

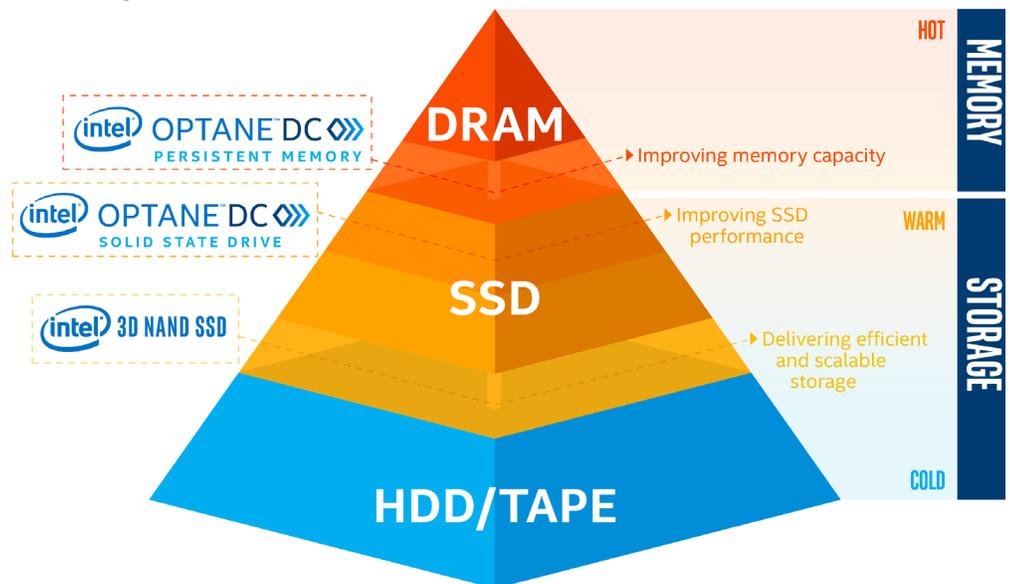
Redis Enterprise and Intel® Optane™ DC Persistent Memory

Breaking the Cost and Capacity Barrier

Intel® Optane™ DC persistent memory is a unique new memory tier that delivers attributes of both storage and memory. Redis Enterprise is optimized for this new byte-addressable memory technology, allowing it to provide the same record-breaking sub-millisecond performance for which it is revered, but at dramatically lower infrastructure costs than DRAM-only system configurations. As a result, organizations can bring massive data sets closer to the CPU, accelerating their application modernization journeys and delivering engaging new customer experiences.

A Revolutionary New Memory Tier

Intel® Optane™ DC persistent memory packages Intel Optane media in a DIMM form factor with module sizes up to 512 GB, several times larger than what today's DDR4 memory supports. Because this new technology is byte-addressable, memory is mapped directly into applications' address spaces, enabling direct data access for reads and writes and providing far lower latency than conventional storage.



Pain Points

- High cost of DRAM is prohibitive for large in-memory databases
- Businesses respond by splitting datasets over multiple data services, hindering performance and adding complexity

Why Intel® Optane™ DC Persistent Memory & Redis Enterprise?

- 128, 256, and 512 GB modules available, enabling larger memory capacities than ever before
- Two operating modes (volatile Memory Mode and persistent App Direct Mode) to extend memory and persist data
- Full data set can be deployed in a single in-memory database

Benefits

- Same sub-millisecond performance as DRAM only, but at dramatically lower TCO
- Large datasets reside closer to compute, eliminating the latency impact of storage
- Improved outcomes across use cases that rely on real-time analytics such as fraud mitigation, personalization, and risk prediction

Redis Enterprise Is Uniquely Suited for Intel® Optane™ DC Persistent Memory

Redis Labs worked very closely with Intel to optimize Redis Enterprise for Intel® Optane™ DC persistent memory. This collaboration benefited from the fact that Redis Enterprise is also byte-addressable, a core architectural characteristic that provides Redis Enterprise with an enduring advantage over traditional disk-based databases, which are inherently limited by serialization and deserialization overheads as well as the relatively long access times of disk-based data structures.

Intel® Optane™ DC persistent memory has two operating modes:

- Memory Mode
- App Direct Mode

Redis Enterprise, along with Redis on Flash, is optimized for both modes.

Benchmark Testing Shows **43% Savings** in Memory Cost

	Test 1 (DRAM-only configuration)	Test 2 (new Intel memory tier)
System configuration	CPU: Intel® Xeon® Platinum 8280 Processor Memory: 1.5 TB DDR4 DRAM Memory	CPU: Intel® Xeon® Platinum 8280 Processor Memory: 192 GB DDR4 DRAM Memory + 1.5 TB Intel Optane DC Persistent Memory
Redis Enterprise work-load and dataset	6 billion keys, 100 billion values 50/50 read/write ratio, random access 1 TB total size	6 billion keys, 100 billion values 50/50 read/write ratio, random access 1 TB total size
Throughput	1 M ops/second	1 M ops/second
Latency	<1 Msec	<1 Msec
Savings in memory cost		43% less

About Redis Labs

Redis Labs is the home of Redis, the world's most popular in-memory database, and commercial provider of Redis Enterprise. Our enterprise version of Redis delivers superior performance, matchless reliability, and unparalleled flexibility for high-speed transactions, recommendation engines, data ingest, fraud mitigation, real-time indexing, session management, caching, and more.

Get started with Redis Enterprise on Intel® Optane™ DC persistent memory today!

Learn more about Intel® Optane™ DC persistent memory:
www.intel.com/OptaneDCPersistentMemory

Talk to a Redis Enterprise expert:
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