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# The Role of the Data Storage Platform in Providing Data Resiliency

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**Abstract:** Databases, in all their forms, remain among the most critical components supporting the digital enterprise. Keeping customer data secured and available is essential to maintaining overall business resiliency and reducing risk. A variety of factors, ranging from data growth to the threat of ransomware, means organizations should evaluate modern approaches to database resiliency. To aid in this, Pure Storage has developed a comprehensive range of capabilities for data protection for database environments that aims to minimize risk and tackle downtime.

## Overview: Data Resiliency for Database Environments in the Modern Age

Data in all its forms—particularly data stored in databases, such as Microsoft SQL Server, Oracle, SAP HANA, and MySQL—is increasingly critical to every organization. In a recent research study from TechTarget's Enterprise Strategy Group, 55% of respondents said their data directly supports either some or all their business.<sup>1</sup> It follows that the impacts of an outage—and losing access to database data, either temporarily or permanently—can be severe. Resiliency should therefore be a fundamental design point for every organization's database strategy.

The reality is that in today's increasingly large, diverse, and complex database environments, data loss events can—and will—occur. In an Enterprise Strategy Group study, 90% of respondents said their organization had to recover data from on-premises data protection and disaster recovery (DR) solutions at least once in the preceding 12 months; over half of respondents (51%) had to recover from these backup systems at least three times during this period.<sup>2</sup>

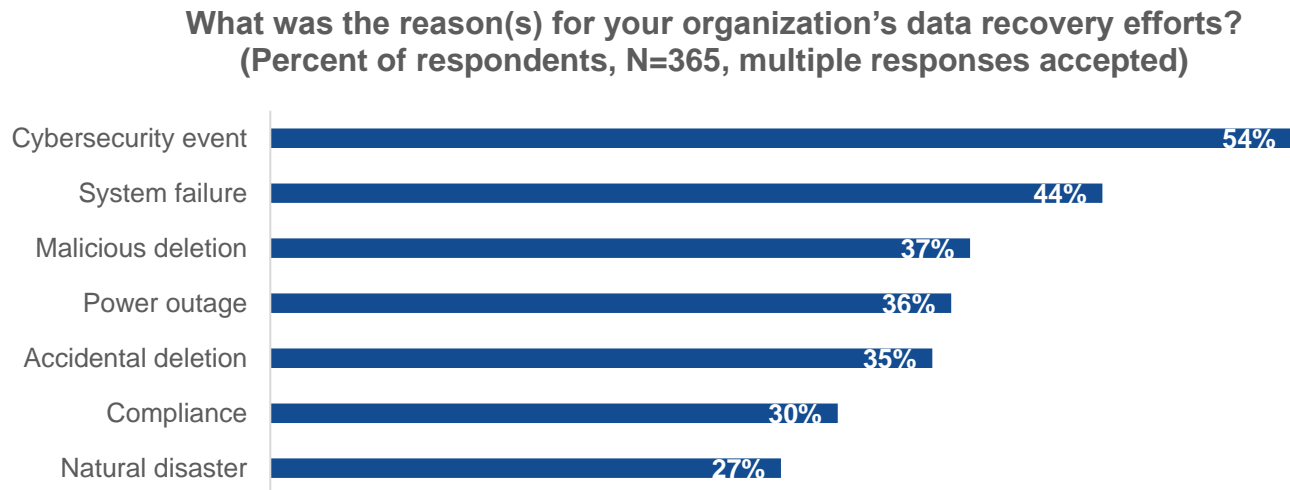
It's not just the number and frequency of incidents requiring data recovery that are growing; it's also the type. Joining the list of more well-understood drivers of recovery, such as system failures, power outages, accidental deletion, and natural disasters, are more recent causes, including compliance-related recoveries and cybersecurity incidents. In fact, recovery from a cybersecurity event, such as a ransomware attack, was the most common catalyst for data recovery, cited by more than half (54%) of organizations (see Figure 1).

It's also evident that many recovery strategies employed by organizations today leave plenty of room for improvement. Only one organization in 10 said they were able to recover 100% of their data from their recent outages. On average, respondents had managed to recover just 73% of their data from their on-premises recovery systems; for those using the cloud for recovery, that average was even lower, at just 69%.

Given this, all organizations should be taking another look at their database environments and asking, "Are we adequately protected?"

<sup>1</sup> Source: Enterprise Strategy Group Research Report, [Navigating the Cloud and AI Revolution: The State of Enterprise Storage and HCI](#), March 2024.

