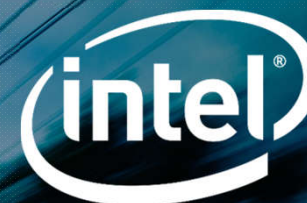


**Hewlett Packard
Enterprise**



THE FOUNDATION OF DATACENTER INNOVATIONS

Juan L Polo
Regional Account Director, Intel EMEA
Matosinhos, October 2018

Fórum Novas Tecnologias 2018 | 11 de outubro | Matosinhos

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4TH INDUSTRIAL REVOLUTION AN UNPRECEDENT DEVELOPMENT PACE



COAL & STEAM, IRON

1760's

STEEL → ELECTRICITY → OIL

1860's

ITC

1960's
JULY 18TH, 1968

JULIO 18TH, 1968

INFORMATION AND COMMUNICATION TECHNOLOGIES

1960's

Gordon Moore

of Intel

EXCLUSIVE

GOOD NEWS!

T

NVIDIA CEO Declares
GPUs will soon replace CPUs

<https://www.extremetech.com/computing/221111-moores-law-dead>

Intel May Lose Half Of Its Market
Share In 2 Years

is on the verge of a steady decline

<http://www.businessinsider.com/article/4075423-intel-may-lose-half-market-share>

Intel bloggers just
announced the end of the

winning game over for Intel

<http://uk.businessinsider.com/jon-gruber-intel-x86-dead-platform-walking-2015-11?r=US&IR=T>

Evolución financiera de intel



Others predict the future. At Intel, we're building it.

4TH INDUSTRIAL REVOLUTION AN UNPRECEDENT DEVELOPMENT PACE



WE ARE HERE



3RD INDUSTRIAL
REVOLUTION

COAL & STEAM, IRON

STEEL → ELECTRICITY → OIL

ITC

1760's

1860's

1960's

...WE ARE JUST AT THE BEGINNING OF THE INTEL VIRTUOUS CYCLE

3D PR

COGNITIVE
SYSTEMS

ROB



EXPERIENCES

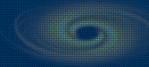
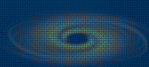
VIRTUAL,
AUGMENTED,
REALITY

WEARABLES

BIOMICS

RAIN

AUTONOMOUS DRIVING



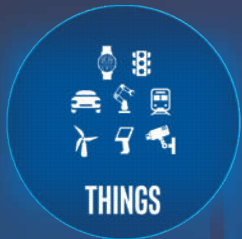
5G CONNECTIVITY

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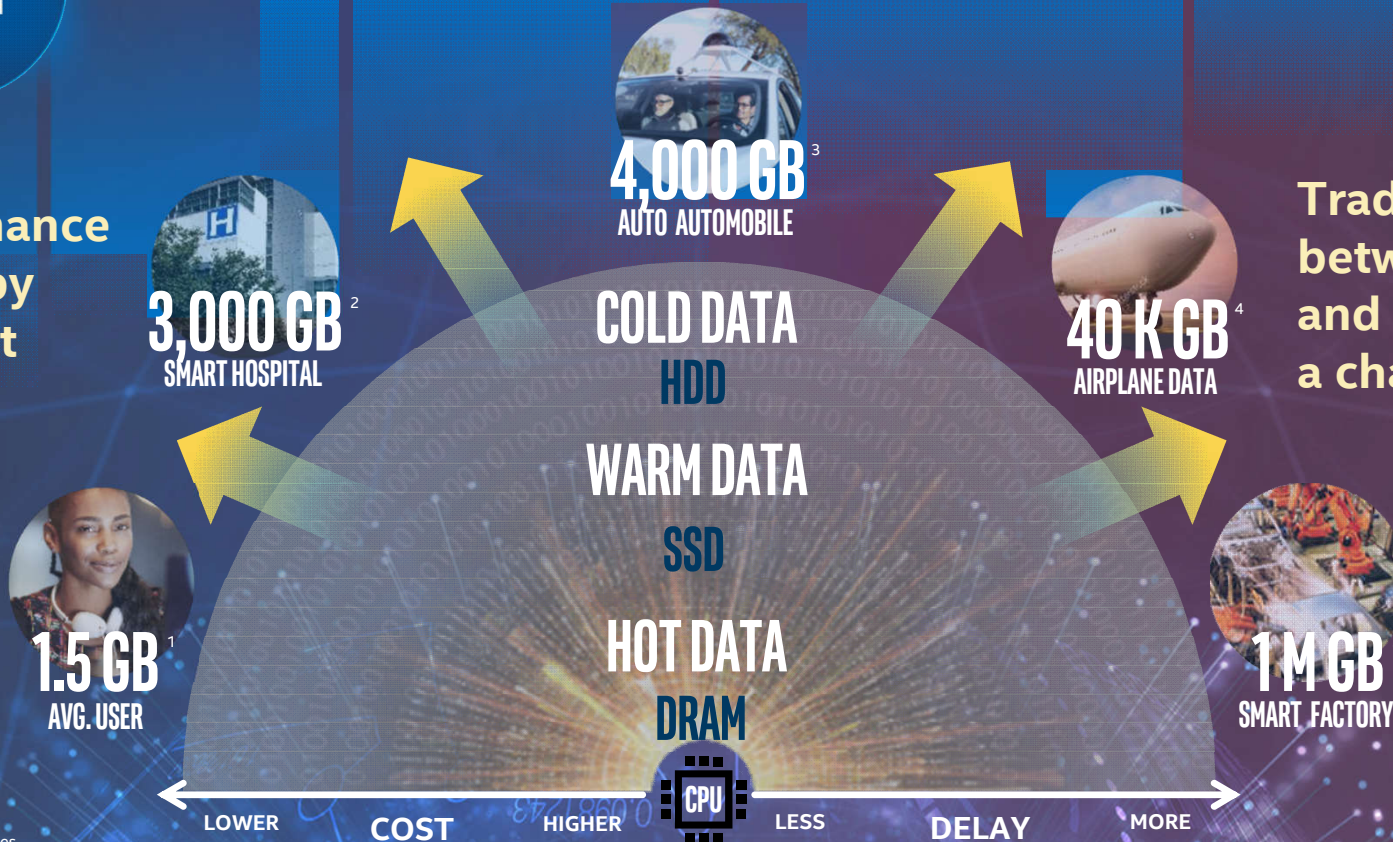


