Local and Remote Replication Solutions from IBM, EMC, and HDS
Session 9018 SHARE Anaheim
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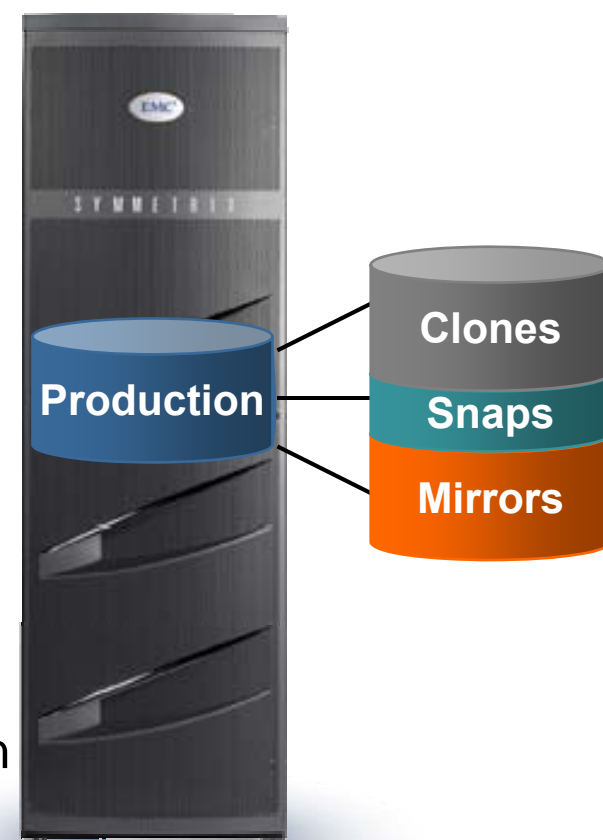
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Technology · Connections · Results

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EMC Local Replication offerings

- TimeFinder / Clone
  - Up to16 High-performance physical copies
  - Full-volume (w/precopy) and dataset level
  - Incremental resync (Dataset and Multi-volume)
  - Consistency group support (**dataset and volume!**)
- TimeFinder / Snap
  - Space-saving volume snapshot images (up to 128)
  - Typically requires less than 30% additional capacity
  - Async COFW, Dynamic SAVEPOOL expansion
  - Incremental resync
  - Consistency group support
- TimeFinder / Mirror
  - Highly-available full-volume mirror
  - Supports RAID-1 BCVs
  - Native (mirror-based) support on DMX
  - Supported on Symmetrix V-Max via Clone Emulation
    - All RAID protection types
    - Thin FBA device support*
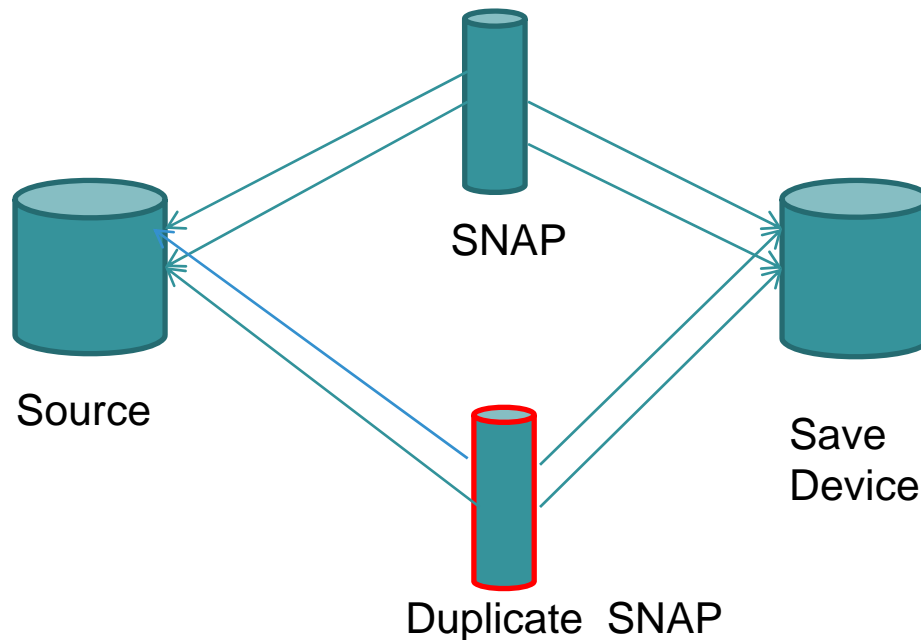

2

Duplicate Snaps

NEW!

Duplicate Snap gives you the ability to create a SNAP of a previously activated SNAP device.

