HPE POINTNEXT

Accelerate workload performance

A blueprint to storage modernization

HPE POINTNEXT BLUEPRINTS: HOW TO GUIDES FROM SERVICES EXPERTS OF HEWLETT PACKARD ENTERPRISE

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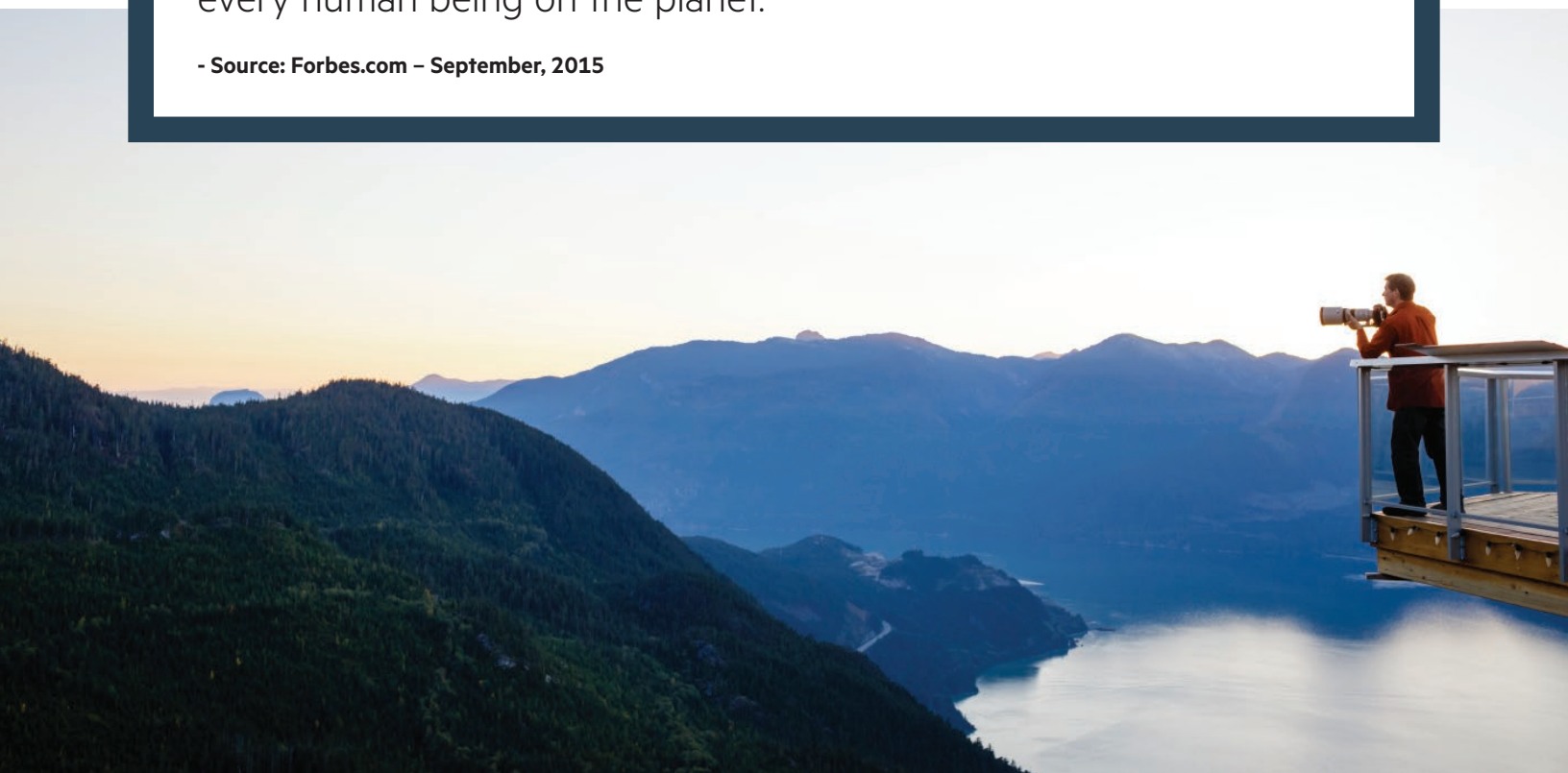
Executive summary

Organizations are running their business on exponentially more data, created by more users, from different devices, and through different digital processes.

