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Unleashing the Power of Your Data

for
dummies
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Eliminate disruptions
and guesswork



Become data driven



Free your data for
hybrid cloud



Steve Kaelble

HPE Special Edition

About Hewlett Packard Enterprise

Hewlett Packard Enterprise is a global technology leader focused on developing intelligent solutions that allow customers to capture, analyze and act upon data seamlessly from edge to cloud. HPE enables customers to accelerate business outcomes by driving new business models, creating new customer and employee experiences, and increasing operational efficiency today and into the future.



Unleashing the Power of Your Data

HPE Special Edition

by Steve Kaelble

**for
dummies®**
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Unleashing the Power of Your Data For Dummies®, HPE Special Edition

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Introduction

Extracting business value from data is the key to a successful enterprise digital transformation strategy. Your business collects, processes, and stores mountains of data every day. Buried within that data are insights that empower your organization to reach new customers, develop and deliver new products, operate more efficiently and more effectively, and develop new business models.

Data holds the power to transform your business — but only if it can be refined and accessed when and where it's needed, edge to cloud. It's about unlocking the value and agility of all your data. To achieve that goal, you need an intelligent data strategy, backed by an intelligent data platform.

This approach accelerates applications with data that is always fast and always on. It harnesses the agility of clouds so data can be moved and the cloud experience can extend everywhere. And data innovators are able to unlock the powerful insights that can drive businesses forward.

About This Book

This book starts with a high-level look at the criticality of data and the challenges facing business and IT. It also examines how intelligence changes everything, the role of an intelligent data strategy, and how your business and IT can be transformed with an intelligent data platform at the heart of this strategy. Success boils down to nine key questions your organization needs to answer. You'll find answers to these questions throughout this book, which you're welcome to read cover to cover, or by jumping around from place to place:

- » Do you have a data strategy? (Chapter 1)
- » What elements make up an intelligent data strategy? (Chapter 2)
- » What makes up an intelligent data platform? (Chapter 3)

- » Is your infrastructure able to predict and prevent problems before they occur? (Chapter 3)
- » Is your data residing on infrastructure that's designed to be high performing and available? (Chapter 4)
- » Do you have a data protection strategy? (Chapter 4)
- » Can you achieve data agility while enabling hybrid cloud? (Chapter 5)
- » Are you getting the most value from your data? (Chapter 5)
- » Are you optimizing the cost of storing that data at each step of the life cycle? (Chapter 5)

Foolish Assumptions

It has been said that most assumptions have outlived their usefulness, but I assume a few things nonetheless! Mainly, I assume that you have a somewhat technical background and work for an enterprise that, like many, is looking for an intelligent and innovative solution to address data challenges in its digital transformation and cloud computing journey.

Icons Used in This Book

Throughout this book, I use a couple of special icons to call attention to important information. Here's what to expect:



REMEMBER

This icon points out important information you should commit to your nonvolatile memory, your gray matter, or your noggin — along with anniversaries and birthdays!



TIP

Tips are appreciated, never expected — and I sure hope you'll appreciate these useful nuggets of information.

Beyond the Book

If you finish the book and think, “I still need to learn more,” check www.hpe.com/intelligentdata.

IN THIS CHAPTER

- » Transforming business with data
- » Understanding what it means to be data driven
- » Recognizing the obstacles that may prevent you from unleashing the power of your data
- » Realizing the importance of your organization's data strategy

Chapter 1

Changing the Game with Data

In a world where everything is digital, how you use your data becomes the key area of competitive differentiation — how fast, how available, how actionable, how intelligent, how innovative. This chapter explores how data drives innovation in game-changing ways and why it's the heart of everything you do. Read on for discussion of your data strategy. I explore why your strategy needs to build in intelligence in the next chapter.

Using Data to Transform Business

The companies creating the greatest disruption in their industries are the ones that use data in unique and innovative ways. They've been able to infuse data into supply chains, distribution models, product development, manufacturing, marketing, sales, and more.

They've used data to identify customer needs and incorporate customer insights into product development. They've created an endless loop of customer input to create unique experiences

that keep evolving as they gather more intelligence about what customers want and how they're responding. They've used data to accelerate revenue, reimagine customer experiences, improve operational efficiency, and speed innovation.

Some real-world examples show how this works in practice. Think of how your perceptions of TV watching, taxis, and vacation rentals have radically changed over the years. Before, it was Blockbuster for DVD or even VHS rentals. You'd go to the store, only to find that what you wanted to rent for movie night wasn't available. You may remember the days of standing in the rain on a busy street to hail a cab, or staying in a town where cabs didn't even exist. And for that weekend getaway or big vacation, you had to make a bunch of phone calls to hotels and rentals, taking up your precious time.

Now Netflix, Uber, and Airbnb all use data to not only innovate, but also disrupt and ultimately transform your experiences — and they have forever reset your expectations. Now you can endlessly binge the movies you want, wherever you are. You can hail a ride from what seems like anywhere you are to wherever you want to go, just by using an app. And you can choose from a variety of different accommodations that match your budget and travel preferences, including options you may not have even considered a few years back.

And it's not just these new entrants that are using data to both disrupt and transform. Traditional businesses such as Domino's — which, for years, you probably thought of for delivering pizza quickly — continue to transform digitally. Now everything from apps to artificial intelligence (AI) are helping get pizza to its customers quickly. Domino's is using technology and, most important, data to stay out in front of its competition.

There are numerous stories just like these, but these examples help illustrate the power of data and how businesses are able to transform by unlocking new levels of agility and insights to power business.

Recognizing That Data Is at the Heart of Everything You Do



REMEMBER

Data is at the heart of everything you do in your organization, and it's unlocking potential in practically every industry. For example:

- » In healthcare, data enables advances in research, treatment, care plans, and procedures that can save lives and improve quality of life.
- » In education, data helps create new interactive-learning experiences.
- » In retail, data brings about highly personalized customer experiences with accelerated development and delivery extending to distributed locations where skilled IT can be in short supply.
- » In financial services, data enables better credit decisions, improved risk analysis, more effective threat identification, and a better handle on compliance.

Today, businesses are either data driven or striving to become data driven. In the following sections, I unpack what this means.

Accelerating applications

It starts with the applications that businesses use to transform and innovate where data needs to be always on and always fast. Through the entire life cycle, your innovators and customers expect data to be seamlessly ingested and then served with consistency and speed. And this is even more important as you consider the mission-critical and business-critical apps upon which you and your customers rely.

Protecting your data

Like it or not, you're exposed to data vulnerability and heightened ransomware risk. IT can't let data and security vulnerabilities be exposed and exploited. Cybercriminals are using any and all opportunities to attack businesses and hold data hostage.



Many organizations haven't modernized their data protection, making it critical to ensure that their data is safeguarded and recoverable. Modernizing data protection can be a long endeavor, so IT needs solutions that can quickly and easily protect them. And you should be making sure you have a way to get value from your backup data.

Enabling hybrid cloud

Next is the agility, flexibility, scalability, and on-demand experience that comes with the cloud. You may have started or considered a "cloud-first" approach, but businesses are now actively in a hybrid reality.

Data silos will persist, however, if you're not taking the right steps. Your data must be able to freely move and be accessed, on- and off-premises, enabling hybrid cloud.

Powering your edge

The concept of the data center in its traditional sense is changing, as data is increasingly generated and stored at the edge. Banks, retailers, energy companies, hospitals, and educational institutions are all capturing and accessing real-time data at the edge to automate operations, make better business decisions, and improve outcomes.



You have the chance here to get closer to your customers and even a new set of remote workers and to harness and understand data at its source. At the same time, you'll likely face challenges as you look for ways to efficiently store and manage increasing quantities of data in the far reaches of your IT environment.

Ultimately, your data needs to be accessible at the edge, even when resources are scarce or locations are remote — all in a way that's simple and efficient.

