

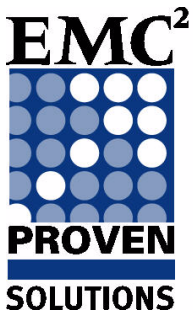


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EMC Backup and Recovery for SAP Oracle with SAP BR*Tools

Enabled by EMC Symmetrix DMX-3, EMC Replication Manager,
EMC Disk Library, and EMC NetWorker

Reference Architecture



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About this Document

Purpose

This document describes the reference architecture of the split-mirror based EMC Backup and Recovery for SAP Oracle with SAP BR*Tools solution. The solution was tested with EMC Replication Manager, EMC NetWorker, Symantec Veritas NetBackup, and the SAP ECC 6 (ERP2005) ABAP stack with SAP BR*Tools. The solution was validated by EMC Global Solutions Operations (GSO).

This document was produced as part of the EMC Total Customer Experience (TCE) program by the GSO TCE Customer Integration Labs working in collaboration with the EMC SAP Global Practice and Center for Excellence, EMC Engineering, and EMC technical field consultants.

Audience

This document is intended for technical staff interested in evaluating or implementing an automated backup and recovery solution for an SAP production database by leveraging EMC hardware and software in an enterprise environment. Executives evaluating such a solution will also find this document useful.

Scope

This document provides an overview of a solution that incorporates emerging requirements for SAP (including SAP BR*Tools for Oracle) / HP-UX / Oracle deployments with EMC technologies. An architectural overview and descriptions of the hardware and software components used in the solution are also included.

Note: This document describes only the features and methodologies specific to this solution. For more detailed information on specific components of this solution, or other EMC solutions, consult the appropriate EMC and third-party documentation.

The business challenge

In today's world, SAP customers face many challenges trying to meet their backup and recovery requirements. Large databases with hundred of gigabytes take an extremely long time to back up using traditional backup-to-tape methods. If an online backup must run into busy production hours, this affects overall SAP production system performance and makes it difficult to choose an appropriate point in time if recovery is needed. System maintenance windows are generally too short to accommodate a full offline backup, while longer SAP downtime to perform an offline backup is not practical because of the criticality of business uptime.

The technology solution

The optimal solution for eliminating offline backups and reducing backup windows of online backups is to make use of a storage system's split-mirror technology to make replicas of the SAP production volumes. Those volumes can then be mounted to another server and backed up from there. SAP backup (BR*) tools support split-mirror technology but leave the actual management of that technology up to the storage provider. This can become quite complex and error prone if manual scripting is used to manage the replicas.

The EMC® Backup and Recovery for SAP Oracle with SAP BR*Tools solution integrates SAP BR* tools with EMC Replication Manager to seamlessly manage the online creation and mounting of replica volumes. This eliminates the need to develop and maintain custom replica scripts, and offloads the backup from the production SAP server. The solution also

supports industry-leading backup products, such as EMC NetWorker and Symantec Veritas NetBackup, to further automate online backup and recovery of the SAP Oracle database and uses the EMC Disk Library virtual tape library to eliminate the problems of physical tape backups.

As an additional benefit, the solution also makes the production system available on a secondary system if the primary system becomes unavailable.

Solution components

The solution includes components from EMC, Symantec Veritas, SAP, HP, and Cisco. This section briefly describes the EMC, SAP, and Symantec Veritas components. For details on all of the components that make up the reference architecture, see [“Hardware and software resources” on page 14](#).

EMC Symmetrix DMX-3

The EMC Symmetrix® family of high-end networked storage systems delivers the highest levels of functionality, performance, data availability, and information protection by enabling customers to incrementally scale the performance and capacity of a single array from 7 terabytes to more than a petabyte. EMC Symmetrix DMX-3, the industry's fastest, most scalable and flexible storage system, supports customers' most ambitious Information Lifecycle Maintenance (ILM) strategies.

EMC Disk Library

An alternative to traditional, tape-based offerings, the EMC Disk Library (EDL) family integrates high-capacity, low-cost drives; tape-emulation software; and powerful functionality to deliver a simple-to-deploy and easy-to-use disk-based backup/restore offering. The EMC Disk Library family includes the cost-effective, entry-level DL210; the high-performance, mid-tier DL4000 series; and the high-end DL6000 series, the industry's first 1 PB single-system disk library.