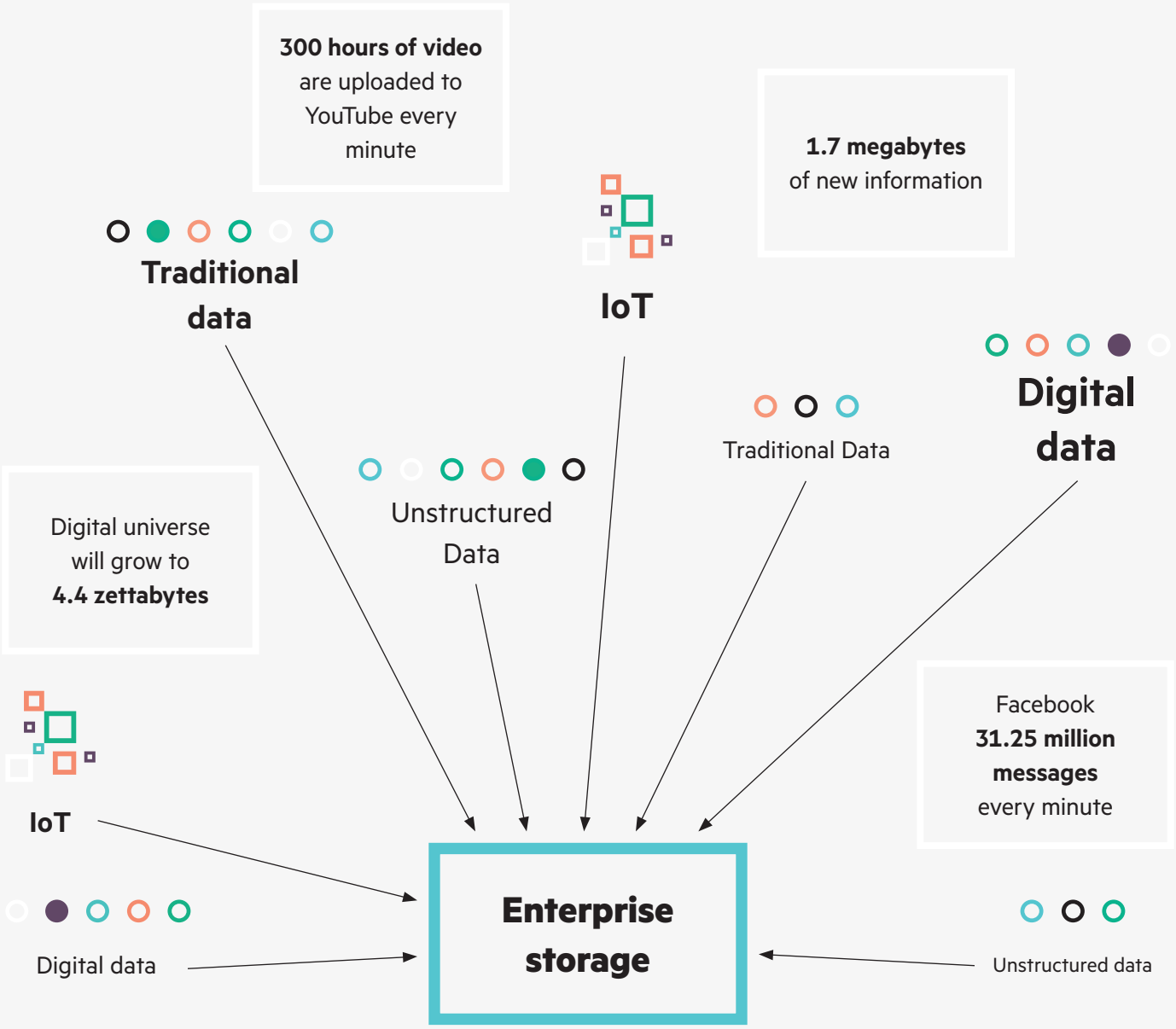
While some data growth is fueled by new applications, it also arrives increasingly from non-traditional IT sources, including digital media, machines, and edge devices. Edge IoT devices are generating a massive amount of data that must be managed, monitored, stored, and analyzed. Deciding where to perform each of these functions is critical to supporting new data-driven business processes. These data types demand more varied approaches to storage than traditional structured data. This creates challenges to storage infrastructure performance, management, and protection.

In a digital enterprise, there is constant change through data consumption, sales, creation, processing and analysis by multiple application and business teams. Meanwhile, current and emerging storage and infrastructure technologies such as software-defined, all-flash, high-performance, and integrated systems are disrupting the status quo.

> Data is growing faster than ever before and by the year 2020, about 1.7 megabytes of new information will be created every second for every human being on the planet.
>
> **- Source: Forbes.com – September, 2015**



With so much disruption, most organizations are trying to determine where to start their transformation. HPE recommends that you assess your data because it should drive your storage needs. Organizations can leverage storage modernization best practices to get ahead of these rapidly growing requirements. Before making your technology decisions and starting a new storage initiative, look for a partner with a broad spectrum of infrastructure, storage, big data, cloud, and IoT expertise. This blueprint from HPE Pointnext, the services division of Hewlett Packard Enterprise is based on real-world experience from many customers across a range of industries. Below is an example of what HPE delivered to one customer.



Example: Optimizing with all-flash storage

Customer challenges:

- Running out of storage capacity.
- Two-tiered storage model with near-line disk and fully allocated fiber channel disk drives.
- Rising maintenance costs for years 4 and 5.
- Maximum IOPS reached that caused significant performance issues.
- Costly upgrade.

