

# Speed up your Data Center

Intel® Optane™ Persistent  
Memory 200 Series

FUJITSU

## IT'S TIME TO TAKE THE RACETRACK

Sometimes it is good to be the spectator, but most of the time it is better to be the driver. Right now, it is the time to take the racetrack. Data is fueling digital transformation. There are growing and new workloads, that are driving transformation. Businesses benefit from new capabilities through the transformation such as minimizing risk and increasing future opportunities. But data also poses challenges. Large-memory systems are growing in prevalence and CPU core growth projection are increasing over time. Data-intensive workloads perform best when in memory, but DRAM is expensive and has limited capacity.



## BIG MEMORY BREAKTHROUGH FOR YOUR BIGGEST DATA CHALLENGES



### SAVE MORE

Displace Dram

Systems > 512 GB

Improve TCO

Workloads that need large  
and/ or persistent memory



### DO MORE

Increase memory size

Large memory or SW  
license fees per core

Consolidate workloads

High VM's with low CPU  
utilization



### GO FASTER

Break I/O bottlenecks

High disk I/O traffic

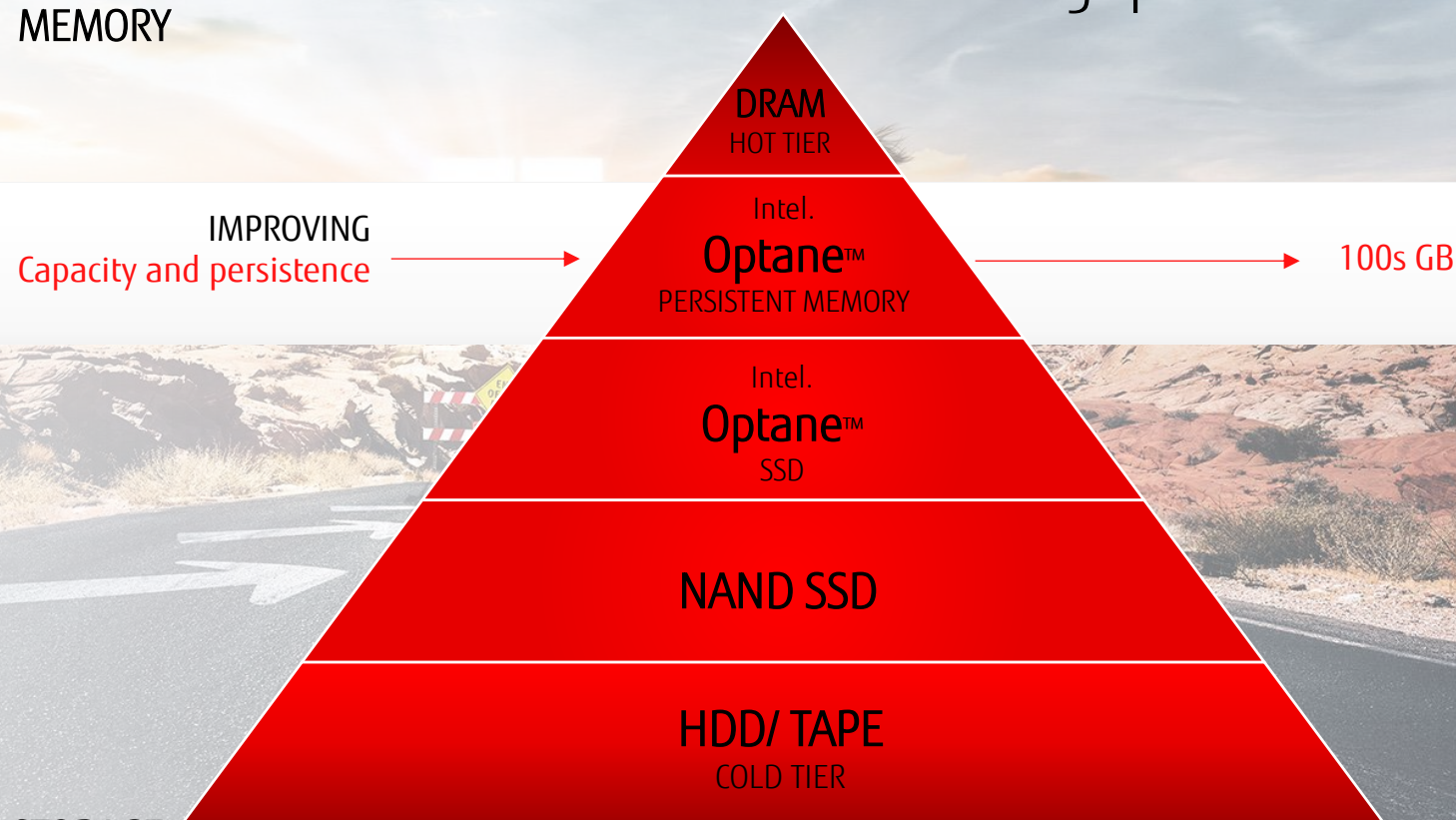
High-speed storage

Tiered storage  
subsystem

# Intel® Optane™ persistent memory (PMem) 200 series fills the DRAM gap

MEMORY

IMPROVING  
Capacity and persistence



STORAGE

Intel® Optane™ persistent memory (PMem) fills the DRAM gap with an innovative memory technology that delivers a unique combination of affordable large capacity and support for data persistence.

## Data Persistence for Memory

In contrast to DRAM, after a planned or unplanned restart data remains in PMem, which means less down time, fewer losses from system outages, and increased operational efficiency. This industry standard persistent memory programming model can be used to build simpler and more powerful applications to future-proof their data center investment.

## Secure Data at Rest

For data at rest the Intel® Optane™ persistent memory 200 series integrates strong, industry-standard hardware security encryption measures. Application-transparent AES-256 encryption secures all data at rest in persistent memory with no software code changes and minimal impact on performance.

## Affordable Large Capacity

Intel® Optane™ PMem 200 series increases the utility of each server by enabling more value to be extracted from larger data sets. In-memory databases can access more data at DRAM-like speeds, and workloads processing massive data sets, such as scientific or data warehousing and analytics, can work continuously without repeatedly loading and storing data locally. Additionally, Intel® Optane™ PMem can offer greater memory capacity per socket than DRAM for virtualized data center infrastructures, so that leaving more headroom for virtualizing future workloads requiring larger memory capacity.

