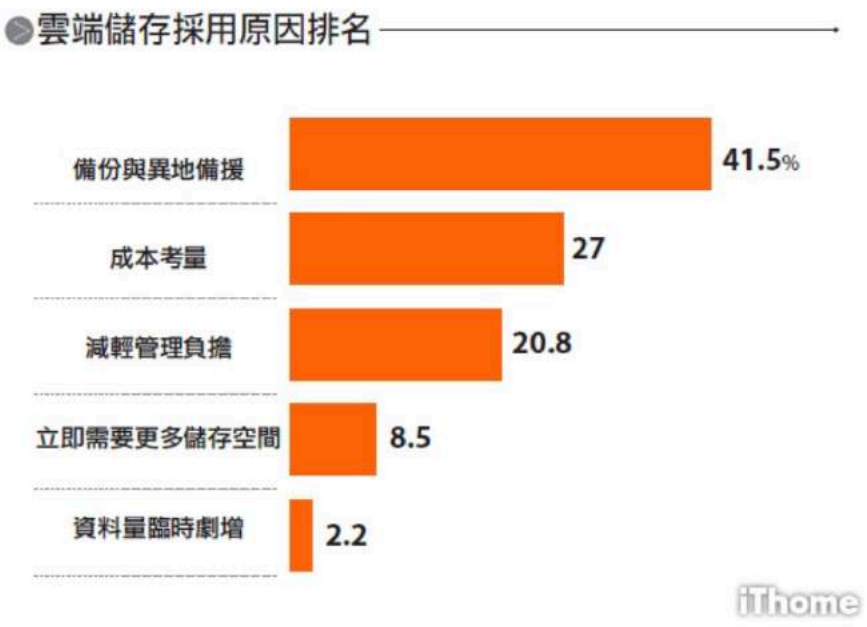
WHAT WORRIES YOU

PUBLIC CLOUD, HYBRID CLOUD, BACKUP





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Source:
iThome,【2017臺灣企業儲存現況總論】

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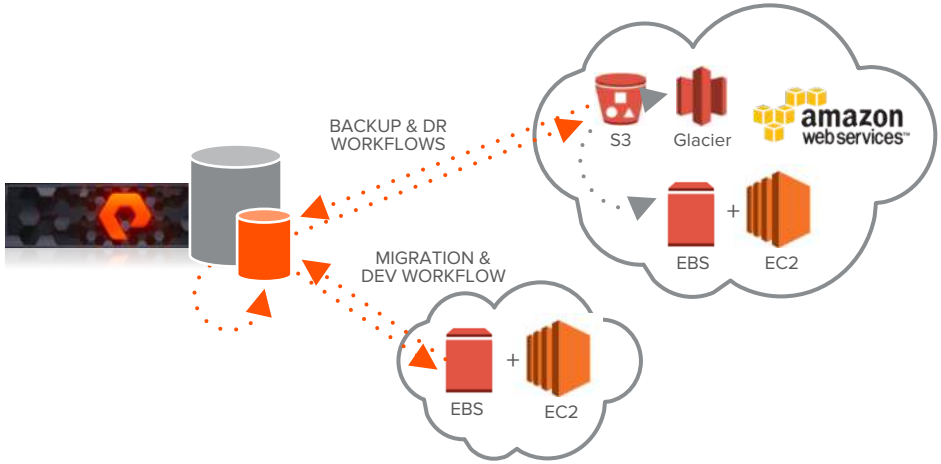
WE BRING TO YOU

Purity FA CloudSnap

EFFORTLESS BACKUP, RESTORE, MIGRATION OR DR TO PUBLIC CLOUD



Natively Cloud Connected

- Backup directly to public cloud
- Restore directly from public cloud
- Hydrate CloudSnaps into native format: EBS, S3, or Glacier
- Disaster Recovery in public cloud
- Migrate workloads to/from public cloud
- Fully leverage all cloud PaaS services!

NO ADDITIONAL SOFTWARE OR GATEWAY REQUIRED!

