



# SRDF/A and DB2 Universal Database for Linux, UNIX, and Windows Testing and Qualification

---

## ***Abstract***

IBM Toronto Labs and EMC jointly performed a series of tests to validate DB2 Universal Database for Linux, UNIX, and Windows in an SRDF/A (SRDF/Asynchronous) environment. The purpose of this exercise was to ensure that under all tested circumstances, SRDF/A yielded a valid copy of the database on the target side of the replication.

Published 7/6/2005

---

Copyright © 2005 EMC Corporation. All rights reserved.

EMC believes the information in this publication is accurate as of its publication date. The information is subject to change without notice.

THE INFORMATION IN THIS PUBLICATION IS PROVIDED “AS IS.” EMC CORPORATION MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WITH RESPECT TO THE INFORMATION IN THIS PUBLICATION, AND SPECIFICALLY DISCLAIMS IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Use, copying, and distribution of any EMC software described in this publication requires an applicable software license.

EMC<sup>2</sup>, EMC, EMC ControlCenter, AlphaStor, ApplicationXtender, Celerra, CentraStar, CLARAlert, CLARiiON, Connectrix, Co-StandbyServer, Dantz, Direct Matrix Architecture, DiskXtender, Documentum, EmailXtender, EmailXtract, HighRoad, Legato, Legato NetWorker, Navisphere, OpenScale, PowerPath, RepliStor, ResourcePak, Retrospect, Smarts, SnapShotServer, SnapView /IP, SRDF, Symmetrix, TimeFinder, VisualSAN, Xtender, Xtender Solutions, and where information lives are registered trademarks and EMC Developers Program, EMC OnCourse, EMC Proven, EMC Snap, EMC Storage Administrator, Access Logix, ArchiveXtender, Authentic Problems, Automated Resource Manager, AutoSwap, AVALONidm, C-Clip, Celerra Replicator, Centera, CLARevent, ClientPak, Codebook Correlation Technology, Common Information Model, CopyCross, CopyPoint, DatabaseXtender, Direct Matrix, DiskXtender 2000, EDM, E-Lab, EmailXaminer, Enginuity, eRoom, FarPoint, FLARE, FullTime, Graphic Visualization, InfoMover, Invista, MirrorView, NetWin, NetWorker, OnAlert, Powerlink, PowerSnap, RepliCare, SafeLine, SAN Advisor, SAN Copy, SAN Manager, SDMS, SnapImage, SnapSure, SnapView, StorageScope, SupportMate, SymmAPI, SymmEnabler, Symmetrix DMX, Viewlets, and VisualSRM are trademarks of EMC Corporation. All other trademarks used herein are the property of their respective owners.

Part Number H1688

---

## Table of Contents

<b>SRDF/A and DB2 Universal Database Testing and Qualification .....</b>	<b>4</b>
<b>Source and Target Hosts Configuration .....</b>	<b>5</b>
<b>Symmetrix Configuration .....</b>	<b>5</b>
<b>Source Server Database Activity.....</b>	<b>5</b>
<b>Target Server Validation Procedure .....</b>	<b>5</b>
<b>Summary .....</b>	<b>6</b>

