Our Disaster Recovery Plan Goes Something Like This...

2002 Calendar

DILBERT™

By Scott Adams

You z malo - you

Q: Do You made a backup before upgrade?

A: Only cowards make backups!

Real men don't use backups, they post their stuff on a public ftp server and let the rest of the world make copies.

Linus Torvalds

User request

> ----- Izvirno sporočilo -----
> Od: xxxxxxxxxxxxxxxxxxxxx
> Za: "Boris Oblak" <boris.oblak@abakus.si>
> Poslano: Torek, 4. Marec 2014 11:43:55
> Zadeva: Baza od petka
>
> Boris,
v čez vikend se je izvedla ena obdelava in je bilo nekaj narobe. A nam lahko postaviš nekje petkovo bazo, da bomo obdelavo ponovili in jo zdebagirali?
>

AS
Abakus
As na disku.

Abakus ARBITER

ORACLE Gold Partner

Boris Oblak

Abakus plus d.o.o.

ORACLE CERTIFIED PROFESSIONAL

Strokovno z malo - strokovno

19. Strokovno srečanje SIOUG

SIOUG 2014

13.-14. oktober 2014

na koncu dodaj piko ali klicaj - odvisno od tega, kako pomembno je sporočilo

Don't panic

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ORACLE Gold Partner

History

from 1992, ~20 employees

Applications:

special (DB – Newspaper Distribution, FIS – Flight Information System)

ARBITER – the ultimate tool in audit trailing

APPM - Abakus Plus Performance and Monitoring Tool

naredit enako dolg pomišljaj kot zgoraj

Services:

presledek med besedo administration in vejico je odveči

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:

klicaj takoj za besedo, brez presledka, vsi trije primeri spodaj

from 1995 GNU/Linux *(19 years of experience !)*

Oracle on GNU/Linux: since RDBMS 7.1.5 & Forms 3.0 *(before Oracle !)*

>20 years of experience with High-Availability !

Sava

Gorenjska Banka

Banka s poslubom

Aerodrom Ljubljana

Mercator

GOODYEAR

BANKA SLOVENIJE

EVROSISTEM

Mestna občina Ljubljana

MESTNA OBČINA KOPER

COMUNE CITTÀ DI CAPODISTRIA

futuraplus

Iskra

Iskra MIS

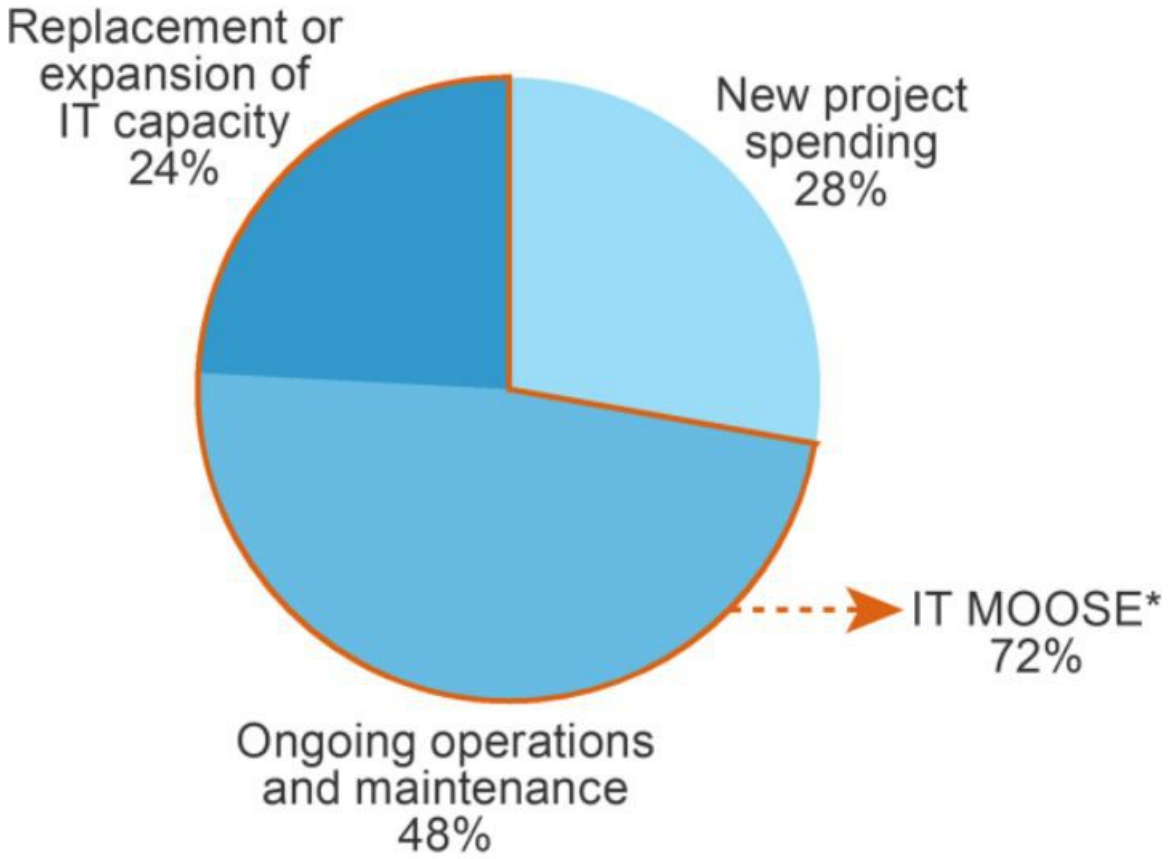
DELO PRODAJA

KONTROLA ZRAČNEGA PROMETA SLOVENIJE

Mestna občina
Ljubljana

MESTNA OBČINA KOPER
COMUNE CITTA DI CAPODISTRIA

Run-The-Business costs



Source: Forrsights Budgets And Priorities Survey, Q4 2013
*IT MOOSE = IT spending to maintain and operate the organization, systems, and equipment

