TSMCluster®

New Version 8.1

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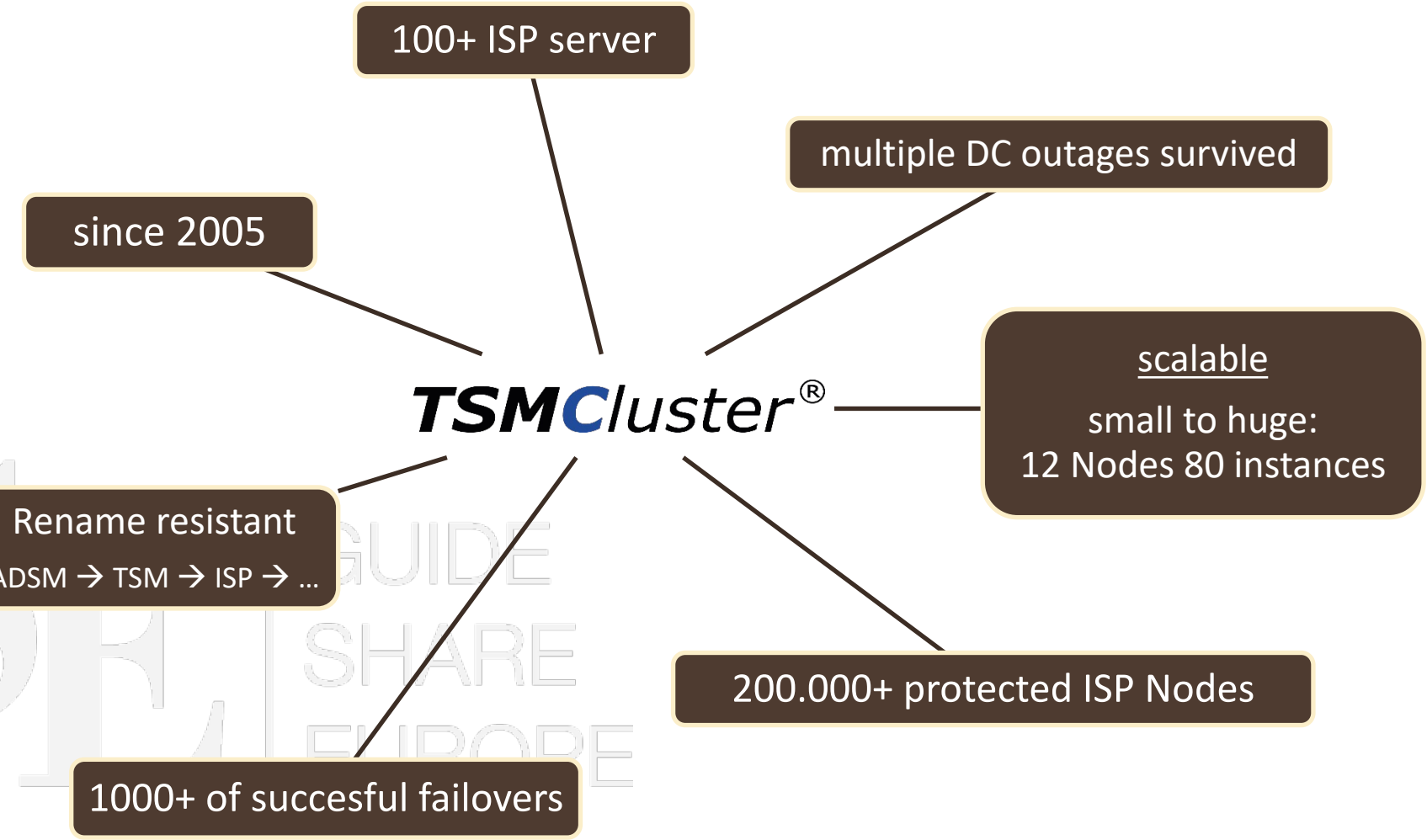
TSMCluster®


100+ ISP server
multiple DC outages survived
since 2005
TSMCluster®
scalable
small to huge:
12 Nodes 80 instances
Rename resistant
ADSM → TSM → ISP → ...
200.000+ protected ISP Nodes
1000+ of succesful failovers

TSMCluster® Why do you need a cluster?

