Dobro, a sad mi se poslužitelj baze podataka srušio …

Agenda

- Who am I
- Threats
- Value of data
- TCL
- RTO / RPO
- Backup / Recovery
- Standby database
- Online data replication

Who am I

- Jan Karremans
- Working in IT since 1991
- Working with Oracle since v. 7 on Alpha VMS
- From administration to development
- From customer to sales / management
- From employee to independent
- Oracle SE Round Table founding member

I'm on-line

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Kicking (open) doors

Threats

- Types of disasters
  - Phyiscal
    - System failures
    - Local problems
    - Regional distrurbances
  - Logical
    - Human error
    - External systems

t minus zero

- Stomach ache

- Some light panic

- Finding documentation

- Start to work

Hoping you tested your procedures & backups!!

WAIT

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Alternatively

- Step back and think
  - What could happen ??
  - Impact of loss ??
  - Value of data ??

Value of data

- Many companies filed for bankruptcy after 9/11
- Credit-card details go for $ 2.00 - $ 45.00 per piece

Credit Card Prices Based on Market Circumstance

Credit Card Price	Market Circumstance
$20–$45	Freshly acquired
$10–$12	Flooded
$2–$7	Clearance ("stale" data)

SOURCE: Data drawn from interviews; Krebs, 2013g

- A medical record is beyond pricing and cannot be re-written or costs € 0,50 per page

Value of data

- How do you look at data?
  - Current value
  - Original value
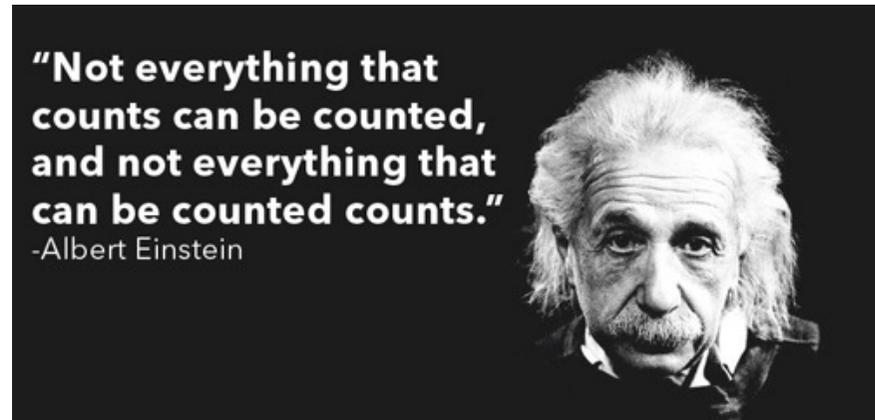 - Future value

- Value of data changes with use & time

Impact of loss

- ## Short term effects
  - Business disruption
  - Damage of reputation

Impact of loss

- Long term effects
  - Stacked errors
  - Intangible adverse results

"Not everything that counts can be counted, and not everything that can be counted counts."
-Albert Einstein

Impact of loss

TCL

- Cost of hardware
- Cost of software
- Cost of manpower

is fractional to

- **T**otal **C**ost of **L**oss (TCL)

Doing nothing

Doing nothing

Does not

Cost nothing

- Expect the unexpected

- Be prepared

- Weigh your needs

Take a moment

And realize "what if"…

RTO / RPO

- The **recovery time objective** (**RTO**) is the *duration* of time and a service level *within which* a business process *must be restored* after a disaster (or disruption) in order to avoid unacceptable consequences.

Source: WikiPedia

RTO / RPO

- Recovery Time Objective
- How long it takes before you can resume operations

"We will need new hardware and it will be delivered next week Thursday."