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DBA: Requirements

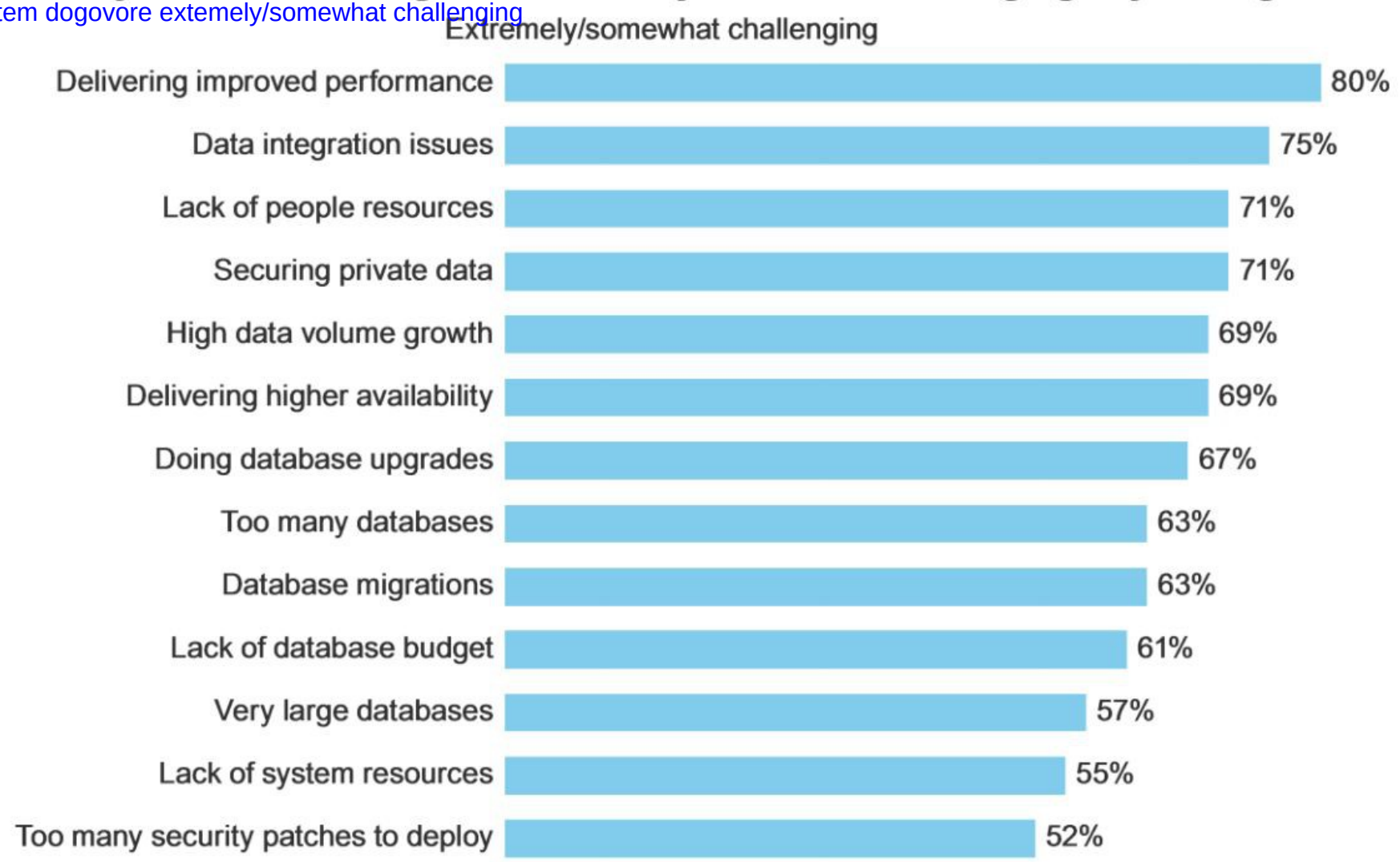
- Delivering improved performance.
  - Tuning and optimization takes nearly twice the effort on large databases (> TB) compared to smaller databases.
- Lack of staff resources.
  - The number of databases has namesto are doubled (or quadrupled), the number of DBAs has not increased proportionally.
- Data integration issues.
- High data volume growth.
  - The amount of data doubles every 18 months.

Key DBA issues

bolj primerno se zdi vprašanje How challenging are the key database management issue in your organization?

"What are the key database management issues you see as challenging in your organization?"

ker imaš potem dogovore extemely/somewhat challenging



Source: February 2013 Global Database Management Online Survey, Forrester Research, Inc.

Outsourcing DBA: benefits

- Lower database administration cost.
  - Number and size of databases constantly growing.
- Improved quality of database administration.
  - Automatic processes, procedure, proactive monitoring systems, applying best practices.
- Focus on business issues.
- Complement existing stuff.
- Improved SLAs.
  - 24x7 databases, minimize critical outages.

mislis tu na zaposlene - staff ali na stvari - stuff?

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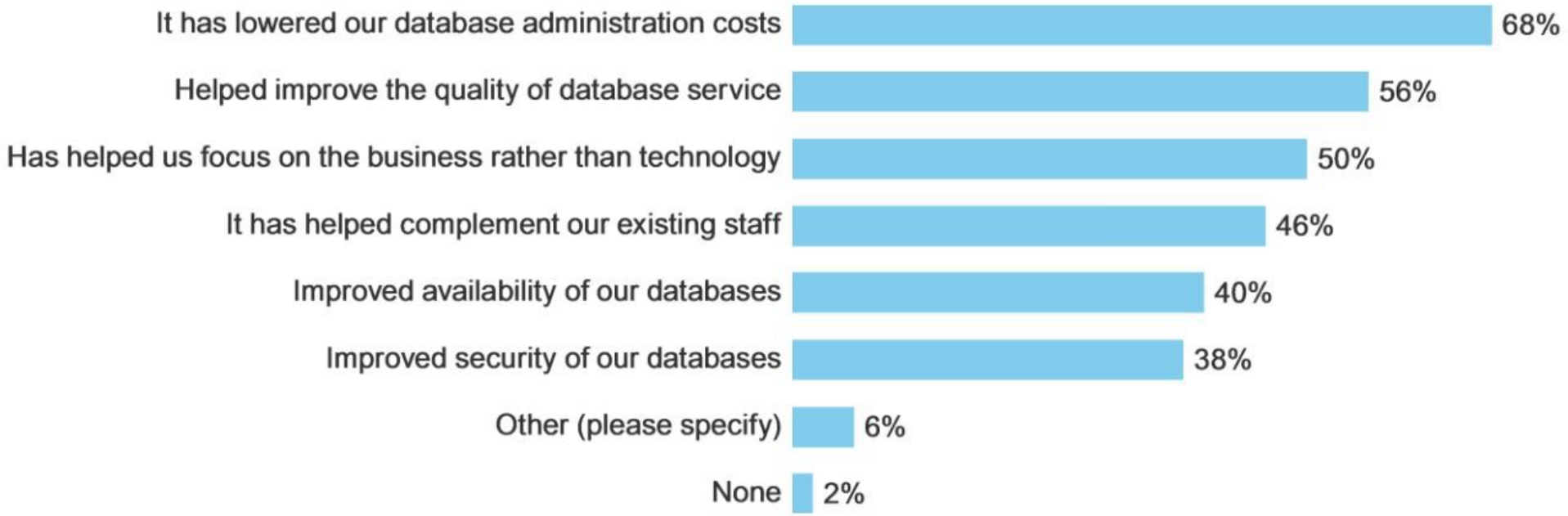
Outsourcing DBA: benefits (2)

"What benefits have you achieved by moving some or all of your database administration (DBA) management to an outsource vendor?"