Customer desired outcomes

- Improve performance. Extremely high performance with very low latency—improving SLA management.
- Better economics. Reduce total cost of ownership via power savings, cooling efficiencies and provisioning.
- Improve reliability. Leverage the 5-year unconditional warranty of flash disk drives—outside of any support contract.

Customer solution

- Implement new HPE 3PAR StoreServ all-flash storage array

Challenges

Enterprises going through digital transformation face significant problems of simultaneously managing storage for traditional predictable applications while enabling storage for rapid application development to support innovation and experimentation. Balancing these demands with legacy storage platforms is not possible. Some of the key customer challenges that HPE has observed include:

- **Poor application performance from legacy systems.** With so much data to process and analyze, organizations are experiencing bottlenecks that are hindering innovative use of data. Legacy storage infrastructure cannot keep up with evolving demands. Application processing is affected, and the lack of data availability has negative impacts on business operations. The rollout of new applications is often blocked because the storage infrastructure cannot deliver the needed performance.
- **Insufficient storage capabilities to handle today's data explosion.** Digital and social media include text, pictures, videos, and other media types that are not easily indexed. Adding to this complexity is the data generated by "things" at the man/machine edge. Designing an infrastructure that can support these media types is critical to leveraging this data. It must be accessible and stored in a way that is cost-effective. Organizations need methods to turn this data into information that can change how they do business.
- **Manual processes increase operational expenses and reduce quality.** Existing storage investments cannot be easily re-allocated as needs change. Current management tools cannot adequately support the provisioning and monitoring of storage that is often siloed for specific applications. Automating the management of these disparate data types is necessary to simplify IT operations and manage costs.
- **Stove-piped infrastructure results in unexpected downtime.** The data explosion has created business protection challenges for all organizations. Massive amounts of data must be readily available to the geographically dispersed organization. Legacy backup systems cannot handle the backup and storage required to meet business availability requirements. These old backup systems should be upgraded, with a focus on business resilience.

> HPE delivered a modern all-flash storage infrastructure that reduced the raw capacity from 200 TB by eliminating over subscription and implementing best practices. The TCO for the customer was reduced from $504K to $99K.
>
> **- HPE TCO analysis**

Guiding principles to accelerating workload performance

Let your data drive your storage needs.

Most organizations are looking for assistance to address these challenges because they lack the resources and expertise to complete them in a timely manner. HPE Pointnext has developed blueprints that are based on its own digital transformation experience and enhanced through other successful customer-transformation engagements. These blueprints are customer-centric, pragmatic, and aligned to best-in-class tools. They offer a prescriptive-yet-flexible, step-by-step process to help guide your journey. This blueprint focuses on accelerating workload performance through storage modernization. Each business challenge is addressed through a "Guiding Principle" that includes an overview, a checklist of best practices, and expected results—all focused on storage modernization.

Guiding principle 1: Boost application performance with all-flash storage

BUSINESS CHALLENGE: Legacy storage infrastructure cannot keep up with evolving workload performance demands.

Address poor legacy storage application performance by implementing all-flash storage for critical applications. Not all data belong on flash storage, so it is important to determine when to use flash storage or object storage. Each technology has distinct advantages, and no one answer fits all customer situations.

Checklist

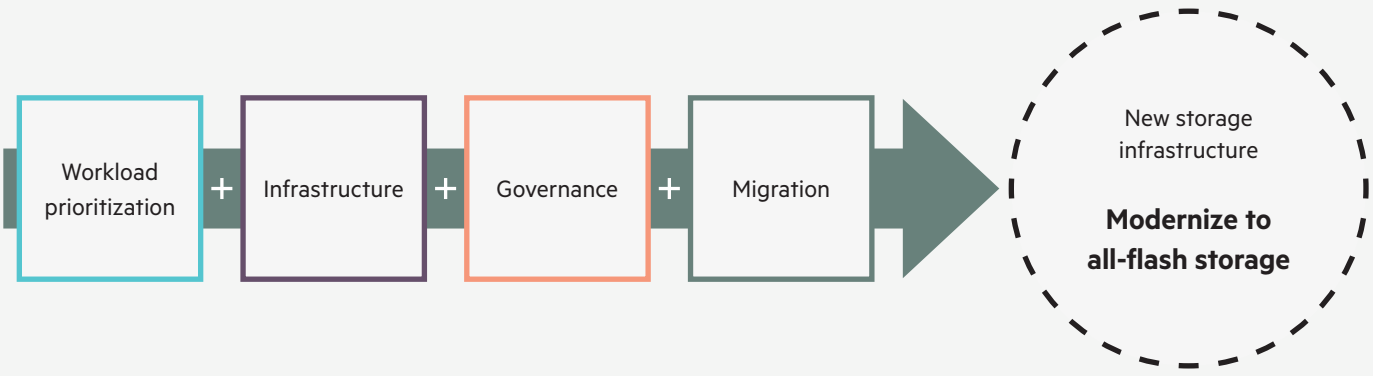
1. **Prioritize workloads.** Access your current environment by prioritizing workloads. The goal is to classify service level requirements and identify workloads that are the best candidates to migrate to flash storage. Most applications will see performance improvements from this technology, and understanding the cost/benefit for each one is important.

