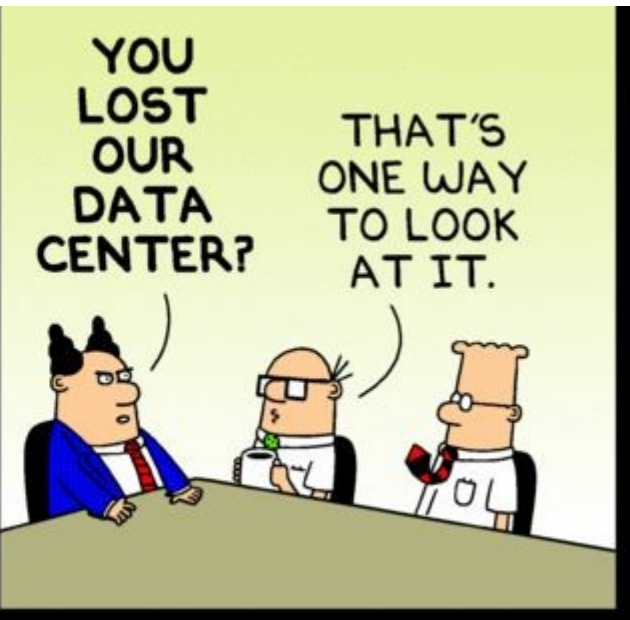




Dilbert.com DilbertCartoonist@gmail.com



7-5-13 © 2013 Scott Adams, Inc. /Dist. by Universal Uclick



The problem

> ----- Original Message -----

> From: xxxxxxxxxxxxxxxxxxxxxxxxx

> To: "Boris Oblak" <boris.oblak@abakus.si>

> Sent: Tuesday, 8. March 2016 11:43:55

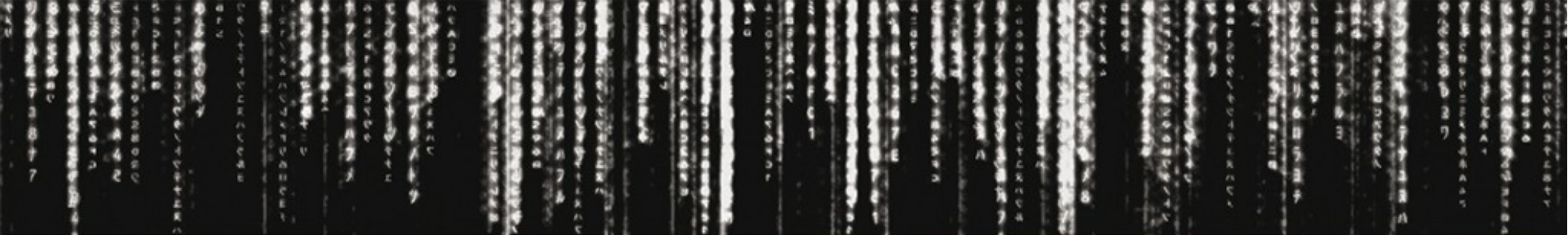
> Subjects: The database from Friday

>

> Boris,

a procedure that ran over the weekend went wrong. Can you restore the friday's database somewhere where we could repeat the procedure and debug it?

>



Boris Oblak
Abakus plus d.o.o.

Déjà Vu virtual databases



Data at your service.



Abakus plus d.o.o.

ORACLE® Gold Partner

Specialized
Oracle Database 11g

History

from 1992, ~20 employees

Applications:

special (DMS - Document Management System, DB - Newspaper Distribution, FIS - Flight Information System)

ARBITER - the ultimate tool in audit trailing

APPM - Abakus Plus Performance and Monitoring Tool

Services:

DBA, OS administration, programming (MediaWiki, Oracle)

networks (services, VPN, QoS, security)

open source, monitoring (Nagios, OCS, Wiki)

Hardware:

servers, **Backup server**, SAN storage, firewalls

Infrastructure:

from 1995 GNU/Linux (*>20 years of experience!*)

>20 years of experience with High-Availability!



Mestna občina Ljubljana



Gorenjska Banka

Banka s poslubom



Aerodrom Ljubljana



Mercator

GOODYEAR

BANKA SLOVENIJE

EVROSISTEM

KONTROLA ZRAČNEGA PROMETA SLOVENIJE



MESTNA OBČINA KOPER
COMUNE CITTA DI CAPODISTRIA



futuraplust



Iskra
Iskra MIS



DELO PRODAJA



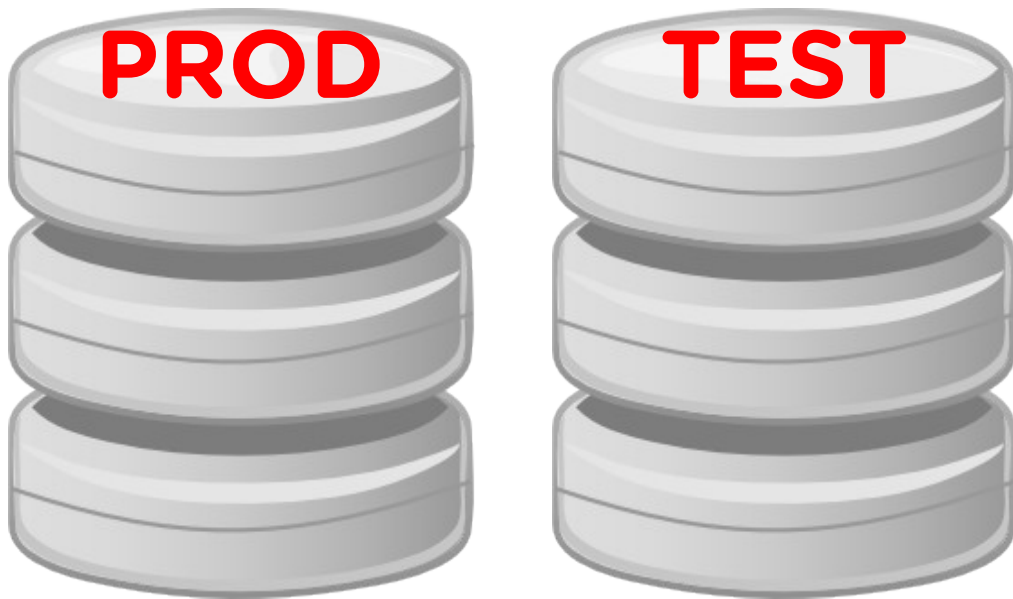


The problem



The problem

- Beyond every prod ...
 - There is TEST, DEV ...



