



EMBRACING THE DATA ERA

Why Now is the Time to Reconsider your Storage Strategy

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INTRODUCTION

The data era is upon us, and it affects companies of every size, in every industry, in every part of the world. Today's organizations have two basic options: Keep throwing disks at growing data volumes, or develop a modern storage strategy that treats data as the valuable business asset it can be.

Storing massive amounts of data isn't the only reason to reconsider your storage strategy. A modern storage strategy can also enable you to support new technology requirements in the future, as well as the ones that are already waiting on your doorstep:

- **Ingesting** data from IoT sensors and smart devices
- **Supporting** machine learning and artificial intelligence
- **Protecting** assets from sophisticated cybersecurity attacks
- **Processing** complex data analytics workloads that in turn create more data
- **Capturing** market data from disparate sources
- **Logging and aggregating** customer data from multiple channels—from device preferences and browsing behaviors to purchase history and social media sentiment

You'll be expected to deliver these and other services at speed and at scale.



The key to success? A holistic, outcomes-based storage strategy that supports a flexible, high-performance IT infrastructure.



Amount of data generated every day:



3 TB of data



4 TB of data



1,000 TB of data

THE NEW ROLE OF STORAGE

In the data era, hospitals are generating 3 TB of data every day.¹ Vehicles are generating 4 TB.² Factories are generating 1,000 TB!¹ Providing storage for this data can no longer be considered a grudge purchase. It's not just something to be checked off the compliance list, or treated as simply an overhead item in the IT budget. Storage is arguably even more critical than your network or servers. After all, you can rent server resources from the cloud in minutes.

Data is a dynamic component that grows and changes by the second, is constantly in motion, and serves every corner of the company. And it holds particular value for companies that know how to use it to uncover insights that directly impact the bottom line. Properly handled, data can facilitate business operations, lead to a better understanding of customers, and drive strategic product development efforts. In fact, storing data is merely the first step in your data storage strategy.



TACKLING TOMORROW'S WORKLOADS

What does a holistic outcomes-based data strategy look like? It supports every process your data can go through in a given day, from initial ingest, processing, sorting, tiering, and storing, to feeding multiple analytics workloads that in turn create more data to be processed, sorted, tiered, stored, and analyzed.

Of course, even when you're finished with the data, you're not really finished. As the cost of high-volume storage has come down, we have become a world of data hoarders. Whether for compliance, future analysis, or simply "we might need it later" purposes, more organizations are keeping more data longer—in some cases, forever.

All of these functions serve a broader purpose, because the more value you derive from your vast amounts of data, the more effective your business can be. Being a data-centric organization enables you to be customer-centric organization, often in profound ways that can differentiate you from the competition.

But you can't become a data-centric organization using legacy systems with dismal performance, disparate infrastructures that create disconnected siloes, and data stores that are unorganized and inaccessible to the people who need them. You have to position the data at the point of need and deliver it at a speed commensurate to its importance—based on established business objectives and a deep understanding of the different types of data and the functions they serve.

Many of today's technologies make it difficult to address these challenges. DRAM provides high performance but is much too costly and volatile to store meaningful amounts of data. Legacy HDDs are more affordable but aren't nearly fast enough, often forcing IT organizations to choose between performance and capacity. As you move data to bulk storage, you lower your costs but you also introduce latencies that significantly impact responsiveness and productivity. The situation calls for a dramatic storage transformation that equips you with the latest innovations in storage, providing effectiveness and flexibility and enabling data monetization.





Bottom-line impacts:

- 1 Higher productivity
- 2 Smarter spend
- 3 Increased agility
- 4 Higher quality of service