2. **Design new infrastructure.** Create a new design for your infrastructure and develop a plan to integrate elements of this new design into your current environment. This represents an end state, but should be open-ended to incorporate new business demands.
3. **Integrate governance.** Integrate the new infrastructure into your existing data management and protection policies.
4. **Plan migration.** Develop a plan to migrate data and transfer workloads with automated tools. The plan will include a phased approach to implement new technologies over time to minimize disruption.

> The era of the storage-only vendor is over and has been replaced by the era of the best-integrated IT stack—accelerating the mainstream adoption of flash for more workloads, at greater scale, with less risk.
>
> **– Source: Marketwired – All-Flash Datacenter Capabilities with Leading Density and Data Services**

Expected Results

- Application performance improvement through implementation of flash storage solution for select workloads.
- Improve and exceed service levels for the workloads that require faster access.
- Faster data migration through automated tools minimizing manual errors.
- Increased flexibility to scale performance to meet the demands of new applications.



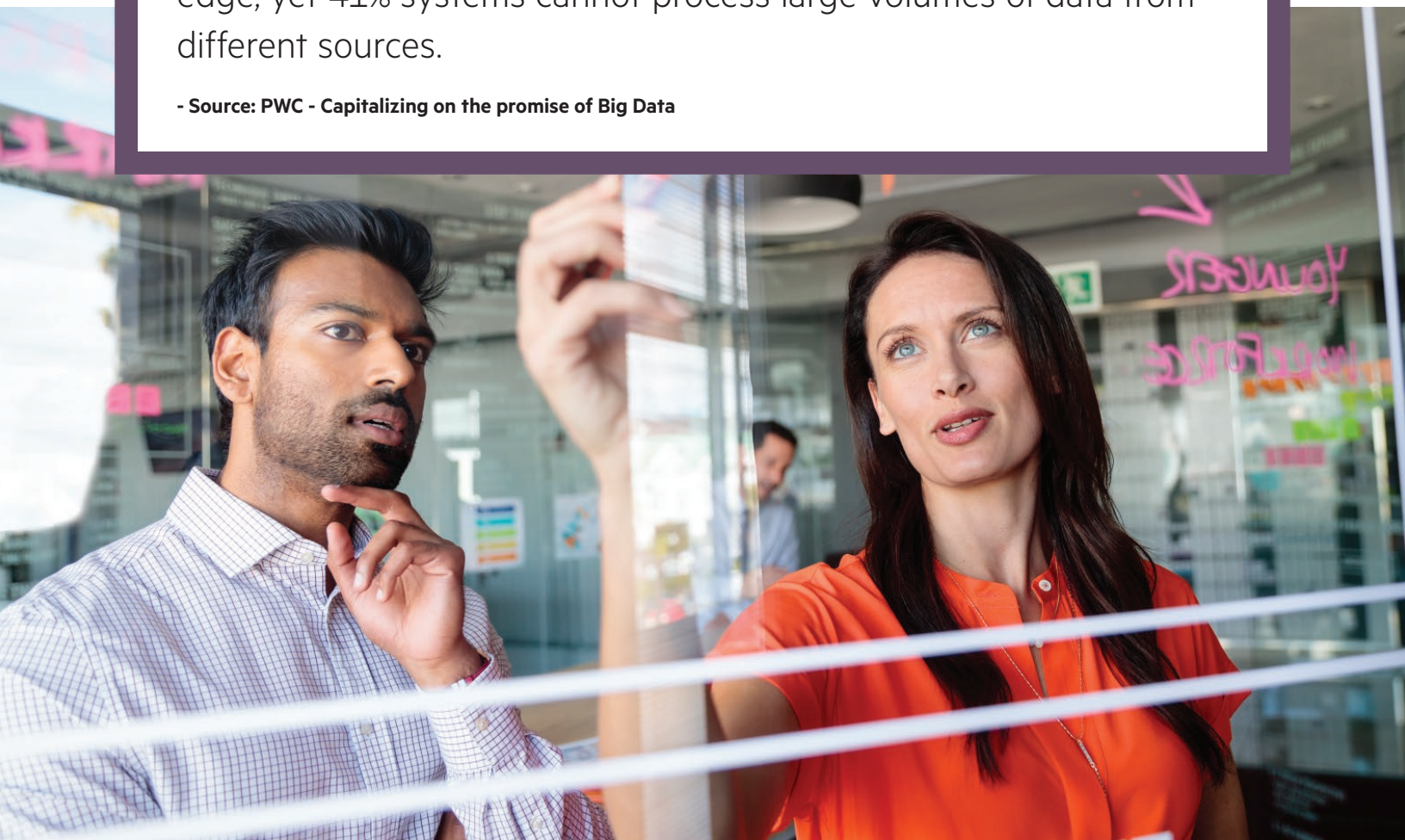
Guiding principle 2: Create a cloud-scale, geographically distributed, object storage repository

BUSINESS CHALLENGE: Current storage infrastructure cannot support these new media types that are critical to new data-driven business processes.