DATA EXPLODING EVERY DAY



**Cost-
Performance
Tiered by
different
usages**

**Traditional Gap
between 'Hot'
and 'Warm' still
a challenge**



Refer to Appendix for footnotes

1. Source: <http://www.cisco.com/c/en/us/solutions/service-provider/vni-network-tran>

2. Source: http://www.cisco.com/c/en/us/solutions/collateral/service-provider/global-cloud-index-gci/Cloud_Index_White_Paper.html

3. Source: <https://dataflopp.com/trend/self-driving-cars-create-2-petabytes-data-annually/172>

4. Source: http://www.research.com/k/aviation-and-cas/collateral/service-provider/global-cloud-index-gci/Cloud_Index_White_Paper.html

5. Source: http://www.cisco.com/c/en/us/solutions/collateral/service-provider/global-cloud-index-gci/Cloud_Index_White_Paper.html

INTEL NOW A DATA-CENTRIC COMPANY

DATA-CENTRIC INFRASTRUCTURE

MOVE FASTER

intel SILICON PHOTONICS
intel OMNI-PATH FABRIC
intel STRATIX 10 inside
intel ETHERNET

STORE MORE

intel OPTANE DC
SOLID STATE DRIVE
intel OPTANE DC
PERSISTENT MEMORY

PROCESS EVERYTHING



NEXT INTEL® XEON® SCALABLE PROCESSOR

CASCADE LAKE

WITH INTEL® OPTANE™ DC PERSISTENT MEMORY

Leadership performance

Support For  **OPTANE DC**
PERSISTENT MEMORY

Optimized Cache Hierarchy

Security Mitigations

Higher Frequencies

Optimized Frameworks & Libraries

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TWO KEY AREAS OF INVESTMENT

BREAKING THE BARRIERS BETWEEN MEDIA AND PLATFORM, RE-DEFINING THE MEMORY/STORAGE HIERARCHY

INTEL 3D NAND
TECHNOLOGY

LOWER COST & HIGHER DENSITY

"WARM DATA"

HARD DISK DRIVE

INTEL 3D NAND
TECHNOLOGY

INTEL® OPTANE™
TECHNOLOGY

DRAM

CPU

← LOWER

COST

HIGHER

LESS

DELAY

→ MORE

INTEL® OPTANE™
TECHNOLOGY

HIGHER PERFORMANCE

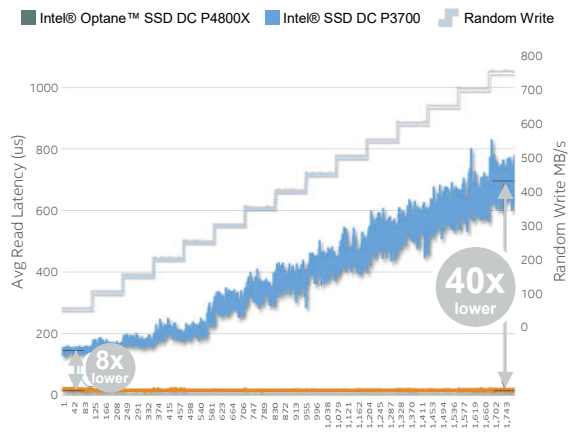
"HOT DATA"