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JOURNEY TO YOUR
ALL-FLASH CLOUD

3 CLOUD NATIVE

kubernetes openstack Pivotal Cloud Foundry KVM docker MESOS

BUILD YOUR CLOUD-NATIVE APP & DATA PLATFORM

DEVOPS BUILD → DEPLOY
CONTAINER-CENTRIC
CLOUD-SCALE DATA & ANALYTICS

ACCELERATE YOUR INTERNAL CLOUD

100% VIRTUAL | 100% FLASH
100% AUTOMATED

2 ALL-FLASH INTERNAL CLOUD

vmware vSphere · Microsoft Hyper-V · openstack · vmware vRealize · CHEF · cisco · puppet labs

ACCELERATE YOUR KEY BUSINESS APPLICATIONS

1 APPS

Microsoft SQL Server · ORACLE · Epic · Exchange · CITRIX · SAP

RUN FASTER | BUILD FASTER
ANALYZE FASTER | DEPLOY FASTER

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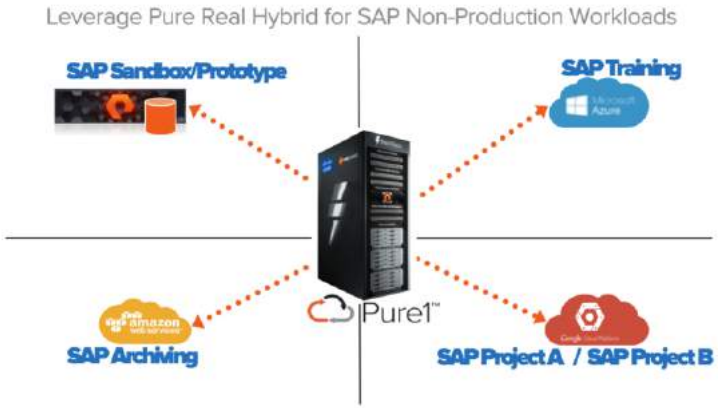
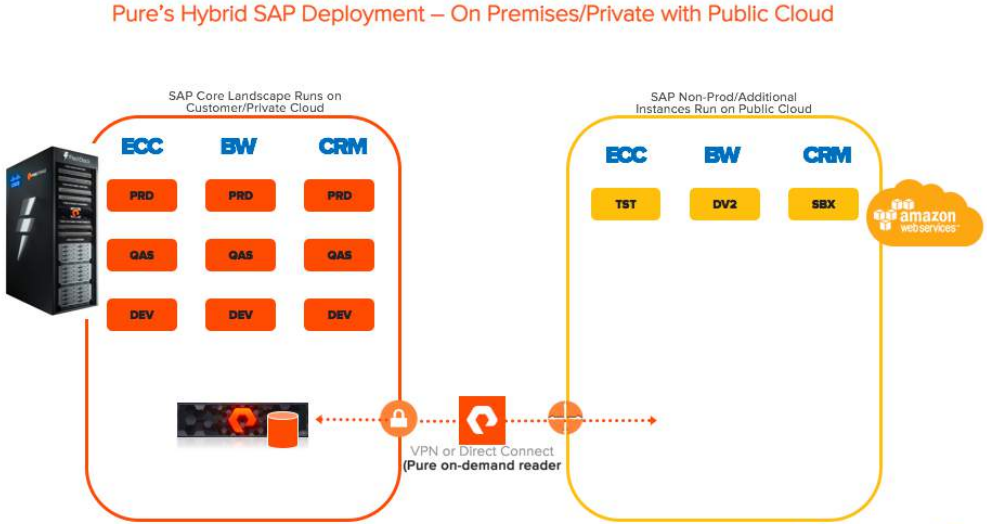
REAL HYBRID CLOUD FOR SAP



- Reduced temporary SAP instances provisioning time by leveraging public cloud.
- Leverage Pure1 for monitoring your data.
- Utilize cloud for secondary storage scenarios e.g archiving.