RTO / RPO

- A **recovery point objective (RPO)** is the *maximum tolerable period* in which *data might be lost* from an IT service due to a major incident.
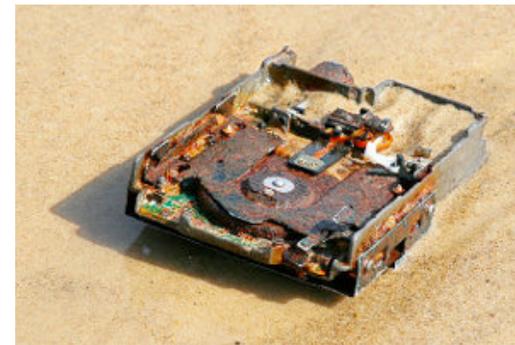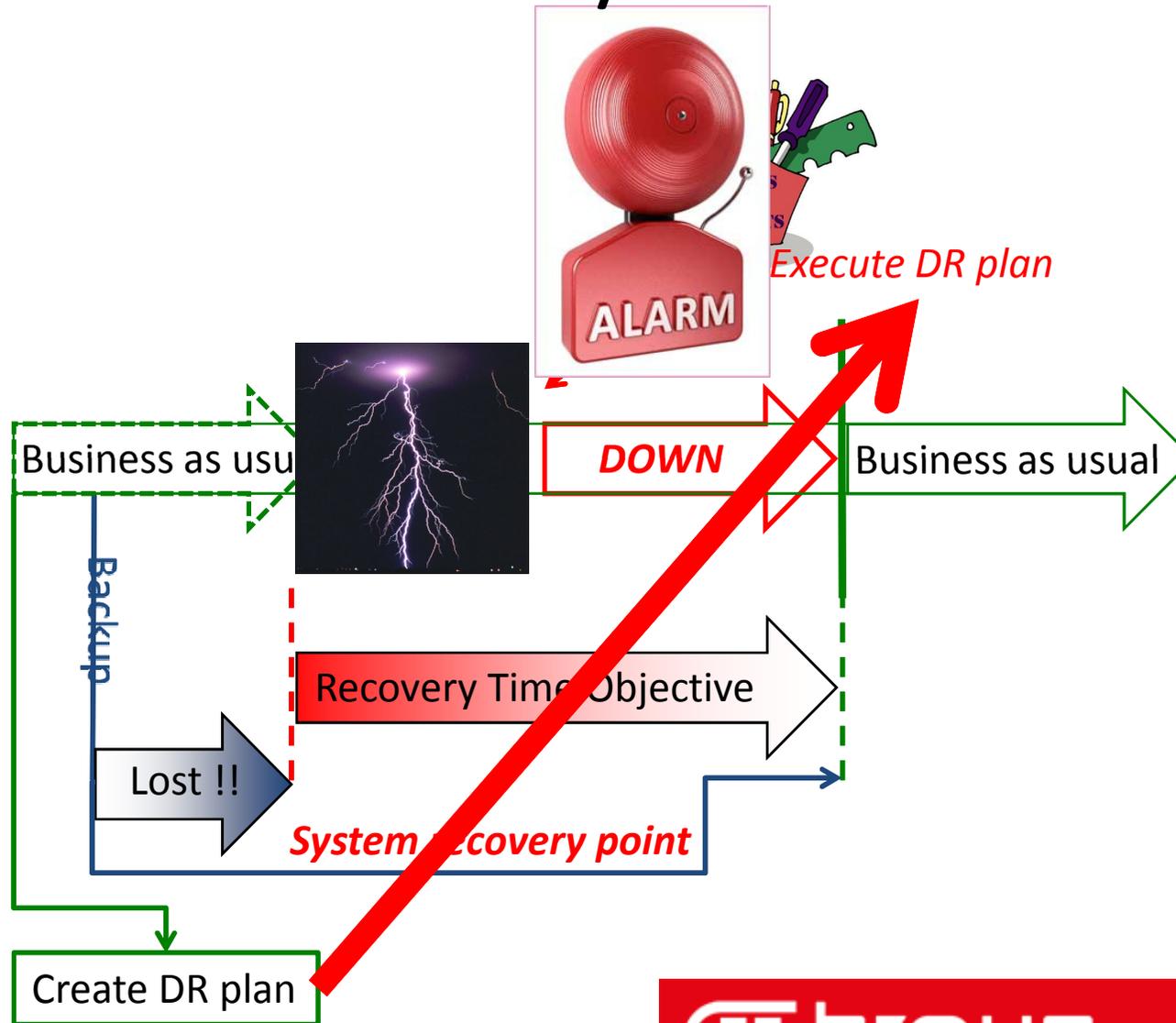
Source: WikiPedia

RTO / RPO

- Recovery Point Objective
- How much data can you afford to lose

"Your database can be recovered until yesterdaynight
Until the point of the backup. "

RTO / RPO

ALARM

Execute DR plan

Business as usual   **DOWN**   Business as usual

Backup

Recovery Time Objective

Lost !!