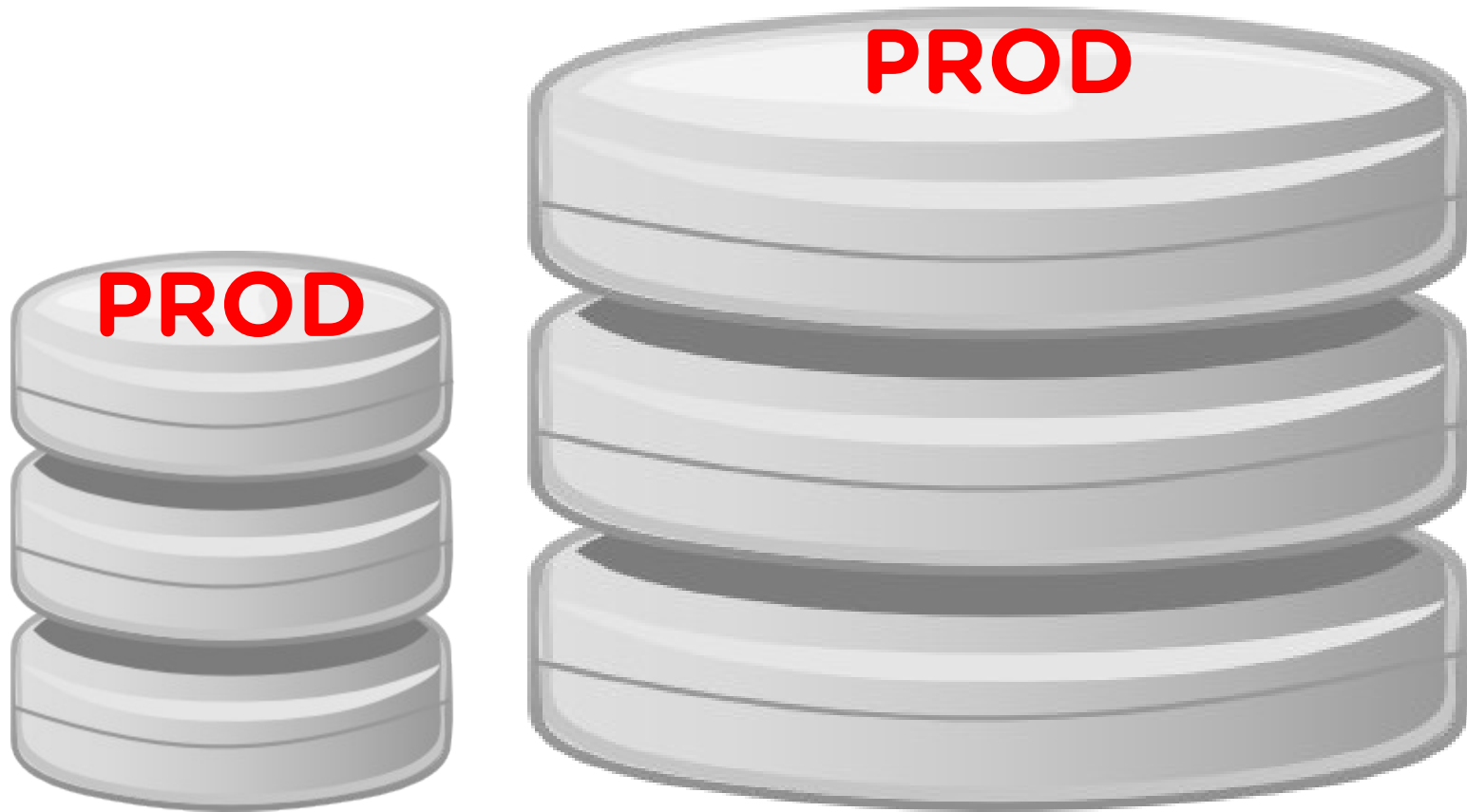
The problem

- Beyond every prod ...
 - There is TEST, DEV ...
 - ... and other project-specific environment.



The problem

- PROD grows



The problem

- Trying to migrate the problem by copying subsets of PROD ...



The problem

- Trying to migrate the problem by copying subsets of PROD ...



- ... but it is difficult and time-consuming.
Most give up ...

The problem

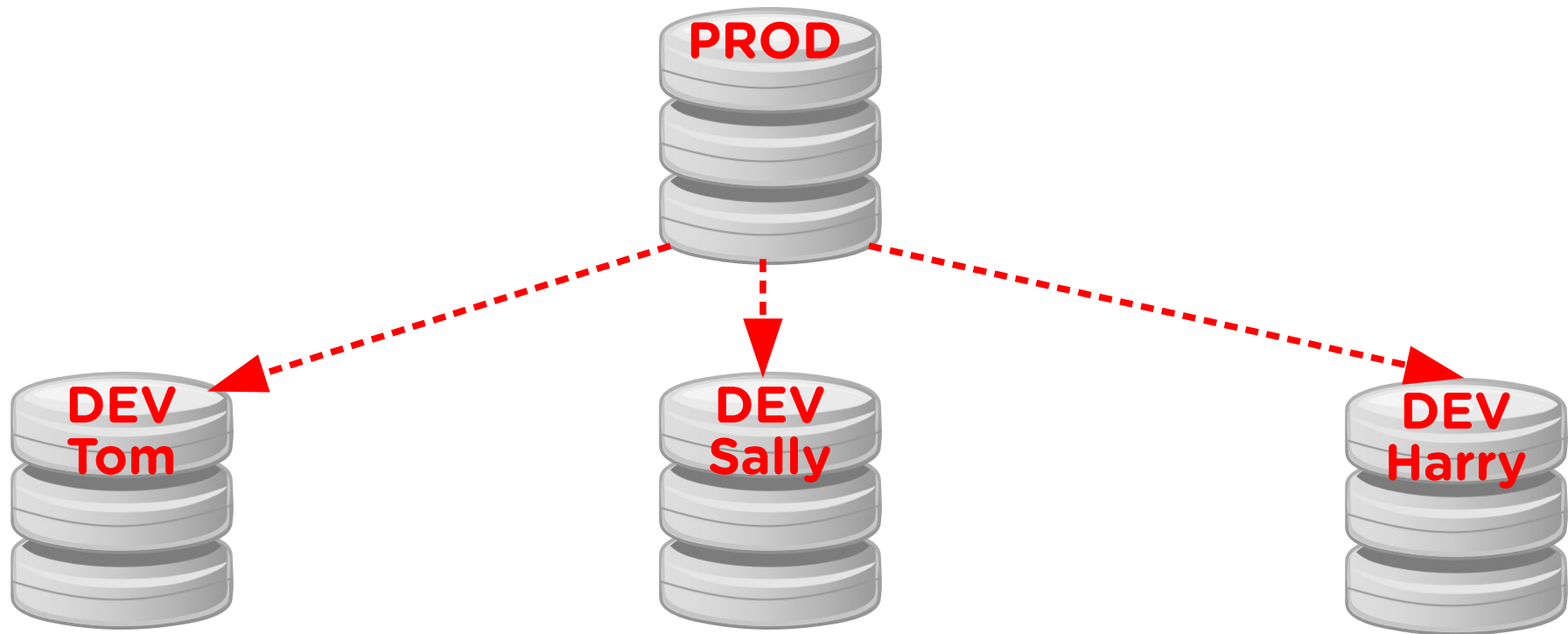
- The environment become stale ...



Attempting to solve problem

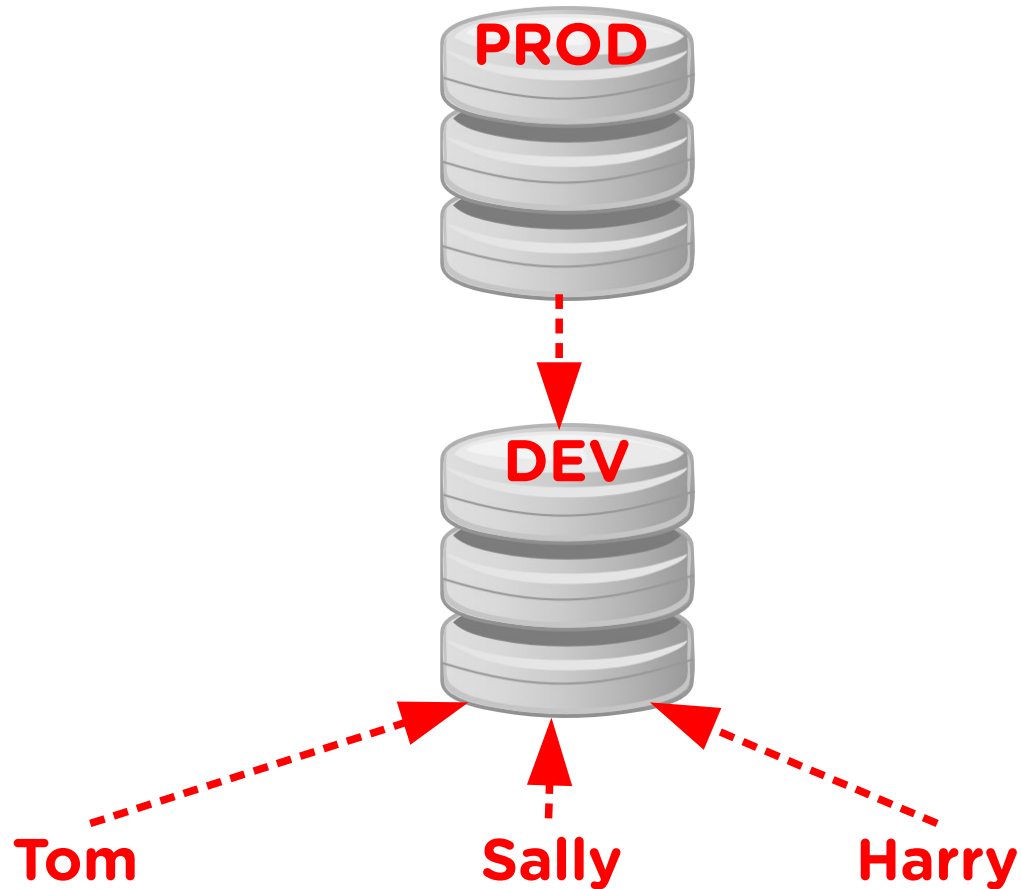


Attempting to solve problem



In a perfect world ...

Attempting to solve problem



In a real world ...