3 REASONS WHY THE INTEL® OPTANE™ SSD IS THE IDEAL CACHING SOLUTION



LOWER AND MORE CONSISTENT LATENCY

Average Read Latency under Random Write Workload¹



HIGHER ENDURANCE

Terabytes Written Specifications (TBW)²

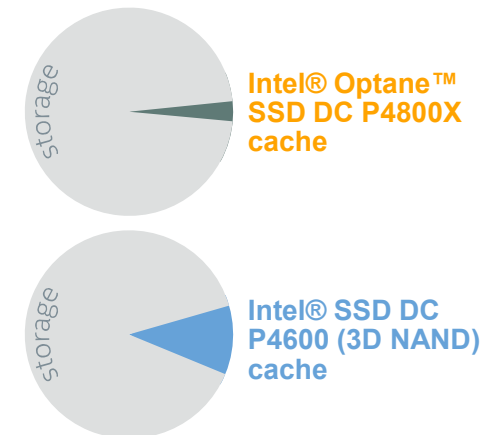
Intel® Optane™
SSD DC P4800X **60 DWPD**

Intel® SSD DC
P4600 (3D NAND) **2.9 DWPD**



MORE EFFICIENT

Cache as a % of Storage Capacity³



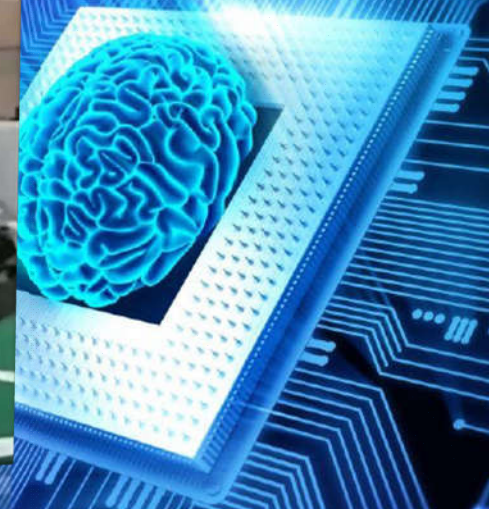
LOWER LATENCY + HIGHER ENDURANCE = GREATER SDS SYSTEM EFFICIENCY

1. Responsiveness defined as average read latency measured at queue depth 1 during 4k random write workload. Measured using FIO 2.15. Common Configuration - Intel 2U Server System, OS CentOS 7.2, kernel 3.10.0-327.el7.x86_64, CPU 2 x Intel® Xeon® E5-2699 v4 @ 2.20GHz (22 cores), RAM 396GB DDR @ 2133MHz. Configuration - Intel® Optane™ SSD DC P4800X 375GB and Intel® SSD DC P3700 1600GB. Latency - Average read latency measured at QD1 during 4K Random Write operations using fio-2.15.
2. Source - Intel Data Sheet: Random/JEDEC up to 2.9 DWPD (5 Years) / 21.7 PBW, sequential workload up to 4 DWPD (5 Years) / 29.2 PBW
3. Source - Intel: General proportions shown for illustrative purposes. Refer to slide 10 for a real-world example of cache to storage ratios

ARTIFICIAL INTELLIGENCE



"REAL" WILL SOON SOLVE "CR7" LEAVE !! 😊



IN SUMMARY...



FROM A PC CENTRIC TO A NEW *"DATA CENTRIC"* ORIENTED COMPANY



INTEL & HPE BREED OF TECHNOLOGIES TO STORE, MOVE & PROCESS DATA FASTER
(INTEL XEON TECHNOLOGY, INTEL AI, INTEL SDS AND PERSISTENT MEMORY)



OPPORTUNITY TO SCALE AND DRIVE ECONOMIES WITH SOFTWARE DEFINED STORAGE
HPE OPTANE PRODUCTS NOW CERTIFIED FOR VMWARE VSAN!



STRONG INTEL VALUE PRO IN ARTIFICIAL INTELLIGENCE
HARDWARE AND SOFTWARE STACK AND OPTIMIZATIONS



OBRIGADO!

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BACKUP