System recovery point

Create DR plan

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RTO / RPO

- Recovery Time Objective

Requirement	Measure
Low	Buy & install, backup
Medium	Restore on ready hardware
High	Standby database
Critical	Online

RTO / RPO

- Recovery Point Objective

Requirement	Measure
Low	Back-up
Medium	Multiple back-ups per day
High	Standby database
Critical	Online

Backup / Recovery

- Most basic protection

- Not even always configured

- Requires restore plan:
  - Hardware present
  - Install software
  - Backup media mountable
  - Environment layout blueprint

Backup / Recovery

- Low cost

- RTO / RPO always "longer"
  - Backup every hour (full / incremental tradeoff)
  - Restore time
  - Prerequisite fulfillment
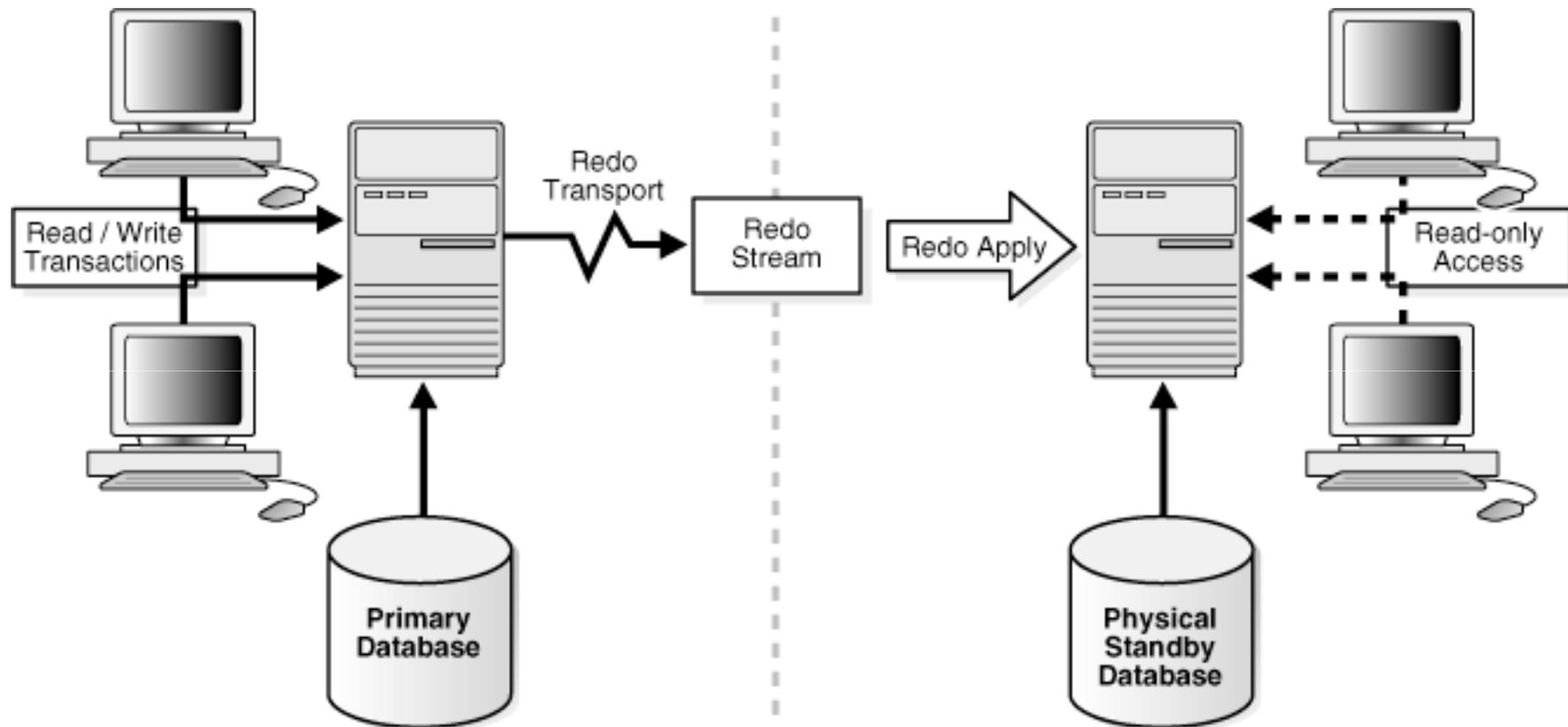- *BAD* idea for any serious system