Attempting to solve problem

- It is not easy for developers or testers to share environments simultaneously.
 - Changes made by each user conflict with one another.
- Serialize access to the limited number of environments.
 - Each user queues at the resource – their project takes more time.
 - Each user destructively changes the resource.
- We need a way and time to reset or cleanup environment between each use.
 - Reset or clean up takes time and resources.

The problem

> ----- Original Message -----

> From: xxxxxxxxxxxxxxxxxxxxxxxxx

> To: "Boris Oblak" <boris.oblak@abakus.si>

> Sent: Tuesday, 8. March 2014 11:43:55

> Subjects: The database from Friday

>

> Boris,

a procedure that ran over the weekend went wrong. Can you restore the friday's database somewhere where we could repeat the procedure and debug it?

>

The problem

- Different versions on PROD, TEST and DEV

PROD V1.0



TEST V1.1



DEV V1.1



The problem

- Different versions on PROD, TEST and DEV

PROD V1.0



TEST V1.1



DEV V1.1



The problem

- Debug on PROD!? Or ...

PROD V1.0



TEST V1.1



DEV V1.1



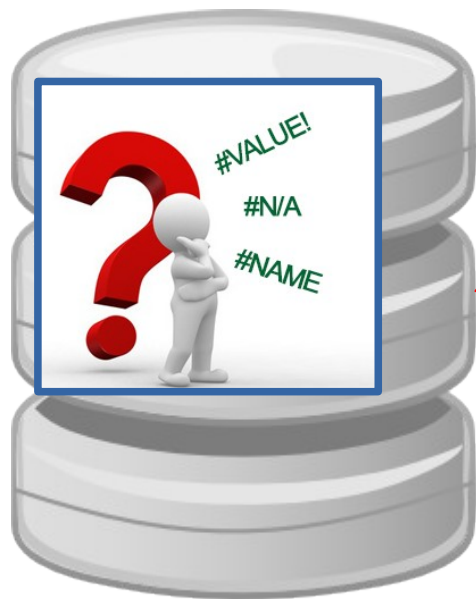
The problem

- Debug on PROD!? Or ...
- ... **create V1.0 TEST clone and debug it.**

PROD V1.0

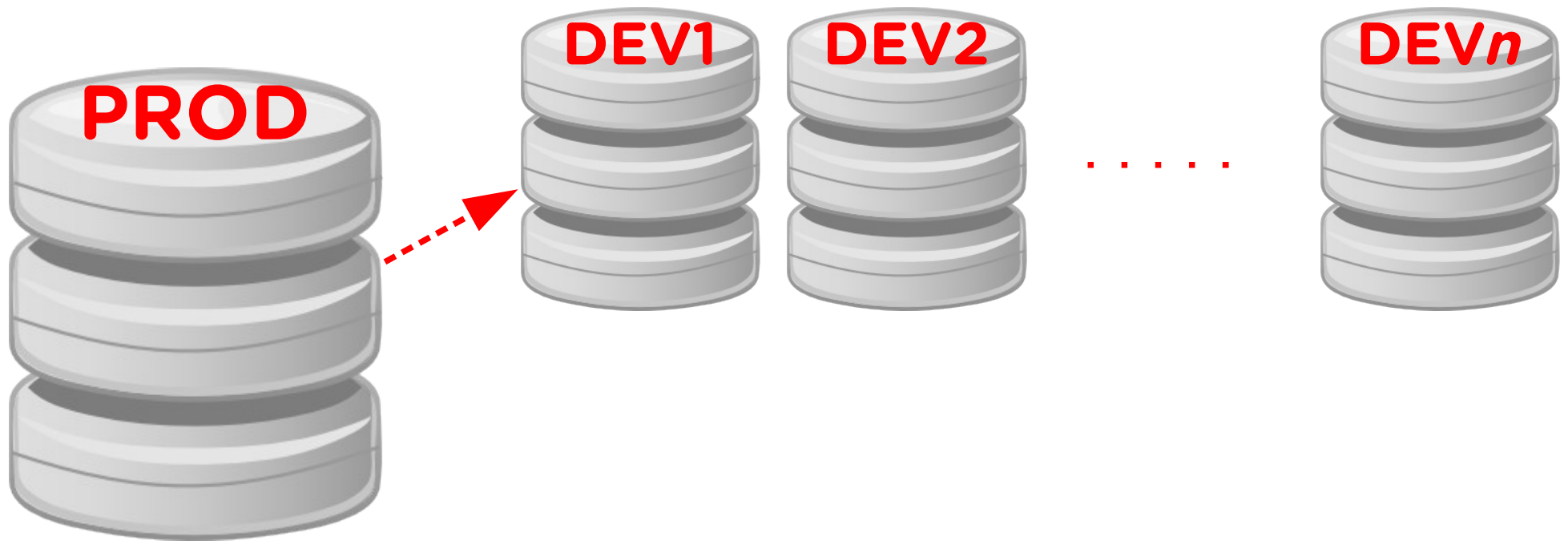
TEST V1.1

DEV V1.1



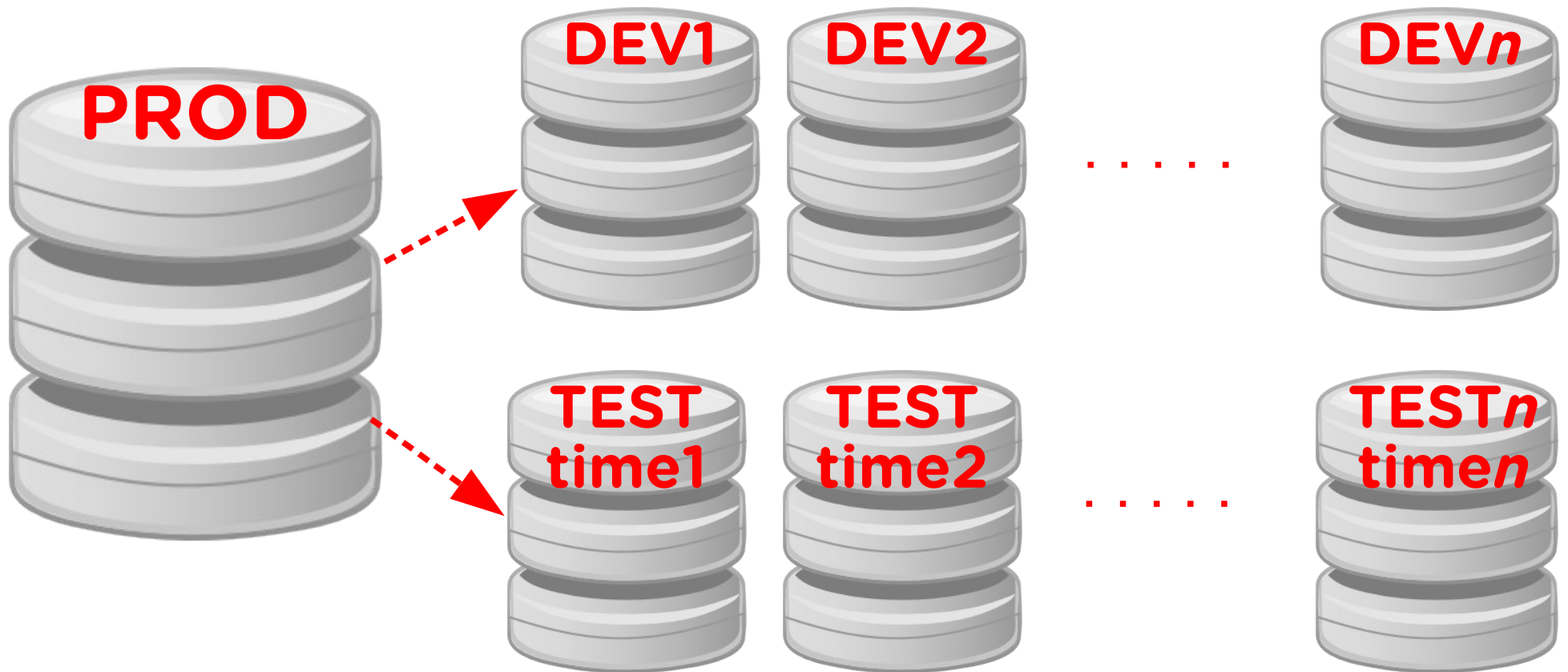
A solution

- DEV database for each developer team.



