Barr Pharmaceuticals:



Integrated strategies and



capabilities to deliver



successful global growth.



Use of DataGuard and Cold Failover Clusters

Jonathan Intner Senior Manager, Database Administration, Barr Laboratories, Inc.



Agenda

- Who am I? and "Thank you's."
- What is Data Guard (DG), Oracle Standby Database (S/B) and Cold Failover Clusters (CFCs)?
- How we use DG and S/B.
- Tools.
- International Implementation.
- Large(ish) database.
- DG & CFC, not so perfect together.



Thank yous

- Thorsten from Oracle Support Germany
- My team:
 - Simay
 - Deepak
 - Tom
- The Croats:
 - Drago
 - Andrea



Quick Intro

- Data Guard (DG) is, essentially, a wrapper around Standby Database (SB) that makes SB easier to manage.
 - A standby database is: "A copy of a production (primary) database that you can use for disaster protection.¹"
 - "A Data Guard configuration consists of one production (primary) database and one or more standby databases²"
- A Cold Failover Cluster (CFC) is an Active-Passive Cluster, that is, a particular package can only run on one node in the cluster at a time.
 - It can best be explained by differentiating it from something like RAC: CFC solutions like Oracle FailSafe (OFS) and HP's MC/ServiceGuard (MC/SG) allow quick failover without the huge license cost of RAC.



Quick Intro (2)

Standby







Quick Intro (2)





Tools

- 9iOEM:
 - Data Guard Manager.
- 10gEMGC
 - "Setup and Manage" option on the "Maintenance" tab for a database.
- dgmgrl
 - Command-line utility.



dgmgrl

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Welcome to DGMGRL, type "help" for information. DGMGRL> connect / Connected. DGMGRL>



dgmgrl

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dgmgrl

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Intended State: OFFLINE	
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TRU	
Properties:	
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LogXptMode	= 'ARCH'
Dependency	= ¹¹
DelayMins	= '0'
Binding	= 'OPTIONAL'
MaxFailure	= '0'
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Darr Pharmaceuticale, Inc.

10gEMGC

ORACLE Enterprise Manager 10g Grid Control Hosts Databases Application Servers Web Applications Service	es Systems Groups All Targets	Home Targets	Setup Preferences Help Logout Deployments Alerts Compliance Jobs Reports
Database Instance:			
Home Performance Administration Maintenance			
The Administration tab displays links that allow you to administer database the flow of data between or outside Oracle databases.	objects and initiate database operations in:	side an Oracle database. The	Maintenance tab displays links that provide functions that control
High A∨ailability			
Backup/Recovery	Backup/Recovery Settings		Oracle Secure Backup
Schedule Backup	Backup Settings		Oracle Secure Backup Device and Media
<u>Perform Recovery</u> Manage Current Bookung	Recovery Settings		File System Backup and Restore
Manage Conent Dackops Manage Restore Points	Recovery Catalog Settings		
Backup Reports			
Data Guard			
Setup and Manage			
			_
Data Movement			
Move Row Data	Move Database Files		Streams
Export to Export Files	Clone Database		Setup
Import from Export Files	Iransport Tablespaces		Management
Load Data from User Files			
Monitor Export and Import Jobs			
Software Deployments			
Configuration	Database Software Patching		
Search	Apply Patch		
Compare Configuration	<u>View Patch Cache</u>		



10gEMGC





International Implementation





Large(ish) Database





Forest, Virginia

Pomona, New York

DG and CFC, not so perfect together





DG and CFC, not so perfect together





DG and CFC, not so perfect together





RPO/RTO

- RPO = Recovery Point Objective:
 - The amount of data loss that is acceptable to the business.
 - While, in theory, this can be 0 and we've all heard of banks with painful RPOs, I've rarely seen it any more stringent than 4 hours
- RTO = Recovery Time Objective:
 - How long the application can be unavailable to the business.
 - Again, this can also be 0, but I've rarely seen RTOs less than 24 hours.