TSM service has to be available 24x7 !!!

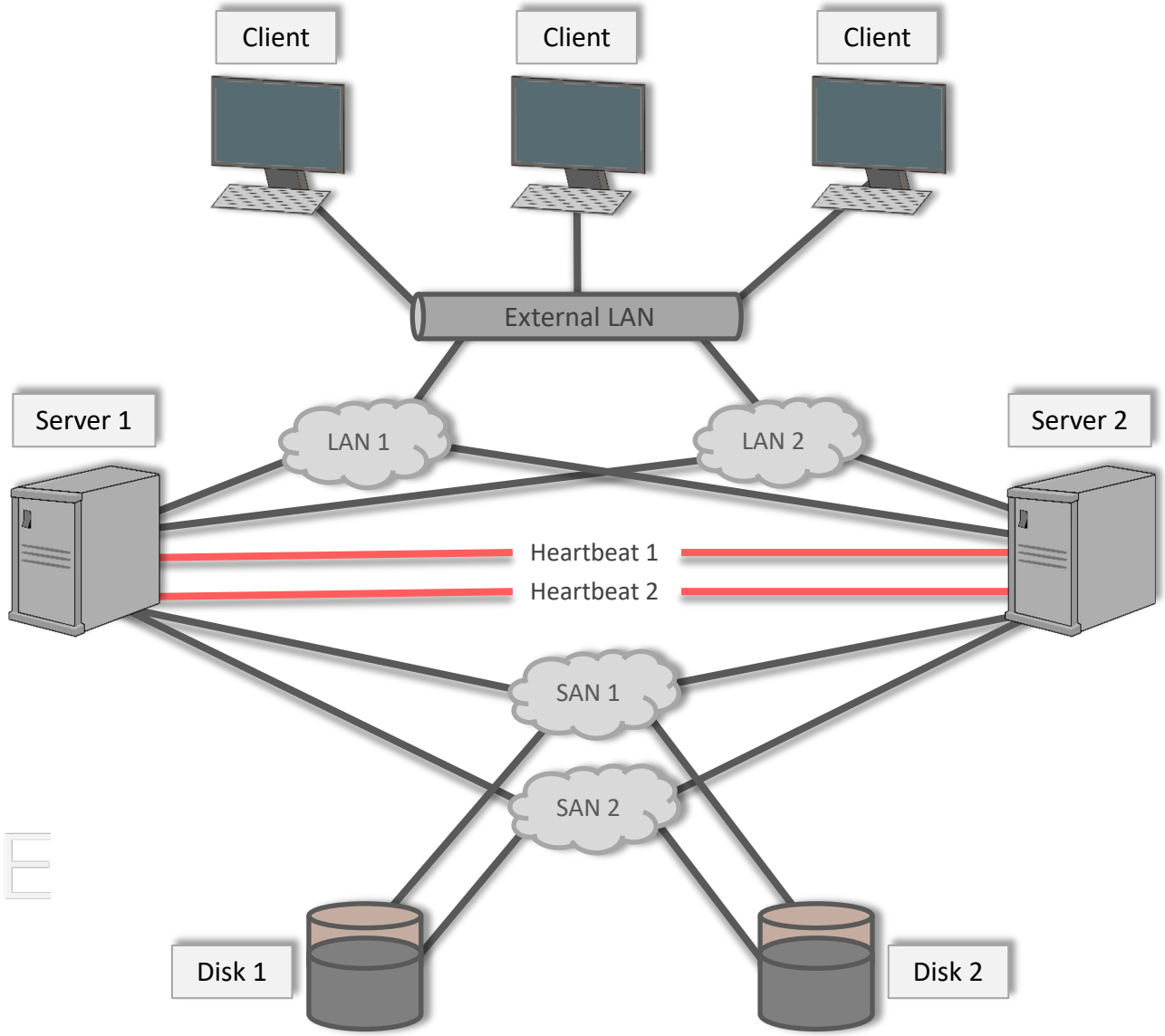
Oracle/SAP/Db2/SQL archive logs

Windows Restores around the clock

National law‘s such as Basel-II, DSGVO…

And **you** have to handle things like…

- Changes, Fixes, Updates
- Hardware problems
- LAN / SAN errors
- Container / Tape inconsistencies
- Driver errors
- Human errors
- Instable OS / applications