Unlocking insights with artificial intelligence and analytics

Businesses are using data to deliver actionable insights and predictions using machine learning (ML) and AI, but they may differ in terms of where they are in their transformational journey. Some businesses are adopting these technologies, while others

are starting to make the move to integrate ML into business applications and processes to scale ML across the enterprise — and that can be challenging. Additionally, for those businesses with highly performant workloads, such as autonomous cars, medical imaging, and video production, you also need capacity and performance-optimized infrastructure to enable those high-performance workloads.

With the right data platform, you have the chance to help your innovators be empowered to use data to unlock insights that you use to propel your business forward.

Overcoming Obstacles

But every business is different and faces unique obstacles that stand in the way of accelerating apps, gaining agility, and unlocking the insights that are used to drive the business. What's standing in your way of becoming more data driven, where you're able to unleash the power of your data?

Tackling infrastructure complexity

Infrastructure complexity certainly can hold you back. When it comes to IT infrastructure management and the complexity associated with it, you can have storage that's reliable and performant, but that's addressing only a fraction of the problem.

According to an April 2019 survey from IDC on server and storage availability, greater than 90 percent of issues arise above the storage layer — server, network, and virtualization stack issues can still impact overall availability and performance of apps. Hundreds or even thousands of variables can contribute to application disruption, requiring millions of simulations to be done to correlate and pinpoint where issues are occurring within all these layers. This is a problem way too complex for humans to solve.



REMEMBER

Fortunately, there's a better way. With AI-driven intelligence, your infrastructure can ease the burden on IT teams and solve business problems by continuously learning in its surroundings. This reduces complexity, optimizes your environment, and significantly lowers costs by self-managing and optimizing IT infrastructure.

Ending IT firefighting

IT firefighting is another good way to slow productivity. From being awakened in the middle of the night to resolve issues you didn't see coming, to day-to-day distractions that arise in which you're having to manually tune and optimize your environment, this problem is far too complex for humans to solve.



REMEMBER

An intelligent data platform collects data not just from storage devices, but from servers, virtual machines (VMs), networks, and other infrastructure elements across the stack. It applies AI and ML to spot what's not right in order to predict and prevent issues. It uses predictive analytics to anticipate and prevent issues across the infrastructure stack and to speed resolution when issues do occur. For IT, this helps greatly reduce the constant firefighting, so you can turn your attention to areas that matter most and to keep your infrastructure optimized.

Breaking down data silos

Data silos can limit agility. Businesses are striving to gain agility, but with data spanning core, cloud, and edge, being able to access, move, and protect that data everywhere is complicated. IT needs a way to deliver consistent data services and consume services, matched with the needs of the business.

Balancing skills and resource constraints

Some problems inhibit innovation. There's the drive to do more with less, putting ever-increasing pressure on IT as you aim to support the most critical initiatives that drive innovation. This situation is incredibly challenging.

The list goes on, and every business is at a different stage of transformation, but it's important to identify what's really standing in your way as you find actionable ways to remove these obstacles, free your data for hybrid cloud, and ultimately allow IT to help advance the business. To keep that heart beating strongly, the right data strategy and platform are vital.



REMEMBER

As I mention in the Introduction, your organization's journey toward tapping into the full potential of data, toward really putting data at the heart of all you do, starts with a series of questions. (In the following section, I outline the first of these questions.)

Your answers to these key questions will help create the road map for your data transformation. You'll even find answers right in the pages of this book.

The good news is that many of your data-related questions can be answered with the right strategy matched with an intelligent data platform, and that's something that already exists today.

Question 1: Do You Have a Data Strategy?

If you don't have a data strategy, now's the time to really give this subject some thought. Here's why: Proceeding without a clear data strategy is kind of like going to the grocery store hungry, without a shopping list. You're likely to impulse-buy something that may be satisfying in the short term but not so great for your long-term health.

Without a clear data strategy, your organization may continue to spend on infrastructure and technology solutions that don't work together to carry you into a healthy and prosperous future.



REMEMBER

The key to that transformation is accelerating the apps that power your business, so data is always on and always fast. You want to achieve agility so the business can go even faster. You need to power your edge, even when resources are scarce, in a way that's simple and efficient. And you need to be prepared to accelerate innovation and propel the business forward with AI and analytics.

Ultimately, data that extends on-premises, across the cloud, and at the edge underpins everything that the business is seeking to do. And this is where intelligence becomes a game changer.

In the next few chapters, I review the elements that make up an intelligent data strategy. I cover what it takes to have an intelligent data strategy. And I share what makes up an intelligent data platform. Finally, I offer real-world use cases you can consider as you look for new ways to unlock the value and agility of your data.



REMEMBER

One more key before taking another step forward: All this may sound pretty amazing and futuristic. But what I cover in this book is not just theoretical, not science-fiction. These remarkable things exist *today*, and the pages ahead include examples of actual solutions available to you now, such as the Intelligent Data

Platform from HPE (www.hpe.com/intelligentdata) that's AI-driven, built for cloud, and delivered as a service. As I explain in this book, solutions such as this one can help customers simplify and be always on with AI-driven intelligence, as well as unlock the value and insights from their data, while gaining agility by delivering a cloud experience everywhere and helping you keep your business out in front.



REMEMBER

Don't forget to begin with a clear data strategy. If you don't, oh, you'll find plenty of ways to spend your money on infrastructure and solutions. But will they achieve what you're hoping? Will they work together? Will they position your organization to be a future case study of what went right?

Just as important, will rudderless forward movement lead you down an uncharted path? Will your solutions create exposure or impact the apps that power your business? Will they make your infrastructure hopelessly complex? Will they create new silos? That's why you need not just a strategy, but an intelligent data strategy.

You need to remain armed with a set of vital questions that you must think through as you move forward into the future and start to unleash the value and agility that your data strategy will unlock.

- » Understanding and defining the elements that make up an intelligent data strategy
- » Driving your strategy with an intelligent data platform
- » Harnessing the power of intelligence
- » Recognizing the value of AIOps

Chapter 2

Establishing an Intelligent Data Strategy

It's so important that it bears repeating: Data is at the heart of virtually everything you do, and you need a clear data strategy. This chapter walks further down that path, exploring the elements that make up not just a data strategy, but an *intelligent* data strategy, as well as an intelligent data platform to deliver on that strategy. I also take an initial look at the second major question your organization must ask and answer about unleashing the power of your data.

Establishing an Intelligent Data Strategy

In Chapter 1, I establish just how vital it is that you have a clear data strategy in place, but becoming data driven isn't something that just magically happens — it takes intent. Especially when you're up against some of the obstacles you face as you balance the needs of the business. For example:

- » End-to-end infrastructure complexity hampers your IT productivity.

- » Constant IT firefighting results in disruptions and slows down the business.
- » Data — regardless of type, location, or volume — needs to be accessed with speed and reliability so your innovators can use it to drive the business forward.
- » You're exposed to security vulnerabilities and ransomware attacks.
- » You're often forced to do more with less.
- » Data relies on both existing and new approaches, which can impact application availability, performance, and your overall experience.



REMEMBER

Your intelligent data strategy needs to be ready to address a variety of headwinds and business needs straight-on. Your strategy opens the door to rethinking how your technology systems serve the organization that you use to unleash the power of your data. It should provide you an opportunity to become the change agent your business needs to accelerate transformation with a clear strategy, matched with the right intelligent data platform to support that strategy.

Question 2: What Are the Elements of an Intelligent Data Strategy?



REMEMBER

As you formulate your strategy, keep these elements on your list so that your data:

- » **Is always on:** No downtime, no wholesale migrations every few years, and no impact on your applications. It's available whether you're using private, public, or hybrid clouds; on-premises data centers; or edge computing environments — in any combination, for any workload and any application.
- » **Is always fast:** Development teams don't have time to deal with delays, customers don't have the patience, and IT teams don't have the luxury. Speed of data is one of the defining characteristics of digital transformation.