Source: A commissioned study conducted by Forrester Consulting on behalf of Datavail, January 2014

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Disadvantages

- Data - Are backups consistent and usable?

daljši pomišljaj kot na začetnih prosojnicah

- Pro-active monitoring and alerting tools (licenses).
- Security -- You have a person with access to your data.

zakaj tile dva pomišljala? daljši pomišljaj kot na začetnih prosojnicah

- Loss Of Managerial Control.
- Communication -- sometimes instructions are not followed properly.

zakaj dva pomišljala? daljši pomišljaj kot na začetnih prosojnicah

Define DBA Services (SLA)

- proactive checks (+ in-house developed);
- performance monitoring and/or optimizing;
- backup and recovery procedures;
- failover (disaster recovers) procedures;
- creating test and acceptance procedures;
- point-in-time procedures;
- security levels.

Inventory

- hosts (servers);
- databases;
- instances;
- relations (standby, audit, test, acceptance, PITR);
- environment (production, test, acceptance, development).

Hosts

APPM Enterprise Monitor

Dashboard | Instances | Databases | Hosts | Worklog | Partners | Users | Settings | External

Host 521: okean.abakus.si

Host ID	521	APPM Agent Access	DIRECT
SSH Host	okean.abakus.si	APPM Agent Port	1099
SSH User	oracle	APPM Checks Transfer	APPM, Fetch via APPM Agent
SSH Port	22	Nagios Server	NONE, nagios disabled
SSH Gateway Host		Nagios Host Name	
SSH Gateway User		APPM Installation Root	/opt/abakus
SSH Gateway Port	0	Last Agent Status	FAILURE
		Last Agent Update	0 hours ago

Save | Create | Cancel

Host Options

- Download config.zip
- Download install.zip
- Update Configuration
- Upgrade Software
- Run Remote Checks
- Collect Results
- Begin Work

Checks | Relations | Thresholds | Worklog

Databases

Database 661: ABAKUS.ABAKUS.SI

Database ID	661	Checks Enabled	YES, Enabled
Unique Name	sbabakus	Environment	Production
Global Name	ABAKUS.ABAKUS.SI	Database Type	Stand-By
Backup Server		Arbiter Server	
Backup Site	okean	Description	

Save | Create | Cancel

Checks | Relations | Thresholds | Worklog

Checks

Severity	SSH Host [/ Instance SID]	Check Category / Name	Last Update	Options
0	okean.abakus.si/sbabakus	appm_db/asm_redundancy	2014-10-04 02:42:00	
0	okean.abakus.si/sbabakus	appm_db/asm_space	2014-10-04 02:42:00	
0	okean.abakus.si/sbabakus	appm_db/db_listener	2014-10-03 15:47:00	

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Instances

Instance 370: abakus

Instance ID	370	Checks Enabled	YES, Enabled
Database Version	11.2.0.3.0	Host ID	paris.abakus.si #24
Instance Name	abakus	Database ID	ABAKUS.ABAKUS.SI/abakus #16
Host Name	paris.abakus.si	ASM Instance ID	paris.abakus.si/+ASM #99
		Instance Type	RDBMS (Oracle Database Instance)

Save | Create | Cancel

Checks | Relations | Thresholds | Worklog

Relations

Referenced SSH Host / Instance SID	Reference Type	Primary SSH Host / Instance SID	Options
okean.abakus.si / sbabakus	*is STANDBY for*	paris.abakus.si / abakus	Configure | Switchover | Delete
atlas.abakus.si / sukaba	*is STANDBY for*	paris.abakus.si / abakus	Configure | Switchover | Delete

Instances for Database #16

Severity	SSH Host / Instance SID	DB Ver.	Last Update
0	paris.abakus.si / abakus	11.2.0.3.0	2014-10-03 11:38:00

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Install checks

APPM Agent Access	DIRECT
APPM Agent Port	1099
APPM Checks Transfer	APPM, Fetch via APPM Agent
Nagios Server	NONE, nagios disabled
Nagios Host Name	
APPM Installation Root	/opt/abakus
Last Agent Status	FAILURE
Last Agent Update	0 hours ago

Host Options

- Download config.zip
- Download install.zip
- Update Configuration
- Upgrade Software
- Run Remote Checks
- Collect Results
- Begin Work

Monitor results

All important (not-ok) checks

Severity	SSH Host [/ Instance SID]	Check Category / Name	Last Update
100	E [illegible]up.abakus.si/stby	appm_db/db_standby	2014-10-04 03:43:00
100	E [illegible]b.abakus.si/hib[illegible]	appm_db/db_statistics	2014-10-04 03:46:00
100	[illegible]n.abakus.si/razv	appm_db/db_block_corruption	2014-10-04 03:20:00
10	[illegible]no.abakus.si/ikar	appm_db/db_tablespaces	2014-10-04 01:40:00
10	[illegible]3.abakus.si/sbarh	appm_db/db_standby	2014-10-04 03:41:00
10	[illegible].abakus.si/sbprod	appm_db/db_standby	2014-10-04 03:41:00
10	[illegible]1.abakus.si/dws1	appm_db/db_tablespaces	2014-10-04 03:39:00
10	[illegible]2.abakus.si/+ASM2	appm_db/asm_disks	2014-10-04 03:50:00
10	[illegible]2.abakus.si/dws2	appm_db/db_tablespaces	2014-10-04 03:50:00
10	[illegible]2.abakus.si	appm_sys/os_diskspace	2014-10-04 01:50:00
5	[illegible].abakus.si/+ASM	appm_db/db_status	2014-10-04 04:25:33
5	[illegible].abakus.si/arbiter	arbiter/arb_partitions_indexes	2014-10-04 04:25:33
5	[illegible]bakus.si/arbiter	arbiter/db_arbiter_indexes	2014-10-04 04:25:33
5	[illegible].abakus.si/arbiter	arbiter/arb_partitions_existence	2014-10-04 04:25:33
5	[illegible].abakus.si/arbiter	appm_db/ext_appm_backup_datafile_copy	2014-10-04 04:25:33
5	[illegible]abakus.si/arbiter	arbiter/db_arbiter_alp_alert	2014-10-04 04:25:33
5	[illegible]abakus.si/arbiter	appm_db/asm_space	2014-10-04 04:25:33
5	[illegible].abakus.si/arbiter	appm_db/asm_voting_disks	2014-10-04 04:25:33
5	[illegible].abakus.si/arbiter	arbiter/db_arbiter_corrupted_aud	2014-10-04 04:25:33

Data (backups)

- Check backup consistency and usability?
- Rman: validate backup.
- Setup new server and restore backup.
- Partial recover (some of the datafiles).
  recovery?
- Export some data (tables) from backups?
- Test failed procedures?