EMC Replication Manager

Replication Manager automates and simplifies management of disk-based replicas. It orchestrates critical business applications, middleware, and underlying EMC replication technologies to create and manage replicas at the application level for a variety of purposes, including operational recovery, backup, restore, development, simulation, and repurposing. Customers interested in reducing manual scripting efforts, improving recovery, and creating parallel access to information can implement Replication Manager to put the right data in the right place at the right time. Replication Manager supports consistency group technology replication, which enables SAP DMX environments running multiple SAP systems to achieve consistent copies of the entire SAP landscape.

EMC TimeFinder The TimeFinder® family of software is the most powerful suite of local storage replication solutions available. Fully leveraging the industry-leading, high-end Symmetrix hardware architecture, it offers unmatched deployment flexibility and massive scalability to deliver a wide range of in-the-box data copying capabilities to meet mixed service-level requirements with minimal operational impact. The TimeFinder family provides customers with options like full volume clones and mirrors, space-saving snapshots, cross-volume and storage-system consistency, tight integration with industry-leading applications, and simplified usage through automated management.

EMC NetWorker EMC NetWorker helps protect data by simplifying and centralizing backup and recovery operations. With its record-breaking performance, NetWorker is the ideal backup software for small offices as well as large data centers. It ensures reliable backup and recovery across local area network (LAN), wide area network (WAN), and storage area network (SAN) environments. NetWorker simplifies management with one solution for multiple and different platforms such as UNIX, Microsoft Windows, Linux, and VMware virtualized systems, and offers other modules such as NWSAP (NetWorker Module for SAP), a fully integrated module for SAP BR*Tools.

Symantec Veritas NetBackup Symantec Veritas NetBackup is enterprise backup and recovery software for heterogeneous operating environments and storage infrastructures. It supports a wide variety of agents and options for different operating systems, databases, and applications such as SAP and Oracle. Symantec Veritas NetBackup for SAP R/3 for Oracle databases protects both the data itself and the availability of the SAP R/3 application

SAP ERP 2005 IDES SAP ERP 2005 IDES is an SAP demo/development system based on ECC 6. IDES demo landscapes are preconfigured installations of mySAP Business Suite components, populated with the data and business processes of a fictional enterprise. SAP ERP 2005 IDES was used in the development of this solution to demonstrate SAP Oracle database clones and backup and recovery.

Process overview

The EMC Backup and Recovery for SAP Oracle with SAP BR*Tools solution automates the entire online backup process and allows it to be initiated from the backup server. The automated process includes splitting the production source mirror, replicating the mirror to the target using RM CLI, and backing up the replica to EDL using SAP BR*Tools and BRBACKUP. The solution automates the following sequence of events:

1. The administrator initiates the backup job from the backup server, which then calls BRBackup on the SAP target host.
2. BRBackup integrates with EMC Replication Manager, which automatically creates replicas of the production storage volumes while they remain online and mounts them on a target host, ready for backup. The replica volumes contain a recoverable, point-in-time image of the SAP production volumes
3. The backup server backs up the replica volumes to the EDL virtual tape library.

The recoverable point-in-time image can be restored from EDL to the target system. Only SAP BR*Tools and the backup server are required to perform recovery from EDL to the SAP target (standby) system.

Following the restore operation, the database can be fully recovered to a specific point in time on the target system by copying the archive logs from source to target and applying them on the target. If a decision is then made to overwrite production, replication from target to source can be performed.