SNAP

Source

Save
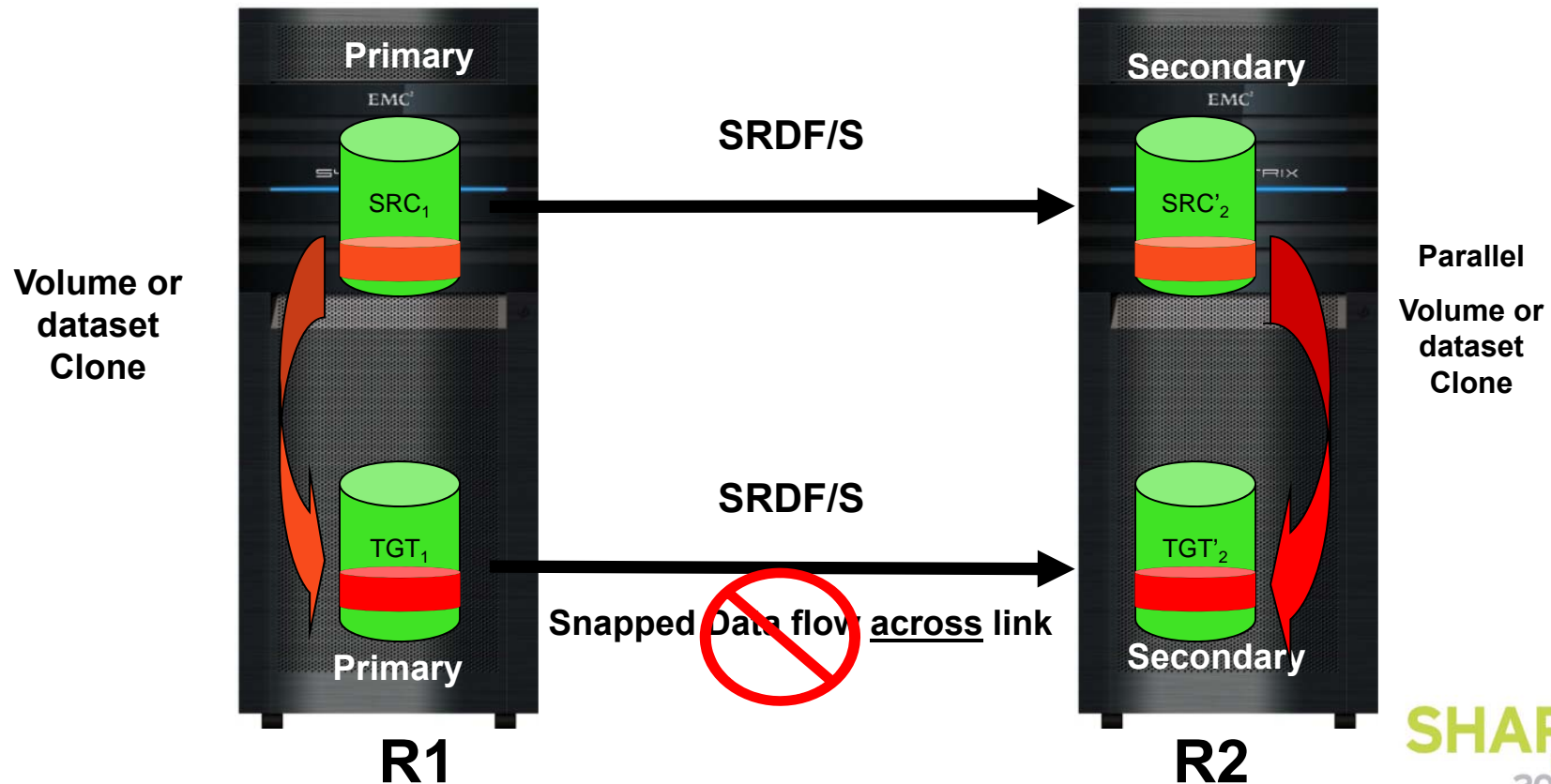Device

Duplicate SNAP
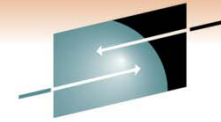
Simultaneous TF/Clone

NEW!

- SNAP VOLUME or SNAP DATASET operations to SRDF/S R1 volumes result in <u>independent simultaneous snap operations</u> in the R2 Symmetrix
- Data state for snapped data is the same on both sides

Primary

Secondary

SRDF/S

SRC_1

SRC'_2

Volume or dataset Clone

Parallel

Volume or dataset Clone

SRDF/S

TGT_1

TGT'_2

Snapped Data flow <u>across</u> link

Primary

Secondary

R1

R2

Symmetrix Remote Data Facility: Two Site solutions

SRDF/Synchronous
- Based on RAID-1 mirroring
- No data loss
- One round trip per I/O
- Supports Autoswap

Primary   **Secondary**

Limited Distance

R1   R2
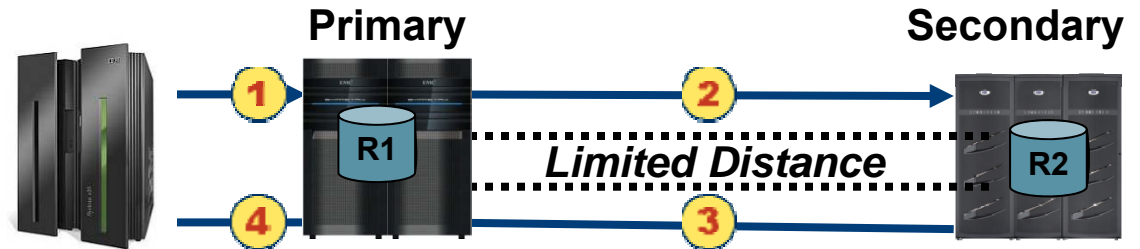
SRDF/Asynchronous
- Predictable RPO
- No performance impact
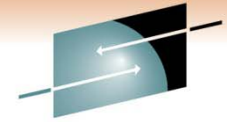- Unlimited distance
- **Only two copies of data req'd**