- » **Is automated and on demand:** On-premises infrastructure should deliver the best of the cloud, and more. Cloud agility, simplicity, and scalability should all be part of the goal, not to mention greater IT control over performance, governance, compliance, and costs. IT must deliver a consumption-based, cloud-powered, self-service model that lets the organization respond smoothly to changes in capacity demand without creating additional problems related to data protection, performance, compliance, data sovereignty, or any other issues that could impede progress. Instead of focusing on firefighting, IT now has a way to transform from operator to delivering the services that match the needs of the business.
- » **Enables hybrid cloud:** Most enterprises see hybrid clouds — their ecosystem of workloads deployed across public clouds, private clouds, and on-premises — as the computing platform and overall experience that will help accelerate transformation. The intelligent data strategy needs to unlock data agility and help you enable hybrid cloud so your data is accessible, movable, protected edge-to-cloud, and extensible, offering data management that can span on-premises and in the cloud.
- » **Is powered by global intelligence:** Through a combination of artificial intelligence (AI)-driven processes, automated operations, and global scope, an intelligent data strategy includes global intelligence intended to keep your environment always fast and always optimized.

That's what your intelligent data strategy calls for. On what do you build this bright future? How about an intelligent data platform?

Making an Intelligent Data Platform the Cornerstone

An intelligent data platform is the cornerstone of an intelligent data strategy. In Chapter 3, I cover this subject in greater detail (including the components that comprise such a platform) and help you understand how everything fits together. In Chapters 4 and 5, I review the use cases where it naturally can be applied.



REMEMBER

Before I get started, though, I need to define the term *intelligent data platform*. The name implies that an intelligent data platform is something you walk in and simply buy, but that's not quite the case. An intelligent data platform is made up of solutions that work together seamlessly based on your overarching intelligent data strategy.

In fact, this strategy is critically important. After you've developed your strategy (which is a combination of business needs and a road map for rethinking your IT environment), you'll work with a trusted partner to choose solutions that support the strategy you've outlined.



TIP

Cobbling together an intelligent data platform on your own can be daunting, but fortunately, you don't have to. HPE — as an edge-to-cloud, platform-as-a-service (PaaS) company — has the Intelligent Data Platform comprised of workload-optimized solutions that can help you accelerate your transformation today as you prepare for what lies ahead.



TIP

Here are some ways your business can benefit from an intelligent data strategy, backed with an intelligent data platform:

- » The data that powers your transformation is always on and always fast, it's automated, and it's available on demand. That gives IT the freedom to innovate, not administrate.
- » You're able to unlock hidden insights from data to propel your business forward.
- » Global intelligence enables self-healing and self-optimizing infrastructure to end IT firefighting and keep everything optimized.
- » Management of your infrastructure moves from overwhelming to effortless.
- » You can achieve data mobility and cloud everywhere.
- » The customer experience is transformed — for both your internal audiences and the external customers you're aiming to please.

A CLOUD SUCCESS STORY BUILT ON AN INTELLIGENT DATA STRATEGY

iland, a leading cloud services provider for application hosting, data protection, and disaster recovery, was looking to modernize storage to improve performance, security, and availability as they scaled business globally. With the Intelligent Data Platform from HPE, iland has been able to streamline storage provisioning from hours or days to minutes.

The company is using predictive analytics to monitor its environments in all geographies from a centralized management plane. It's managing capacity with intelligence, leveraging an instant view of performance capacity across both external and internal platforms. This approach helps ensure that iland can deliver customers the capacity they need, when they need it.

Additional benefits include the following:

- Increased application performance with sub-millisecond response times
- Rapid disaster recovery from any of the company's global cloud sites
- Accelerated customer onboarding to support business growth
- Improved ability to ensure data security compliance for hosted customers

Harnessing the Power of Intelligence

Everywhere you turn today, AI and analytics (which I cover in more depth in Chapter 5) are being leveraged to increase business value and drive innovation.

Let's look at an example: In surveillance, what were once simple camera feeds are now imbued with ongoing streams of insight as an AI actively identifies objects to help operators focus on outcomes instead of having to sift through footage. In retail, already an intensely data-driven industry with metrics for everything,

AI-based systems are transforming the customer experience as AI learns customer behavior and automates the checkout process. In healthcare, medical imaging is creating volumes of data that must be quickly analyzed and that, at times, must remain on-premises to meet unique regulatory or compliance needs.

Using intelligence, every industry has the potential for transformation based on the available data deluge that the world is experiencing. Regardless of where workloads operate — in the cloud, on-premises, or at the edge — the data spigot is generating more data every year, which brings yet more data to bear.

It's simply not possible for a human to assimilate this fire hose of data and generate any actionable insights from it. AI-based systems and analytics, on the other hand, can aggregate, correlate, and make sense of data across sources, as well as give organizations an edge in an increasingly competitive business landscape. But that's only one side of the intelligence coin.



REMEMBER

It's simply not possible for individual humans, or even teams of humans, to operate at the emerging speed of business, so organizations are turning to AI- and machine learning (ML)-assisted services to propel calculations and analysis to speeds that are almost unimaginable. That's *AI and analytics*.

So, what happens when you apply AI to your IT operations? Here's where we get to AIOps. These days, hundreds of apps may be sharing an infrastructure in which humans can't prevent or even detect issues. AI-driven infrastructure becomes a must-have.

Predicting and Preventing Infrastructure Problems

You need to be asking yourself if your infrastructure uses AI-driven intelligence to predict and prevent problems before they occur. Doing so lets you focus more on the areas that matter most to your business.

As is the case with the speed of business, these fluid infrastructure environments work best when humans are freed from daily IT firefighting. They allow the infrastructure to optimize its own environments and avoid the latency, freeing IT to focus more on the areas that drive innovation.

Automated IT operations have been slowly making their way into IT infrastructure for more than a decade. Today, as compute capability continues to increase and as workload locations continue to grow in number, more automation is critical for organizations to ensure that business targets can be met.



REMEMBER

The coalescence of AI, cloud, edge computing, and new infrastructure capabilities is enabling a global footprint for businesses with infrastructure that can actually keep up with the rapid pace of change. However, those infrastructure environments need to have the right combination of intelligence to be able to meet the demands being placed on them and to be able to support massive changes in the way that data is viewed and managed.

The result: Modern organizations have a critical need to identify and put in place an intelligent data strategy. That strategy has to be backed by a platform that can keep pace and meet the goals that the business has set forth.

As you work with business units to deploy innovative solutions to transform your digital efforts, you'll quickly discover that the IT status quo simply doesn't work anymore when you're trying to move at the modern speed of business. With more organizations adopting more and varied technologies and cloud platforms, new ways to manage the increased variety and complexity are needed. Your infrastructure needs to go from manual operations to one that's self-healing and self-optimizing.



REMEMBER

And with that, the critical segment of AI known as AIOps was born. AIOps is the melding of ML and data science with the ultimate goal of improving and automating IT operations. AIOps also seeks to provide performance and availability boosts, all without the need for constant human intervention.

With the vast variety and volume of data at their disposal, modern IT systems need to be more self-managing. This is increasingly vital in customer-centric transactions where any problem that leads to latency or errors, quite literally, costs money *right now*. Dissatisfied customers will be more than happy to buy from one of your competitors if their experience with you is poor.

For example, in the financial services industry, data extends everywhere, yet it needs to address emerging regulatory frameworks. IT systems need to remain operational to maintain business continuity and transactional integrity as data wends and winds

through internal workflows. At the same time, there is always a need to keep pace with innovation and customer demand, such as deploying online banking and new branches.

The goal is for a seamless experience for the customer with workloads that operate across the cloud, in on-premises environments and at the edge, and that run the gamut from traditional to modern applications. Regardless of customer location, the experience should be consistent.



REMEMBER

An intelligent data strategy and platform needs to be AI-driven, embracing AIOps as a fundamental building block to ensure quick resolution to problems and to maintain fast and reliable applications and data.