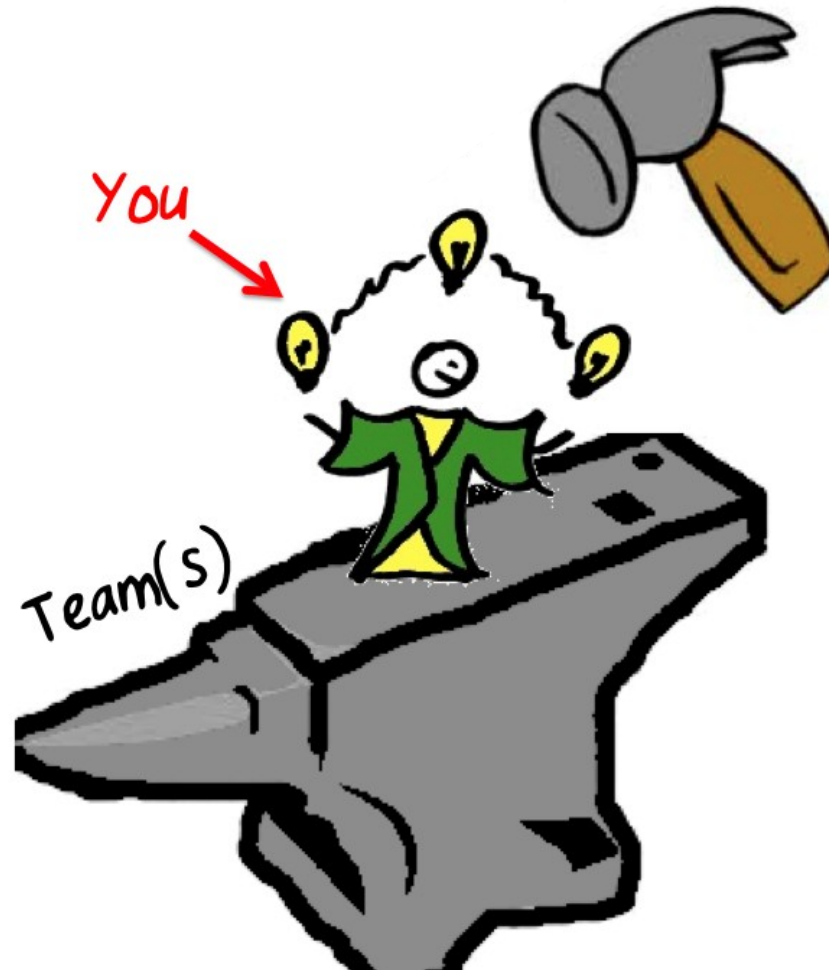
A solution

- DEV database for each developer team.
- Point in time database for each problem.



DBA

- Leadership.



- Developers,
- testers.

Point In Time Recovery

- Setup a new server and restore the backup.
- Open the standby database in read only mode (if we have old enough standby database).
- Import data or metadata from exports (if we have one).

Point In Time Recovery

- Setup a new server and restore the backup.
- Open the standby database in read only mode (if we have old enough standby database).
- Import data or metadata from exports (if we have one).
- Time to complete procedure?
- Cost (DBA work, servers, ...)?

MISSION: IMPOSSIBLE



MISSION: IMPOSSIBLE



Backup Server – Deja Vu

- Connect to the Backup server.
- Open the database from required time in read-only or read-write mode.
- Execute failed job and debug it.