Primary   **Secondary**

Unlimited Distance

R1   R2
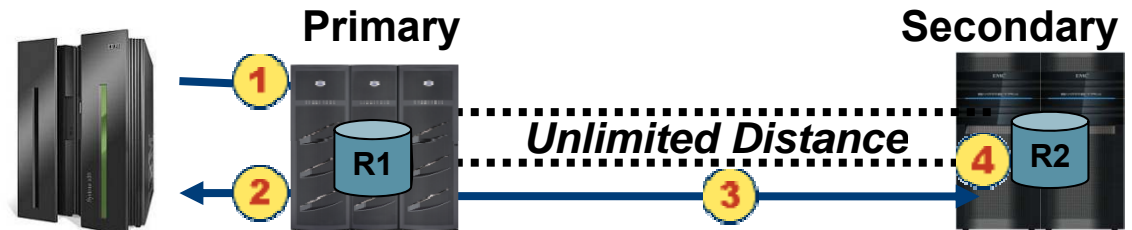
SRDF/DM
- Data Movement solution
- No performance impact
- Unlimited distance

Primary   **Secondary**

Unlimited Distance

R1   R2

SRDF/A
Multi-Session Consistency

- SRDF/A groups that span Symmetrix systems
  - Used when related data resides on more than one system
- The SRDF/A MSC group is acted upon as a single entity
  - Ensures a complete, restartable point in time remote copy
  - Supports mixed Unix, Windows, MF devices in a single group

- SRDF/A Resiliency features
  - Transmit Idle Delta Set Extension
  - SRDF/A Write Pacing
- SRDF/A Automated Recovery
- Dynamic group expansion
- Secondary side Time of Day indication
- 3 second cycle time RPO

MSC task

Delta Set

Delta Set

Delta Set
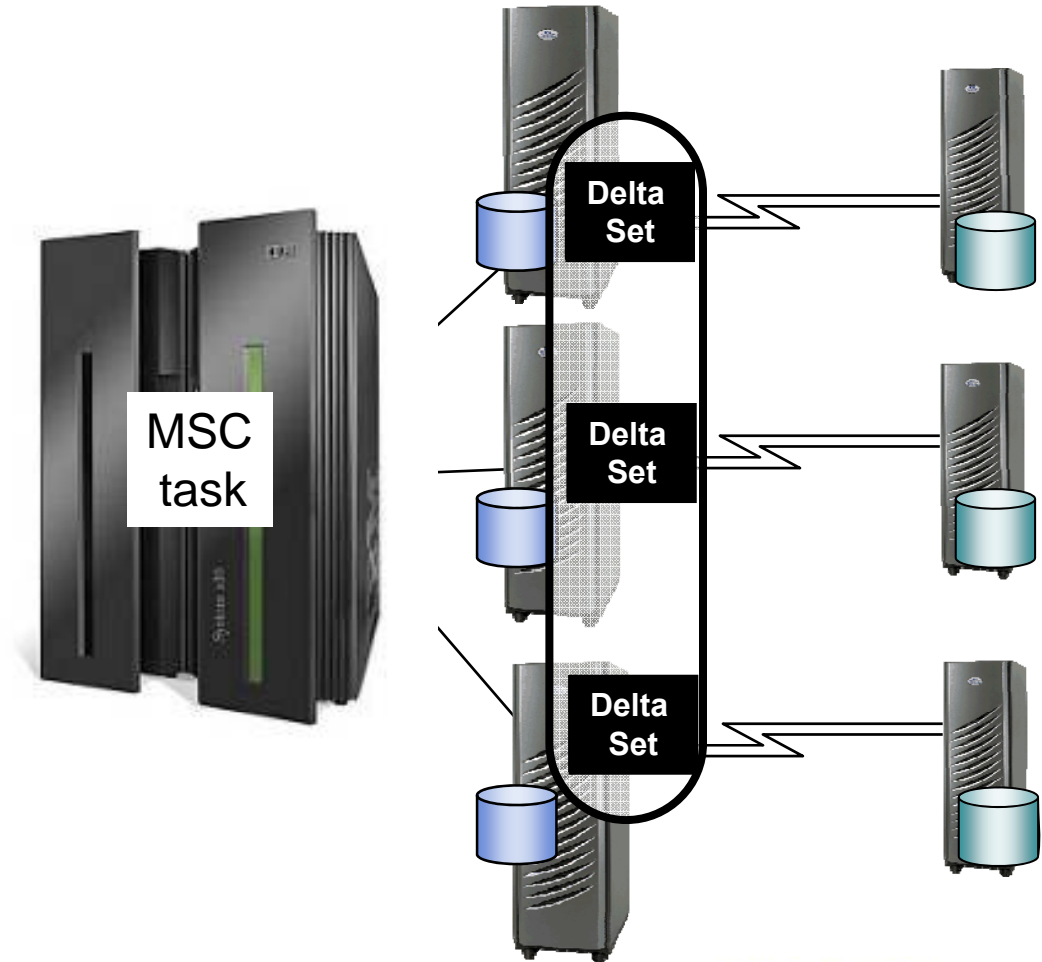
Enterprise-wide Consistency with SRDF and TimeFinder Consistency Groups