When something breaks in the world of IT, if you're stopping everything you're doing to try to fix it, or if you have infrastructure monitoring tools that only tell you a problem occurred after it happened, then you likely have room to grow with intelligence. With intelligence, you'll gain a sophisticated analytics tool that tells you exactly why a problem occurred, with clear direction on how to fix it. Again, it's here that AIOps comes into play, moving you to an infrastructure that predicts and prevents issues before they occur.

- » Identifying the high-level components in the Intelligent Data Platform from HPE
- » Optimizing the infrastructure that powers your data
- » Unpacking the Intelligent Data Platform from HPE and understanding what makes it unique

Chapter 3

Understanding Intelligent Data Platform Components

When you understand the importance of an intelligent data strategy, backed by an intelligent data platform as the backbone of your strategy, it's time to move on to considering platform options for your endeavor. Your data platform has to be robust, available, scalable, flexible, and workload optimized, and it must work with any cloud. In this chapter, using an example from HPE, I outline the components that comprise the foundation of an intelligent data platform.

Question 3: What Makes Up an Intelligent Data Platform?

In this section, I start with the broad strokes to help you ultimately drill down on what you need in an intelligent data platform, such as the Intelligent Data Platform solution from HPE. Figure 3-1 provides a high-level look at a platform and the components that comprise it.

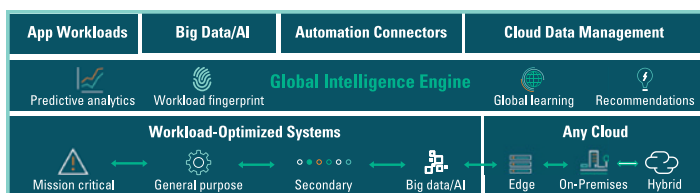


FIGURE 3-1: Breaking down the Intelligent Data Platform from HPE.

As you can see in Figure 3-1, you need to consider three important layers in an intelligent data platform:

- » **Workload-optimized infrastructure/any cloud:** It begins with workload-optimized systems so you deliver the right system for the right application workload, spanning your mission-critical, general-purpose, secondary, and big data/artificial intelligence (AI) workloads. Those systems are then plumbed with data mobility so you can deliver enterprise cloud data services to help you unlock agility and innovation across a hybrid cloud.
- » **Global intelligence engine:** A data-driven automation layer leverages predictive analytics, and ongoing learning aggregates all the data coming into the platform and imbues it with intelligence, keeping your fleet of systems constantly optimized.
- » **The application and management layer:** Applications are where the business magic happens. Running atop a global intelligence engine and a workload-optimized system ensures that applications have exactly the infrastructure they need when they need it, even as the workload environment changes.



REMEMBER

There is also a fourth layer not shown here: the people who depend on this environment. This layer is equally important. These are the people who leverage the platform to make your business thrive. With the right platform, these people will be continually delighted, and your customer-facing business units will be able to execute their digital transformation initiatives to boost the bottom line.

Here's who benefits from a robust strategy that's supported with the right intelligent data platform:

- » **Line-of-business (LOB) managers** can accelerate all application workloads, whether traditional applications, container-based workloads, or a new stack, with the ability to build and deliver flexible big data and AI pipelines for real-time analytics.
- » **Developers** can develop and test, deploy continuous integration/continuous delivery (CI/CD) pipelines on containers or virtual machines (VMs), and get the full as-a-service experience they've typically only been able to get from public cloud services. This accelerates time to market and enhances application quality and performance.
- » **IT teams** can transform from operators to delivering as-a-service as they deploy and scale VM farms and embrace hybrid clouds, while leveraging intelligence to reduce the time they must devote to "keeping the lights on."
- » **Data scientists** can leverage AI and machine learning (ML) to explore larger data sets, conduct more and faster simulations, and use intelligence to ask questions and gather insights that were never before possible. In some cases, the time to derive insights is reduced from months to mere minutes.

Question 4: Can Your Infrastructure Predict and Prevent Problems?

Can your infrastructure predict and prevent problems before they occur so you can focus more on the areas that matter most to your business?



REMEMBER

Today, every business is dealing with exponential growth in the volume, variety, and velocity of data coming from business-critical legacy applications, social media platforms, Internet of Things (IoT) devices, mobile apps, and more. And if your company is like most, you have all this data stored all over the place — in multiple public clouds, in on-premises data centers and private clouds, and in edge-computing environments — which creates numerous silos and inefficiencies.

Traditional platforms weren't designed for modern multi-cloud and hybrid cloud environments. They can't efficiently sort all this data and move it seamlessly across disparate on-premises and cloud environments. Too many variables disrupt and slow the process, resulting in performance gaps, downtime, and inefficiencies.



REMEMBER

An intelligent data platform solves these challenges and enables the organization to put all its data to work. An intelligent data platform is self-managing, self-healing, and self-optimizing. It's built for the cloud, allowing users to access data when and where they need it, no matter where it lives. It delivers cloud mobility so that data created in one cloud can be used across the entire enterprise IT environment. It automates and simplifies the management of data throughout its life cycle so its full value can be extracted at any stage.



TIP

Here are the three key elements that distinguish the Intelligent Data Platform from HPE to deliver these capabilities:

- » **It's AI driven** so data is always on and always fast, and operations are autonomous to unlock agility.
- » **It's built for cloud** with seamless data mobility to bridge different clouds and enable enterprise cloud data services to bring consistency, reliability, and a unified data experience.
- » **It's delivered as-a-service** with a fully managed offering and pay-as-you-go consumption so you can shift from being an operator to enjoying the agility of being a service provider to your business.



REMEMBER

This can all be delivered as-a-service to unlock agility, reduce infrastructure complexity, and increase scalability. You'll unlock greater levels of agility for all application workloads, aided by storage and data protection as a service, and more broadly, containers and applications as a service delivered by HPE GreenLake.

Taking a closer look, an intelligent data platform is composed of the following:

- » **Workload-optimized systems:** The intelligent data platform begins with workload-optimized systems that span mission-critical, general-purpose, secondary, and big data AI/ workloads.



Workload-optimized infrastructure is critical to ensure intended outcomes for *your* intelligent data strategy. No two strategies look alike. Therefore, the platform that supports *your* strategy will need to offer choices that are workload optimized. It's the platform that best matches your business needs.

You may be supporting the unique needs of mission-critical apps running on-premises, trying to protect and access data on-premises and off-premises, or trying to extract value from your data with AI-based analytics. But that doesn't mean these organizations need to procure radically different platforms from a multitude of different partners. (Chapters 4 and 5 dive more deeply into the specifics so you can see how this may apply to your business.)

- » **Any cloud:** The intelligent data platform delivers cloud data services across on-premises and private cloud, public cloud, and edge cloud environments (all discussed in Chapters 4 and 5). The intelligent data platform connects these multi-cloud environments with bidirectional data mobility so that data can flow seamlessly across its life cycle in a true hybrid cloud environment.
- » **Global intelligence engine:** The global intelligence engine predicts and proactively resolves issues before they occur. It also creates workload fingerprints to recognize the unique characteristics of each individual workload across hundreds of thousands of devices, spanning storage systems, servers, and VM farms deployed around the world. The workload fingerprints, combined with global learning, drive recommendations that keep applications and workloads always optimized and delivering predictable speed. ML finds and resolves areas of performance degradation, ensuring consistent performance.
- » **App workloads:** The intelligent data platform supports a full range of application workload and virtualization technologies, from traditional on-premises monolithic applications and custom software to modern cloud-native apps built on microservices spanning multiple clouds. Examples include
 - Docker
 - Microsoft Exchange
 - Microsoft Hyper-V



REMEMBER

- Microsoft SQL Server
- Oracle
- SAP
- VMware

Why is this level of support important? Your platform shouldn't hold you back.

