# 5 Necessary Data Protection Technologies and How To Unify Them

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No single data protection technology protects against all types of failure scenarios and meets all service level requirements. Every enterprise that relies on digital information to conduct its business needs at least a combination of the following technologies, and many require the use of all of them.

## RAID: Mirrors or Stripes Data Across Multiple Media

**Usage:** Recover data following media errors, corruption or failure.

**Advantages:** Protection and recovery occur automatically. Different schemes provide varying levels of protection, performance and cost.

**Disadvantages:** Susceptible to multiple or cascading media failures, or to system-level and site-level outages.

## Snapshot: Creates Fast, Space-Efficient, Local Point-in-Time Recovery Points

**Usage:** Enable fast operational recovery following a data corruption or deletion event. Snapshots can be application consistent with the integration of orchestration software or scripts. Choose snapshots for critical data that cannot be protected within the available backup window using traditional backup technologies.

**Advantages:** Eliminate the backup window, with little-to-no impact on production applications.

**Disadvantages:** Intolerant of media, system or site-level failures since the data is stored on the source system.

## Backup: Creates an Application-Consistent Copy of Data on Secondary Media

**Usage:** Provide local recovery from a data corruption, deletion, media error or system failure event.

**Advantages:** Lower media costs, work with long-established best practices, and achieve "good enough" service level compliance for most small and noncritical data volumes.

**Disadvantages:** Requirement for long backup windows risks downtime and limits frequency of protection (recovery point objective or RPO). Recovery times are long. Many backup products need periodic full backups, which increase storage costs and/or require data deduplication.

## Active-Active Storage Cluster: Synchronizes Active Data Across Two Systems

**Usage:** Provide full read-write access to data, simultaneously, in two different locations.

**Advantages:** Eliminate the need to fail over and fail back when either of the systems experiences a failure or becomes unavailable. Provides true business continuity.

**Disadvantages:** Lacks point-in-time recovery; the synchronized data is susceptible to corruption or deletion. Costs may be higher than other protection technologies, and performance will degrade at longer distances between systems.

## Remote Replication: Creates a Synchronous or Asynchronous Data Copy in Another Location

**Usage:** Provide remote recovery after a system-level or site-level outage, such as a natural disaster.

**Advantages:** Effective disaster recovery supports small (asynchronous) or zero (synchronous) RPO and fast recovery time objective (RTO). Flexible 2- and 3-data-center configurations are possible.

**Disadvantages:** Does not provide application-consistent recovery and is not resilient to data corruption or deletion. Depending on vendor and product capabilities, the cost of the disaster recovery system may be the same as the primary system.

## Unified Modern Data Protection

With Hitachi Vantara, you can achieve a unified approach to data protection that minimizes complexity while providing complete coverage. Hardware-based RAID, snapshot, cluster and replication technologies are built right into the Hitachi Storage Virtualization Operating System of the Hitachi Virtual Storage Platform family and can be fully automated and orchestrated with Hitachi Ops Center Protector.

Protector capabilities include the creation of application-consistent snapshots and clones, automation of global-active device storage clusters, and remote replication. It creates snapshots and clones on the remote sites to enable point-in-time recovery in the disaster recovery site, as well as repurposing of data. Ops Center Protector also includes host-based backup capabilities for heterogeneous file systems and popular applications.

Learn how smaller enterprises can achieve the same levels of modern data protection, business continuity and disaster recovery as large enterprises, without the big costs and complexity. Download the solution profile.

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