TimefInder/Clone
Timefinder/Snap
Timefinder/Mirror

SRDF/S or
SRDF/A

Mainframe

Windows

UNIX

Ensuring enterprise-wide consistency across multiple databases, applications, and platforms

Product-based consistency function
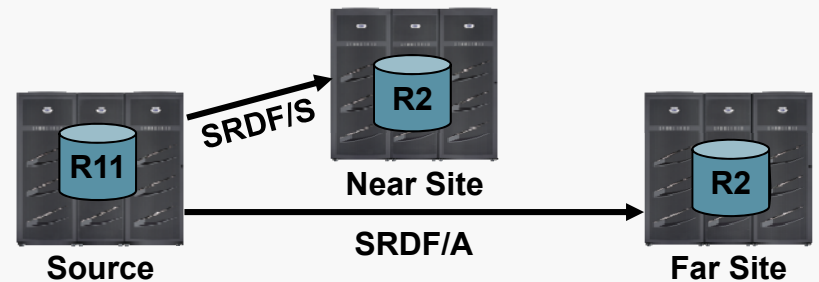*-Not automation driven*
-Single comand
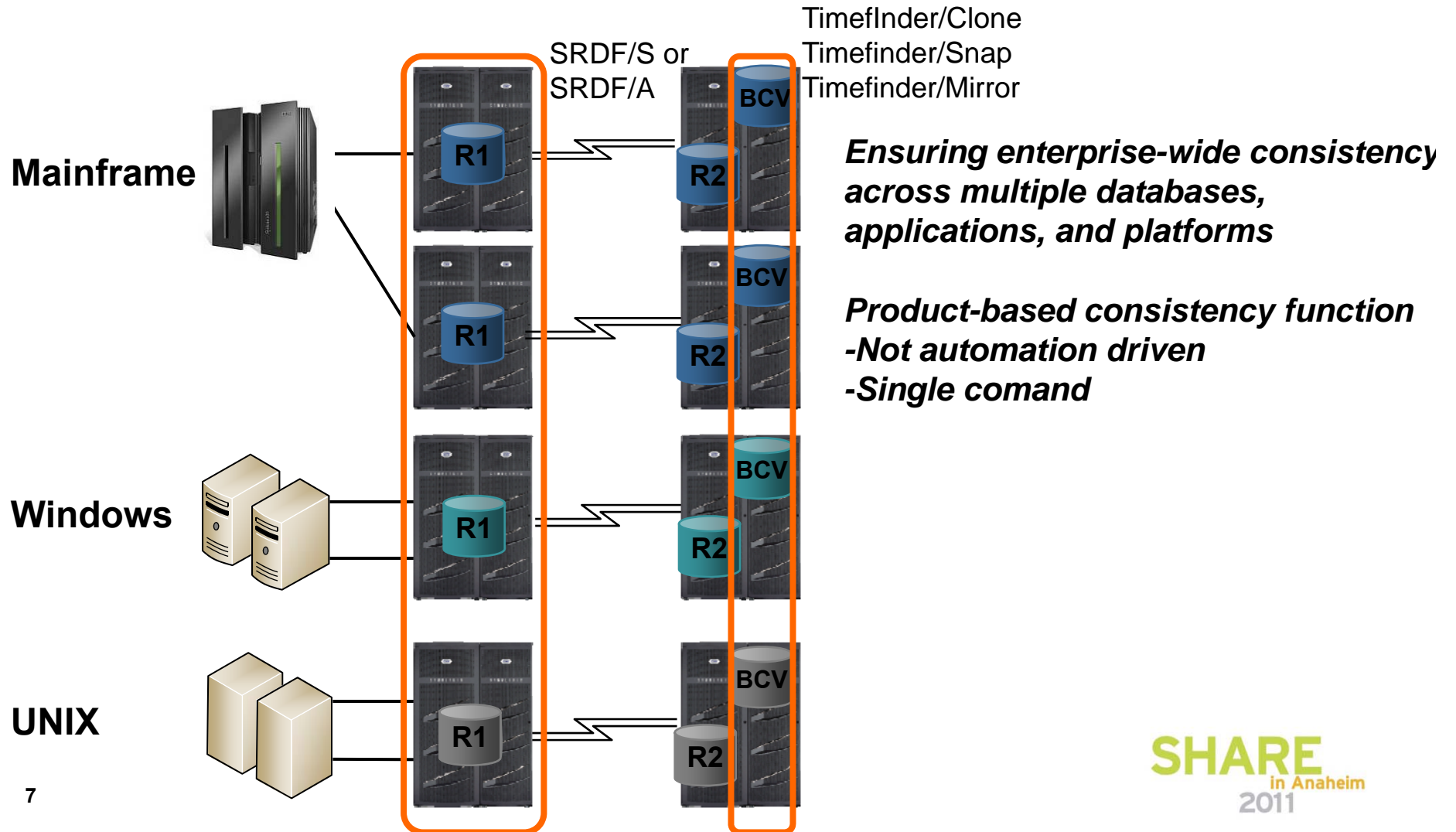
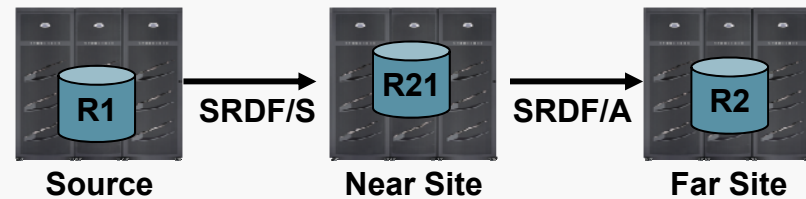# Symmetrix Remote Data Facility: Three Site solutions