» **Big data and AI:** The intelligent data platform enables big data analytics, AI, and ML leveraging the most widely used frameworks, including the following:

- Apache Kafka
- Apache Spark
- Cloudera
- H2O.ai
- TensorFlow

This combination of open-source and commercial tools provides incredible capability when it comes to intelligent automation. This capability is possible using the HPE Ezmeral software portfolio, which includes the HPE Ezmeral Container Platform (formerly BlueData), HPE Ezmeral MLOps, and the HPE Ezmeral Data Fabric (formerly MapR).

» **Automation connectors:** The intelligent data platform provides a representational state transfer (REST) application programming interface (API) with prebuilt automation connectors for widely used development and orchestration platforms such as Ansible, Chef, Kubernetes, and Puppet.

» **Cloud data management:** Software-as-a-service (SaaS)-based cloud data management brings context awareness and enables seamless and intelligent data life-cycle management in the future.

To see where an intelligent data platform, like the one from HPE that exists today, can take you, read on to find about the use case where this can be applied and the expected outcomes you can achieve.

- » Adopting an intelligent data platform
- » Learning the power of intelligent storage
- » Accelerating mission-critical and business-critical applications
- » Modernizing data protection

Chapter 4

Transforming Your Business and Your IT

In the first three chapters, I explain intelligent data strategy and platforms, which are important topics to build a foundational understanding of what an intelligent data platform can do for your business. This chapter links the concepts in the previous chapters with specific use cases that can be addressed through the use of an intelligent data platform, and it answers more of the key questions I spell out in the Introduction.

Getting Started with an Intelligent Data Platform

An intelligent data platform helps deliver a new way to think about data, how you use data, and how data can transform your business.

You could try to stitch together various elements yourself. You could also make your own mayonnaise instead of buying it from

the store, but most of us can find better ways to spend our time. In the case of an intelligent data platform, the alternative to DIY is to connect with an edge-to-cloud platform-as-a-service (PaaS) company (such as HPE) that has already done the hard work in order to make it simpler for you. Of course, with this type of vendor and its Intelligent Data Platform, you have a selection of workload-optimized solutions spanning any cloud. You can manage and operate them yourself, or they can be delivered as-a-service.

How do you know where to begin? Now that you have a solid grounding of the elements of the strategy and the intelligent data platform powering that strategy, it's time to take a careful look at the challenges you face and the business outcomes you hope to achieve.

In other words, you need to examine the specific use case that applies to your business. Every business is at a different stage of transformation, but in this chapter we start to look at some use cases to help you understand where intelligence can start taking you today.

We've already started the conversation about one of our key questions: Is your infrastructure able to predict and prevent problems before they occur? It's worth diving more deeply into that subject, while touching on the critical role of intelligence and seeing how the platform can be leveraged to accelerate your applications.

Transforming with Intelligent Storage



REMEMBER

Businesses today want to focus squarely on areas that drive innovation. But they're consistently foiled by manual processes, legacy on-premises environments, data silos, lack of staffing, and limited resources holding them back from making the most of their data.

Add to the mix the set of disparate tools that organizations attempt to cobble together, and you have a recipe for chaos that

actively works against operational efficiency by failing to bring an intelligence-based approach to solve the problem.

Harnessing the power of global intelligence

Consider as an example the intelligence found in HPE's portfolio of products. It's driven by HPE InfoSight, which provides global intelligence to power the Intelligent Data Platform from HPE.

HPE InfoSight is an engine that uses the power of cloud-based machine learning (ML) to deliver proactive issue resolution and artificial intelligence (AI)-driven insights and actions for infrastructure across servers, storage, and virtualized resources. The product collects and analyzes millions of sensor data points every second from a globally connected installed base of hardware devices.

This sensor data provides comprehensive measurements of the operation and state of each system, subsystem, and surrounding IT infrastructure. HPE InfoSight learns from this data to drive its predictive analytics, recommendations, and actions. The impact for enterprises is significant.



REMEMBER

You can't just get to intelligence overnight, and it's important to remember that the size of the data set matters — I'm talking data sets in the trillions. Finding a partner with both the right technology and a strong data set helps the algorithms get smarter over time.

The power of autonomous operations

To proceed further with this example, HPE InfoSight continuously learns from the telemetry. It develops an understanding of the ideal operating environment for every workload and application. Advanced ML then drives predictive analytics, advanced recommendations, and actions on the user's behalf. Problematic behavior is predicted through recognition of the underlying patterns and configurations in each system, driving support automation, automated recommendations, and autonomous operations.

This translates directly into significant business impact. According to research by Enterprise Strategy Group, HPE InfoSight delivered the following results:

- » Seventy-nine percent lower storage operational expenses
- » Seventy-three percent fewer trouble tickets in the environment
- » Sixty-nine percent faster time to resolution for events requiring level 3 support



REMEMBER

An intelligent data strategy enables your data to be always on, always fast, automated, and on demand. HPE Nimble Storage and HPE Primera are examples of workload-optimized solutions that help you simplify across the end-to-end life cycle and focus instead on areas that drive innovation.

Question 5: Is Your Infrastructure High-Performing and Available?

This is a key question from our list of vital considerations. You should settle for nothing less when it comes to your mission-critical functions.

Mission-critical applications are exactly what they sound like — applications upon which the business relies. When they're down or performance hiccups occur, the business is also down or is not performing to its fullest potential. Needless to say, for mission-critical applications, availability and predictable performance are vital.

Up until now, organizations have sought out traditional high-end storage because of its high availability and high performance. Unfortunately, the high cost and complexity of traditional high-end storage have sent organizations to the breaking point. They're held back because IT is consumed with administering, tuning, and supporting their existing infrastructure.

Organizations would love to tap into the agility of the cloud, but they're unwilling to ship their mission-critical apps off-site, fearing that they'll lose control of their applications and risk impact to their overall business. As a result, IT remains stuck and is forced to sacrifice agility for resiliency.

That's where the intelligent data strategy pays off. Consider the example of the Intelligent Data Platform from HPE, which starts with workload-optimized solutions, including HPE Primera for mission-critical workloads.



REMEMBER

HPE Primera (www.hpe.com/primera) tackles the agility-versus-reliability tradeoff of the public cloud and traditional enterprise storage. The answer is facilitated by AI-driven intelligence, data services that extend to the cloud, and timeless ownership that eliminates forklift upgrades and ensures that storage stays modern. It's delivered as a consumption experience through HPE GreenLake.

Supporting mission-critical apps

A solution such as HPE Primera demonstrates how an organization can handle workloads that demand mission-critical levels of availability and performance. It features a massively parallel, multi-node, and all-active platform to consolidate all mission-critical apps.

Pursuing this kind of function can be surprisingly easy — this solution, for example, can be self-installed and self-upgraded in a matter of minutes — and yet it achieves 100 percent availability for data that's always on and always fast. It allows organizations to experience extreme availability and performance with the agility of the cloud, avoiding the compromises that can be associated with traditional high-end storage.

HPE Primera provides instant access to data from self-managing storage that tunes itself and can be delivered as a service. Provisioning happens in seconds and updates in minutes, and upgrades are transparent.

Mission-critical applications, by definition, must be always on and always fast, even at scale. In the example of HPE Primera, it's architected for high availability with multi-node design,

transparent business continuity with HPE Peer Persistence, and data replication. Unlike traditional storage, it employs AI and ML, powered by HPE InfoSight, to predict and prevent disruptions across storage, servers, and virtual machines (VMs). It's an end-to-end, app-aware approach for resiliency that maximizes uptime for mission-critical apps.

Timeless storage, meanwhile, means an end to disruptions and costly forklift upgrades. All-inclusive licensing and nondisruptive upgrades are other key benefits intended to future-proof the storage investment.

Powering business-critical applications



REMEMBER

Business-critical applications are workloads that have strict service-level agreements (SLAs) for availability and performance but don't need extreme resiliency. Example workloads can be diverse, including some database environments, testing and development, and VM and container farms. Because of this diversity, organizations need a data platform that maximizes their efficiency.