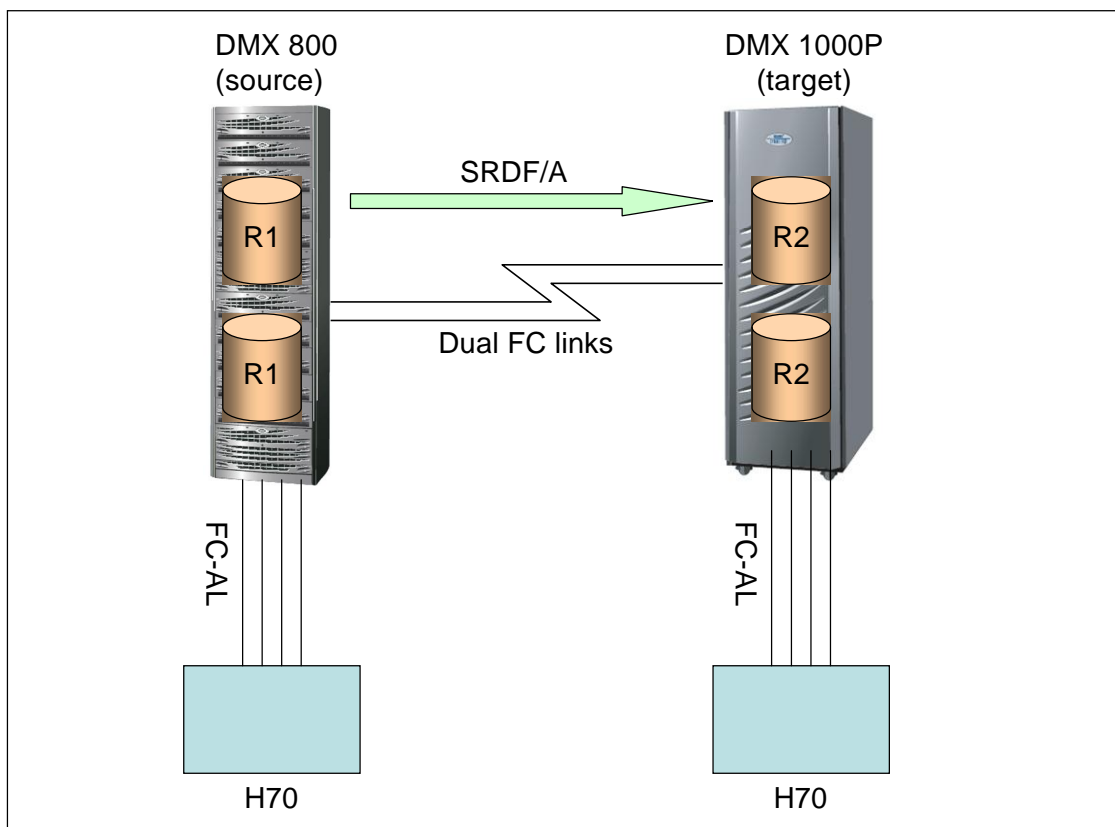
## SRDF/A and DB2 Universal Database Testing and Qualification

IBM Toronto Labs and EMC jointly performed a series of tests to validate DB2 Universal Database for Linux, UNIX, and Windows in an EMC® SRDF®/A (SRDF/Asynchronous) environment. The purpose of this exercise was to ensure that under all tested circumstances, SRDF/A yielded a valid copy of the database on the target side of the replication. Various methods were used to introduce failures and/or stoppages to the SRDF/A replication and in every case the target system was checked for database consistency and integrity. In all the tests, DB2 LUW was found to be restartable, consistent, and error-free.

During each of the failure test scenarios, a load was placed on the database as described below. The following test scenarios were used:

- `symrdf split` of the SRDF/A relationship – controlled failover
- Disconnect source H70 Fibre Channel connections to storage
- Power off the source H70
- Disconnect link between source and target Symmetrix® units

The following is a diagram of the test configuration that was used:



## Source and Target Hosts Configuration

The source and target hosts were configured identically with the following attributes:

- IBM RS6000 H70
- AIX 5.2
- PowerPath® 4.4
- SYMCLI 5.5
- Four FC-AL connections to the storage
- DB2 LUW V8.2

## Symmetrix Configuration

Source Symmetrix	Target Symmetrix
DMX800	DMX1000P
5670 Microcode	5670 Microcode

## Source Server Database Activity

The database load was generated using a standard load-generation utility. The utility was configured to execute 64 processes running a mixture of reads and writes both random and sequential. The load parameters were:

- 12.5 percent dynamic insertion applications
- 12.5 percent dynamic selection applications
- 12.5 percent dynamic update applications
- 12.5 percent dynamic deletion applications
- 50 percent mixed static applications

## Target Server Validation Procedure

After each test, the following steps validated the database on the R2 volumes:

1. Write Enable the R2 volumes using SYMCLI.
2. Import the database volume group.
3. Mount the file system (a JFS file system so the journal log was processed by the mount command to ensure that the file system was consistent).
4. Restart the DB2 database (verifying that the database can restart).
5. Shut down the database:
6. `db2dart <database_alias>` (verifying integrity of database).
7. Start the database.
8. Run workload on the database for a variable number of hours.
9. Stop workload and shut down database:

10. `db2dart <database alias>` (verifying that running the workload has not exposed any hidden integrity problems).

## Summary

SRDF/A, in combination with DB2, produces a restartable database image on the target Symmetrix in all conceived error scenarios.

While SRDF/A and DB2 LUW were tested on this specific configuration, the solution works for all supported platform combinations of DB2 LUW and host operating systems.