Concurrent SRDF

- Multi-site protection leveraging a single source and concurrently replicating to two remote sites


Cascaded SRDF

- Multi-site protection SRDF/S between Source and Near Site; SRDF/A between Near Site and Far Site
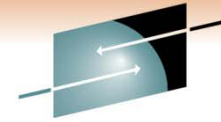- Eliminates BCV cycling at Near Site; improves RPO/RTO at Far Site

SRDF Extended Distance Protection

- Lower cost solution to achieve no data loss at out-of-region distance site
- Near site acts as 'pass thru' to far site
- Requires V-Max and 5874 for new 'diskless' R21 device type
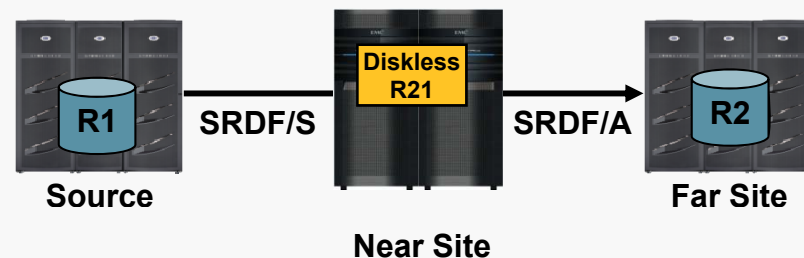
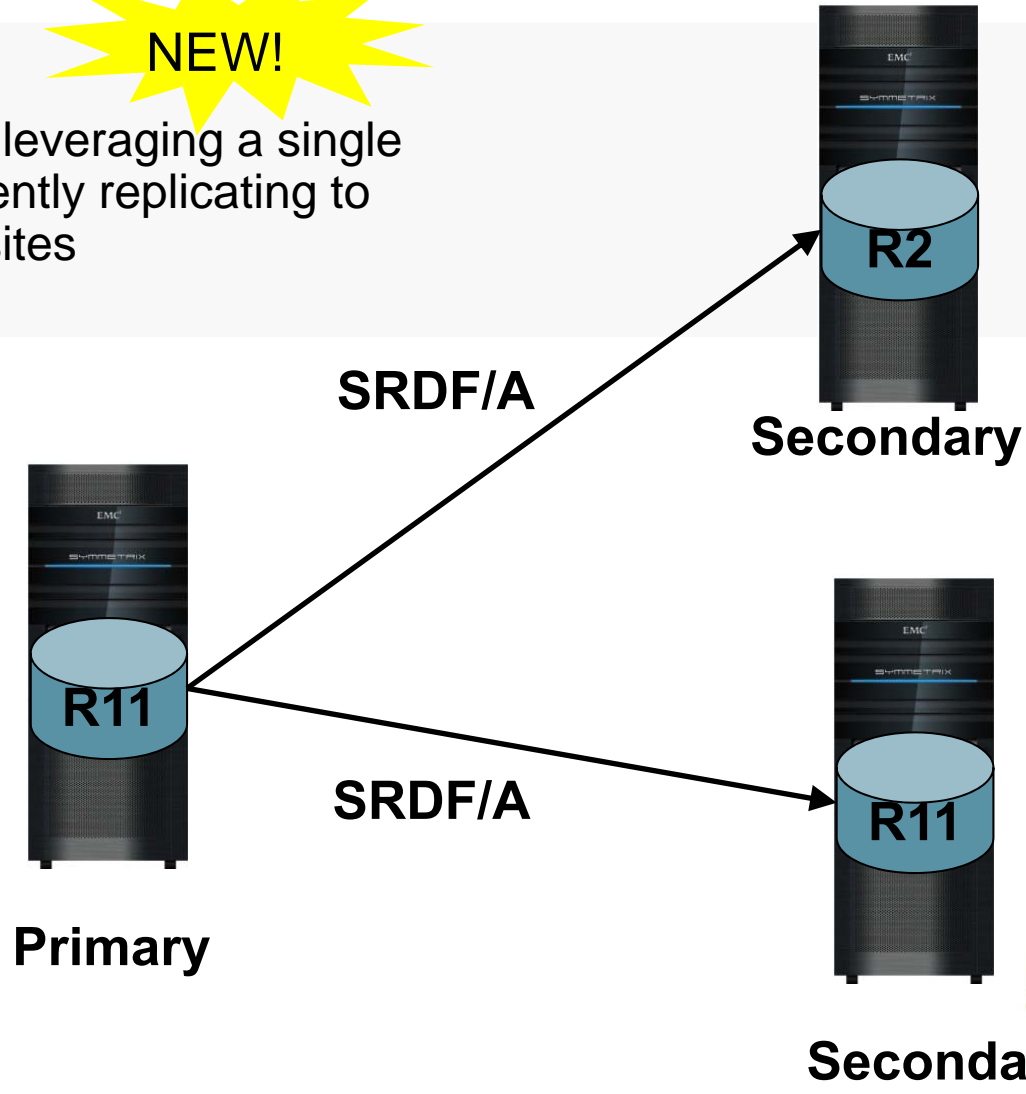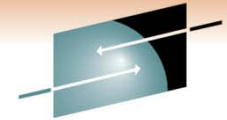# Symmetrix Remote Data Facility: Three Site solutions

Concurrent SRDF/A

NEW!

