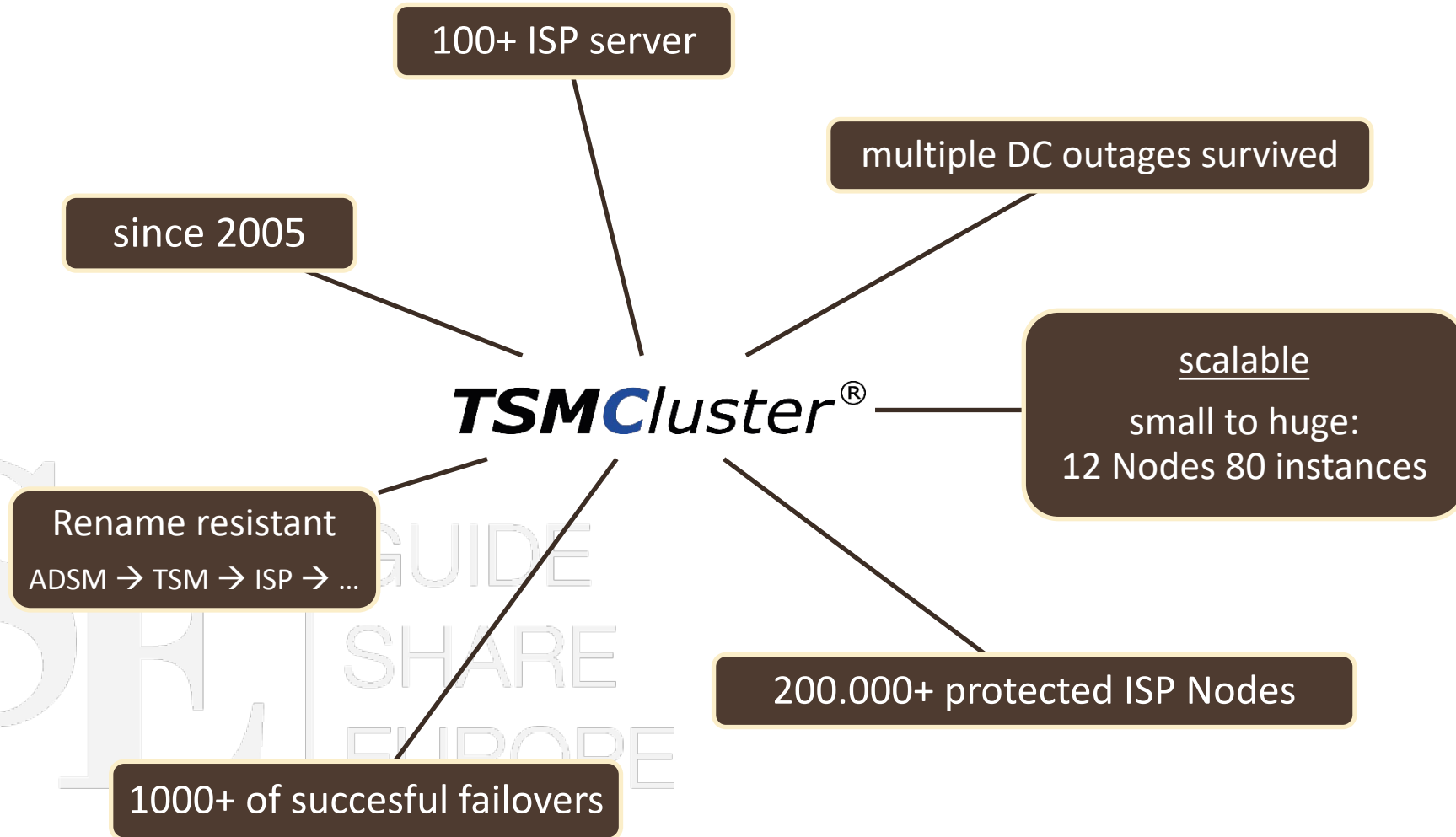


TSMcluster[®]

New Version 8.1





TSMcluster[®] Why do you need a cluster?

TSM service has to be available 24x7 !!!