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TSMCluster® Why no HADR?

HADR is good for Db2, but for TSM??

HADR (**h**igh **a**vailability **d**isaster **r**ecovery) is a „log-shipping“ methodology to replicate a Db2 database from one Db2 system to another.

Limitations:

- TSM as application runs on the same machine
  - When TSM “terminates”, Db2 components will not die
  - When Db2 crashes then TSM will not start on the other machine (and TSM does not recognize that Db2 has crashed)
- With TSM only **one standby** database is supported
- A large database has large buffer caches and warming up can take a long time
- Failover and Failback must be handled from an admin or scripts (scripts must be changed for every version)
- HADR is for database crashes/problems only
- TSM on AIX comes still with version 11.1 (until 8.1.12)

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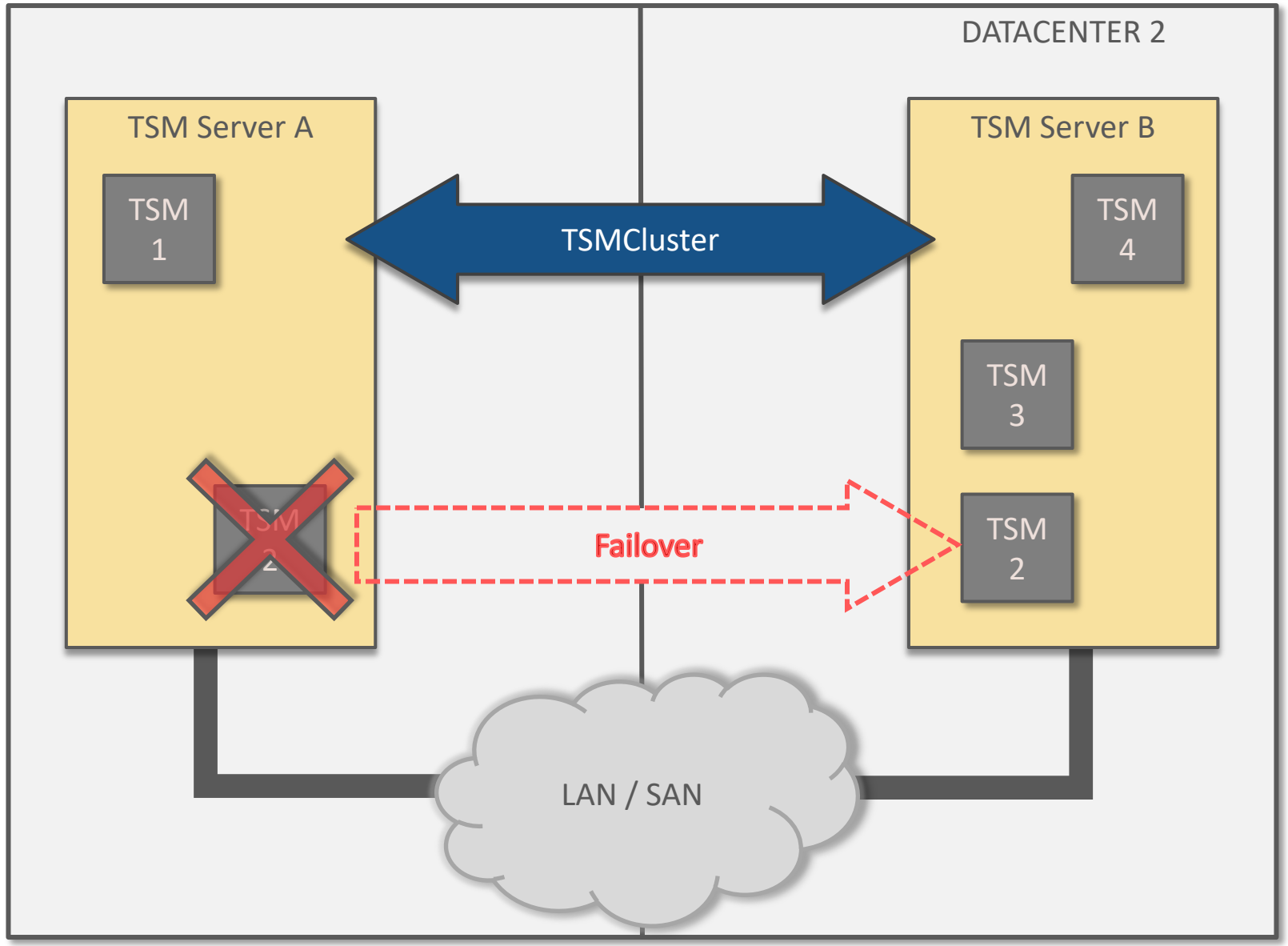
TSMCluster® What is TSMCluster?