- Multi-site protection leveraging a single source and concurrently replicating to two distant remote sites

SRDF/A

R2

Secondary

R11

Primary

SRDF/A

R11

Secondary
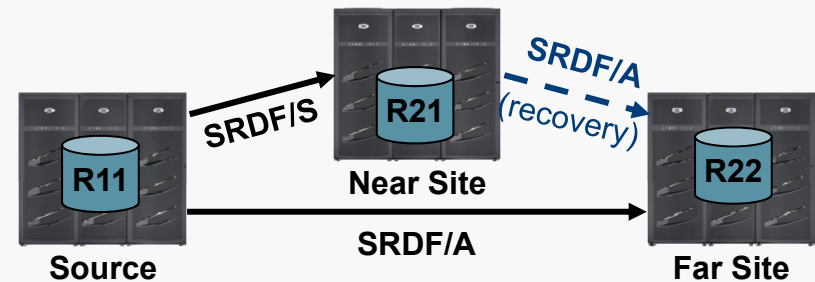
# Symmetrix Remote Data Facility: Three Site Star solutions

SRDF/Star - Concurrent

- Zero data loss recovery
- Includes standby SRDF/A links between remote sites to continue protection if any site fails
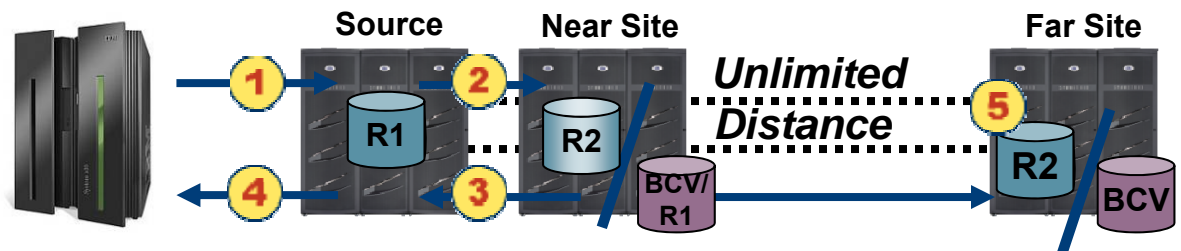- Exploits new R22 device type for improved resiliency
- Requires GDDR

SRDF/Star - Cascaded

- Supports SRDF/EDP for lower disk cost
- Zero data loss recovery
- Exploits new R22 device type for improved resiliency
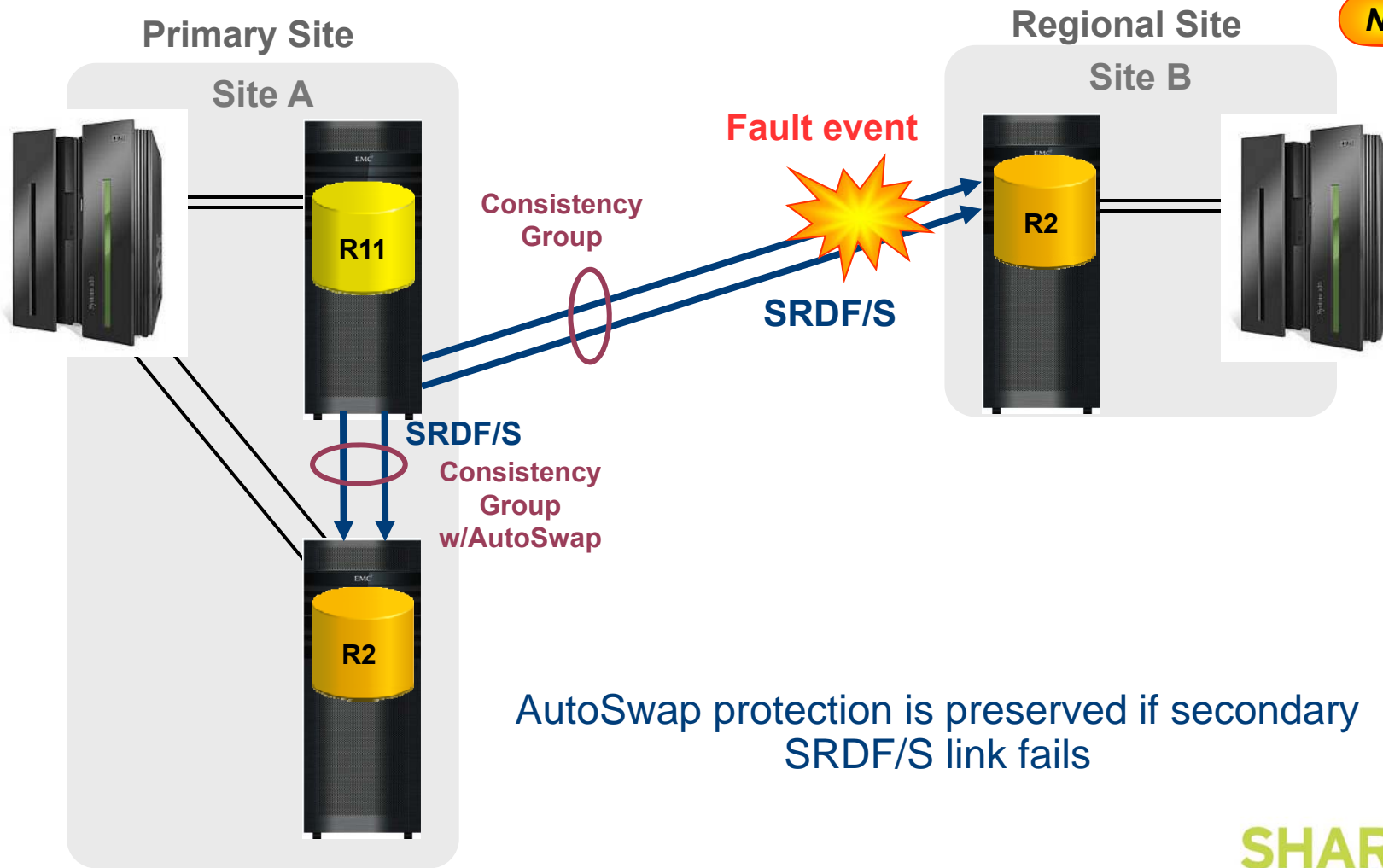- Requires GDDR
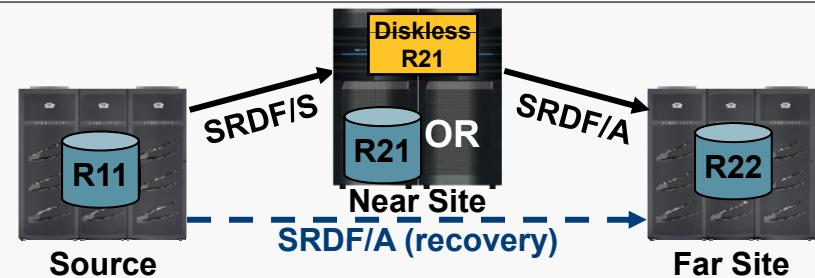
SRDF/AR Automated Replication