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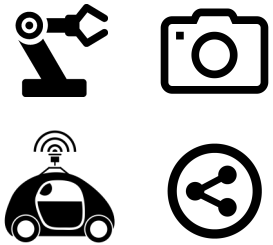
WHAT WORRIES YOU

COMPLEXITIES OF AI IN PRODUCTION

INGEST

From sensors, machines, & user generated



CLEAN & TRANSFORM

Label, anomaly detection, ETL, prep, stage

CPU Servers

EXPLORE

Quickly iterate to converge on models

GPU Server

TRAIN

Run for hours to days in production cluster

GPU Production Cluster

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The AIconics Awards 2017

Best Innovation in AI Hardware

WINNER

PURESTORAGE®

The AI Summit®
SAN FRANCISCO

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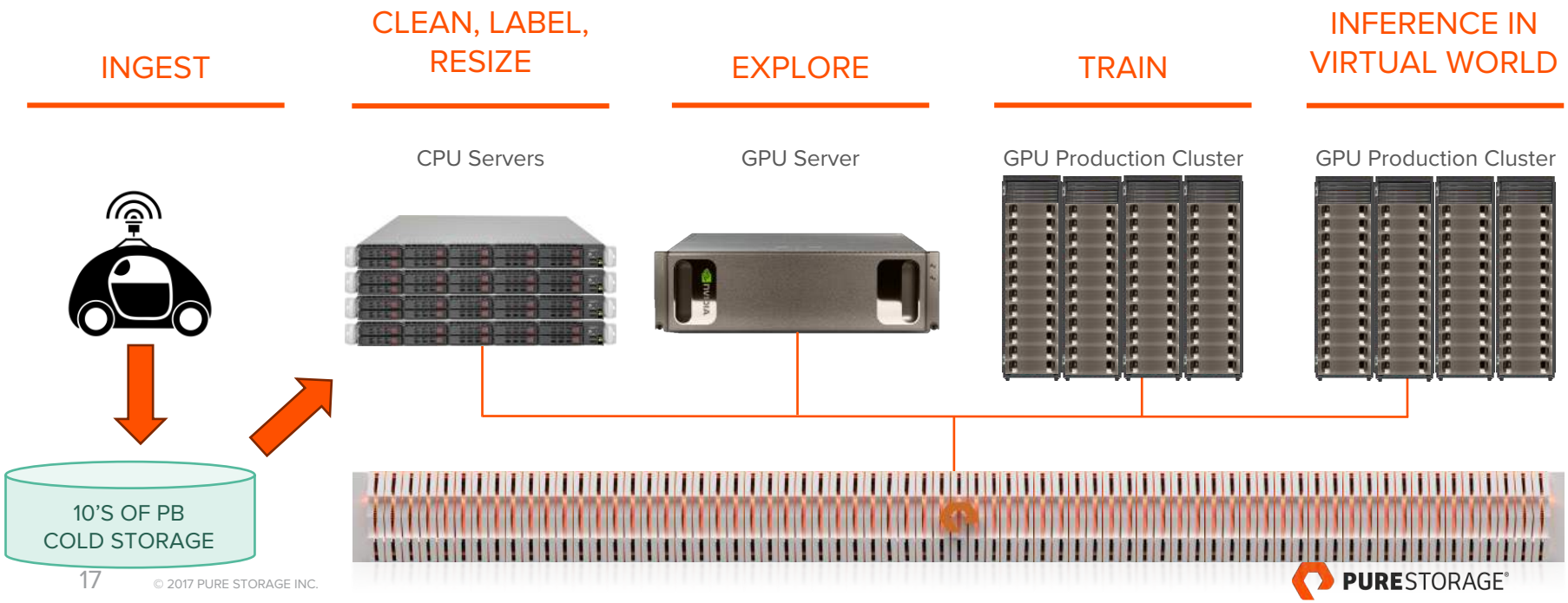
WE BRING TO YOU

REAL WORLD PIPELINE IN AN AUTONOMOUS CAR COMPANY



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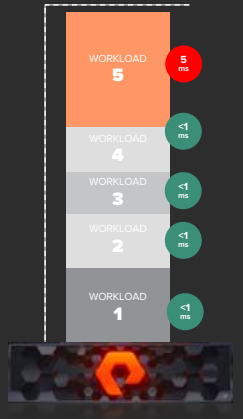
STEP 1:

SIMPLIFY AND AUTOMATE FROM THE START



ALWAYS-ON QoS

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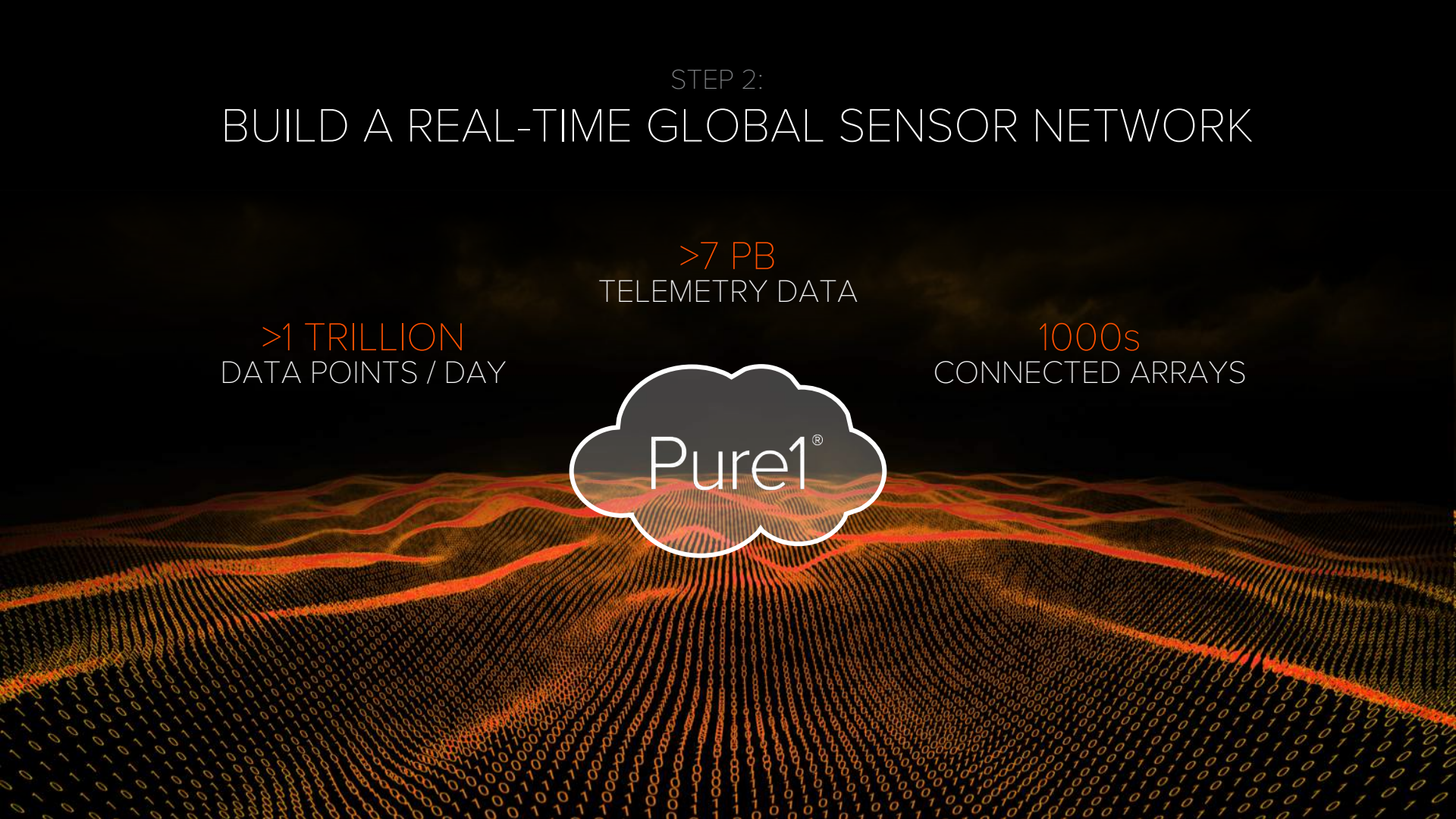
STEP 2:

BUILD A REAL-TIME GLOBAL SENSOR NETWORK



REAL-TIME ANALYTICS TO PREVENT ISSUES

>500 SEV-1s AVOIDED TO DATE!

FINGERPRINT
EACH KNOWN ISSUE
(NOW 100s)

SEARCH EACH ARRAY
IN REAL-TIME FOR ISSUES

MATCH!