About

- Failover via stop/start of the TSM instance
- Works with Db2 HADR…but better without
- Takeover of all resources (IP, Disks & Processes, such as servermon or object agent)
- Any-to-Any Concept (each instance is able to start on each node)
- No limitation for instances or nodes in one cluster
- No limitation of number of instances on one node

TSMCluster® What is new in Version 8.1?

Available November 2022

- Multi cluster GUI
  - Based on container and micro services
  - Runs outside of the cluster on Linux
- New tools and new design
  - Backup / restore
  - Create / delete
  - Security (ransomware detection)
- Db2 crash recovery enhancements
  - recognition and management
  - detailed report
- Daily health check report via mail
  - New and less sensors
- OSSM support with 8.1.15
- Support for new OS and TSM Server levels
  - Redhat 7 to 9
  - SLES 11 to 15
  - AIX 7.1 to 7.3
- New Spectrum Scale (GPFS) sensor

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TSMCluster® tsmcltool instance backup/restore

About

- Checks the environment before doing the backup/restore
  > API, certificates, encryption key, file access rights…
- Are the responsible files reasonable ?
  > devconfig, volhist, planfile (DRM)
- Ransomware protection
  > keys, read tests, comparison tests
- Estimate function
- Preview option

```
Starting TSMCluster(R) Tool Instance Backup - 8.1.0.0 v1.0

  MODE: Force: enabled  Preview: disabled

  INFO: Instance TSMCluster membership
        |--Instances
        |  |--rlin90 -> available

  DATA: Get instance user, node & status data
        |--Instances
        |  |--rlin90
        |  |  |--user -> rlin90
        |  |  |--node -> exrlin09
        |  |  |--status -> start

REMOTE: Check node remote connection
        |--rlin90 [node=exrlin09] -> localhost

 CHECK: Available instance user on current node
        |--rlin90 [user=rlin90] -> yes

        Compare configured with current home directory
        |--rlin90 [home=/nas/cluster/rlin90/conf] -> match

        Access permission of instance userprofile file(s)
        |--rlin90 -> ok

        Server availability in the dsm.sys
        |--rlin90 -> warn

        Access permission of instance volumehistory and devconfig file(s)
        |--rlin90 -> ok

BACKUP: Get instance backup information
        |--rlin90
        |  |--devtype -> file
        |  |--full_dev_class -> dbfile
        |  |--directory -> /nas/cluster/rlin90/dbfile
        |  |--protect_master_key -> yes
        |  |--server_passset -> yes

        Estimate backup time
        |--rlin90 -> 0 hour(s), 2 minute(s), 59 second(s)

        Start backup
        |--rlin90 -> running
        ...
```

