

EMC Celerra Replicator

Advanced IP Storage Protection

Asynchronous file system and iSCSI LUN replication for EMC Celerra

The Big Picture

- Improve information protection with multi-site disaster recovery
- Speed information recovery with disk-based restores
- Easily specify replication service levels
- Lower TCO with affordable, easy-to-manage IP-based replication
- Utilize replicas for backup, decision support, and testing

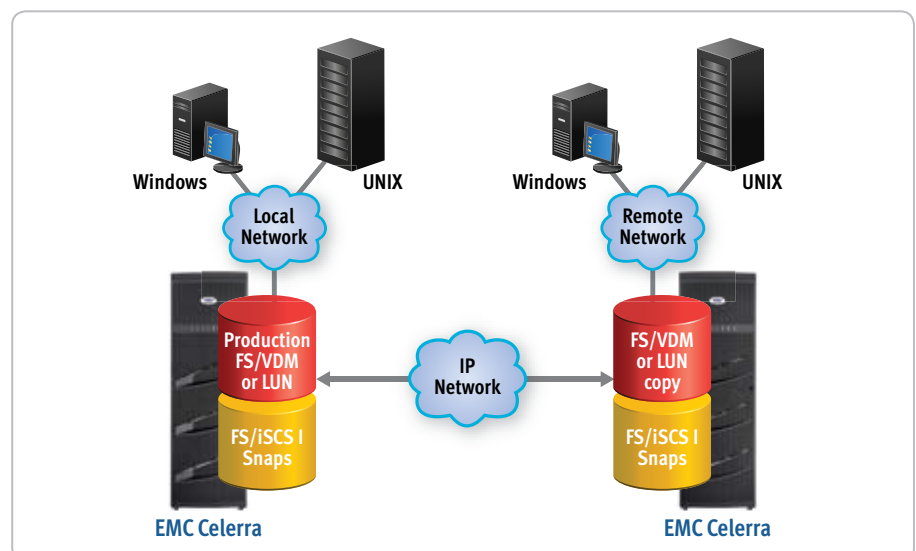
EMC Celerra Replicator improves information protection

In today's competitive marketplace, information protection and faster business restart from a disaster or unplanned outage are of paramount importance to all companies. Increasingly, recovery-point objectives (RPOs) and recovery-time objectives (RTOs) are being used as the metrics between the IT groups and the business units to measure service-level agreements (SLAs). Disaster recovery plans and strategies are often formed around the specification of those values

EMC® Celerra Replicator™ provides efficient, snapshot-based, asynchronous data replication over IP networks. With Celerra Replicator, you can create local or remote copies of file systems, virtual data movers, or iSCSI LUNs.

- File system replication creates a point-in-time copy of a source file system at a destination and periodically updates this copy, making it consistent with the source file system.
- Replicating a virtual data mover (VDM) enables you to produce a copy of a Windows CIFS production environment and ensures that the necessary context is replicated to the remote site along with the file systems. This includes CIFS server data, audit logs, and local groups.
- iSCSI LUN replication is used to produce a point-in-time, consistent copy of a source iSCSI LUN at a destination. Celerra Replicator supports array-based, crash-consistent replication, as well as application-consistent iSCSI replication via EMC Replication Manager.

With Celerra Replicator, both the production data and replica are accessible at all times. An initial copy is made over the network or by physically transporting the image via tape or an additional Celerra® system to the remote location. After the initial synchronization, Celerra Replicator uses differential snapshots to send only the changes over the wire.



Replication Service Levels

The administrator sets a maximum “out-of-synch time” for each replication. Data is transferred across interconnects, which are configured with bandwidth schedule settings. An interconnect is defined per primary/secondary Celerra blade relationship, which is shared by all the objects being replicated. The Celerra Replicator adaptive scheduler determines the size and frequency of updates based on the bandwidth settings, the incoming data loads, and the concurrency of data transfers to ensure this recovery-point objective (RPO) service level is maintained. Due to these market-leading capabilities, Celerra Replicator is as easy to manage with 100 objects being replicated as it is with just two or three. In addition, if a service level cannot be met, the system will send an alert to notify the administrator.