The solution

Tom

September 2015

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Time 13:38:47

Hour

Minute

Second

The solution

Tom

September 2015

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Time 13:38:47

Hour

Minute

Second

Sally

September 2015

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Time 16:19:33

Hour

Minute

Second

The solution

Tom

September 2015

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Time 13:38:47

Hour

Minute

Second

Sally

September 2015

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Time 16:19:33

Hour

Minute

Second

Harry

August 2015

Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

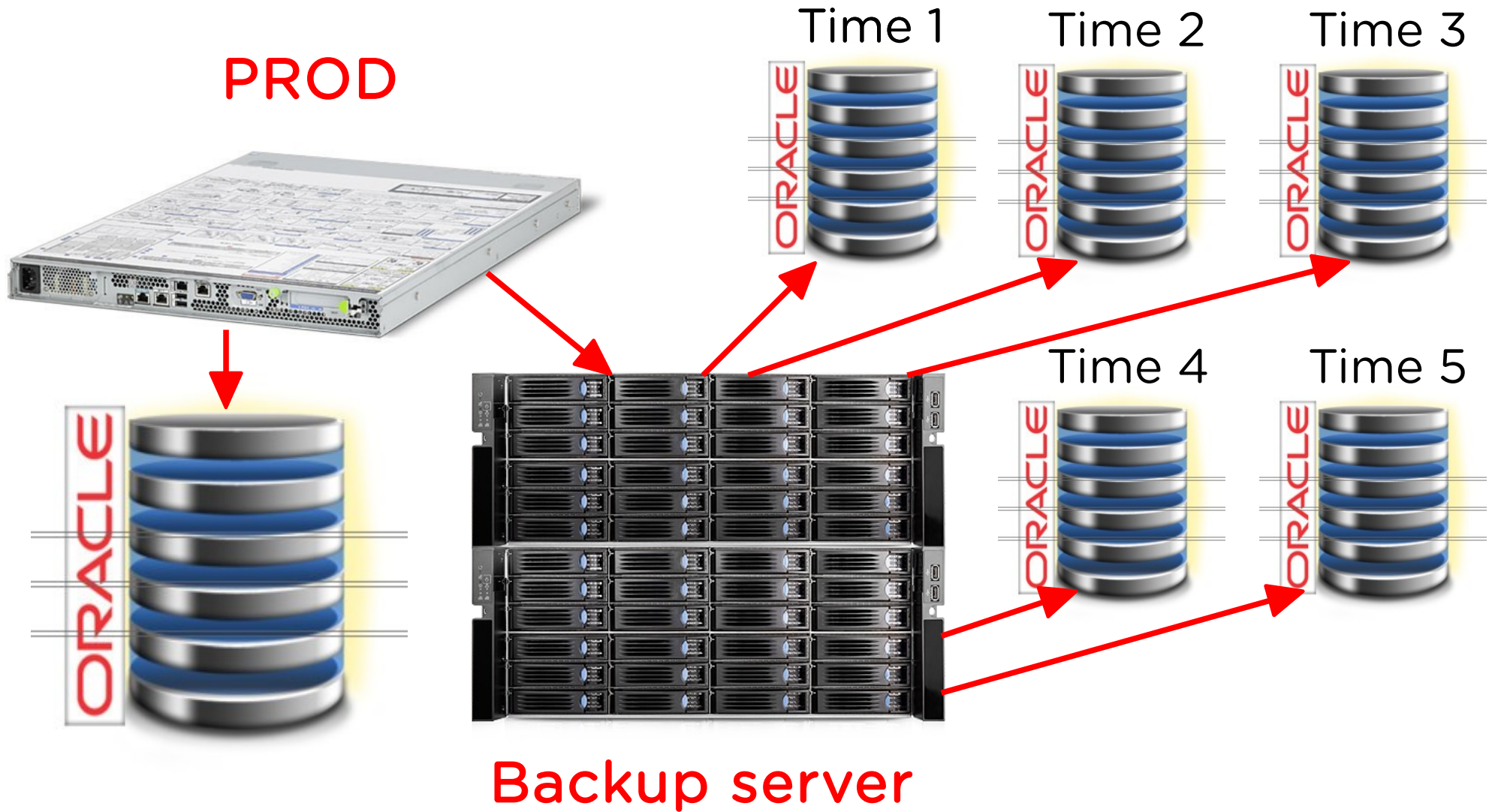
Time 15:40:22

Hour

Minute

Second

The solution



The solution

PROD

DEV srv1

TEST srv1

Time 1

Time 2

ORACLE

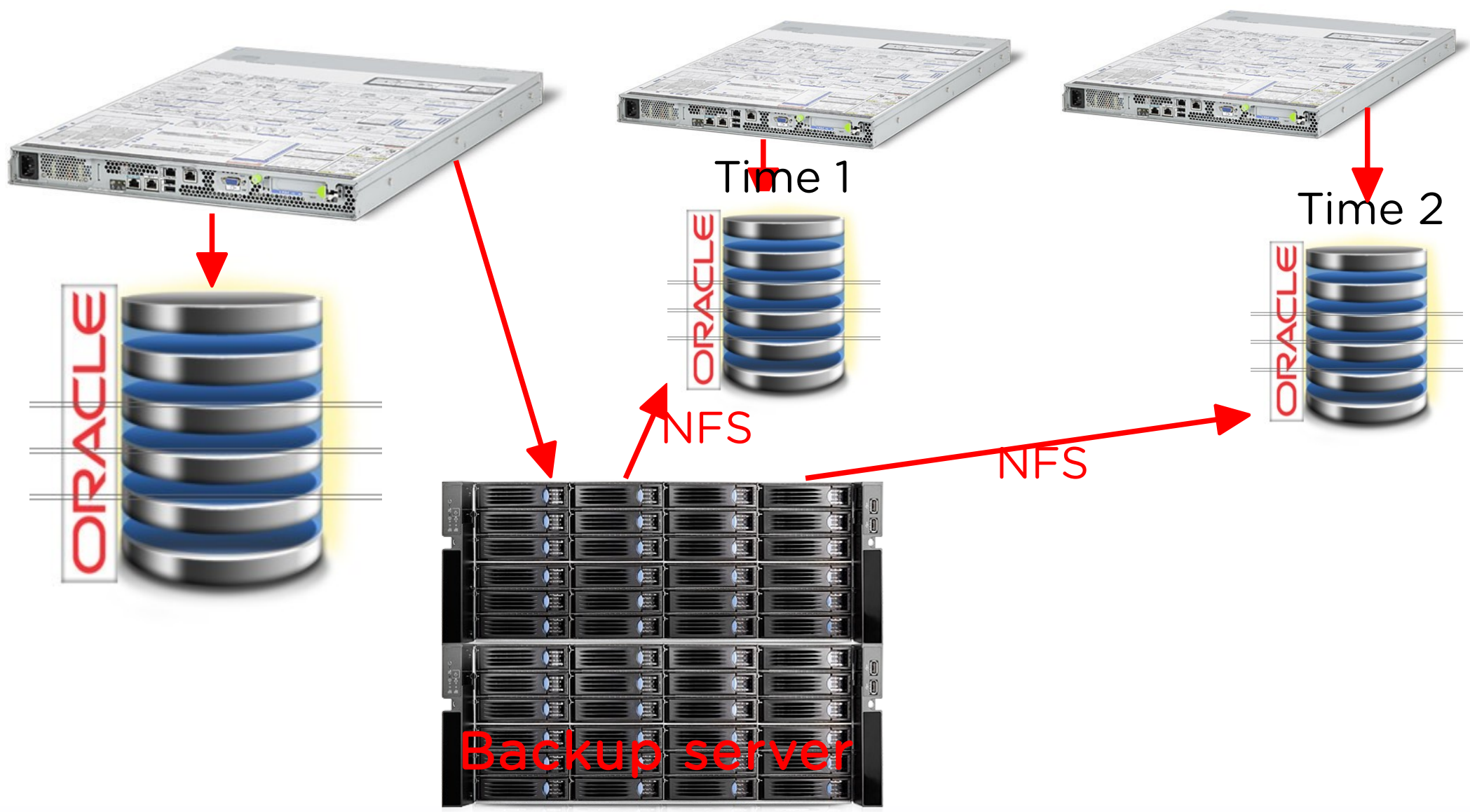
ORACLE

ORACLE

NFS

NFS

Backup server



Backup Server – Deja Vu

Resources					
Status	Type	Name	Flash Date	First Date	Last Date
OFFLINE	database	DWSTAGE1	2014-10-02 18:10:13	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	DWTARGET	2014-10-02 19:10:30	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	EB	2014-10-02 18:10:07	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	ORCL10	2014-10-02 21:10:49	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	RIS10G	2014-10-02 23:10:16	2014-10-03 23:00:00	2014-06-20 23:00:00
	vm-incremental	san1		2014-10-03 18:00:00	2014-06-20 18:00:00

Oracle PITR Instance

Refresh

Backups				
Path	Size	Taken	Actual	Status
/zbackup/ORCL10-2014-10-03-23-00		2014-10-03 23:00:00		UNKNOWN
/zbackup/ORCL10-2014-10-02-23-00	861 G	2014-10-02 23:00:00	2014-10-02 21:10:49	OK
/zbackup/ORCL10-2014-10-01-23-00	860 G	2014-10-01 23:00:00	2014-10-01 21:10:42	OK
/zbackup/ORCL10-2014-09-30-23-00	860 G	2014-09-30 23:00:00	2014-09-30 21:09:22	OK
/zbackup/ORCL10-2014-09-29-23-00	859 G	2014-09-29 23:00:00	2014-09-29 21:09:44	OK
/zbackup/ORCL10-2014-09-28-23-00	858 G	2014-09-28 23:00:00	2014-09-28 05:09:04	OK
/zbackup/ORCL10-2014-09-27-23-00	858 G	2014-09-27 23:00:00	2014-09-27 21:09:59	OK
/zbackup/ORCL10-2014-09-26-23-00	858 G	2014-09-26 23:00:00	2014-09-26 21:09:23	OK
/zbackup/ORCL10-2014-09-25-23-00	858 G	2014-09-25 23:00:00	2014-09-25 19:09:28	OK
/zbackup/ORCL10-2014-09-24-23-00	857 G	2014-09-24 23:00:00	2014-09-24 19:09:45	OK
/zbackup/ORCL10-2014-09-23-23-00	857 G	2014-09-23 23:00:00	2014-09-23 19:09:47	OK
/zbackup/ORCL10-2014-09-22-23-00	857 G	2014-09-22 23:00:00	2014-09-22 19:09:53	OK
/zbackup/ORCL10-2014-09-21-23-00	857 G	2014-09-21 23:00:00	2014-09-21 19:09:46	OK
/zbackup/ORCL10-2014-09-20-23-00	857 G	2014-09-20 23:00:00	2014-09-20 19:09:38	OK
/zbackup/ORCL10-2014-09-19-23-00	857 G	2014-09-19 23:00:00	2014-09-19 19:09:55	OK
/zbackup/ORCL10-2014-09-18-23-00	857 G	2014-09-18 23:00:00	2014-09-18 19:09:50	OK
/zbackup/ORCL10-2014-09-17-23-00	857 G	2014-09-17 23:00:00	2014-09-17 19:09:47	OK
/zbackup/ORCL10-2014-09-16-23-00	857 G	2014-09-16 23:00:00	2014-09-16 19:09:53	OK
/zbackup/ORCL10-2014-09-15-23-00	857 G	2014-09-15 23:00:00	2014-09-15 19:09:10	OK
/zbackup/ORCL10-2014-09-14-23-00	857 G	2014-09-14 23:00:00	2014-09-14 19:09:32	OK

Backup Server – Deja Vu

Resources

Status	Type	Name	Flash Date	First Date	Last Date
OFFLINE	database	DWSTAGE1	2014-10-02 18:10:13	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	DWTARGET	2014-10-02 19:10:30	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	EB	2014-10-02 18:10:07	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	ORCL10	2014-10-02 21:10:49	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	RIS10G	2014-10-02 23:10:16	2014-10-03 23:00:00	2014-06-20 23:00:00
	vm-incremental	san1		2014-10-03 18:00:00	2014-06-20 18:00:00

Oracle PITR Instance Refresh

Backups

Path	Size	Taken	Actual	Status
/zbackup/ORCL10-2014-10-03-23-00				UNKNOWN
/zbackup/ORCL10-2014-10-02-23-00	861 G		21:10:49	OK
/zbackup/ORCL10-2014-10-01-23-00	860 G		21:10:42	OK
/zbackup/ORCL10-2014-09-30-23-00	860 G		21:09:22	OK
/zbackup/ORCL10-2014-09-29-23-00	859 G		21:09:44	OK
/zbackup/ORCL10-2014-09-28-23-00	858 G		05:09:04	OK
/zbackup/ORCL10-2014-09-27-23-00	858 G		21:09:59	OK
/zbackup/ORCL10-2014-09-26-23-00	858 G		21:09:23	OK
/zbackup/ORCL10-2014-09-25-23-00	858 G		19:09:28	OK
/zbackup/ORCL10-2014-09-24-23-00	857 G		19:09:45	OK
/zbackup/ORCL10-2014-09-23-23-00	857 G	2014-09-23 23:00:00	2014-09-23 19:09:47	OK
/zbackup/ORCL10-2014-09-22-23-00	857 G	2014-09-22 23:00:00	2014-09-22 19:09:53	OK
/zbackup/ORCL10-2014-09-21-23-00	857 G	2014-09-21 23:00:00	2014-09-21 19:09:46	OK
/zbackup/ORCL10-2014-09-20-23-00	857 G	2014-09-20 23:00:00	2014-09-20 19:09:38	OK
/zbackup/ORCL10-2014-09-19-23-00	857 G	2014-09-19 23:00:00	2014-09-19 19:09:55	OK
/zbackup/ORCL10-2014-09-18-23-00	857 G	2014-09-18 23:00:00	2014-09-18 19:09:50	OK
/zbackup/ORCL10-2014-09-17-23-00	857 G	2014-09-17 23:00:00	2014-09-17 19:09:47	OK
/zbackup/ORCL10-2014-09-16-23-00	857 G	2014-09-16 23:00:00	2014-09-16 19:09:53	OK
/zbackup/ORCL10-2014-09-15-23-00	857 G	2014-09-15 23:00:00	2014-09-15 19:09:10	OK
/zbackup/ORCL10-2014-09-14-23-00	857 G	2014-09-14 23:00:00	2014-09-14 19:09:32	OK