As an example, the Intelligent Data Platform from HPE can start with workload-optimized solutions, such as HPE Nimble Storage (www.hpe.com/nimble) for business-critical workloads. HPE Nimble Storage delivers a midrange storage platform with data services that extend across hybrid cloud — all delivered as a consumption experience through HPE GreenLake. Timeless storage helps to end forklift upgrades.

Further supporting business-critical applications



REMEMBER

HPE Nimble Storage was architected for predictive analytics. Its architecture delivers sub-millisecond latency, allowing business-critical application workloads to take on new life. HPE Nimble Storage provides the following:

- » **Self-managing storage:** Through HPE InfoSight advanced ML, 86 percent of problems are auto-resolved and closed before customers even realize they have an issue. That's not just for the array but across the entire infrastructure stack.

- » **Reduced spend on all-flash guaranteed:** HPE provides a guarantee that HPE Nimble Storage All Flash Arrays will deliver the most-effective capacity per raw terabyte of flash compared to other all-flash arrays.
- » **Availability:** HPE Nimble Storage has delivered proven 99.9999 percent availability across its installed base — and it's guaranteed for every customer and every array.
- » **Extreme data integrity and durability without compromise:** Triple+ Parity RAID with zero performance impact results in orders of magnitude more resiliency.



REMEMBER

Don't forget, the support experience matters. You should expect and strive for not only a simplified experience, but also solutions that leverage intelligence to improve your overall support experience.

For instance, predictive support automation has enabled HPE Nimble Storage to help eliminate level 1 and level 2 support, providing direct access to level 3 Nimble Storage support engineers, which skips over time-consuming and frustrating escalations. The point is to simplify the storage life cycle from install to provisioning, ongoing operations and support, and upgrades. For you, that means no more knob turning or trade-offs, and it makes it easy for any IT generalist to manage storage.



REMEMBER

The Multicloud Flash Fabric unifies Nimble Storage solutions into a single solution with common data services and easy mobility. Flash storage can be optimized for any workload, whether on-premises or in the cloud. Nimble Storage solutions include the following:

- » **All-flash arrays:** These deliver high performance for the most latency-sensitive virtual desktop infrastructure (VDI), online transaction processing (OLTP), and mission-critical database applications. Add in optional storage-class memory powered by Intel Optane Solid State Drives (SSDs), and the result is up to two times faster response time for demanding transactional database workloads described in an HPE video on HPE Nimble Storage Memory Driven Flash with Oracle Database.
- » **Adaptive flash arrays:** These deliver cost-effective high performance for other primary and secondary workloads.



TIP

Use cases served by HPE Nimble Storage Adaptive Flash Arrays include workloads for which cost and performance balance are primary concerns. HPE Nimble Storage also provides secondary storage that is optimized for high-performance backup and disaster recovery, with the performance to run other applications such as development/testing and analytics.

Question 6: Do You Have a Data Protection Strategy?

Like a game show host, I'll deliver another of our important questions here: Do you have a data protection strategy, how many secondary or backup copies of data exist, how are they being used, and when are they being used? Read on to explore potential answers to these questions.



REMEMBER

But first, a little background into why this point is so important. The threat and risk of data loss is growing in both variety and volume, resulting in lost revenue, lost productivity, and lost reputation. IT can't let data and security vulnerabilities be exposed or exploited.

Fire up your email, and you'll find the latest attempt by a hacker to convince you to click on a ransomware message. Look at your network analytics, and you'll see a sea of red in the "Attempts to Hack the Network Today" column. Cybercrime is on the rise, and as more data with value is converted to digital processes, the potential payout for criminals is greater than ever. No wonder cybercriminals are attacking businesses and holding data hostage.

Unfortunately, many organizations haven't modernized their data protection, making it critical to ensure their data is safeguarded and recoverable. Modernizing data protection can be a long endeavor, so IT needs solutions that can quickly and easily protect them.

Ensuring data protection is critical to powering new and traditional applications and workloads. You need to protect data across all consumption models — whether the data lives on traditional

IT, or in private, managed, and public clouds. Ultimately, you need to be able to protect and recover your critical assets on-premises and in the cloud and be able to extract value from your backup data.



REMEMBER

You need to be able to deliver all the protection you need — wherever you need it, and be ready to put your backup data to work. Now is the time to modernize data protection. Important as it is, the necessary steps can seem overwhelming in the midst of data growth challenges:

- 1. Simplify operations.**

IT organizations spend too much time managing data protection infrastructure and policies to meet every SLA and protect against threats.

- 2. Plan and align the infrastructure needs with actual usage.**

Traditional scale-up backup appliances require significant upfront cost, leading to overprovisioning of capacity and underutilized resources.

- 3. Transform your backup data.**

Traditional backup solutions are like expensive insurance policies, locking data away only to be used in case of an emergency, limiting its value and usefulness.

Fortunately, there are more powerful and flexible approaches to data protection. One example is Data Protection through HPE GreenLake, which allows seamless recovery of data so you can put it to use on-premises, at the edge, or in the public cloud.

Services such as these are designed to meet ever-demanding SLAs across a spectrum of recovery point objectives (RPOs) and recovery time objectives (RTOs), where compliance and retention are key. From rapid recovery to long term retention, data protection through HPE GreenLake (www.hpe.com/us/en/greenlake/data-protection.html) simplifies backing up and recovering data. Customers have the flexibility to affordably modernize their data protection and meet every SLA at the right stage of the data life cycle.

An on-premises data protection platform may be the best option for workloads demanding fast recovery, and backup as a service is an option through platforms such as HPE StoreOnce. Customers get rapid recovery with cloud consumption and elastic scaling in a preconfigured system.

Through HPE GreenLake, customers deploy cloud services for local data protection with HPE StoreOnce on-premises. It's a pay-as-you-protect cloud model that makes it simpler to order, monitor, and scale on demand. You pay based on usage. HPE StoreOnce has deep integration with a rich ecosystem of independent software vendor (ISV) partners, providing customers the flexibility to deploy their preferred backup software for edge-to-core workloads.

Cloud data protection

A modern data protection plan typically extends to the cloud for scalability. The cloud offers flexible capacity and supreme agility without requiring additional capital investment.

To see how this can work, consider the example of HPE Cloud Volumes Backup (<https://cloudvolumes.hpe.com>). As an on-demand enterprise cloud backup service, HPE Cloud Volumes Backup delivers a simple, efficient, and flexible way to store backup data.



REMEMBER

Customers can spin up storage capacity in minutes and direct it to existing data workflows in just a few clicks. Automated backup policies eliminate having to initialize, configure, manage, or tune physical or virtual infrastructure. The enterprise cloud service also breaks down the silos of a typical cloud backup deployment.

HPE Cloud Volumes Backup unifies backup data in the cloud, removing mass fragmentation with open support for any primary storage array and any data protection software, such as Commvault, MicroFocus, Veeam, Veritas NetBackup, and others.

This backup service eliminates complexity by freeing customers from the day-to-day hassles and operational costs of backup infrastructure, with consumption-based pricing and efficient data mobility. And it's flexible. Customers can restore workloads

on-premises or easily leverage public cloud for multiple use cases, such as test/dev, reporting, and analytics, enabling them to transform backup data into a business asset.

Long-term data retention in the cloud

The next stop on the data life-cycle spectrum is data retention. One example of a solution is HPE Cloud Bank Storage, which enables HPE StoreOnce users to leverage low-cost on-premises or cloud-based external object storage for long-term retention of backup data.

This solution seamlessly cloud-enables backup data and enterprise apps. It sends, stores, and retrieves only unique data for lower cost, reliable, and highly scalable cloud storage and disaster recovery.



REMEMBER

HPE Cloud Bank Storage provides end-to-end protection, by making it easier to leverage the economics and agility of the cloud for archive or disaster recovery while continuing to use your on-premises infrastructure for fast, reliable operational recovery.