Replication Types

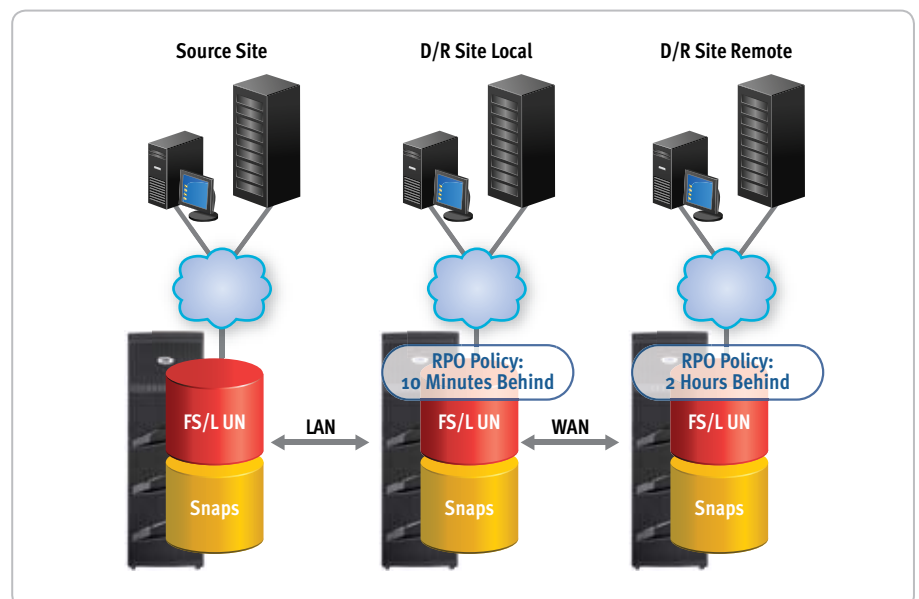
Celerra Replicator supports both local and remote replication:

- **Local replication:** Celerra Replicator can implement local, full copies of the production data. This is ideal for local recovery or non-disruptive backups.
- **Remote Replication:** Celerra Replicator can send information across a WAN. This is ideal for IP-based, asynchronous disaster recovery and remote backups.
- **One-to-many replication:** Celerra Replicator can simultaneously replicate a single source across four sites. This is ideal for distributing shared information for engineering and software development, enterprises with multiple disaster recovery sites, and for multiple remote test environments.
- **Cascading replication:** For multi-site disaster recovery environments, Celerra Replicator can replicate to a secondary site and then replicate from the secondary site to a third site. This is ideal for tiered replication where the nearby disaster recovery site requires an RPO of minutes and the remote disaster recovery site requires an RPO of hours. This deployment maintains disaster recovery compliance if any site is lost and can recover from the loss of two sites.

Simplify Disaster Recovery Testing

Celerra Replicator integrates with Celerra writeable snapshot functionality, so whenever there has been a change to the environment it is a simple process to generate a writeable snap at the remote location, bring up the new environment, and validate the disaster recovery process. Complete testing methodologies involving full failover and disaster recovery process testing can easily be accommodated by forcing a failover.

Cascading replication with multiple recovery-point objectives



Speed information recovery

Using Celerra Replicator to maintain a complete copy of the data in a local or remote location allows for business continuity and dramatically speeds the recovery process. When disaster recovery is required, Celerra Replicator ensures that all your mission-critical information has been captured and sent to one or more remote sites. For data recovery, the secondary copy can be made read/write, and production can continue at the remote site. If the primary system becomes available, incremental changes at the secondary copy can be played back to the primary with the resynchronization function. Using replicas rather than tape means you can be up and running in hours as opposed to days.

Easily specify replication service levels

Administrators can easily implement their disaster recovery service levels by directly specifying recovery-point objectives (RPOs) and interconnect quality of service. The RPO is set with a maximum lag time and the IP network interconnects are throttled with a schedule of times, days, and bandwidth limits. Celerra Replicator automatically schedules updates to meet these service levels and generates an alert in the unlikely event a service level cannot be met, such as because of the loss of a network connection.

Affordable, easy-to-manage IP-based replication

Celerra Replicator runs over standard IP LAN and WAN infrastructures. This simplifies the replication configuration and management and allows the customer to deploy remote replication with only IP network skills, resulting in significant TCO savings.