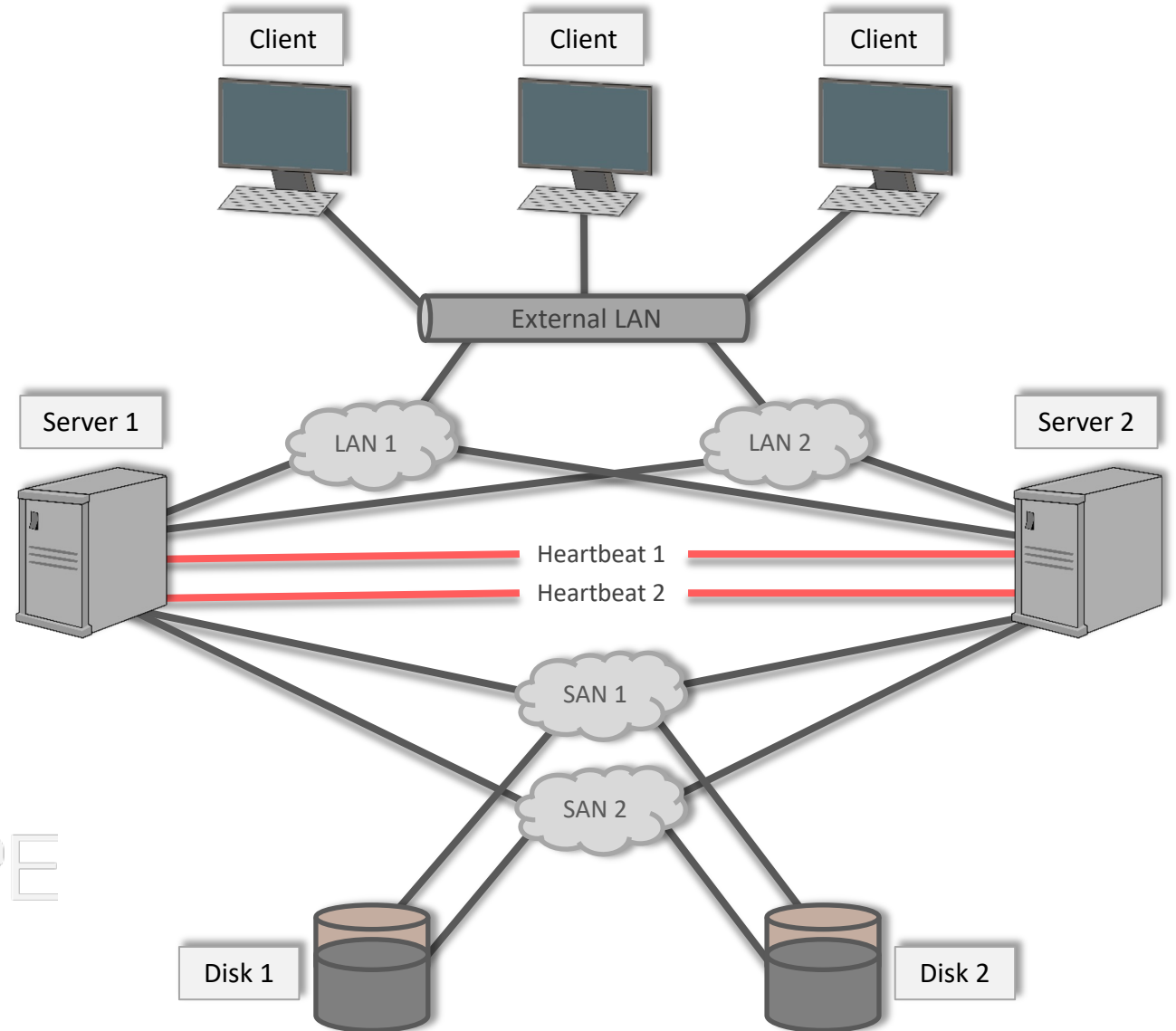
Oracle/SAP/Db2/SQL archive logs

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



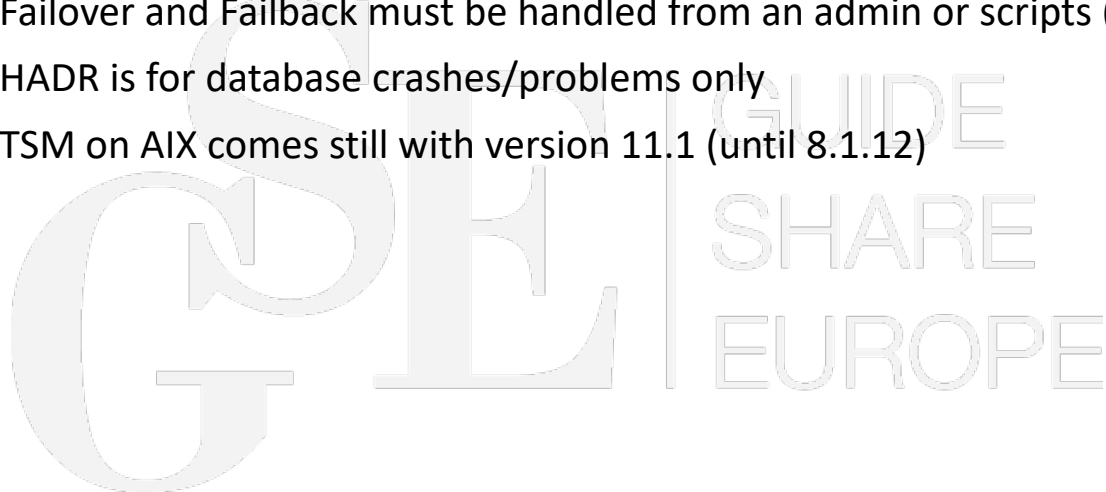
TSMcluster® Why no HADR?