TIP

Don't stop here. In today's hybrid reality, it's important to dive into Chapter 5, where I explore new ways to unlock the value and agility of your data, edge to cloud.

- » Enabling hybrid cloud
- » Powering your edge
- » Unlocking insights with artificial intelligence and analytics
- » Transforming from IT operator to as-a-service

Chapter 5

The Cloud, the Edge, and Your Valuable Data

I touch on cloud in Chapter 4, but in this chapter I take an even deeper look at use cases focused on hybrid cloud and edge, along with artificial intelligence (AI) and analytics. In this chapter, I take a closer look at each use case and how it ties in as part of an intelligent data strategy and platform. I also answer the final three questions on the list of essential queries that guide your data journey (see the Introduction).

Question 7: Can You Achieve Data Agility While Enabling Hybrid Cloud?

An intelligent data platform must support any cloud, any time. Cloud has become a critical part of IT strategy, and what started with cloud-first has shifted to a hybrid- and edge-cloud paradigm.

The public cloud has given enterprises a peek into what's possible — agility, scalability, on-demand — with economics that align to the needs of the business. However, public cloud is not one-size-fits-all. This strategy works well for born-in-the-cloud applications designed for the distributed infrastructure and

platform services of the public cloud, but they're not always suitable, especially for mission-critical apps.

For mission-critical applications and databases, organizations rely on the data services, such as six nines+ resiliency and low-latency performance of on-premises storage. Data gravity and application refactoring for the cloud make a cloud-first strategy a tough choice for the core business applications.

The goal for many chief information officers (CIOs) today is to have the cloud experience everywhere, from the public cloud to the data center to the edge. You gain agility by freeing your data, with the ability to deliver consistent services and enable data to flow everywhere.

CIOs recognize the need for a mix of clouds — both on-premises private clouds and public-cloud resources leveraged for certain workloads and requirements. It's about enabling hybrid cloud, so you can innovate across clouds.



REMEMBER

Cloud is more than just the on-premises or off-premises resources; it's about the data and the experience you're able to deliver. You need to be able to provide a seamless and consistent experience everywhere, with true app and data mobility, so your business stakeholders can get what they want, when they want it, regardless of where it resides.

Ensuring an intelligent foundation for your on-premises cloud

On-premises IT is based on a known configuration of platforms, technology, people, places, and secured processes. It's a good way to stay in control of issues such as privacy, compliance, and performance.

Private cloud, sometimes referred to as *IT as a service* (ITaaS), delivers a cloudlike experience in your own data center and allows the platforms, applications, privacy, access, and control to remain in-house, while providing rapid, elastic access to scalable capacity.

An example of technology enabling this is HPE Nimble Storage dHCI (www.hpe.com/nimbledhci). Whereas traditional HCI offerings enforce some level of linear scale in which compute and storage grow in lockstep, HPE Nimble Storage dHCI takes a less

strict scaling approach. HPE Nimble Storage dHCI allows users to scale compute and storage independently of one another.

That concept combines much of the simplicity of HCI with the flexibility of a more traditional approach to the data center. And it brings better performance, availability, and resource efficiency needed for business-critical apps. Enterprises can achieve an on-premises cloud by consuming HPE Nimble Storage dHCI as a service through HPE GreenLake.

Gaining seamless data mobility with a unified data experience

So, what role does your data play in enabling hybrid cloud? Every business is at a different stage with its digital transformation, but hybrid cloud is the reality for most businesses because it provides maximum agility, flexibility, and speed to the enterprise. Yet, from a data perspective, enterprises need to enable seamless data mobility and provide a unified data experience — and that can be difficult to achieve.



TIP

Maximizing your data at each stage of its life cycle is critical. One way to do that is with a product such as HPE Cloud Volumes (<https://cloudvolumes.hpe.com>), which offers enterprise cloud data services that unlock the potential of the hybrid cloud. It's an on-demand cloud storage service that provisions storage in a matter of minutes and brings along the enterprise reliability and performance capabilities.

The aim is seamless data mobility that bridges your on-premises cloud to any public cloud. A service such as HPE Cloud Volumes enables multi-cloud flexibility so you can point your data to the computing power of the cloud of your choice. This lets you take advantage of every cloud for testing/development and analytics without having to migrate your data or deal with the egress costs involved in moving data across clouds.

The services in the suite include the following:

- » **HPE Cloud Volumes Block:** An enterprise-grade, multi-cloud data service for running and protecting your applications in the public cloud. You can replicate HPE Nimble Storage to HPE Cloud Volumes Block for disaster recovery, but they can also use public-cloud compute resources to run analytics, testing, reporting, and so on.

» **HPE Cloud Volumes Backup:** This is an on-demand enterprise cloud backup service that allows you to instantly start backing up to the cloud from any storage array and with your favorite backup software in minutes, without changing any of your existing data workflows. This backup service breaks down fragmented silos to simplify data protection in the cloud. It employs pay-as-you-protect economics and offers the ability to activate your backup data anywhere to accelerate innovation.

Powering the distributed edge

A massive data storm is underway, and edge and the Internet of Things (IoT) are making it possible to extract value from your data. This data trend creates new possibilities for every business. The edge opportunity unlocks new experiences, drives new business models, and delivers better business outcomes. But running many sites with disparate platforms can be a hassle for IT and also very expensive, as costs multiply across sites.



REMEMBER

The distributed edge provides public-cloud-like resources and services at the infrastructure edge, closer to the end user, to improve performance, reduce latency, and increase control. Compute and storage resources in the edge cloud are typically deployed in the “last mile” of the network.

The edge is a prime location for a market-defining technology such as hyperconverged infrastructure (www.hpe.com/hyperconverged). An example of this is HPE SimpliVity (www.hpe.com/simplivity), which combines IT infrastructure, advanced data services, extreme efficiency at the edge for data, and AI-driven operations into a single, integrated solution.

HPE SimpliVity delivers a compact platform that includes robust resiliency, data protection, mobility, and automation. With the efficiency of an always-on deduplication and compression process, HPE SimpliVity reduces capacity utilization by up to ten times, which saves money when deployed across many edge sites.

HPE SimpliVity offers optimization of your distributed enterprise edge sites and provides the following:

» Compute-intensive general-purpose virtualization, edge, and virtual desktop infrastructure (VDI) workloads

- » A compact, resilient form factor for space-constrained environments with two-node high availability and protection
- » Extreme efficiency with always-on deduplication and compression, which can save storage capacity savings by 90 percent or more
- » Comprehensive central management of all sites

Question 8: Are You Getting the Most Value from Your Data?

Back once more to that list of all-important questions for planning your data journey (see the Introduction). Data is the center of every business initiative today. With a massive data explosion being experienced by almost every enterprise, many organizations are looking for new ways to enable transformation.



REMEMBER

This transformation drives the use cases that are important to the business, such as autonomous driving, video surveillance, and medical imaging. These new emerging use cases pose new and divergent demands on the underlying infrastructure. Supporting these new data-driven use cases means that IT has to balance the difficult three-legged trade-off of managing the economics of the infrastructure, delivering highly performant workloads, and dealing with the increasing scale of unstructured data.

Here are some examples of the emerging divergent workloads:

- » Leveraging large unstructured data sets (for example, video, images, audio, and text) to train machine learning (ML) models for a wide variety of enterprise AI use cases
- » Deploying large-scale data lakes for managing data across a variety of use cases — for example, medical imaging in the healthcare and life-sciences industry, video editing/production in the media and entertainment industry, or long-term archival of sensitive user data for compliance purposes across all regulated industries

- » Supporting big data and analytics, such as storing data via Hadoop Distributed File System (HDFS) and processing it using Spark
- » Supporting batch and real-time applications



REMEMBER

Enterprises need to be able to ingest data, store it, and make it available for ML and advanced analytics, empowering data scientists to extract value from data.