Details ✕

Resource is OFFLINE

Target:

Point-in-Time:

Log Level:

Log Files: [alert_pthibis.log](#), [bks_task_pthibis.log](#)

Backup Server – Deja Vu

Resources					
Status	Type	Name	Flash Date	First Date	Last Date
OFFLINE	database	DWSTAGE1	2014-10-02 18:10:13	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	DWTARGET	2014-10-02 19:10:30	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	EB	2014-10-02 18:10:07	2014-10-03 23:00:00	2014-06-20 23:00:00
ONLINE	database	ORCL10	2014-10-02 21:10:49	2014-10-03 23:00:00	2014-06-20 23:00:00
OFFLINE	database	RIS10G	2014-10-02 23:10:16	2014-10-03 23:00:00	2014-06-20 23:00:00
	vm-incremental	san1		2014-10-03 18:00:00	2014-06-20 18:00:00

Oracle PITR Instance Refresh

Path	Size	Status
/zbackup/ORCL10-2014-10-03-23-00		UNKNOWN
/zbackup/ORCL10-2014-10-02-23-00	861 G	OK
/zbackup/ORCL10-2014-10-01-23-00	860 G	OK
/zbackup/ORCL10-2014-09-30-23-00	860 G	OK
/zbackup/ORCL10-2014-09-29-23-00	859 G	OK
/zbackup/ORCL10-2014-09-28-23-00	858 G	OK
/zbackup/ORCL10-2014-09-27-23-00	858 G	OK
/zbackup/ORCL10-2014-09-26-23-00	858 G	OK
/zbackup/ORCL10-2014-09-25-23-00	858 G	OK
/zbackup/ORCL10-2014-09-24-23-00	857 G	OK
/zbackup/ORCL10-2014-09-23-23-00	857 G	OK
/zbackup/ORCL10-2014-09-22-23-00	857 G	OK
/zbackup/ORCL10-2014-09-21-23-00	857 G	OK
/zbackup/ORCL10-2014-09-20-23-00	857 G	OK
/zbackup/ORCL10-2014-09-19-23-00	857 G	OK
/zbackup/ORCL10-2014-09-18-23-00	857 G	OK
/zbackup/ORCL10-2014-09-17-23-00	857 G	OK
/zbackup/ORCL10-2014-09-16-23-00	857 G	OK
/zbackup/ORCL10-2014-09-15-23-00	857 G	OK