EMC Replication Manager software is designed to manage and automate snapshots and clones for EMC's replication products. It maps applications on the host to the underlying storage infrastructure and replication technology. If your environment changes, Replication Manager will discover those changes for you, unlike scripting which requires manual changes to your scripts. EMC Replication Manager supports Celerra SnapSure™ for iSCSI and Celerra Replicator for iSCSI in Windows environments. It provides application-consistent replication for key applications like Exchange, SQL, and VMware®. With Replication Manager, the disaster recovery management is performed from the host.

The EMC Celerra Manager provides simple, web-based management of Celerra systems, enabling you to discover, monitor, provision, and manage filesystems, virtual data movers, and iSCSI LUNs. Celerra Manager has specific screens for managing Celerra Replicator. From the GUI, you can set up the replication relationships, interconnects, view the replication status, and initiate a remote failover/failback. In addition, there is a comprehensive management wizard for guided configuration of all replication types on Celerra. Celerra Manager provides server-consistent replication and the disaster recovery management is performed from the management workstation.

Celerra Manager Replication Interface

The screenshot shows the EMC Celerra Manager - Advanced Edition GUI. The left sidebar contains a tree view with categories like Data Movers, Storage, File Systems, and Replications. The main window is titled 'Replications' and shows a table of replication relationships. The table has the following columns: Replication, Type, Local Data Mover, Data Mover Interconnect, Celerra Network Server, and Status. The data rows are as follows:

Replication	Type	Local Data Mover	Data Mover Interconnect	Celerra Network Server	Status
new-iscsi	iSCSI LUN	server_2	ns10dm2-ns11dm2	NS11	OK
ns10-iscsi-back	File System	server_2	iscsi-back		OK
NS10-VDW-ns11	Virtual Data Mover	server_2	ns10dm2-ns11dm2	NS11	OK
ns10dm2-ns10dm3	File System	server_2	ns10dm2-ns10dm3		OK
ns10dm2-ns10dm2	File System	server_2	ns10dm2-ns10dm2	NS11	OK

At the bottom of the table, it says '5 items displayed.' Below the table are several action buttons: New, Refresh, Stop, Start, Reverse, Switchover, Failover, and Delete.

Utilize replicas for backup, decision support, and testing

Celerra Replicator is ideal for protecting information, providing disaster recovery, content distribution, and data center migrations. Celerra Replicator provides investment protection by letting customers leverage those replicas for backup, decision support, and testing.

- **Disaster recovery:** A duplicate copy of production data can be replicated to a remote site where it can be brought online with little downtime in case of a major disaster. Cascading replication allows for multi-site protection.
- **Content distribution:** Celerra one-to-many replication is ideal for pushing content to remote sites, for example, when engineering or software development occurs in multiple locations and new builds need to be distributed to those locations.
- **Backup:** Performing backups with a copy of the production data eliminates the need to take the production applications offline. The backup can occur locally or at the remote location.
- **Decision support:** File systems and iSCSI LUNs can be replicated to make a copy of a database to be used for data mining and decision support without affecting the production applications.
- **Software testing:** Before upgrading software, a duplicate copy of the data can be made and the upgrade tested before impacting production data. Writeable snaps allow the software to be tested with a modifiable copy of the production data.
- **Data center migrations:** Celerra Replicator can be used to relocate to a new data center by copying the data to the new system and forcing a failover. This allows the migration to take place without any data loss.

Services and expertise

EMC Services delivers expert implementation of Celerra Replicator, leveraging EMC's leadership in comprehensive recovery solutions, extensive storage deployment best practices, and proven methodology to accelerate business results without straining your resources. Our experienced team will help you assess risks, devise an optimal plan, and keep your business running, regardless of scale.

The EMC Global Delivery Model ensures flawless service delivery that is customized to address your specific goals and requirements in three phases. These include: Discovery, Analysis, and Planning; Implementation and Testing; and Documentation, Functional Overview, and Acceptance.

After implementation, EMC Customer Service—five-time winner of the SSPA STAR Award for outstanding mission-critical support—helps you keep your information available 24/7. And EMC Education Services drives the value of your investment with a comprehensive portfolio of customer courses.



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