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User requests (1)

> ----- Izvirno sporočilo -----
> Od: xxxxxxxxxxxxxxxxxxxxx
> Za: "Boris Oblak" <boris.oblak@abakus.si>
> Poslano: Torek, 2. September 2014 03:35:46
> Zadeva: View
>
> Boris,
>
> Prosim za pomoc. Na shemi XXXX na XXXX bi moral biti view XXXX_place. To je view iz katerega uvazamo podatke v place. V cetrtek sem delal prnose na XXXX in sem ga dropnil. Vsaj mislim tako, ker ga ne najdem vec. Nujno ga rabimo za place. Potem je potrebno narediti se synonym na XXXX.
>
> Lp
>

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User requests (2)

> ----- Izvirno sporočilo -----
> Od: xxxxxxxxxxxxxxxxxxxxx
> Za: "Boris Oblak" <boris.oblak@abakus.si>
> Poslano: Sreda, 27. Avgust 2014 10:15:21
> Zadeva: Stari podatki iz tabele XXXX
>
> Včeraj so pri instaliranu nove verzije avtorji pomotoma brisali podatke iz tabele XXXXX. Prosim vrni stanje tabele enkrat med 16. in 24. avgustom.
>

User requests (3)

> ----- Izvirno sporočilo -----
> Od: xxxxxxxxxxxxxxxxxxxxx
> Za: "Boris Oblak" <boris.oblak@abakus.si>
> Poslano: Torek, 4. Marec 2014 11:43:55
> Zadeva: Baza od petka
>
> Boris,
v čez vikend se je izvedla ena obdelava in je bilo nekaj narobe. A nam lahko postaviš nekje petkovo bazo, da bomo obdelavo ponovili in jo zdebagirali?
>

AS
Abakus
As na disku.

User requests (4)

> ----- Izvirno sporočilo -----
> Od: xxxxxxxxxxxxxxxxxxxxx
> Za: "Boris Oblak" <boris.oblak@abakus.si>
> Poslano: Ponedeljek, 4. November 2013 12:01:43
> Zadeva: Testna predprodukcijska baza
>
> Boris,
s 1. januarjem bomo dali v produkcijo novo verzijo XXXX. Kako bi lahko naredili kopijo produkcijske baze, da bi izvedli test? Kopijo produkcijske baze bomo rabili večkrat, ker bomo teste večkrat izvedli, vedno pa rabimo svežo kopijo produkcije. Kaj vse bi morali postaviti (strežnike, …), da bi to naredili?
>

Point In Time Recovery

- Setup a new server and restore the backup (check also backup reliability ~~also~~ and in some cases time to restore).
- 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 the procedure?
- Cost (DBA work, server, ...)?

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PITR – Abakus way

- Connect to the Backup server.
- Open the database from required backup in read only mode.
- Export or transfer via db link required data or metadata.
- Time to complete the procedure is measured in minutes!
- No DBA intervention! (no cost)

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PITR – Abakus way (2)

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

PITR – Abakus way (3)

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		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	Static Backup
Point-in-Time	2014-08-24 19:08:54
Log Level	INFO

Open Read-Only | Open Read-Write

Log Files: alert_pthibis.log, bks_task_pthibis.log

PITR – Abakus way (4)

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

Details

Resource is ONLINE

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

Close Database

Log Files: alert_pthibis.log, bks_task_pthibis.log

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	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

Setup new database

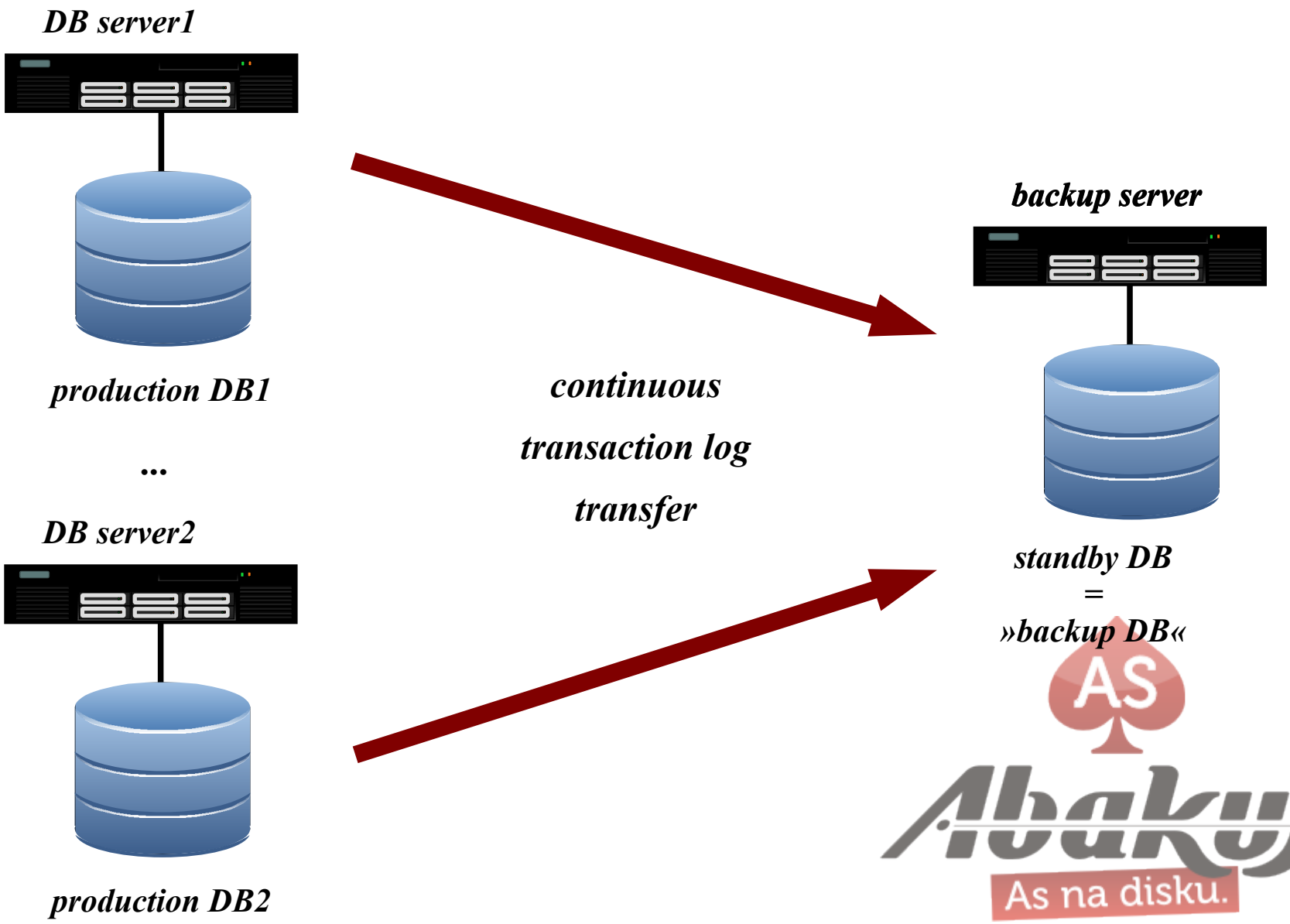
- Setup database for test or acceptance.
- Prepare new server.
- Restore database from required backup.
- Time to complete the procedure?
- Cost (DBA work, server, ...)?