Backup / Recovery

- Oracle Recovery Manager
- 3rd party tools

Recovery:

- Database
- Software (configuration)
- Multiple stack components

Standby database

Standby database

- (Relatively) low cost
- RTO matter of minutes
  - Depending on environmental complexity
- RPO typically about 5 minutes
- Good idea for disaster proofing
  - Time to protect against logical errors
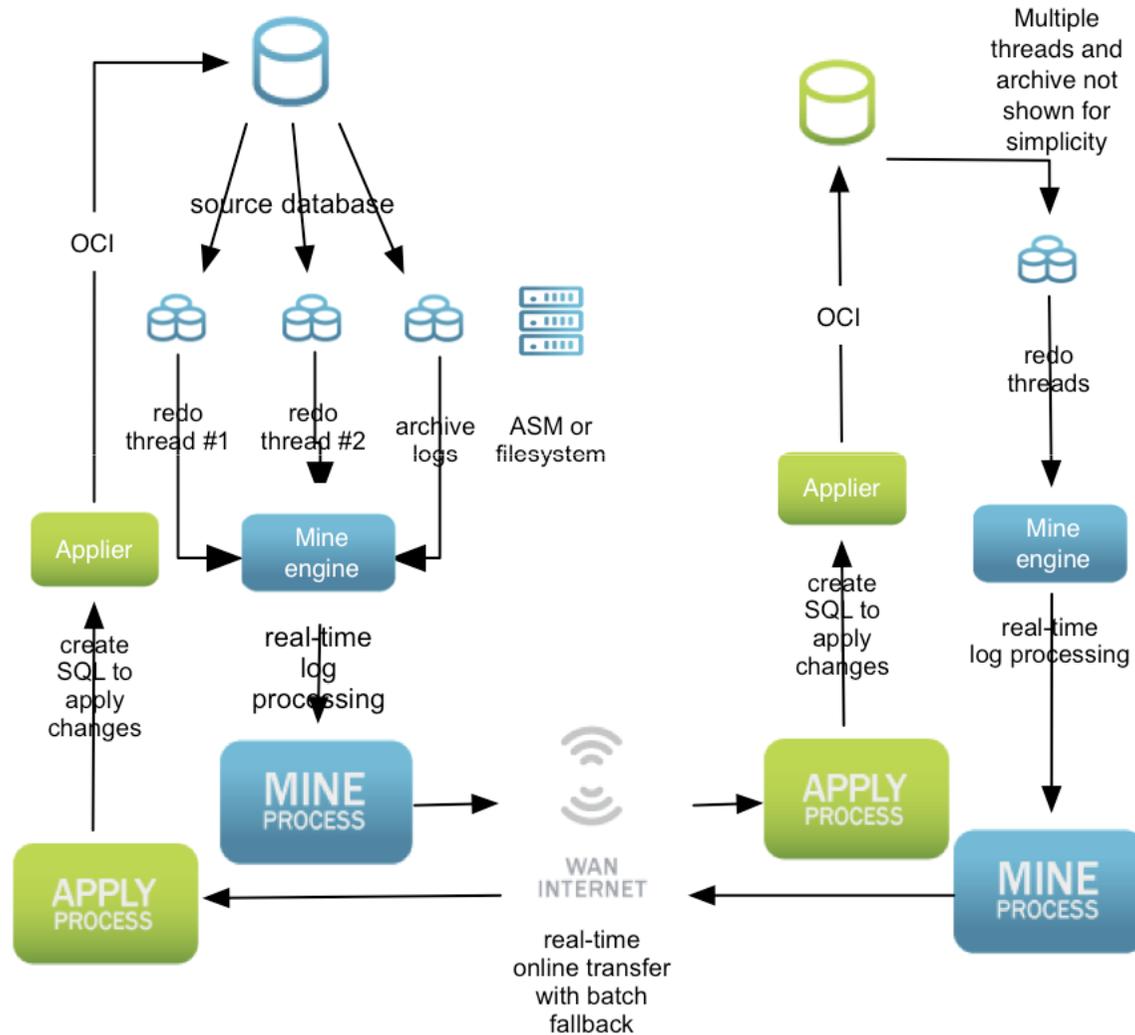
Standby database