Traditional storage infrastructures were designed to process block-mode data and are incapable of handling unstructured data, machine data, media information, and object-based data. Some of this data may reside on all-flash storage, but most of it should be placed on cost-efficient object storage devices.

10x faster growth in emerging data types from core and the edge, yet 41% systems cannot process large volumes of data from different sources.

- Source: PWC - Capitalizing on the promise of Big Data

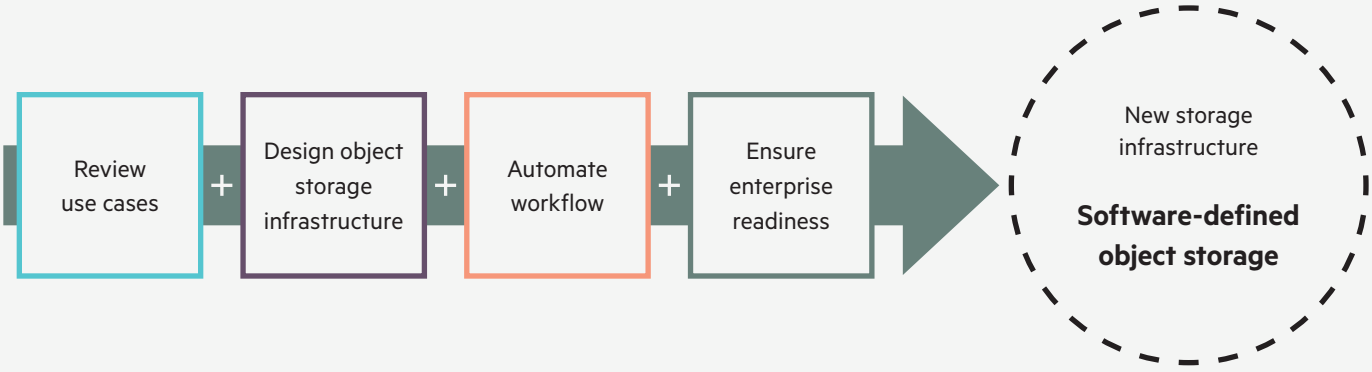


Checklist

1. **Review use cases.** Identify workloads that require hyperscale storage resources based on object protocols. This workload will include everything that was not targeted for all-flash storage.
2. **Design an object storage infrastructure.** Review available technology options to design a new object storage infrastructure based on software and a data-dense platform. Consider alternatives that include a cloud-scale, geographically distributed, object storage repository. This strategy will help you balance cost vs. accessibility.
3. **Automate workflow.** Develop a plan to implement workflow-focused software to automate the management of capacity. Attempting to manually manage these growing, complex environments typically raises costs and generates errors. Automation is necessary to gain real operational efficiencies and reduce costs.
4. **Ensure enterprise readiness.** All changes to storage infrastructure and software management need stability and resilience to meet your enterprise wide, service level agreements. New technology implementations can elicit new risks. HPE Pointnext focuses only on enterprise-ready software defined and object storage solutions from internal IP or selected third-party partners, to design and integrate solutions that are proven to be ready for business-critical workloads. This ensures that all changes are consistent with business requirements.

Expected results

- Increased ability to leverage object data that improves decision-making and turns new data types into information.
- Improved reliability with automation