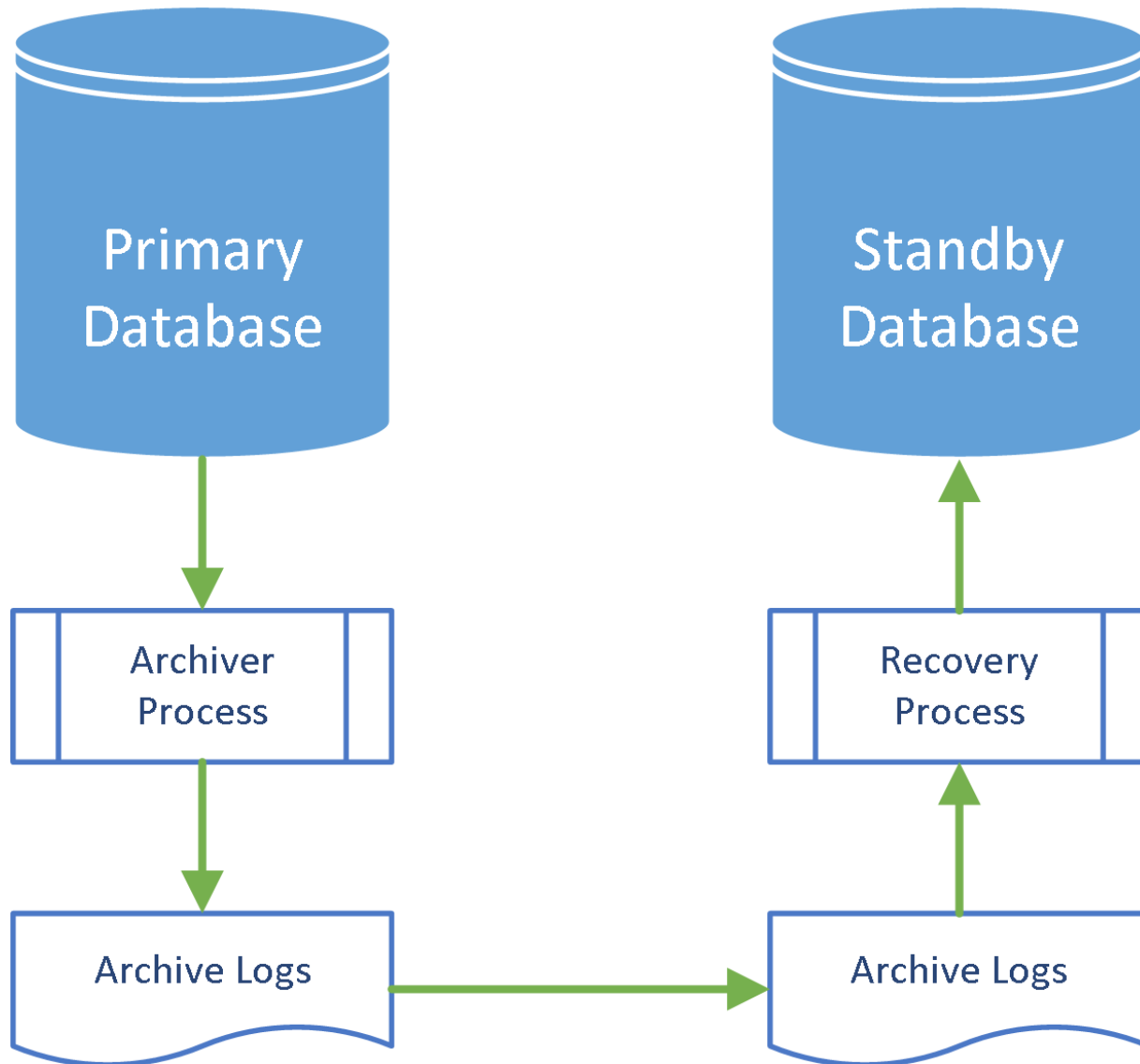
Details ✕

Resource is ONLINE

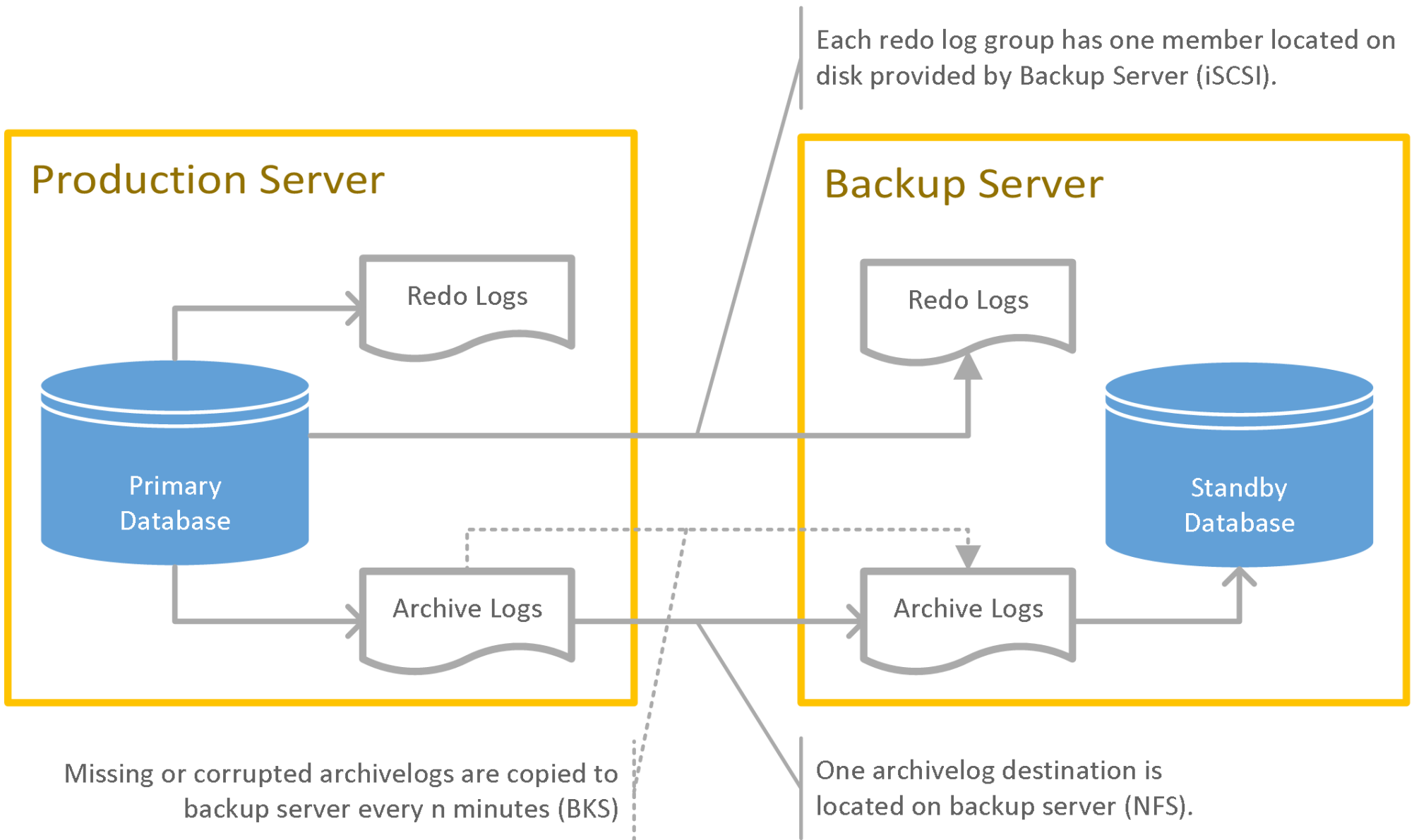
Point-in-Time	2014-08-24-19-08-54
Simple Connect String	//backup.hlon.local:1521/pthibis
TNS Block	<pre> ORCL10_BACKUP = (DESCRIPTION = (ADDRESS = (PROTOCOL = TCP) (HOST = backup.hlon.local) (PORT = 1521)) (CONNECT_DATA = (SERVICE_NAME = pthibis))) </pre>
Log Level	INFO <input type="button" value="v"/>

Log Files: [alert_pthibis.log](#), [bks_task_pthibis.log](#)