Setup DB: Abakus way

- Connect to the Backup server.
- Open the database from required backup in read write mode.
- **That's all!**
- Time to complete the procedure is measured in minutes!
- No DBA intervention! (no cost)

Abakus
As na disku.

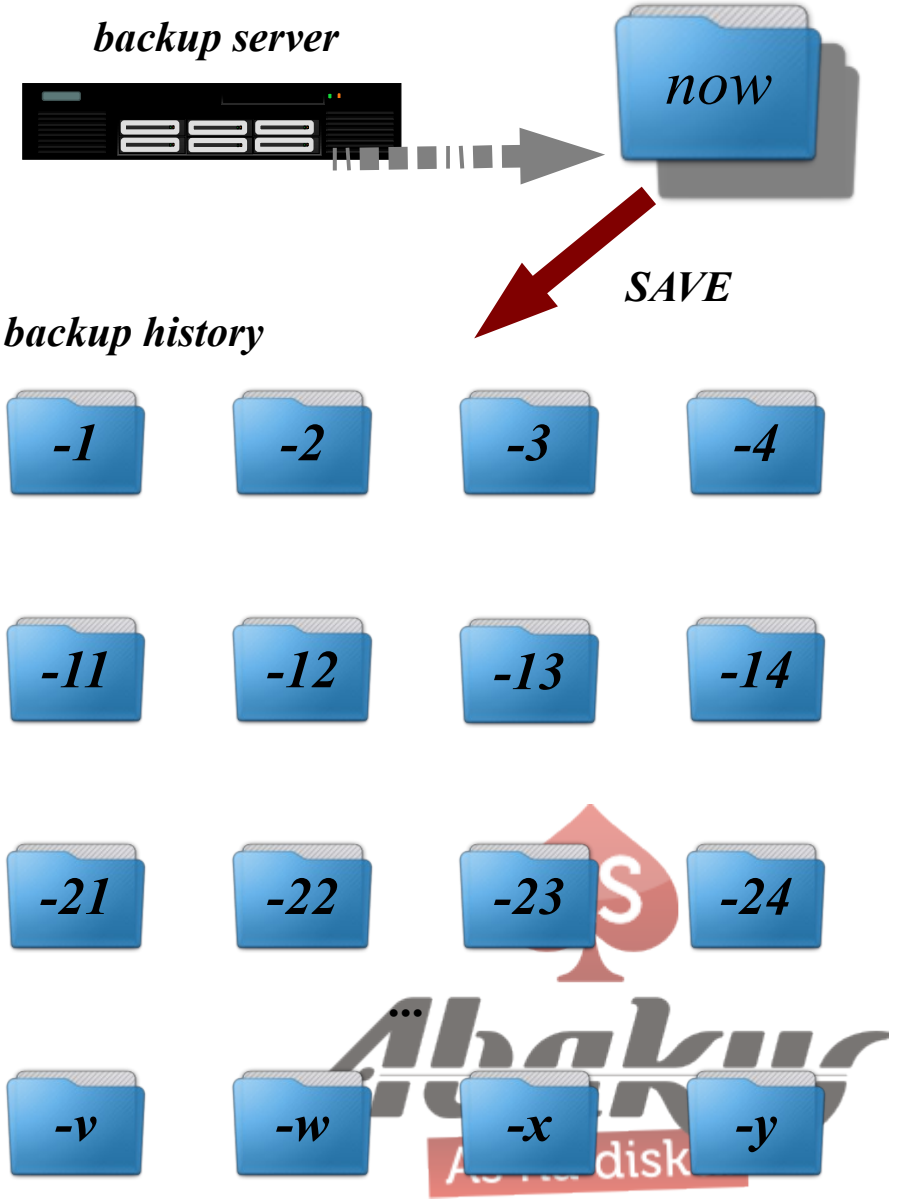
Backup server: behind the scene



… and history

- snapshot
- save snapshot
- Time and resources are consumed exclusively on backup server.dodaj piko
- Backup occupies a lot of disk space !?

zbriši presledek do !?