- Predictable RPO
- Zero data loss recovery
- Unlimited distance
- **Low bandwidth requirement**
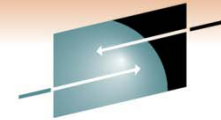- Also available in two site configuration

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Concurrent SRDF/S:
Persistent AutoSwap Protection

New
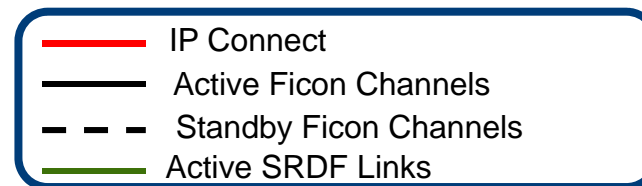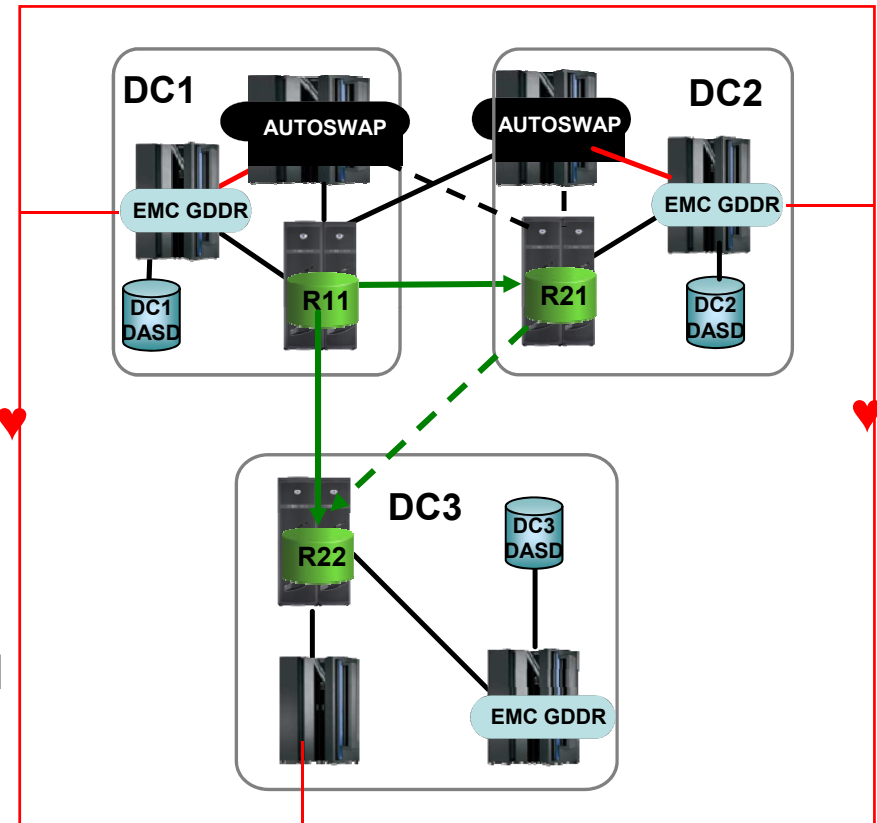
Primary Site