YOU ARE
NOTIFIED

SUPPORT NOTIFIED,
TICKET OPENED

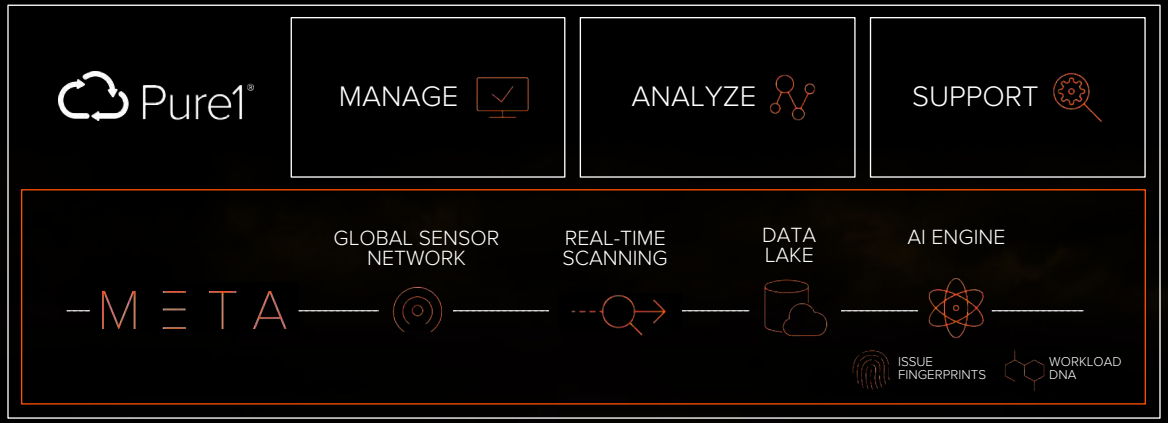
Pure1®

NEW INTRODUCING

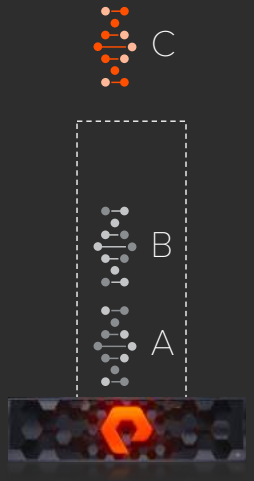
Pure1®

META

GLOBAL PREDICTIVE INTELLIGENCE

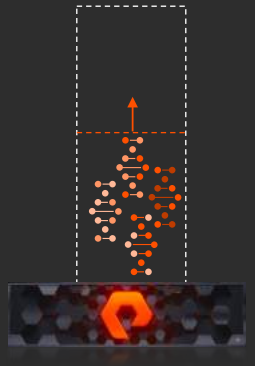


WILL A NEW WORKLOAD FIT?

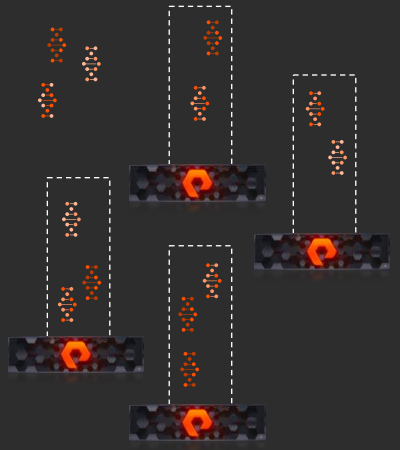


WILL A & B INTERACT WELL?

HOW WILL PERFORMANCE & CAPACITY GROW?



HOW CAN I OPTIMIZE PLACEMENT?



PULSE LEARNS FROM EVERYONE'S WORKLOADS TO MAKE BETTER PREDICTIONS

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NEW INTRODUCING

Meta Workload DNA

Workload DNA

>1,000 MEASURES

INLINE DEDUPE RATE	WRITE B/W
INLINE COMPRESSION RATE	WRITE IOPS
SPACE USAGE	WRITE I/O SIZE
TOTAL DATA REDUCTION	READ B/W
AND 100s MORE	READ I/O SIZE

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