TIP

To build, deliver, and support AI analytics, you need to be ready to adopt new technologies, such as containers. Plus, you need to continue to make the most of virtual machines (VMs), as you stretch your investment even further. The right platform, including storage, enables you to achieve the optimized infrastructure needed to support AI and the unlocking of insights.

Think about it: You want to tap into large stores of data and store it across the entire life cycle. To do this, you need a platform that is:

- » Globally accessible, from edge to core to cloud
- » Scalable
- » Open, so you can connect to the right tools, including Spark, TensorFlow, and third-party independent software vendor (ISV) tools
- » Container-friendly, supporting flexible deployment and delivering data portability from edge to cloud

There is significant benefit to seeking solutions offering an optimized infrastructure that helps you across the entire data life cycle. A glance at the HPE portfolio serves as an example of how this can work.

HPE Ezmeral ML Ops is a turnkey container-based software solution that supports the entire ML life cycle. It's built on the HPE Ezmeral Container Platform (www.hpe.com/ezmeral) that brings together technology from HPE's acquisitions of BlueData and MapR with open-source Kubernetes to deliver an enterprise-grade container platform. The HPE Ezmeral Container Platform integrates the HPE Ezmeral Data Fabric (previously MapR), which provides persistent storage for stateful applications deployed on containers.

Question 9: Are You Optimizing the Cost of Storing Data?

We're down to the question that's last, but certainly not least. In fact, more and more, this is where the conversation begins, and it's a consideration that can truly transform you and your business.

You may have the knowledge, skills, and experience in your organization to be successful in making the most of your data. But don't be ashamed if you don't, because most organizations need some help in this area. You can connect with appropriate experience and expertise through such services as HPE Pointnext, which offers AI advisory, data transformation, and storage service, to name just a few.



REMEMBER

Meanwhile, consider taking advantage of a consumption-based model as you develop your intelligent data strategy. That leads to the question that logically follows, related to ongoing growth and economics.

How do you want to scale the environment and how “cloudlike” do you want it to be? A possible approach is illustrated by HPE GreenLake, which delivers an as-a-service experience for your on-premises and private-cloud workloads. The result is the agility and economics of the cloud with on-premises control. Here's how that provides benefits:

- » **IT organizations get infrastructure delivered to them as a service, paid for on a monthly basis.** HPE GreenLake is responsible for maintaining the infrastructure and ensuring that buffer capacity is available, with best practices and advice to get the most from the platform.
- » **IT can host workloads on demand for customers using best-practice operational techniques, orchestration, and service catalog technology.** IT can stop concerning itself with performance limits because HPE GreenLake is responsible for the ongoing capacity management based on usage data. That ensures that capacity will be available ahead of need.

The traditional model for purchasing IT infrastructure can leave you with capacity that's too high or too low for your business needs. For example, you may spend money on unused capacity to handle unexpected growth, or struggle to meet demand when you don't have enough capacity, or both. With HPE GreenLake you eliminate this costly overprovisioning, saving as much as 40 percent on TCO, according to a commissioned study conducted by Forrester Consulting in May 2020.



TIP

If you're looking to spend less time on administrating and more time on innovation, take storage for instance, find an experienced partner that delivers as-a-service with elastic scale, offers a broad set of cloud services on demand, and has the ability to operate the infrastructure for you.

Plus, you should be able to pay only for what you use. A consumption-based model such as the one provided by HPE GreenLake workload-optimized cloud services aligns cash flow to actual capacity usage. With metered usage and activity capacity planning, you pay only for what you use above a reserve, and you always have capacity ahead of demand.



REMEMBER

Considering all these use cases together, you can see the benefit of seeking solutions that are aligned as a platform, such as the Intelligent Data Platform from HPE. It can be delivered as-a-service to reduce infrastructure complexity, increase scalability, and unlock agility. Acquiring storage and data management as a service — and, more broadly, containers and applications as a service — helps unlock greater levels of agility for all application workloads.

As you take actionable steps to unleash the power of your data, keep handy the list of questions outlined in the Introduction to this book. It'll help you be sure that the platform you select has the breadth, depth, and intelligence to help you every step of the way — with an approach that's AI driven, built for cloud, and delivered as a service.



TIP

If you want to learn more about what an Intelligent Data Platform, such as the one from HPE, can do for you, go to www.hpe.com/intelligentdata.

- » Accelerating apps, gaining agility, and unlocking insights with the Intelligent Data Platform from HPE
- » Transforming with global intelligence

Chapter 6

Ten (Or So) Benefits of an Intelligent Data Platform

The intelligent data platform is the path to extracting the value of your data and unleashing business agility and innovation. But adopting artificial intelligence (AI)-driven intelligence doesn't just happen, and you'll find that the best path forward involves consulting a partner with lots of experience.

Take the Intelligent Data Platform from HPE as an example, where global intelligence is powered by HPE InfoSight, the industry's most advanced AI for infrastructure. In the past decade, HPE InfoSight has analyzed nearly 1,250 trillion data points from more than 150,000 systems. These resulting insights helped save time with predictive analytics, time that would have otherwise been lost productivity due to downtime.

Using the Intelligent Data Platform from HPE, here are benefits of an approach that's AI-driven, built for the cloud, and delivered as a service:

- » **Always on:** There's no time for downtime when business is expected to run 24/7/365. With an approach built around

intelligent data, your infrastructure predicts and prevents issues before they occur. And that's not just in the storage layer, but all the way up into the virtual machine (VM) server layer, in a way that's optimized for all workloads.

- » **Effortless management:** Intelligence enables operational savings and simplicity so you can spend more time on strategic business goals. This concept reduces the time IT staff spends “keeping the lights on,” by using AI and predictive analytics to anticipate problems and optimize infrastructure in real time.
- » **A transformed customer experience:** The overall support experience is built around AI-driven infrastructure, where issues are opened and resolved automatically, support proactively contacts you, and you can speak to level 3 support as needed.
- » **Accelerated apps:** You have workload-optimized intelligent storage matched to the needs of your business. Depending on what your business does, that could mean better patient outcomes, improved cycle times of inventory, accelerated troubleshooting, or whatever is most important to your organization.
- » **Agility of hybrid cloud:** You can bridge every cloud with a platform that's built for cloud and enable data to be moved across public, on-premises (private), and edge cloud environments as needed.
- » **The delivery of storage and data protection as a service:** You can shift from being an operator to becoming your own service provider within your data center. Here, you have everything operated and managed for you while helping to eliminate overprovisioning and optimize spend with pay-as-you-go, consumption-based models.
- » **Protection against data vulnerability and heightened ransomware risk:** Modernized data protection helps ensure that data is safeguarded and recoverable across all your clouds.
- » **Deep insights in minutes:** You can leverage AI and machine learning (ML) to explore larger data sets, conduct more and faster simulations, and ask questions and gather insights that are now possible.
- » **Empowering your data innovators:** Unlock the value and agility of your data, and use it to propel your business forward.

Turn data challenges into business opportunities

Data is crucial: it underpins the apps and workloads that power your business. Enterprises need an intelligent data strategy that ensures your data is always-on, always fast, automated, and available on-demand. It also needs to be hybrid by design, so your data is accessible and usable across your cloud environments, while also delivering visibility and life-cycle management via global intelligence. Learn how to turn your data challenges into opportunities with an intelligent data platform— as the foundation of your intelligent data strategy—that's artificial intelligence (AI)–driven, built for cloud, and delivered as a service.

Inside...

- Explore innovating with data
- Examine the elements that will make up an intelligent data strategy
- Learn the value of harnessing an intelligent data platform
- Uncover real world cases to unlock the value and agility of your data, edge to cloud
- See what it takes to have modernized data protection



Steve Kaelble is the author of many books in the *For Dummies* series. His writing has also been published in magazines, newspapers, and corporate annual reports. When not immersed in the *For Dummies* world or writing articles, he engages in healthcare communications.

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