Site A

Regional Site

Site B

Fault event

R11

R2

Consistency Group

SRDF/S

SRDF/S

R2

Consistency Group w/AutoSwap

AutoSwap protection is preserved if secondary SRDF/S link fails

GDDR –
Geographically Dispersed Disaster Restart
Session 8193 March 3, 3:00
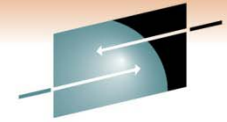
- Product-based Offering
- Available since February 2007
  - V3.2 recently announced
- Introduces 'automation LPARs' to separate command and control
  - Known as 'C' systems
- GDDR is installed in each of three 'C-Systems'
  - Known as a GDDR Complex
- One GDDR Complex is required per managed consistency group
- Multiple replication topologies supported
  - 2-site
  - 3-site
  - Sync and Async
  - With or without AutoSwap

▬▬▬ (red)	IP Connect
▬▬▬ (black)	Active Ficon Channels
- - - -	Standby Ficon Channels
▬▬▬ (green)	Active SRDF Links

FourSite SRDF for Migration

Primary Symmetrix

New Primary

R1 **R1**

Adaptive Copy Disk

SRDF/S or /A

SRDF/S or /A

R2

R2

Secondary Symmetrix

New Secondary
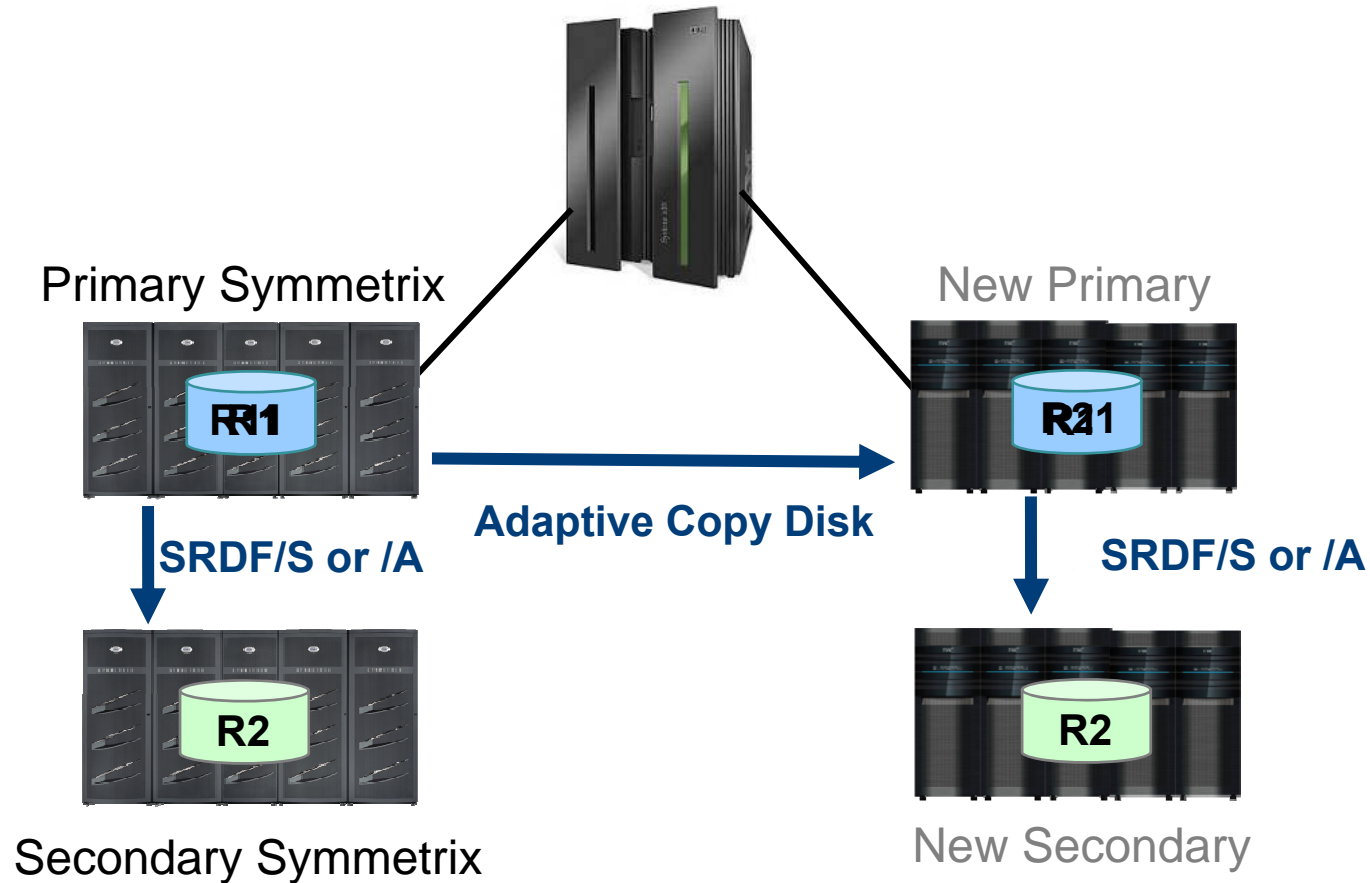
Four Site SRDF for 'Redundant DR'

Primary Symmetrix

Sync secondary

R11 — SRDF/S → **R21**

SRDF/A

SRDF/A

R2

R2

Async Secondary

Async Secondary