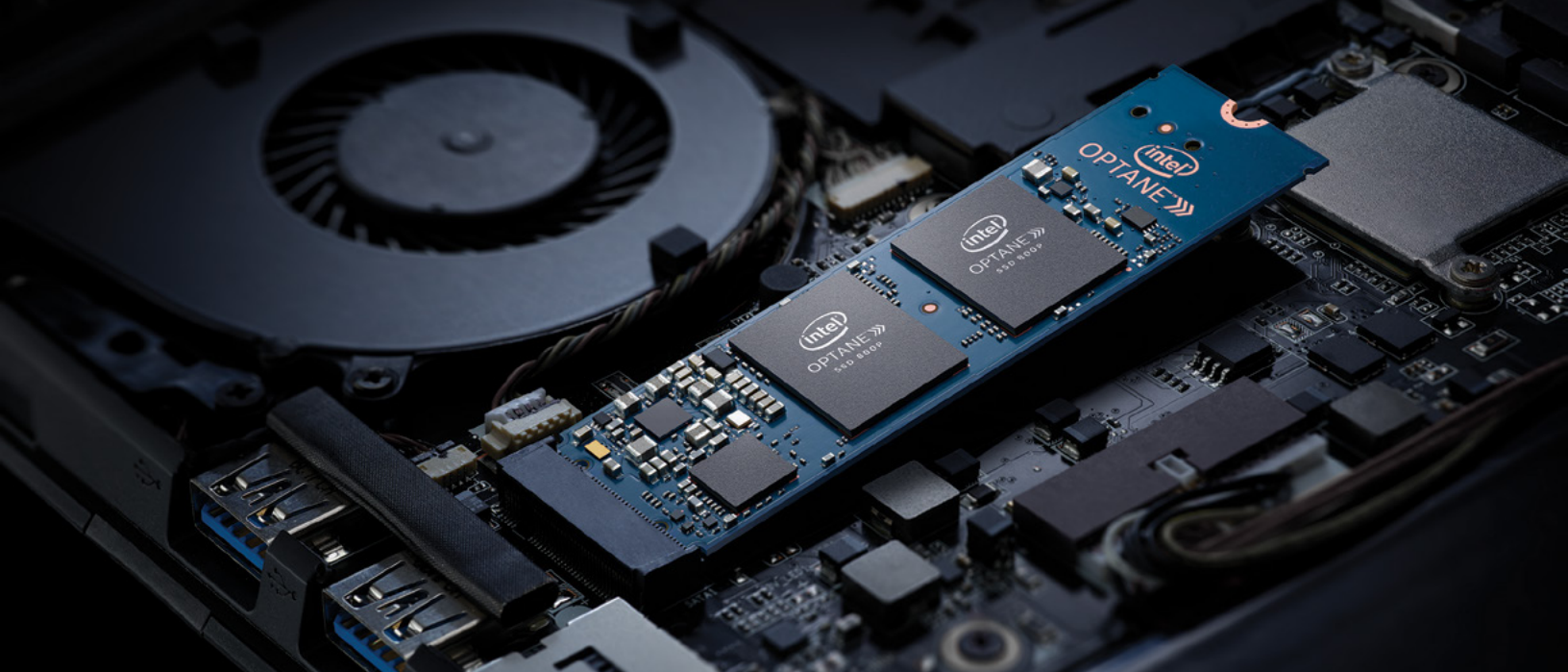
THE BENEFITS OF STORAGE TRANSFORMATION

A modern storage infrastructure provides many benefits across the entire data lifecycle, and these benefits can be felt across the organization:

- **Individual users** can quickly access the data they need from wherever they are, driving higher productivity and improved collaboration
- **Product and marketing departments** can make more informed decisions based on the latest business intelligence, driving smarter spend and faster time to market
- **Customer service departments** can have more meaningful interactions, driving customer conversion and retention
- **IT organizations** can simplify management, optimize workloads for higher quality of service, and make better use of data center resources, driving cost efficiency

And at the end of the day, executives and other stakeholders can see bottom-line impacts rolling up from all corners, as higher productivity, smarter spend, increased agility, and higher quality of service create cost efficiencies and generate revenue.

Finally, a modern storage infrastructure is one that is future-ready, so organizations don't waste time reinventing the wheel (or the data center) every time a new requirement comes along, or every time you have to grow the system.



MEET INTEL® OPTANE™ SSD

Intel® 3D-XPoint™ technology is the first all-new class of memory in 25 years, revolutionizing the speed of Intel® Optane™ storage. It can be used to create a new tier in the storage and memory infrastructure—one that helps bridge the existing gap between DRAM and bulk storage.

As workloads become more speed-sensitive and data-intensive, Intel® Optane™ and 3D NAND create a new standard for fast and predictable quality of service. No longer is storage the bottleneck of the system. Used as a complement alongside Intel® Xeon® Scalable based infrastructure, Intel® Optane™ SSD and Intel® 3D NAND storage technology transforms the economics of storage infrastructure with unprecedented balance of scalability, performance, and flexibility of choice. This combination of technologies can accelerate your data-intensive applications, reduce transaction costs for latency-sensitive workloads, and improve overall data center TCO.

Intel® in the Real World

Some of the most important applications of today's high-performance computing platforms—and the most dramatic results—are in the realm of medical research. One university in Europe is using the latest Intel® technologies to research degenerative brain diseases that affect millions of people around the globe.

This research relies heavily on analyzing large numbers of patients' brain scans, such as MRIs. The team uses a method called “under-sampling” to extract valuable patient data from smaller data sets, then creates larger and more balanced data sets by applying pre-calculated values. These tasks require substantial processing power, advanced system memory, and fast storage capabilities.

To accommodate these large-scale data sets and support the associated research workloads, the team at the university deployed Intel® SSDs in their scientific computing environment. MRI scans of patients now render in two minutes instead of 40, and the low-latency Intel® Optane™ technology speeds the associated computations, accelerating this potentially life-changing research.



PUTTING IT ALL TOGETHER

Your storage infrastructure is key to business success—every bit as important as your servers, your applications, and your network—and the technology at the foundation of it can make all the difference.

Storage requirements and technologies can be complex and confusing. It helps to have a strong technology partner. An enterprise technology leader like Intel® can help you take advantage of the latest innovations, like Intel® Optane™, helping your organization make the most of the data you have—and the data that's coming.

Ready to find out how Intel® Optane™ supports a modern storage infrastructure?

[DOWNLOAD EGUIDE](#)



Sources

¹ "Cisco Global Cloud Index: Forecast and Methodology, 2016–2021 White Paper," Cisco, February 1, 2018. <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/global-cloud-index-gci/white-paper-c11-738085.html>

² van Rijmenam, Mark, "Self-driving Cars Will Create 2 Petabytes Of Data, What Are The Big Data Opportunities For The Car Industry?" Datafloq, July 18, 2017. <https://datafloq.com/read/self-driving-cars-create-2-petabytes-data-annually/172>



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* 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 396 GB DDR @ 2133MHz. Intel drives evaluated - Intel® Optane™ SSD DC P4800X 375GB and Intel® SSD DC P3700 1600 GB. Samsung drives evaluated – Samsung SSD* PM1725a, Samsung SSD* PM1725, Samsung* PM963, Samsung* PM953. Micron drive evaluated – Micron* 9100 PCIe* NVMe* SSD. Toshiba drives evaluated – Toshiba* ZD6300. Test – QD1 Random Read 4K latency, QD1 Random RW 4K 70% Read latency, QD1 Random Write 4K latency using FIO 2.15.