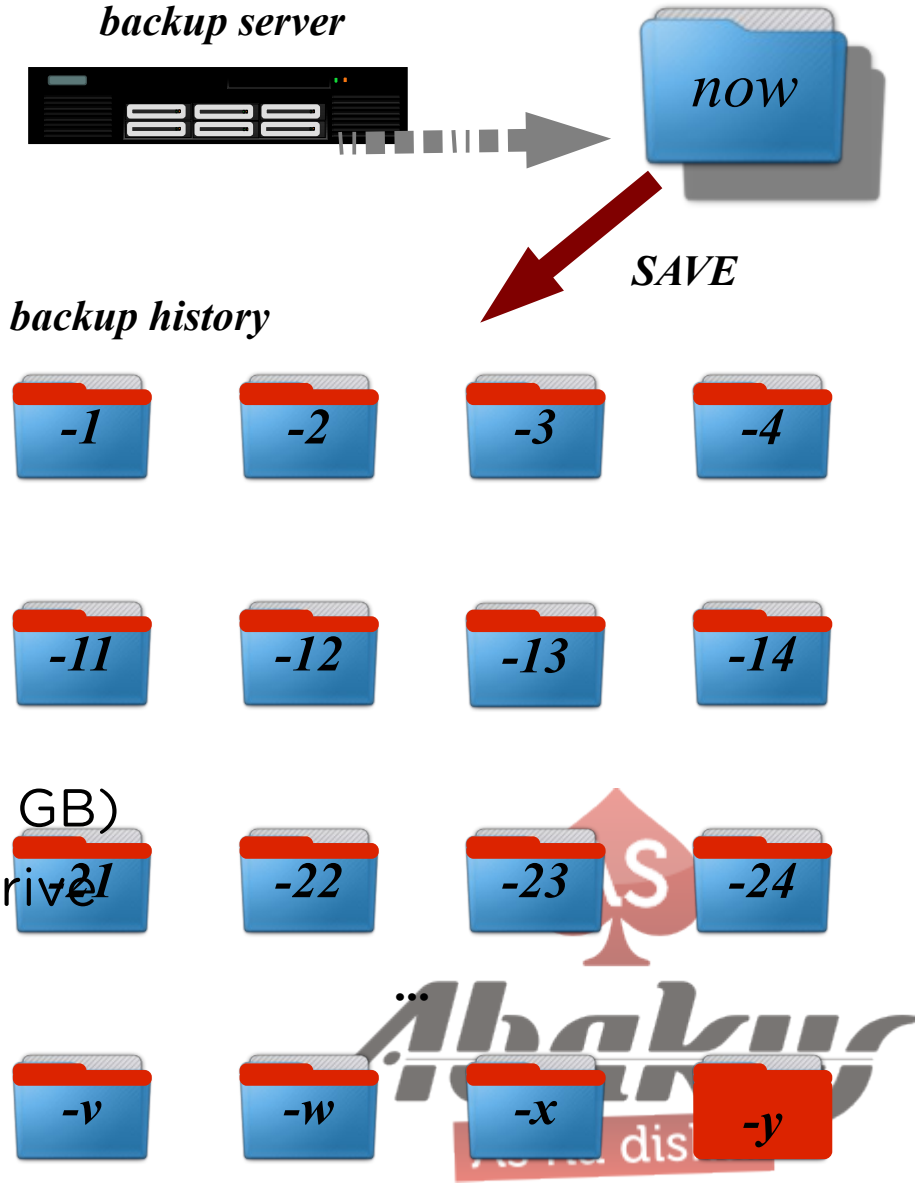
... and (almost) no disk space

... by using data deduplication

- snapshot
- save snapshot
  to deduplicated area

Example:

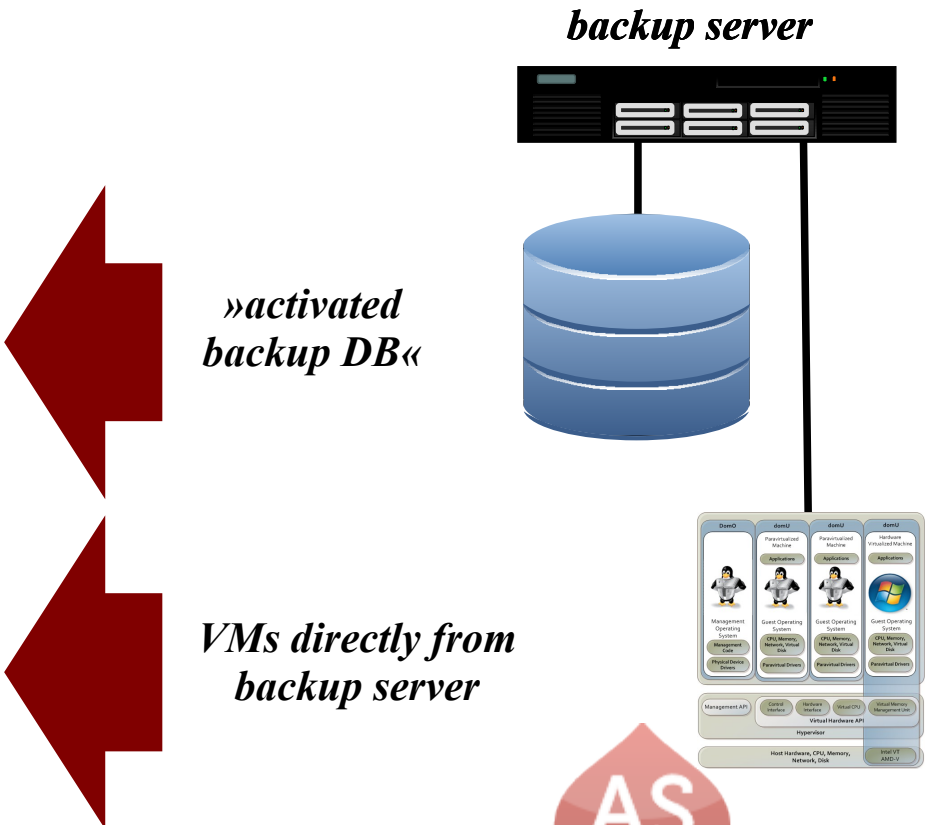
- DB size 1 TB
- 1% changed/added data per day (~10 GB)
- ~200 days backup fits on 3 TB disk drive



Recovery in no time – scenario 1

Recovery as a Service (RaaS)

- services are offered directly from the backup server



BACK IN BUSINESS
IN NO TIME!*

* real restore in more appropriate time

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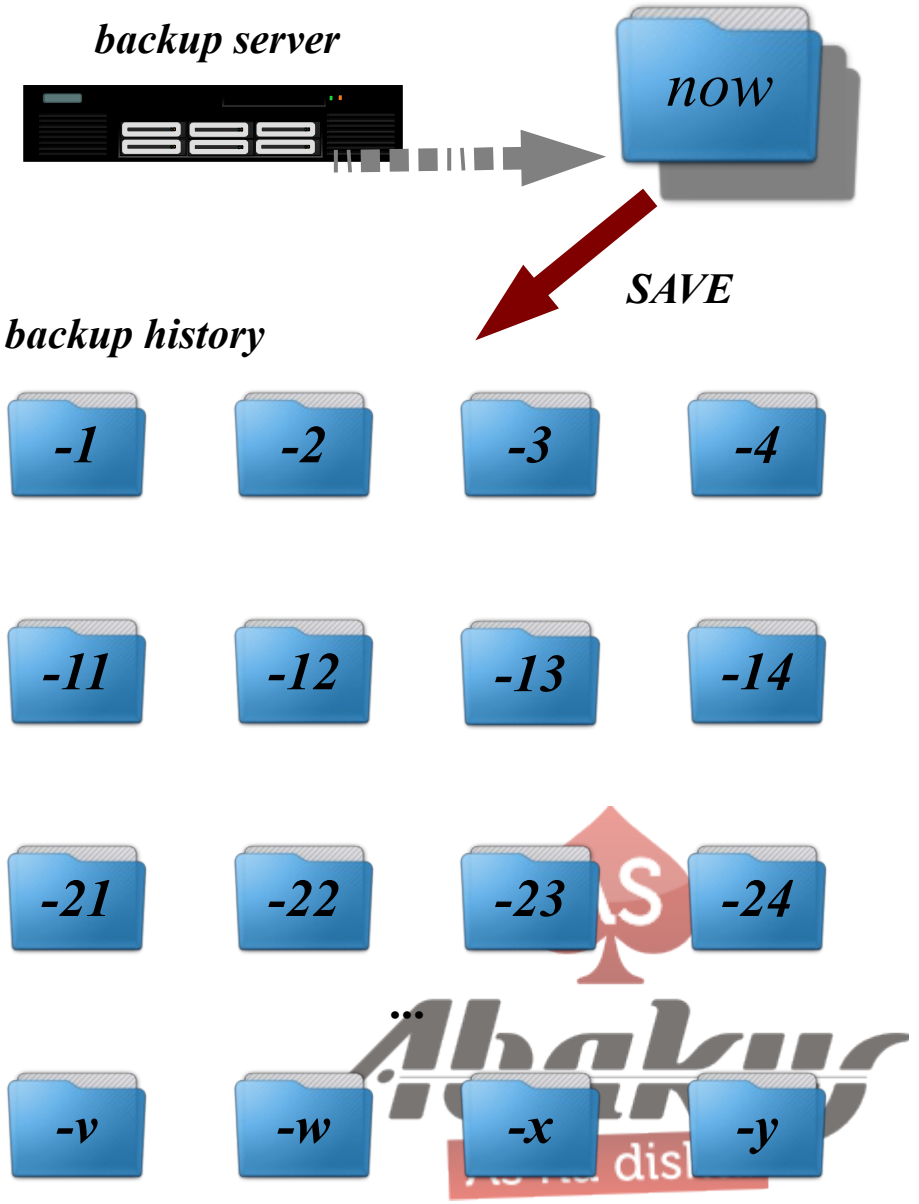
Alternative use