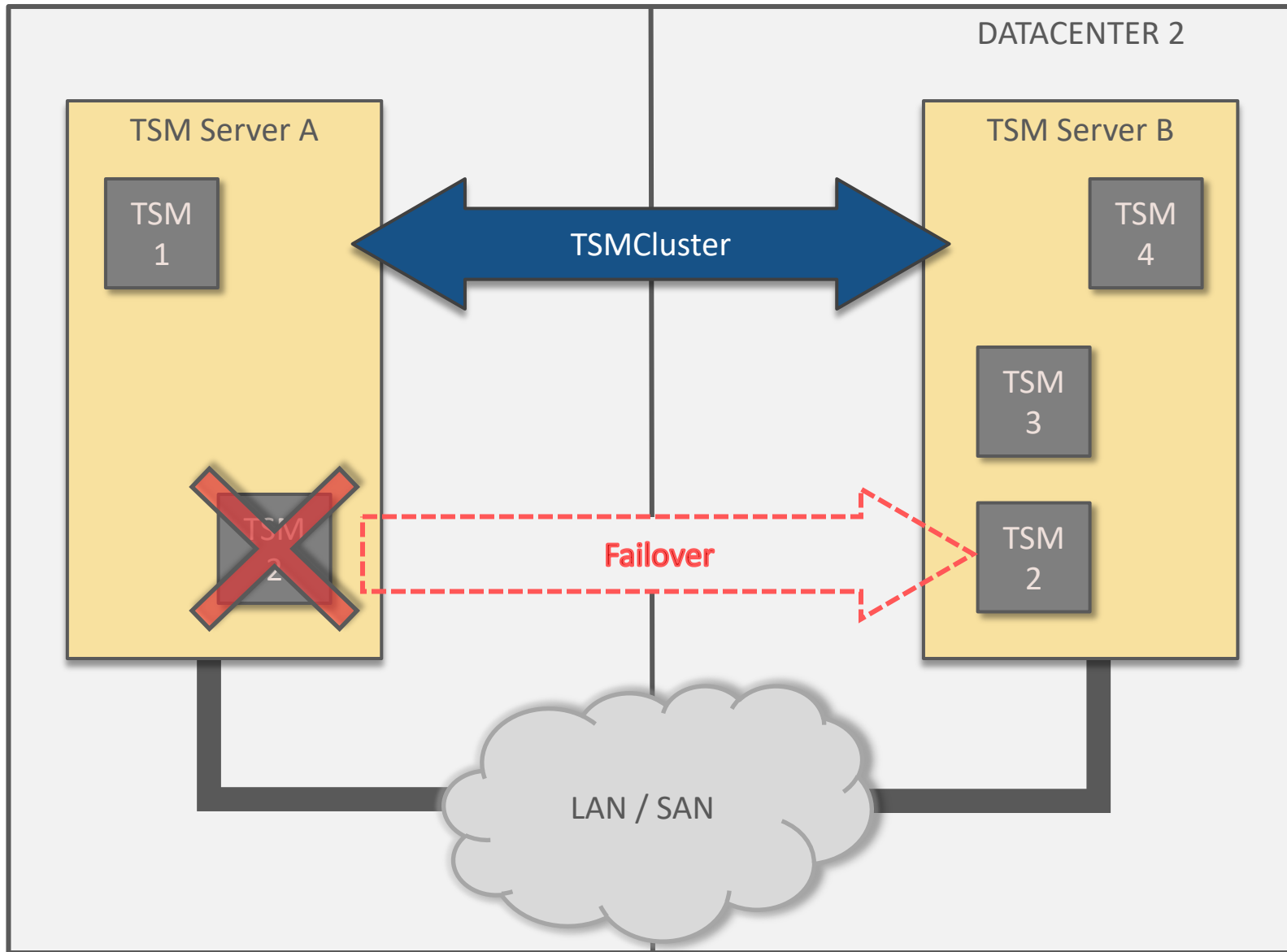
HADR is good for Db2, but for TSM??