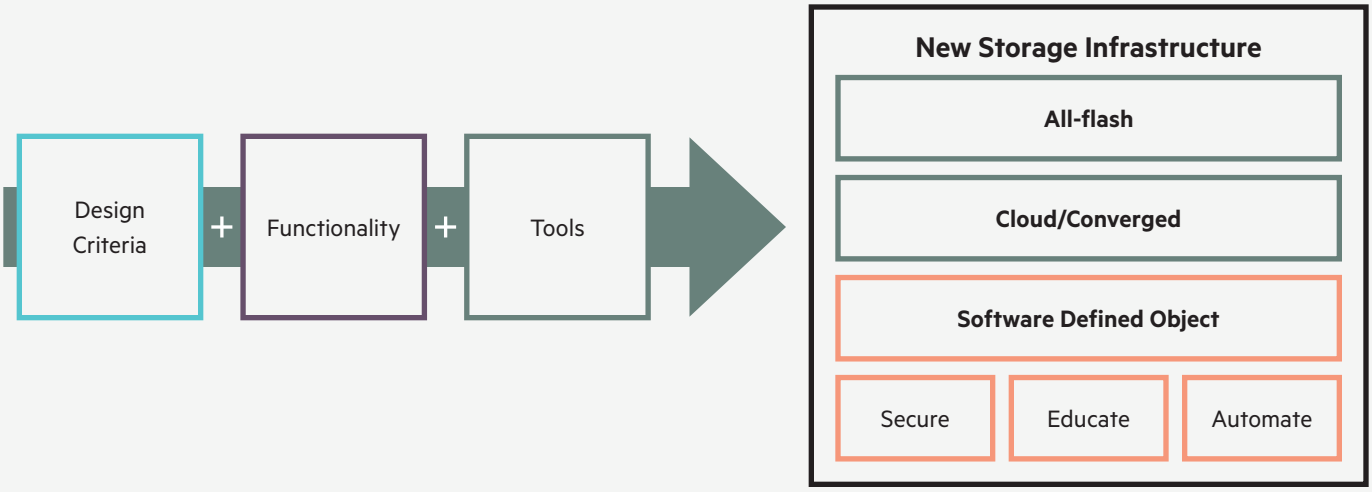
Guiding principle 3: Implement software-defined data management and automation

BUSINESS CHALLENGE: Current management tools cannot adequately support the provisioning, reallocation and monitoring of storage.

Manual processes can increase operational costs and reduce quality. Eliminating these manual processes is critical to successful storage modernization. Address this challenge by implementing software-defined data management and automation.

Checklist

1. **Design new criteria.** Consider application requirements and infrastructure topology in the criteria for new management tools. Be sure to include management of all-flash storage, object storage, and repositories anywhere locally or in the cloud.
2. **Implement tools.** Review the current legacy storage tools to evaluate applicability to the redesigned storage infrastructure. Select new software tools wherever appropriate to map infrastructure to workloads, simplify provisioning, and manage configuration.
3. **Address functionality.** Real benefits can only be realized through integration of all the different technical components. Incorporate data management, migration, protection, monitoring, analytics, and operations to provide the necessary automation for modernization.



Expected Results

- Simplify operational complexity.
- Reduce management costs.

> 30% of typical IT budget is spent on storage, yet 85% of storage spend is for managing copies.
>
> **– Source: IDC – The Copy Data Management Problem**

Guiding principle 4: Make data recoverability and business continuity part of infrastructure design

BUSINESS CHALLENGE: Current management tools cannot adequately support the provisioning, reallocation and monitoring of storage.

Legacy protection environments are often siloed, reflecting their application or business unit origins. This can increase the risk of unexpected downtime because the focus might have been on a single area and does not ensure business availability or recoverability. Many customers are still struggling to determine what is the impact of unexpected downtime to their business processes:

- Lack knowledge of financial, reputation and legal impact on the organization when a critical process is down.
- No process classification such as critical and non-critical.
- Associated process interdependencies not identified.
- No established acceptable downtime and recovery level of critical processes.
- Resource requirements not defined at the time of a disruption.

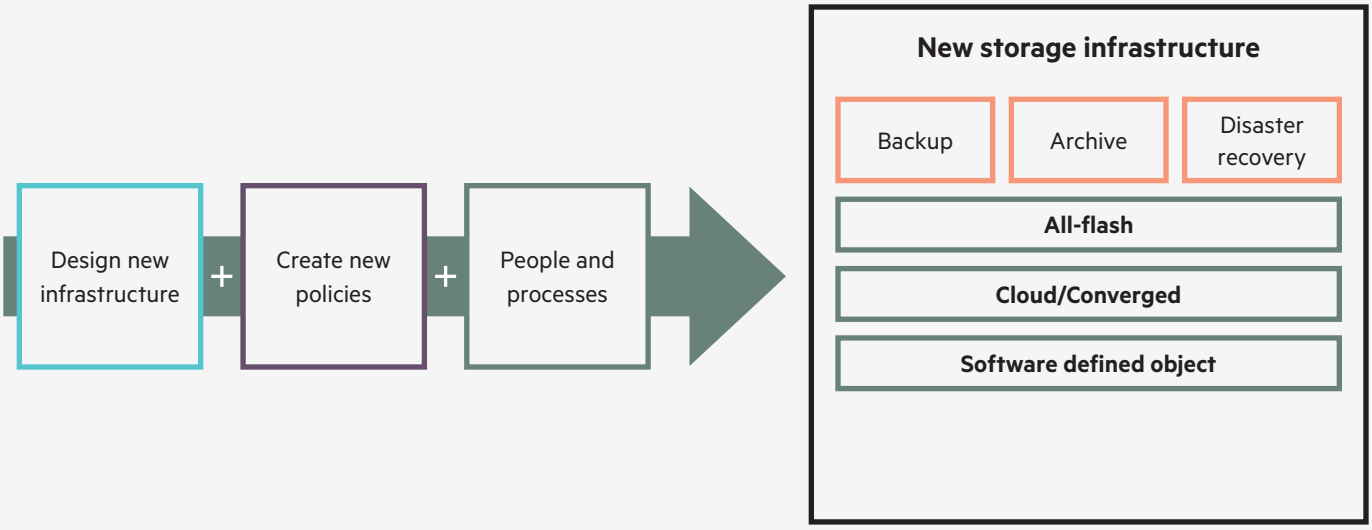
Decisions on business continuity investments should be based on service level agreements that reflect higher level business needs.

