

EMC SRDF/Star



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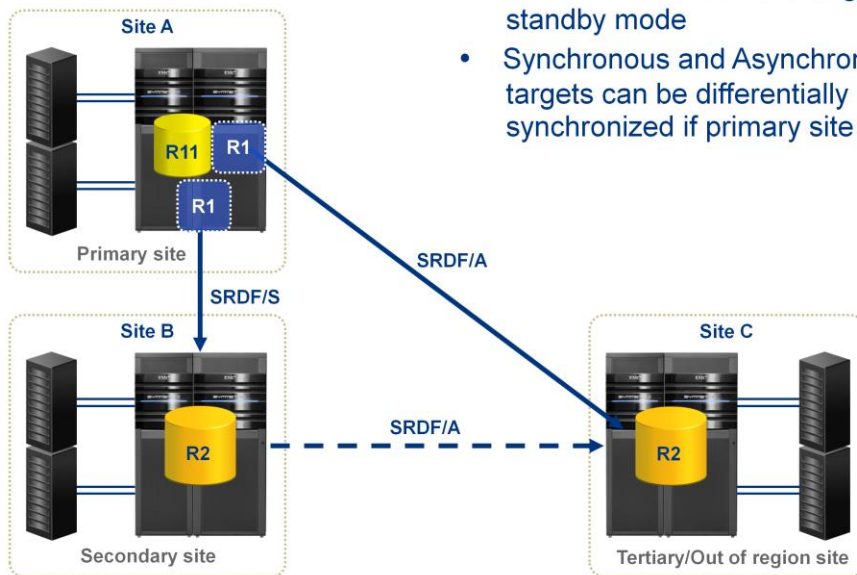
- Three site disaster recovery solution
- Maintains continuous protection if primary workload site becomes inoperable
- One target in Synchronous mode
 - Short distance, zero data lag
- One target in Asynchronous mode
 - Longer distance, variable data lag, no performance impact
- Two modes
 - Concurrent SRDF/Star
 - Cascaded SRDF/Star

SRDF/Star is a three-site disaster recovery solution that consists of the Primary (production) site, Secondary site (regional), and the Tertiary site (out-of region). The secondary site synchronously mirrors the production site, the tertiary site asynchronously. In the event of the primary site outage, SRDF/Star allows to quickly move operations and re-establish remote mirroring between the remaining sites. It operates in two modes namely Concurrent SRDF/Star and Cascaded SRDF/Star. SRDF/Star provides the following advantages:

- The ability to maintain protection and business continuance despite the loss of any site in a three-site configuration (primary, secondary, tertiary).
- The ability to resume asynchronous protection between the secondary and tertiary sites, with minimal data movement, in the event of a primary site failure.

SRDF/Star Using Concurrent SRDF Mode

- Source to two concurrent targets
- SRDF link between two targets in standby mode
- Synchronous and Asynchronous targets can be differentially synchronized if primary site fails



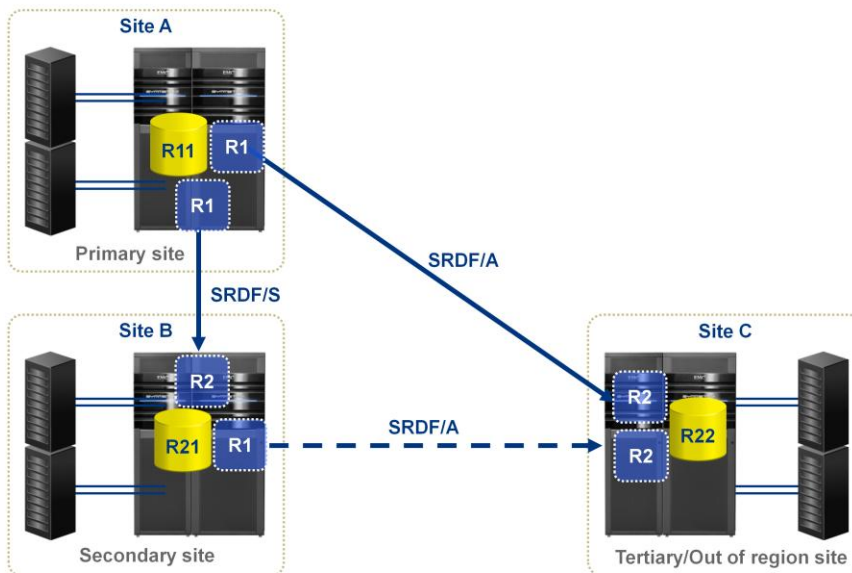
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Concurrent SRDF/Star enables concurrent SRDF/S and SRDF/A operations from the same source volume. The primary business benefit of Star is that in the event of a primary site outage, it is possible to undertake a differential resynchronization between the two remaining sites, followed by the resumption of production at either site.

If primary site fails, one can fail over to secondary site (synchronous, failover site) and resume remote mirroring after creating new SRDF pairs between secondary and tertiary. Reconfiguration steps at secondary and tertiary are necessary before SRDF mirroring can be resumed. You can use R22 volumes in tertiary, to avoid these configuration steps.