- Oracle Data Guard (requires EE!)
- Dbvisit Standby
- Own solution

Recovery:

- Secures Database
- Technical environment already there

Online data replication

Online data replication

- Can become quite complicated

- RTO immediate

- RPO immediate

- Good idea for data high availability
  - Does not protect against logical errors

Online data replication

- Oracle Golden gate   ($$ & $$)
- Dell Shareplex   ($ & $$)
- Dbvisit Replicate   ($ & $)

Recovery:

- Secures data availability
- Technical environment already there

Data Guard

- Data Guard does both

- Physical Standby database -> Redo apply
- Logical Standby database -> SQL apply

- Snapshot Standby database -> something different

Data Guard

- Modes:

  1. Maximum Availability *of the primary database*

  2. Maximum Performance *of the primary database*

  3. Maximum Protection *of the primary database*

Data Guard

- **Free** with Enterprise Edition Database

Oracle Data Guard Redo & SQL Apply &
Snapshot Standby
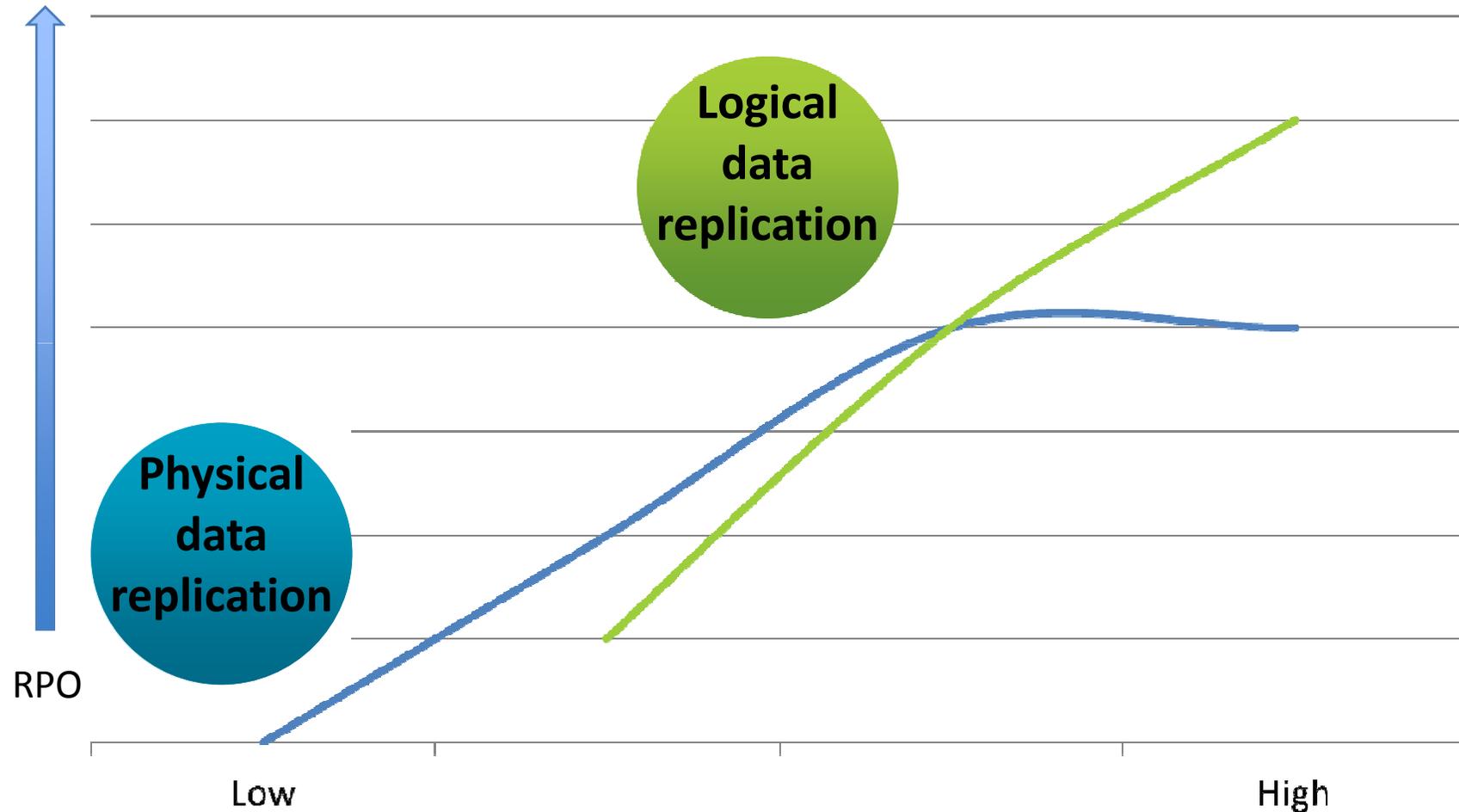
- Cost option