Checklist

1. Design new, resilient infrastructure. Review the current legacy protection infrastructure and design a new tiered infrastructure for business resilience and long-term data protection.
2. Create new policies. Define backup and recovery strategies to incorporate service level agreements and business continuity objectives. Focus on business availability and not simply the data.
3. Include people and processes. Build a plan that incorporates complete recovery planning and testing by your IT staff and business owners for business continuance. This integrated approach offers you the best business protection because it ensures that all aspects are covered, no matter what arises.

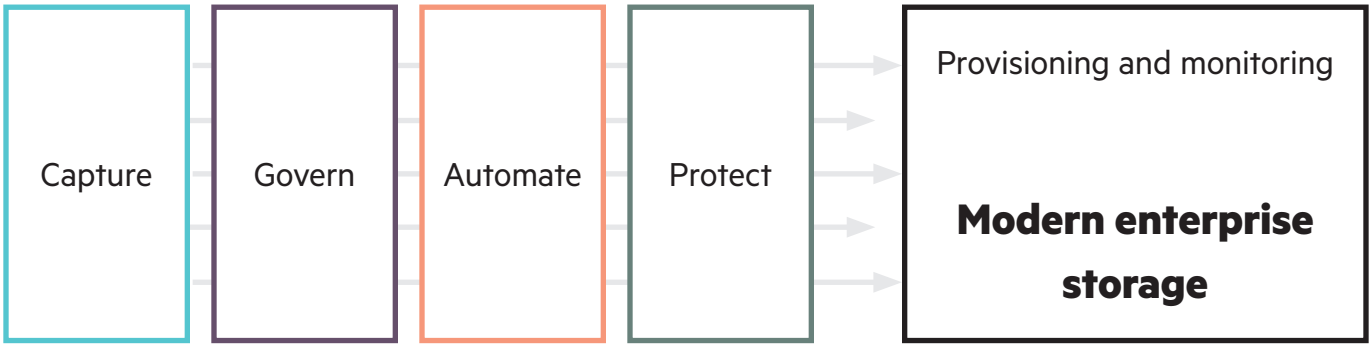
Expected Results

- Simplify backup and recovery operations.
- Improve reliability.
- Increase business resilience.



HPE approach to storage modernization

Before addressing any problem of this magnitude, it is important to have a comprehensive plan that integrates legacy technology while enabling optimal use of new investments. HPE Pointnext approaches this transformation with four parameters: capture, govern, automate, and protect.



- **Capture.** Build a storage infrastructure that offers rich data services by combining all-flash and object storage to cover different data types and access requirements.
- **Govern.** Build a tiered-storage infrastructure to follow the information life cycle to ensure that data is always secure, recoverable, and accessible.
- **Automate.** Incorporate process automation software to deploy and provision infrastructure. Eliminate manual processes to lower operational costs and improve reliability.
- **Protect.** Integrate solutions for backup, archiving, business continuance, and disaster recovery into the data management and protection infrastructure.

Case study
FNZC solves business issues with all-flash storage

FNZC is a leading, full-service brokerage and investment banking firm. The company was an early adopter of virtualized infrastructure and is 95% virtualized today across its server and desktop fleet. Although only a medium-size company with 200 employees, FNZC requires an infrastructure that is enterprise grade to support its business model.

In 2015, the company's legacy storage technology was at the end of its lifecycle and in need of a refresh. The technology was slow, latency was an issue, and its core trading platform performance was suffering.

FNZC had two milestones - replace its five-year-old storage system with one that could meet performance demands, and replaced its even older traditional backup technology. Both were threatening the company's ability to recover, then restore, data in a timely manner.

> FNZC's goal was to find a simplified solution with a better management approach and one that would be a game changing solution that could future proof us for the next five years. We were impressed with the way HPE architected its data storage solution offering a mature and enterprise grade storage system.
>
> **– John Sew Hoy, infrastructure architect, FNZC**

After reviewing many competing alternatives, FNZC selected HPE to modernize its storage infrastructure. HPE proposed an infrastructure that included HPE 3PAR StoreServ 8200 All-flash Array (AFA), HPE StoreOnce 3540, and HPE DL Gen9 Rack Servers. The integration of 3PAR snapshots StoreServ with StoreOnce and Veeam backups completed the backup/restore solution.

HPE Technology Services provided the initial set-up and configuration, and it conducted the health check on the system. HPE engineers completed the migration. FNZC selected HPE Proactive Care 24x7 Service to support the new environment.