- BI – business analysis purposes
- reporting
- development & test

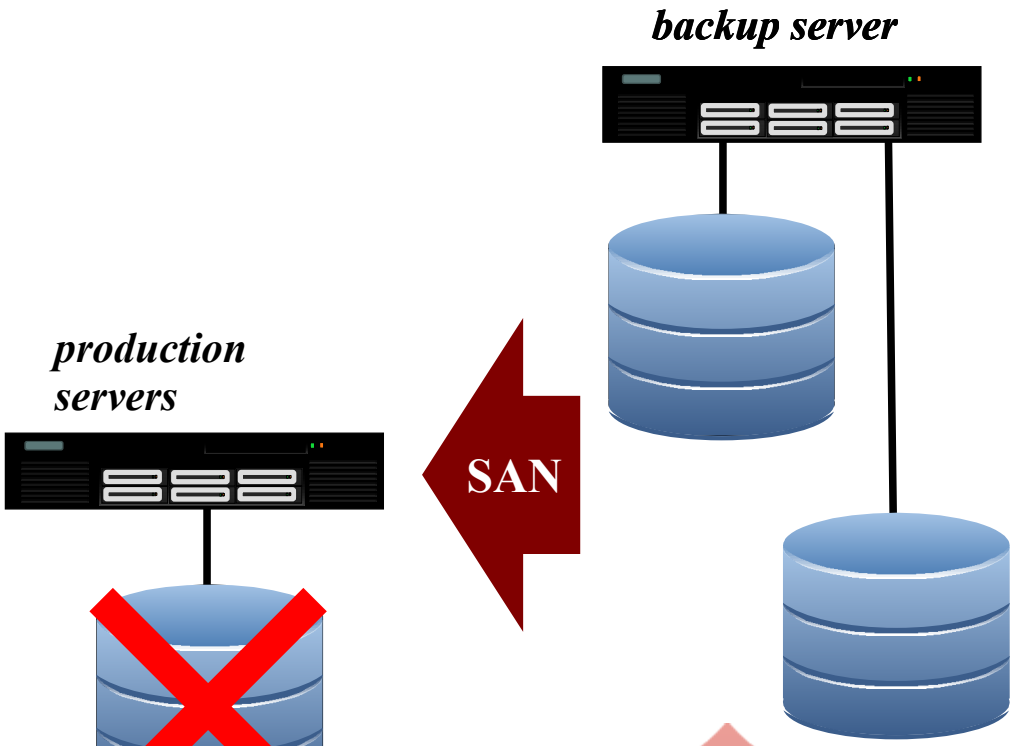


Recovery in no time – scenario 2

Recovery as an Infrastructure

(change role to SAN storage)

- backup server works as a SAN storage infrastructure to production servers



BACK IN BUSINESS
IN NO TIME!*

* real restore in more appropriate time

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Space utilization

Bank

- Everyday backups.
- **5** databases, largest **13 TB.**
- Total disk capacity **60 TB.**
- Total saved since 1/Aug/2014 **300 TB.**
- Still available free space **40%.**

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Performance and diagnostic tools

- Hidden cost – licences for diagnostic and performance pack (active session history).
- Third party diagnostic and performance packs.

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APPM – Abakus tool

- Own ASH implementation (work with Oracle Active session history too).
- No need for diagnostic and performance pack.
- Works on Standard and Enterprise edition.

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APPM – Abakus tool (2)

APPM - *Oracle Database Interface*

Overview ▾ Performance ▾ Diagnostics ▾ Security ▾ Scheduler ▾ Storage ▾ APPM

Query Parameters | **Collector Job**

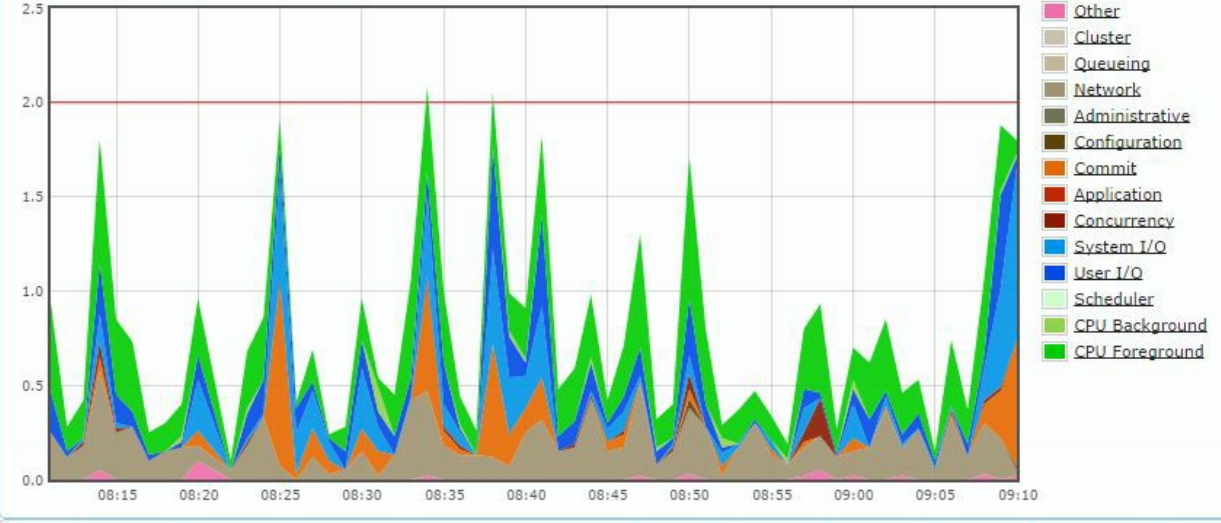
Data Source: appm$ash_raw — For Instance: -- All Instances -- — Exclude APPM ☑