Oracle *Active* Data Guard

Data Guard

- Data Guard does not do…

- Logical online data replication!

- Active Data Guard is read-only!

Need for availability

RPO

Logical data replication

Physical data replication

Low

High

Need for availability

- Multiple ways to protect data

  but

- Data availability dependent on more

- Always a multi solution approach!

Business Continuity Management

Data recovery

      is part of

      Data availability

            is part of

            Systems availability

                  is part of

                  Business process availability

Being the rock

What we covered

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- Value of data
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Important takeaway
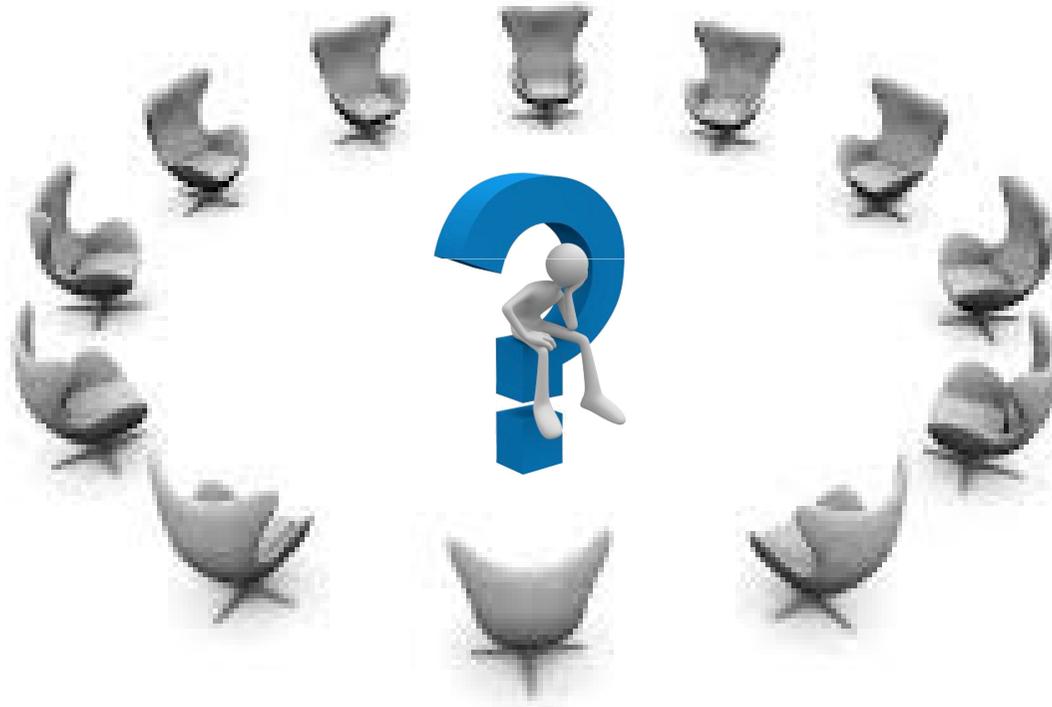
- Plan some time

- Think about situation

- Be prepared

and

T E S T

What do you think?

The end

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