Customer outcomes

- Users are enjoying a better experience with faster response speed.
- Database response is 14 times faster, as measured in latency performance.
- SQL Server reading and writing data now 18 times faster.
- Reduce virtual desktop maintenance from one hour to 15 minutes.
- Reduced carbon footprint delivering solid cost savings in power consumption and cooling requirements.
- Reduce loading time of replicated data from four hours to 45 minutes.

> The HPE 3PAR StoreServ technology has reduced the overall risk to the business, provided higher uptime and delivered guaranteed high end value. It is phenomenal compared to what it used to be.
>
> **— John Sew Hoy, infrastructure architect, FNZC**

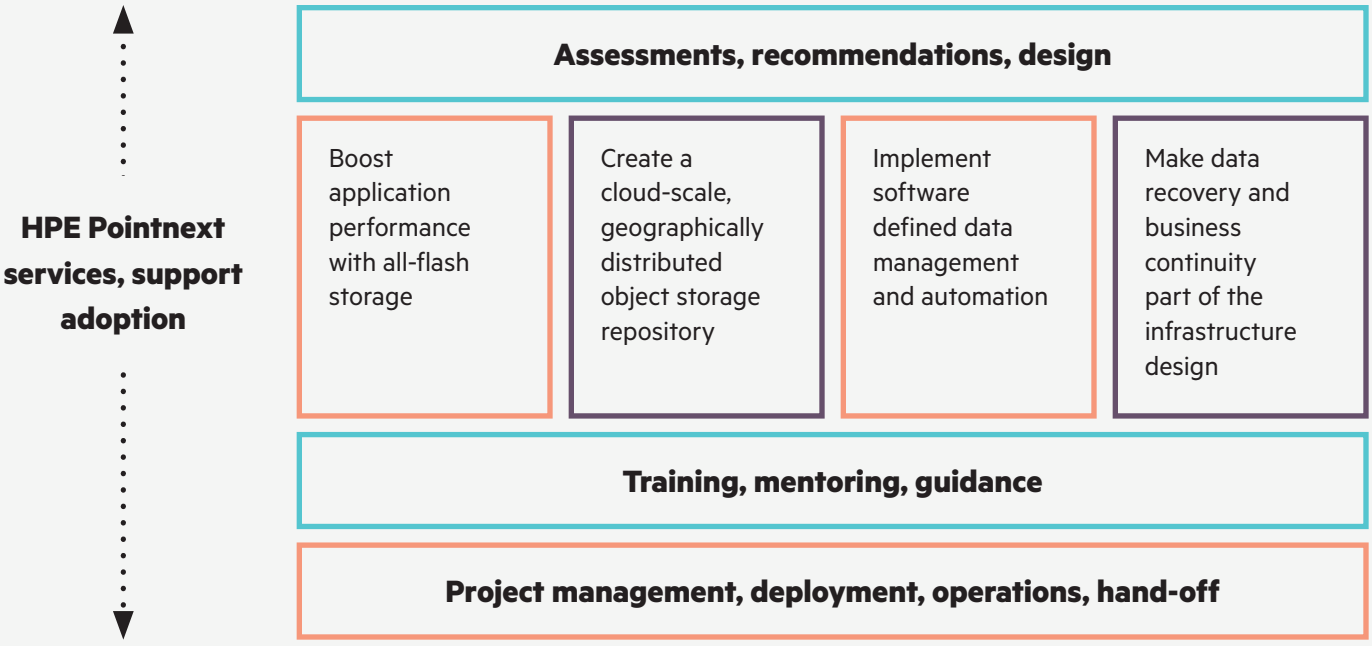
Conclusion

Organizations of all sizes must address explosive data growth, by modernizing their storage infrastructure to survive and thrive in today's market. If your current legacy systems cannot meet your performance demands or adequately protect your business, consider modernizing your data infrastructure. Accelerating workload performance is a critical starting point because data knowledge powers innovation. Meeting current and new application performance requirements will help turn data into information.

Work with an experienced team, such as HPE Pointnext, which can help you determine where to start and guide you through the transformation. Proven blueprints by HPE Pointnext help organizations navigate the process and deliver results quickly. Leverage the experience of HPE Pointnext, with a long history of delivering digital transformations across industries and around the globe. This diagram shows the range HPE Pointnext services that help customers set priorities and move forward.

HPE Pointnext can help evaluate requirements, then recommend and deploy new approaches. HPE Pointnext has the methodology, blueprints, and expertise to help complete this storage modernization.

Applying the accelerate workload performance blueprint



Additional resources

HPE Pointnext

Enterprise Storage Transformation Workshop

All-flash TCO Analysis

Empower the Data Driven Organization

HPE Storage Advisory and Professional Services

HPE 3PAR StoreServ All-flash

HPE Case Study

Hewlett Packard Enterprise

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