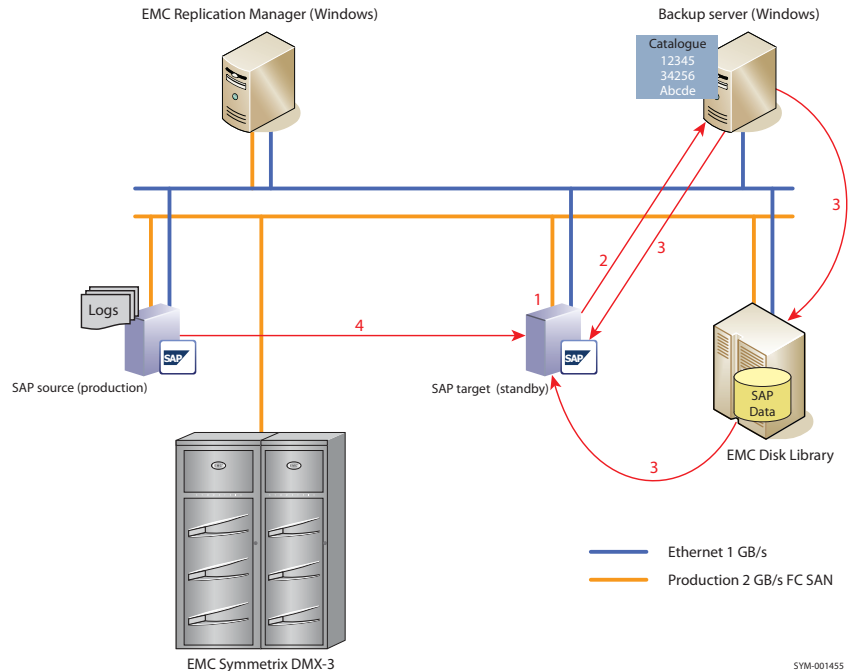


Figure 2 Recover/restore scenario

The recover/restore steps are as follows:

1. An administrator uses BR*Tools or BRRestore to initiate a restore from the target host.
2. BRRestore locates the backup set the administrator specified and connects to the Backup server to locate the files to be restored.
3. The Backup server calls the target host to start BACKINT, which initiates the restore. EMC Disk Library restores the appropriate files to the target host.
4. The administrator applies the archive logs from the source to the target, resulting in a point-in-time recovery of the database.

Hardware and software resources

The following tables list the hardware and software resources used in the validated solution.

Table 1 Hardware resources

Equipment	Quantity	Configuration
EMC DMX-3 1500	1	146 GB 15k drives
HP RX4640	2	SAP hosts; four Itanium dual-core CPUs; 16 GB RAM; HP-UX 11i v2
Dell PowerEdge 2650	3	RM and backup hosts; two dual-core CPUs; 4 GB RAM; Microsoft Windows Server 2003 R2; two 72 GB drives
EMC EDL 4200	1	Virtual tape (disk) library

Table 2 Software resources

Title	Version	Configuration/comments
HP-UX 11i v2	HP-UX 11.23/IA64	Installed on SAP servers
Oracle Database 10G Release 2	10.2.0.1 64-bit	Installed on SAP servers
SAP ERP 2005 IDES (ECC 6)	ECC 6 IDES ERP 2005 ABAP stack	Installed on SAP servers
Microsoft Windows Server 2003 Enterprise R2	n/a	Installed on 32-bit RM server
EMC Replication Manager	v5.1	Installed on 32-bit RM server
Java JDK	v1.4.2.13	Installed on SAP source and target servers and backup server
SAP BR*Tools	v.7.0	Included with SAP kernel installation
EMC NetWorker Server	v.7.4	Installed on backup server HP-UX agent installed on SAP source and target servers SAP agent installed on SAP source and target servers NetWorker Storage Node installed on SAP source and target servers
Symantec Veritas NetBackup Server	v6.0	Installed on backup server HP-UX agent installed on SAP source and target servers SAP agent installed on SAP source and target servers NetBackup Media Server installed on SAP source and target servers

Conclusion

This reference architecture depicts a validated SAP ERP production backup and recovery solution for Oracle. The solution utilizes SAP BR*Tools with split-mirror technology on an EMC Symmetrix DMX-3 storage system in conjunction with EMC Replication Manager and EMC NetWorker or Symantec Veritas NetBackup. The solution provides the following benefits:

- Eliminates manual scripting of replica creation and management and eliminates the ongoing maintenance of such scripts
- Eliminates downtime caused by offline backups; increases the availability of the production environment; all systems remain online during backups
- Eliminates sluggish system performance associated with conventional online backups
- Eliminates reliability concerns related to tape backups and physical tape libraries
- Reduces manual intervention required by conventional backup methods; both backup and restore can be administered by a single BASIS administrator
- Increases the speed of point-in-time recovery, because data retrieval is faster from disk than from tape

EMC can help accelerate assessment, design, implementation, and management while lowering the implementation risks and cost of creating a backup and recovery solution for SAP and Oracle with SAP BR*Tools.

To learn more about this and other solutions contact an EMC representative or visit www.EMC.com/solutions/sap.