Hosts Databases Application Servers Web Appli	cations Services Systems Groups All Targets	
Detabase Instance: TWOES BARDI ADS CON		
Database Instance: TWOPS.BARRLABS.COM		
Home Performance Administration Maint	enance	
The Administration tab displays links that allow you to adm	inister database obiects and initiate database operations inside	an Oracle database. The Maintenance tab displays links that provide functions that
the flow of data between or outside Oracle databases.		
High A∨ailability		
Backup/Recovery	Backup/Recovery Settings	Oracle Secure Backup
Schedule Backup	Backup Settings	Oracle Secure Backup Device and Media
Perform Recovery	Recovery Settings	File System Backup and Restore
Manage Current Backups	Recovery Catalog Settings	
Manage Restore Points		
<u>Backup Reports</u>		
Data Guard		
Setup and Manage		
Data Movement		
Move Row Data	Move Database Files	Streams
Export to Export Files	Clone Database	Setup
Import from Export Files	<u>Transport Tablespaces</u>	<u>Management</u>
I nad Data from User Files		
Monitor Export and Import Jobs		
Software Deployments		
Configuration	Database Software Patching	
<u>Search</u>	Apply Patch	
Compare Configuration	View Patch Cache	
Compare to Multiple Configurations (Job)		
view Saved Configurations		
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Collection Status		
Last Collected Configuration <u>Collection Status</u>		
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Details and Inclosed		
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Use the Adr	OTT 1 Standhy Database wizard to configure a Data Guard environment	
Add Stand	by Database	
Confirma	tion	
The Data G	uard configuration has been removed.	
Data Guard		
- and when d	Entermise Manager provides comprehensive Data Guard setup, management, and monitoring canabilities, including	
	Fase reaction and management of horizontal and lonical standby databases	
	Centralized control of primary and standby databases via Data Guard broker	
	Built-in monitoring, alert, and control capabilities	
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Hosts Databases Application Servers Web Applications Services Systems Groups All Target	S	
Database Instance: TWOFS.BARRLABS.COM > Data Guard >		
Add Standby Database		
		(Cancel)
This wizard creates a Data Guard configuration containing a primary database and a standby database. Select how to add the standby database.	Standby Database Types Physical standby database characteristics:	
Create a new physical standby database	Physically identical to the primary database	
A physical standby database is maintained as an exact copy of the primary database.	 Mounted (not open) when in recovery mode 	
O Create a new logical standby database	 Can be opened read only 	
A logical standby database duplicates the data from the primary database at the SQL level.	 Supports all datatypes and DDL 	
Manage an existing standby database with Data Guard broker	Logical standby database characteristics:	
The existing standby database must be fully configured to function as a standby database for the primary database.	 Not physically identical to primary database 	
O Create a primary database backup only	 Open read/write when in recovery mode 	
Instead of creating a standby database, this option creates a primary database backup that can be used for a future standby database creation.	 Can be used for data protection and reporting Does not support some datatypes, some DDL 	
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Overview Data Guard S Protection	itatus 🗸 Normal Mode Maximum Performat	nce	Standb The transp difference	Progress Summary ort lag is the time difference between between the primary last update and	the primary last update and the s	tandby last received redo. The apply lag is
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	🔋 Oracle Fail Safe Manager : USNJDBT		^
HP System	<u> </u>	nooting Help	
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ß	Clusters	General Dependencies Policies Database Authentication	
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Cluster	CracleOraDb10g_ho	Home Name: OraDb10g_home1	
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- 2. <u>http://download.oracle.com/docs/cd/B19306_01/server.10</u> 2/b14239/concepts.htm#i1033723
- 3. MetaLink Notes:
 - Note# 259902.1, Oracle 9i Data Guard and Oracle Fail Safe
 - Note# 413696.1, <u>Data Guard Broker does not support Cold</u> <u>Failover Clusters</u>
- A number of the slides came from instructions developed by me and my team so that we could repeatably perform tasks with DG &, most especially, with CFCs!



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