Concurrent SRDF/Star with R22 Device



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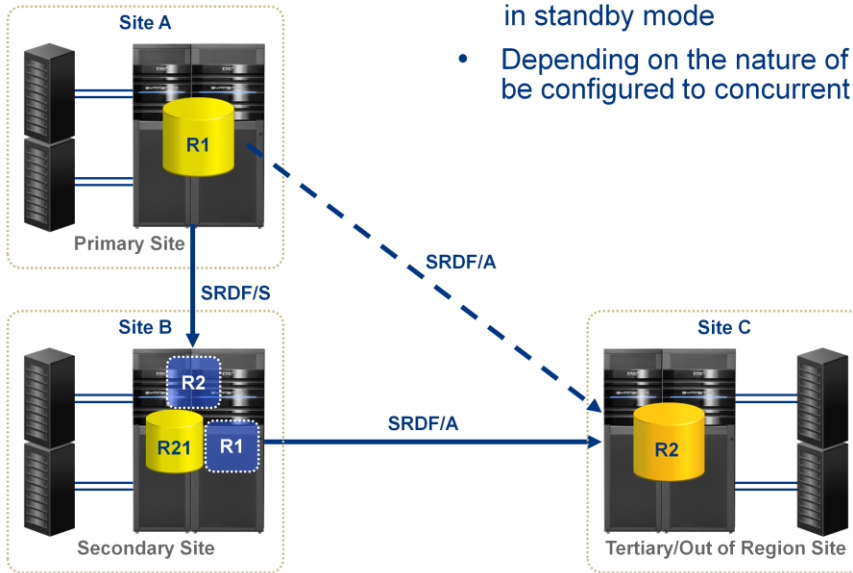
Engenuity version 5874 supports Concurrent SRDF/Star configurations using concurrent R22 volumes. R22 volumes have two SRDF mirrors, only one of which is allowed to be active on the SRDF links at a given time. R22 volumes simplify SRDF/Star failover situations, improve the resiliency of the SRDF/Star application, and reduce the number of steps involved in failover procedures, thus enabling the command sequences to finish quicker.

Proceed as follows to set up a Concurrent SRDF/Star relationship using R22 volumes:

1. Create the initial R1 --> R2 pair between primary and secondary.
2. Create the R11 --> R2 pair between primary and tertiary.
3. Create the R21 --> R22 pair between secondary and tertiary.

SRDF/Star Using Cascaded SRDF mode

- Source to two cascaded targets
- SRDF link between source and async target in standby mode
- Depending on the nature of the failure, can be configured to concurrent star

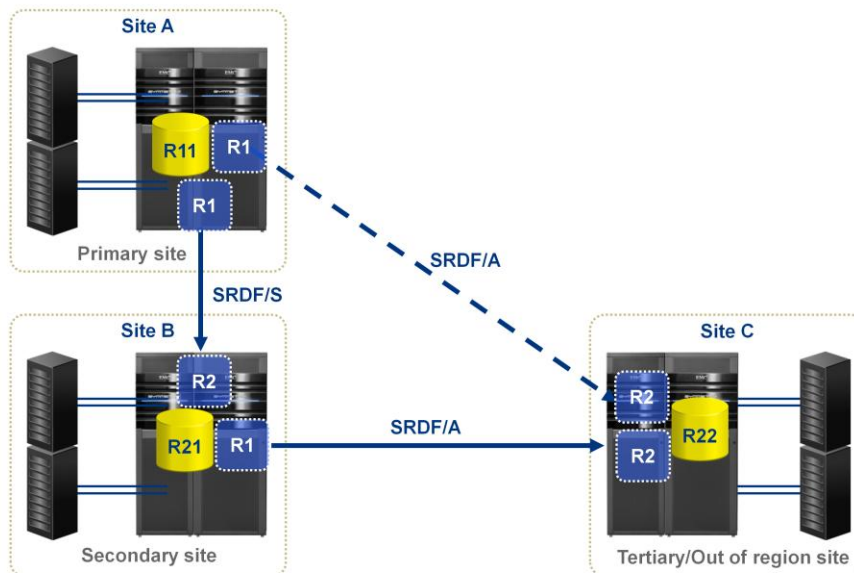


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Cascaded SRDF/Star enhances the basic cascaded SRDF functionality by using the SRDF/Star differential resynchronization. Cascaded SRDF allows a synchronous R2 target to also act as a source for SRDF/A. In Cascaded SRDF/Star configurations, the synchronous secondary site is always more current than the asynchronous tertiary site. If secondary site fails, the Cascaded SRDF/Star configuration offers the ability to incrementally establish an SRDF/A session between primary site and tertiary site. The basic Cascaded SRDF/Star configuration requires configuring new SRDF pairs between primary and tertiary before they can incrementally establish an SRDF/A session. If R22 volumes are used in tertiary, these configuration steps are not needed.

Cascaded SRDF/Star with R22 Device



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The slide shows Cascaded SRDF R22 mode of operation. This mode has the same configuration as the basic Cascaded SRDF/Star except that it requires R22 volumes in tertiary side. The SRDF links between primary and tertiary are passive and serve as the recovery path. By using R22 volumes in tertiary, pre-configure the SRDF pairs required to incrementally establish an SRDF/A session between primary and tertiary in case of secondary fails.

Consider the following when creating a Cascaded SRDF/Star configuration with R22 volumes:

- All volumes at the primary site must be configured as concurrent (R11) volumes paired with R21 volumes in secondary and R22 volumes in tertiary.
- All volumes at the secondary (synchronous site) must be configured as R21 volumes.
- All volumes at the tertiary (asynchronous site) must be configured as R22 volumes.

SRDF/Star Benefits

- Ability to establish remote replication between two sites in event of one site becoming inoperable
 - Incur zero-data-loss in event of local site disaster
 - Incur minimal data loss in event of regional disaster
- The ability to easily reconfigure concurrent to cascaded Star and vice versa provides great flexibility
- The R22 device provides additional operational resiliency to SRDF/Star
 - Allows the SRDF/Star pair relationships for all 3 sites to be created at initial set-up
 - Improves RTO with more efficient synchronization process

This slide lists a summary of major benefits and advantages of SRDF/Star.