# Intel® Optane™ Persistent Memory in the Data Center

## DATABASE

### Efficient In-Memory Databases



Up to  
**2.4X**  
Performance Gain vs.  
3-Year Old Servers<sup>7</sup>

### Accelerated Performance Through Expanded Capacity



Up to  
**10X**  
Faster queries in  
memory<sup>7</sup>

## Virtualized Infrastructure

### Denser Hyper-Converged Infrastructure



Up to  
**87%**  
More VDI users  
with Optane<sup>8</sup>

### More Virtualized Database Instances



Up to  
**36%**  
More VDI at  
Similar Cost<sup>8</sup>

## Drive Application Innovation and Explore New Data-Intensive Use Case with this Best-in-Class Product

With Intel® Optane™ PMem 200 series it is possible to have direct load/store access to it and can drive new innovation and capabilities using the same persistent programming model introduced with the first generation of PMem. Rapid adoption is easy and customers are able to take full advantages of its capabilities with a growing global ecosystem of ISVs, OSVs, virtualization providers, database and enterprise application vendors, data analytics vendors, open source solutions providers, Cloud Service Providers, hardware OEMs, and standards bodies, such as the Storage Network Industry Association (SNIA), ACPI, UEFI, and DMTF.

### Operational Modes

Intel® Optane™ PMem 200 series has multiple operating modes:

#### Memory Mode:

- Higher system capacity vs. DRAM and/or lower TCO
- No App changes required
- Encryption key is trashed & volatile data cannot be logically located/accessed after power cycle
- OS sees MM as total Memory capacity, not DRAM; DRAM as directmapped Cache

#### App Direct Mode:

- Fast Recovery from power loss, RDMA for persistent data replication
- Byte Addressable Memory, Apps manage exposed PMEM regions via DAX calls
- OS sees DRAM + AD as total Memory capacity
- OS/VMM Requires PMEM aware file system



# OUR RACETRACKS IN THE SERVER STREETS

FUJITSU Server PRIMERGY line-up available with  
Intel® Optane™ Persistent Memory 200 Series



RX2530 M6

RX2540 M6

RX4770 M6

CX400 M6  
with CX2560 M6

## WHICH RACETRACK DO YOU TAKE?

Driving the digital transformation  
with full speed

For further information please visit:  
 [www.fujitsu.com/primergy](http://www.fujitsu.com/primergy)



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2021-03-23 [INT] [EN]

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