From Time: 2014-10-03 08:11 — Sample by: Minute — Exclude Lab128 ☐

To Time: 2014-10-03 09:11

Refresh — ○ Manual ○ 5s ○ 15s ○ 1m ◉ Historical — Clear Class Filter

Average Active Sessions per Event Class



Top Waits | **Current Waits**

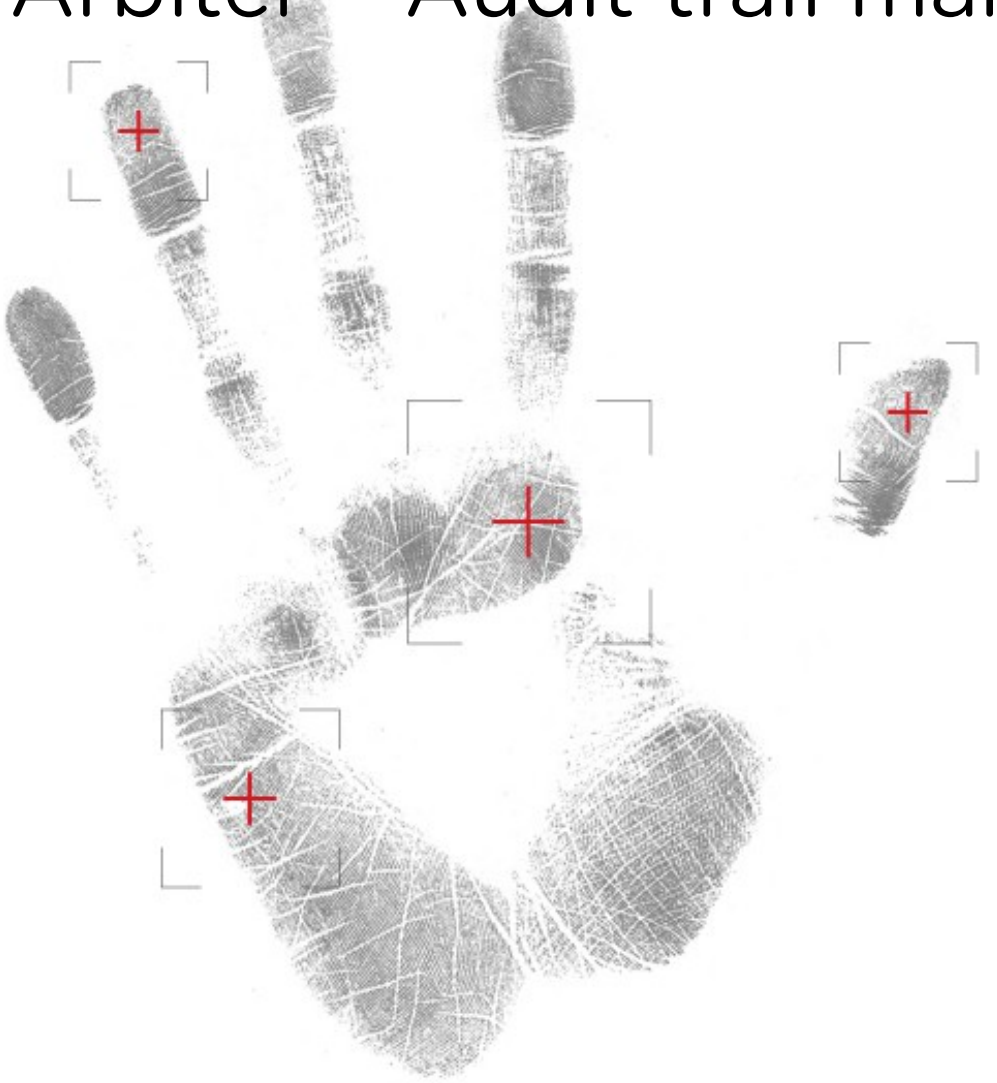
Inst	Event	Time	Count
1	log file sync	7	7
1	db file sequential read	13	4
1	control file sequential read	107	0
1	control file parallel write	3	1
1	log file parallel write	3	0
1	Disk file operations I/O	16	0
1	db file parallel write	1	0
1	ASM file metadata operation	9	0
1	SQL*Net break/reset to client	4	0
1	SQL*Net more data to client	6	0
1	SQL*Net message to client	57	0
1	db file async I/O submit	1	0

SQL | PL/SQL | Objects | Sessions | Background Sessions | Files | Modules | Actions | Clients | Top Waits | Top Waits by SQL | Top Waits by Session

Activity	SQL ID	SQL Text	Child Number
	1wt0yq09pcuww	SELECT SUBSTR(A.RIS_PROCEDURE ,1 ,LENGTH(A.RIS_PROCEDURE) - 5) RIS ,COUNT(*) STEVILO FROM TA_RIS_PWL	1
	bnhrzdmj8mpmx	SELECT COUNT(*) FROM RIS_CADE ,RISHSUDE ,RIS_USER WHERE RIS_CADE.DEPART_ID = RISHSUDE.DEPART_ID AND	0
	93hmhpmn0x3y5	SELECT count(*) cnt FROM (SELECT tbs.tablespace_name, tbs.gb_free_rsrv,	2
	81kbtbfpw0np2	SELECT DECODE(:B11 ,'ime' ,UPPER(C.LNAME) ,TO_CHAR(C.MNR ,'fm0000000000')) ORDER_1 ,DECODE(:B11 ,'im	4
	6p5k3453a7a3x	SELECT COUNT(*) FROM (SELECT CONNECT_BY_ROOT Z.GRANTED_ROLE ROLE, Z.GRANTED_ROLE GRANTED_ROLE FROM (	0
	39q52mhhsh0dz	SELECT DISTINCT C.TREE_ID ,T.DESCRIPTION ,T.RIS_LEVEL FROM VI_RISUCARD C ,TA_RIS_TREE T WHERE C.TREE	1

Security

- Arbiter – Audit trail management.



Your data is safe and secure!

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

Boris Oblak
Abakus plus d.o.o.

ORACLE CERTIFIED PROFESSIONAL

ORACLE Gold Partner

strokovno z malo
19. Strokovno srečanje SIOUG

SIOUG 2014
13.-14. oktober 2014

Don't panic

pika ali klicaj