TSMCluster® tsmcltool instance

Additional instance tools

- tsmcltool instance create [-f | force] [-p | preview] — Runs the installation in a preview mode to prevent possible errors
- tsmcltool instance relocate — Automatic relocation of parts or all TSM components
  - Archlog
  - Actlog
  - Db
  - home *
- tsmcltool instance backup | restore — Controlled backup/restore of one TSM instance
- tsmcltool instance update* — Complete update managed via this script
- tsmcltool instance delete — Deletion of one instance (total or partial)

* Planned for 1Q23

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TSMCluster® tsmcltool security

About

- Ransomware protection
- Checks the environment
- Comparism of files via md5 checksum history
- Check of certificates and keys
- TSM config changes
- Reports via CLI or daily mail

```
Starting TSMCluster(R) Tool Security  - 8.1.0.0 v1.0

 MODE: Apps: enabled  Clean: disabled

       Log-Viewer: disabled  Report (Default): enabled

       Specific instance(s): enabled

 NODE: Hostname: exrlin09
       System: GNU/Linux
       Kernel-Version: 3.10.0-1127.19.1.el7.x86_64
       OS-Version: centos-release-7-8.2003.0.el7.centos.x86_64

 INFO: Reading config file -> done

       Local Node/Instance TSMCluster membership
       |--Node
       |   |--exrlin09 -> available
       |--Instances
       |   |--rlin90 -> available

 DATA: Collecting TSMCluster instance data
       |--rlin90 -> done

       Check config data -> done

       Check/Apply configuration -> done

       Analyse & Log file/folder report -> done

  APP: Check instance application
       |--rlin90 -> warn

       Analyse & Log application report -> warn

FILES: /tmp/tsmcltool.log
       /tmp/tsmcltool_security_report_1661174712.log
       ...
```

TSMCluster® tsmcltool health

About

- Checks the machine, OS, TSM and Db2
- Check for TSMCluster events (manual operations, failovers…)
- Reports via CLI or daily mail

```
Starting TSMCluster(R) Tool Health  - 8.1.0.0 v1.0

MODE: Clean: disabled  Days: disabled

      Local: enabled  Report (Default): enabled

      Specific instance(s): enabled  Specific node(s): unavailable

DATA: Get instance ip(s), user, account, node & status data
      |--Instances
      |  |--rlin90
      |  |  |--IP(s)
      |  |  |  |--ip1 -> 192.168.1.90
      |  |  |--User -> rlin90
      |  |  |--Account -> exsm
      |  |  |--Node -> exrlin09
      |  |  |--Status -> start

CHECK: Node(s) rebooted in the last 1 day(s)
      |--exrlin09 -> no

      All instance spare-nodes left
      |--rlin90 -> yes

      Instance plan file(s) older than set expiration date
      |--rlin90 -> warn

      Instance db backup in the last 24h
      |--rlin90 -> 2022-08-22 15:01:11

      Old instance archive file(s)
      |--rlin90 -> 0

      Instance admin account with a password expired or expiring soon
      |--rlin90 -> unlimited

      Cluster log files bigger than 1 GB
      |--exrlin09 -> 0

      Cluster archive files older than 1 day(s) (CLH)
      |--clh [node=exrlin09] -> 0
      ...
```

TSMCluster® Multi cluster GUI

TSMCluster® Multi cluster GUI

Overview

Instances / Nodes	exrlin09	exrlin10	exrlin11	exrlin12	exrlin13	exrlin14
rlin91	✓					
rlin92		⊘		✓		
rlin93						
rlin94	✓	⊘	⊘	⊘	⊘	⊘

Status

- cluster lock holder
- node/instance failed
- node/instance ok
- instance stop
- instance starting
- instance terminating
- instance maintenance
- instance not available
- instance takeover disabled
- instance no spare nodes
- instance disabled
- instance running on this node

TSMCluster® Multi cluster GUI

TSMCluster® Let‘s start

See you at the booth (exhibition area)

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