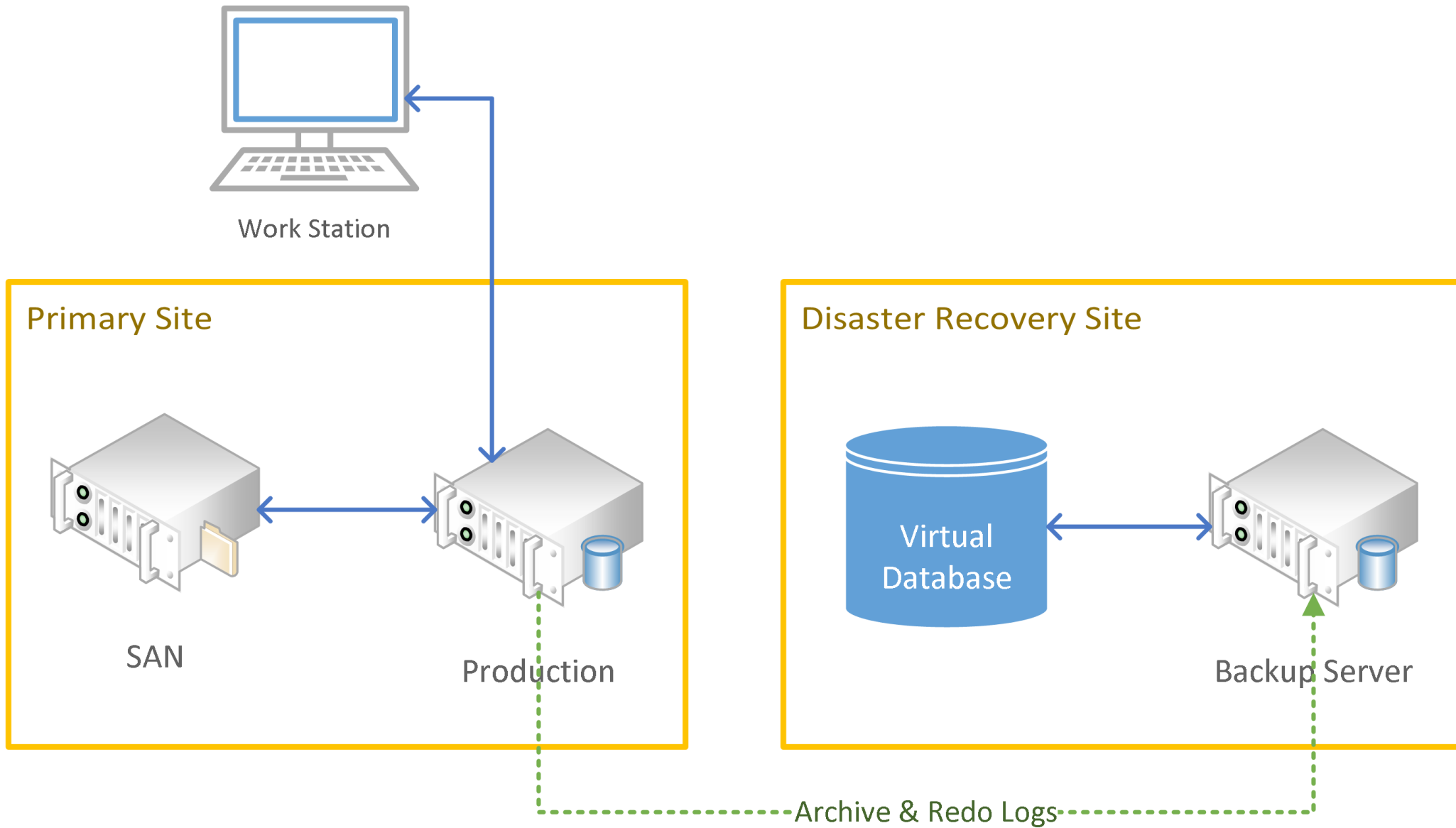
Oracle Physical Standby



Perfect Recall



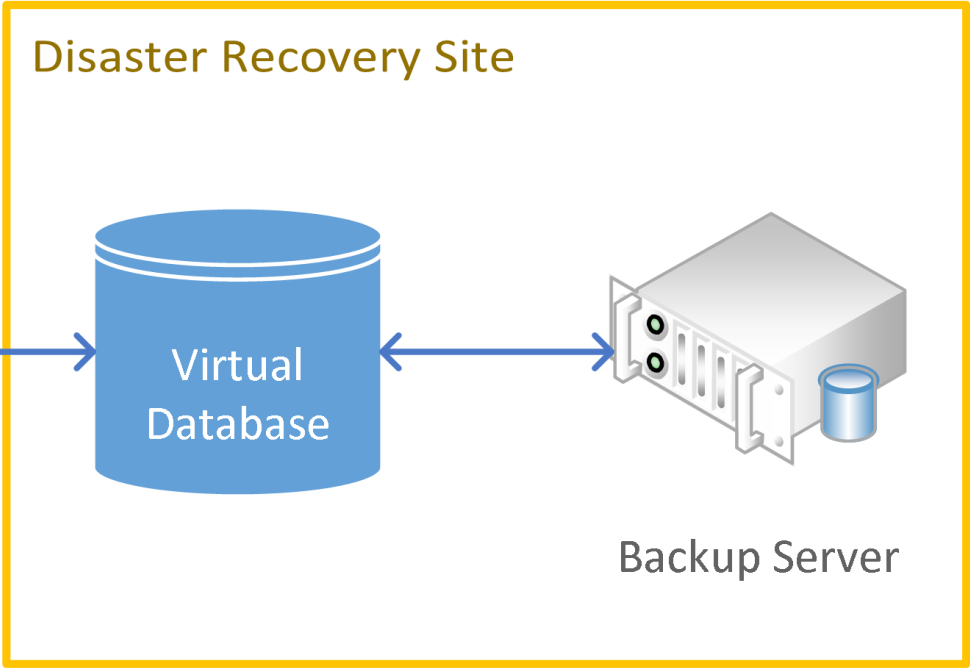
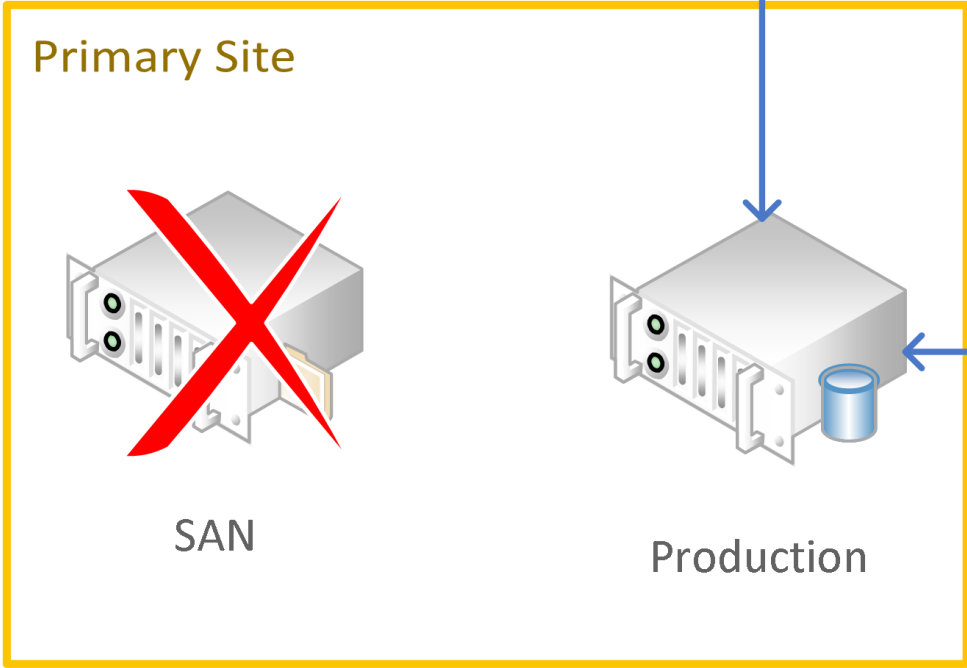
Environment



Disaster scenario – SAN(disk) failure



Work Station

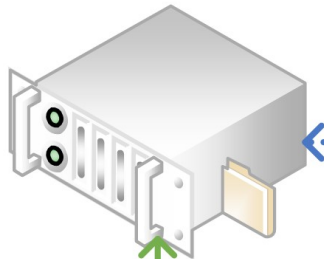


Recovery scenario

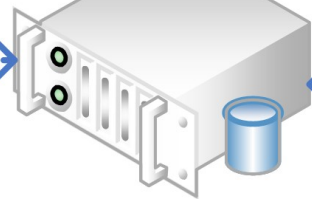


Work Station

Primary Site

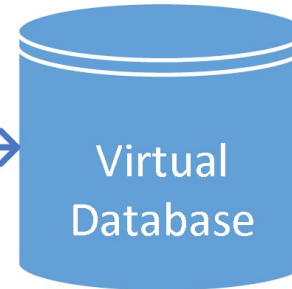


SAN

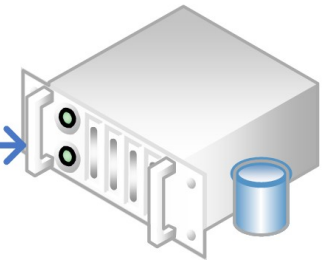


Production

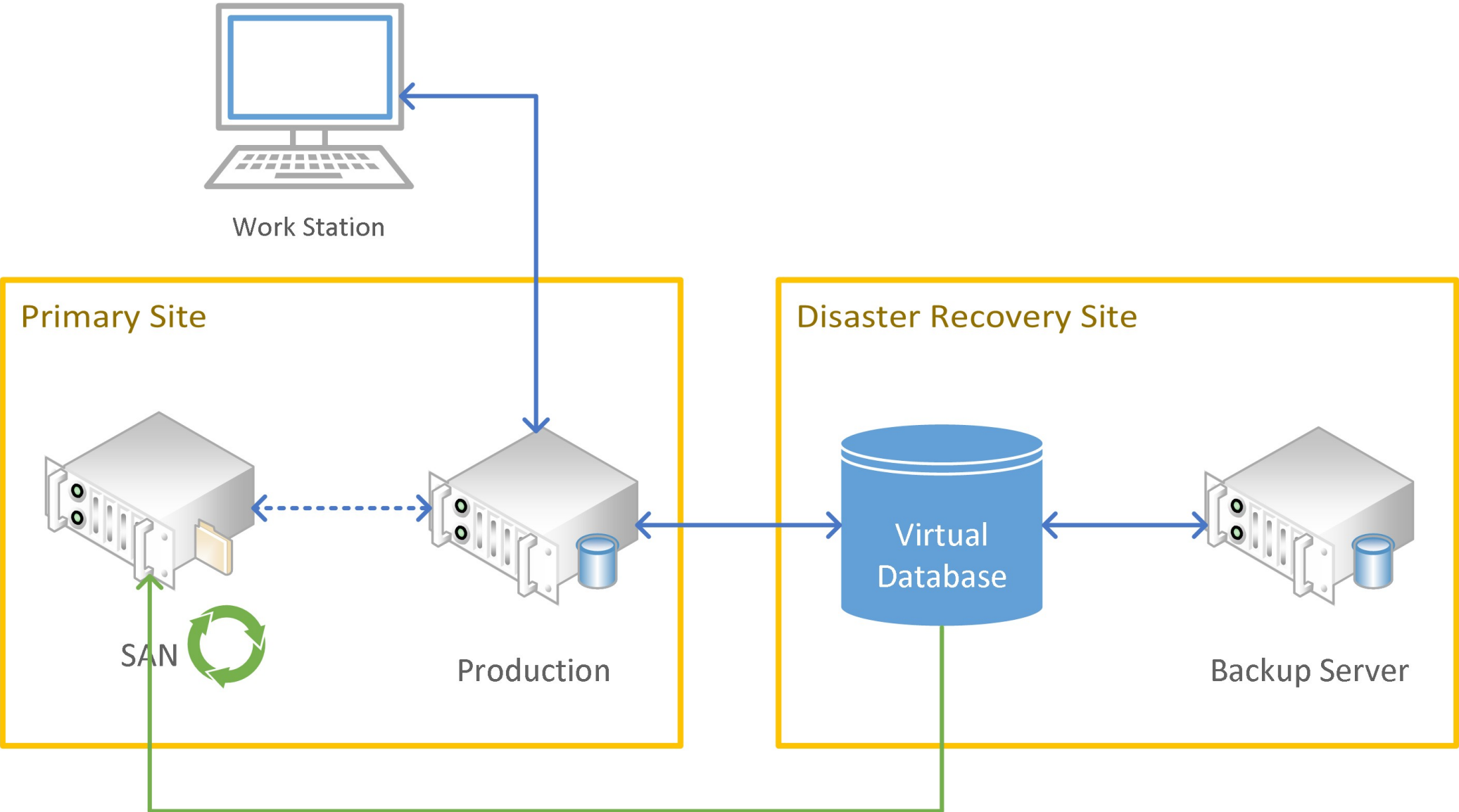
Disaster Recovery Site



Virtual Database



Backup Server



Backup Server

- 410 days of history
- 608,53 TB of data occupies 23 TB of physical disk space

Backup Server

398 backups provide **410 days** days of history until 2015-02-27.

154.92 TB of backup data is stored on 1.65 TB / **4.88 TB** physical volume.

Backup Server

416 backups provide **147 days** days of history until 2015-11-17.

608,53 TB of backup data is stored on 23,67 TB / **25,00 TB** physical volume.

Backup Server - Editions

	Lite	Standard	Deja-Vu
Primary purpose	backup & recovery	backup & recovery	test & development
Oracle license required	NO	YES	YES
Perfect Recall	Optional	Optional	Optional

The Solution

- **Backup server & Deja Vu**
- Fast data provisioning in continuous delivery.
- Faster development and accurate testing.
- Fast and accurate debugging.
- Reduces IT cost.



ORA-03113: end-of-file on communication
channel

Boris Oblak
Abakus plus d.o.o.

Déjà Vu virtual databases

ORACLE | CERTIFIED
PROFESSIONAL

Data at your service.

dejavu

SrOUG