<sup>2</sup> Source: Enterprise Strategy Group Research Report, [Cloud Data Protection Strategies at a Crossroads](#), August 2023. All research references and charts in this paper have been taken from this report unless otherwise noted.

**Figure 1. Reasons for Data Recovery**

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

## Data Resiliency for Database Environments Requires a Defense-in-depth Approach

The above data is particularly relevant to database environments because major database platforms, such as Oracle, Microsoft SQL Server, SAP HANA, and more, continue to form the beating heart of the data center. They support the most critical transaction-based applications and processes that the business depends on. Any outage could cause loss of revenue, reputational damage, compliance/regulatory fines, or all the above.

Historically, engineering resiliency into the database environment has been complex—and expensive—to architect, manage, and test. This task is compounded by the fact that many organizations run multiple database types, often of varying sizes. True resiliency requires a defense-in-depth approach: Protecting data in a database environment isn't just about creating a local backup copy; it should also include creating an off-site copy at a remote site, and ideally a further off-site cloud copy for additional backup or archiving purposes. Depending on the criticality of the application, data might also be synchronously replicated to a second system for high availability and business continuity, either on-site or remotely to a second data center on the same campus, city, or metro region. The entire resiliency process should be regularly tested to ensure adherence to recovery time and recovery point objectives. All of this should be done in a way that doesn't affect application availability. In an "always-on" economy, the notion of taking applications offline to meet backup windows is increasingly obsolete.

If that wasn't enough, in recent years the ransomware threat has emerged to add a major new dimension to the resiliency question. Hackers have caught on that a "good" backup copy often stands between them and their ransom, and they are engineering increasingly sophisticated attacks that specifically target the backup/DR environment. Accordingly, organizations need to add ransomware resilience, with capabilities such as data immutability, to their strategies by creating secure, immutable copies that will be safe to recover from in case of attack.

Though the IT market is bursting with data protection tools and capabilities that cater to a wide range of requirements, IT practitioners rarely have the time to implement and manage myriad products and use them to stitch together a strategy piece by piece. What they require is a consolidated approach that can combine multiple capabilities in an integrated fashion to deliver a complete resiliency picture across multiple recovery scenarios, whether its operational recovery of an accidental deletion, recovering from a ransomware attack, or a full disaster recovery.

## Pure Storage: A Comprehensive Approach to Data Resiliency for Database Environments

Thankfully, help is at hand for IT organizations looking to develop a modern approach to database resiliency. Pure Storage might be best known as a provider of all-flash storage systems for primary storage, but it also has a comprehensive approach to resiliency that enables customers to protect their database environments across a variety of scenarios. Pure Storage has over 12,500 customers globally, including Meta, Comcast, Dominos, and ServiceNow.<sup>3</sup>

Pure's approach to database resiliency spans the full spectrum of recovery scenarios, including local backups/snapshots for operational recovery, remote copies at secondary data centers for DR, remote copies to the cloud for backup/archiving, ransomware protection, and high availability/business continuity across local/metro regions.

The company's approach is noteworthy for a couple of reasons. First, rather than creating data protection "add-ons," Pure's range of data resiliency features like SafeMode have been designed from the ground up to take advantage of its flash-based storage architecture, particularly with products such as FlashArray and FlashBlade//S. This enables administrators to create frequent data copies, such as backups, snapshots, and clones, without incurring significant additional overhead on the storage array. This in turn means mission-critical database systems can remain operational for longer.

Additionally, Pure has developed deep support for specific database environments, such as Oracle, SAP HANA, and Microsoft SQL Server. These solutions have been designed in a way that complement the native database protection features customers might already be using. For example, Oracle customers using Recovery Manager (RMAN)—Oracle's preferred tool for backup and recovery of Oracle databases—can configure Pure's capacity-optimized FlashArray//C or FlashBlade//S system as an RMAN backup target, with higher performance and lower cost than hybrid (disk/flash) storage. Customers can also use FlashArray//C as a consolidated target for storing both RMAN backups and as an Oracle snapshot repository.