HADR (**high availability disaster recovery**) 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)



**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

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

GUIDE
SHARE
EUROPE

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
...
```

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



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
       ...
```

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)
| | | |--ipl -> 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

The screenshot displays the TSMcluster Multi cluster GUI interface. On the left is a navigation sidebar with sections for Overview, Nodes (exrlin09-14), Instances (rlin91-94), and Apps (Operation Center, Libman, TSLM). The main content area is divided into several panels:

- Node Overview (exrlin09):** Shows status as 'active | enabled | CLH'. Info includes OS: centos 7.8, System: Linux, Type: Physical, Serial: 37pe04, Up Since: 19h 05m, Errors: 12 (red circle), and Dump: 1 (yellow triangle). Actions include 'enable' and 'move' buttons for takeover and instances on this node. Adapter shows 34 Ethernet and 23 Fibre. Filesystems show a Warning (34) and Errors. Environment shows Network (1 warning, 1 error), Config (23 warnings, 1 error), and Certs (3 warnings, 1 error).
- Errors:** A line graph showing error counts over time for cluster.log (orange), system.log (purple), and OS messages (grey). The x-axis ranges from 05:08 to 17:08. A legend is provided at the top.
- Timeline:** Shows a horizontal timeline with events marked as 'D' (Dump) and 'R' (Reboot). Legend: (D) Dump, (R) Reboot. Events are labeled with dates: 27.10, 29.12, 30.12, 29.01. A message states 'No more data for the last 30 days'.
- Version History:** A table showing the history of software updates.













Date / Software	OS	TSM Server	TSM Client	Tape	Cluster	Db2
20.01.2022	7.9	8.1.13	8.1.13	3.0.54	7.3.1.0	10.5.5
03.12.2021	7.8		8.1.8.100			
03.10.2021		8.1.7	8.1.7	3.0.34	7.3.0.0	10.5.1
22.12.2020	7.6					
27.05.2020	7.5	8.1.1	8.1.1	3.0.24	7.2.1.0	

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

The screenshot displays the TSMcluster Multi cluster GUI interface. On the left is a navigation sidebar with sections for Overview, Nodes, Instances, and Apps. The main area is divided into several panels:

- Overview:** Shows a list of nodes (Conan, Tomb-Raider) and a list of instances (exrlin09 to exrlin14).
- Instance Details (rlin91):**
 - Status: active | started | exrlin09
 - Info:** Last Action: START --> STOP; Automatic Takeover: ✓; Autostart: ✓; Failover: 3; Home Node: exrlin09; Spare Nodes: exrlin09, exrlin10, exrlin11, ...
 - Resources:**
 - Filesystem:** XFS (7), GPFS (3)
 - Network:** IP'S : 200, Port : 1990
 - Script:** Resources : 2
 - App:**
 - Info:** Up Since : 11.07.2018 20:06
 - Clients:** AIX (12), Linux (714), Windows (98), Others (109)
 - Backup:** Last 24h : ✓
 - Occupancy:** PRIM (1427 TB), COPY (912 TB)
 - Db2:**
 - Info:** db2 Version : 9.7.8; Connection : ✓; HADR : ✗; Log consumption : 1412 MB (last 24h); Db2 growth : 171 MB (last 24h)
- Activity Log:** A line chart showing warnings (red), errors (brown), and severe errors (blue) over time from 03:19 to 12:19. A significant peak in warnings is visible around 08:19.
- Timeline:** A horizontal timeline showing various events with icons and dates: Start (green up arrow), Stop (yellow down arrow), Maintenance (grey X), Failover (red exclamation mark), and Move (yellow equals sign). Key dates include 27.06, 17.07, 27.10, 09.12, 02.01, 04.11, 27.11, 20.12, 25.12, 27.12, 29.12, and 29.01.

TSMcluster[®] Let's start

See you at the booth (exhibition area)

E-Mail: info@tsmcluster.com

Webseite: <http://www.tsmcluster.com>

Tel.: +49 7261 4074962

Fax: +49 7261 4074963



Bruno Friess
bf@exstor.de
+49 170 6326924