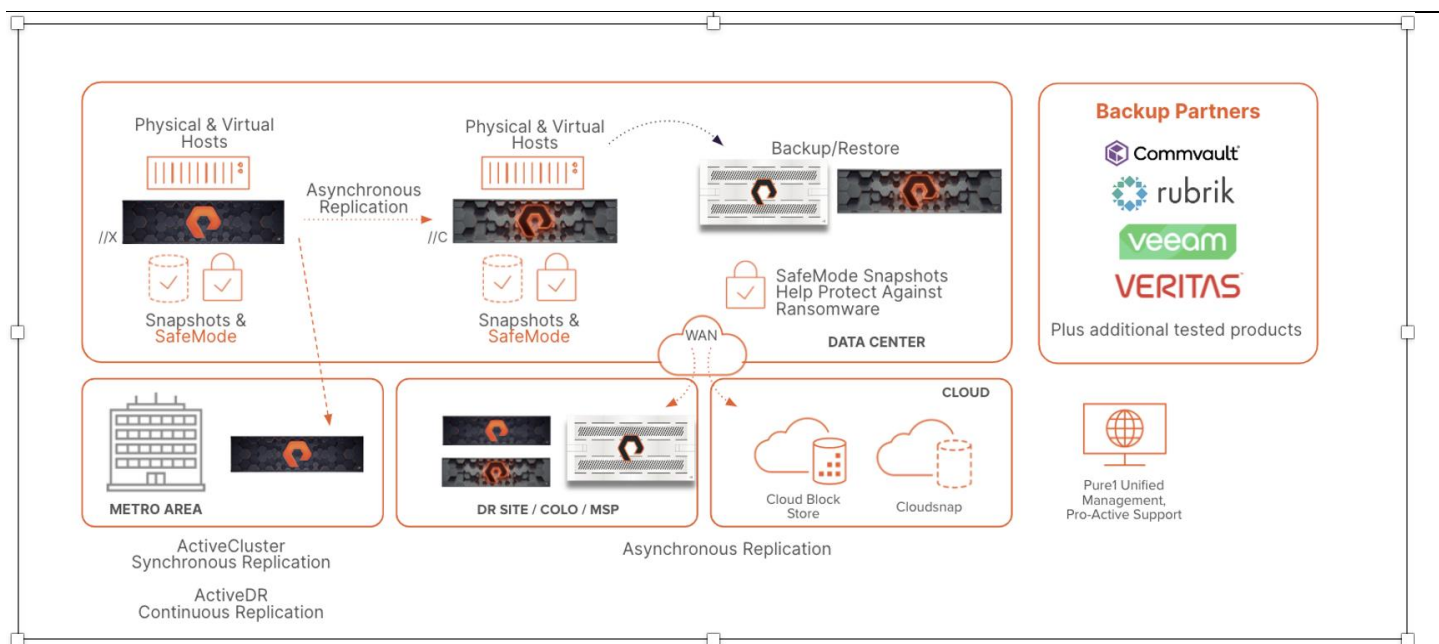
Pure's exclusive use of flash-based storage delivers the same benefits around data protection as it does for primary storage: performance, obviously, but also reduced power usage/data center footprint, improved reliability, and greater efficiency via deduplication and compression. Customers can leverage products such as FlashArray//C and FlashBlade//S as a highly scalable but economical way to enable backups and other copies to be stored on flash.

As depicted in Figure 2, key aspects of Pure Storage's comprehensive approach to database resiliency include the following:

- **Petabyte-scale recovery.** Quickly recover data using Rapid Restore with FlashBlade.
- **Data resiliency.** ActiveCluster and ActiveDR support on-site and off-site replication.
- **Immutability.** Secure data with SafeMode and S3 Object Lock integration.
- **Cloud support.** Back up off-site copies to cloud (with S3 support).
- **Enhancement of native database tools.** Complement and enhance tools like Oracle RMAN with improved performance (faster backups/restores), efficiency (data reduction), automation (of backups/restores), and enhanced resiliency, with high availability options.
- **Compliance.** Apply consistent protection policies to data volume groups.
- **Evergreen//One Advanced SLAs.** Reduce risk with advanced service-level agreements for cyber recovery, optimization, and resilience.

<sup>3</sup> Source: "[Pure Storage: 2024 Fast Facts](#)," PureStorage.com, 2024.

Figure 2. Overview of Pure’s Data Resiliency Capabilities



Source: Pure Storage.

## Conclusion

As the volume and importance of data to every organization continues to grow, the impact of losing access to that data also increases. In a world where outages—be it a small-scale accidental deletion, a site-wide disaster, or a malicious ransomware attack—are inevitable, a comprehensive approach to resiliency at every level of the data infrastructure becomes paramount.

For business- and mission-critical database environments, this is a particularly important but often particularly challenging requirement, and it forces organizations to develop a strategic and integrated approach that spans all recovery scenarios. Pure Storage has developed an innovative and comprehensive range of capabilities covering all key scenarios that will help customers lower their risk and make downtime a thing of the past.

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