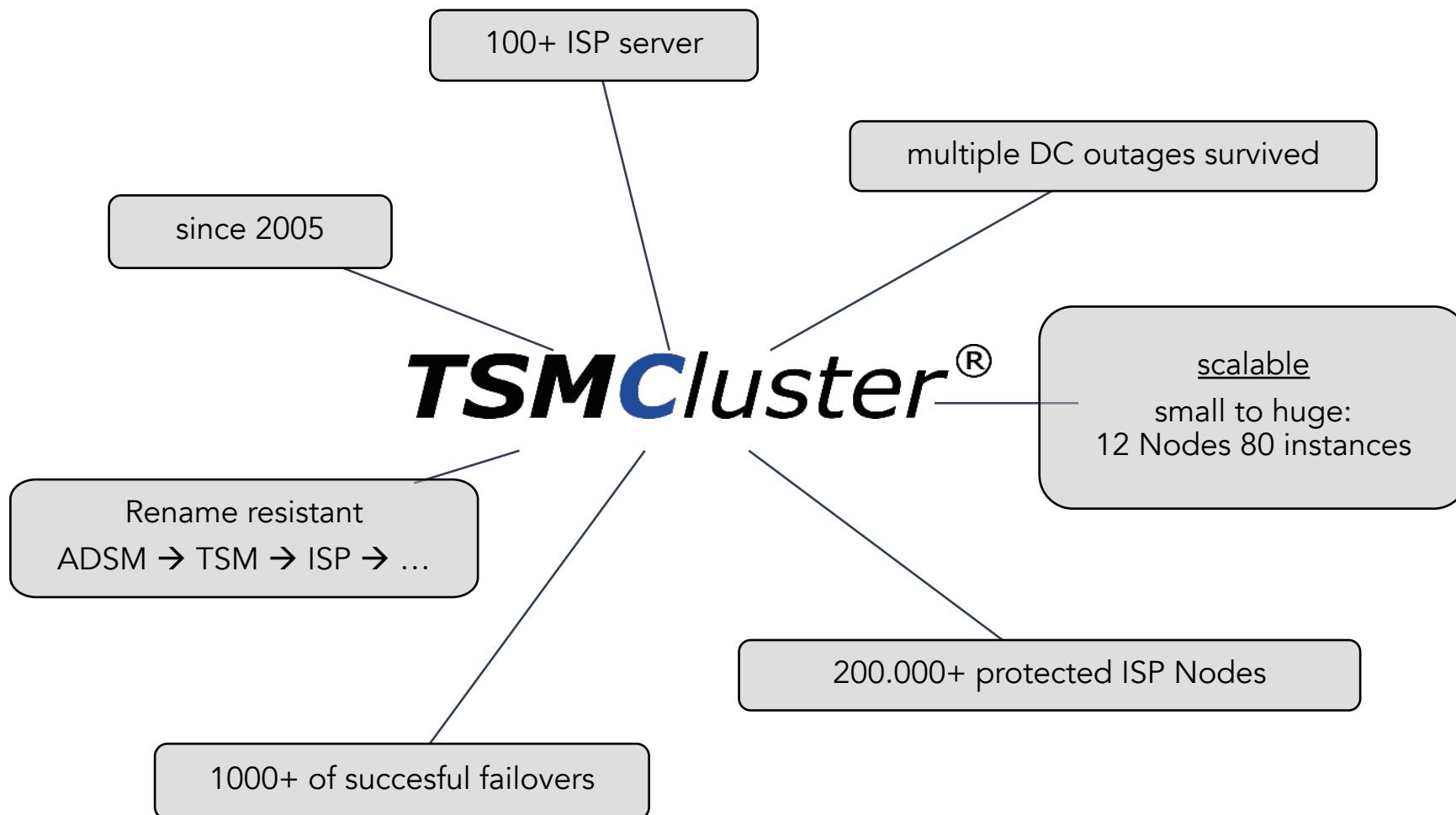


TSMCluster[®]

New Version 8.1.4.0

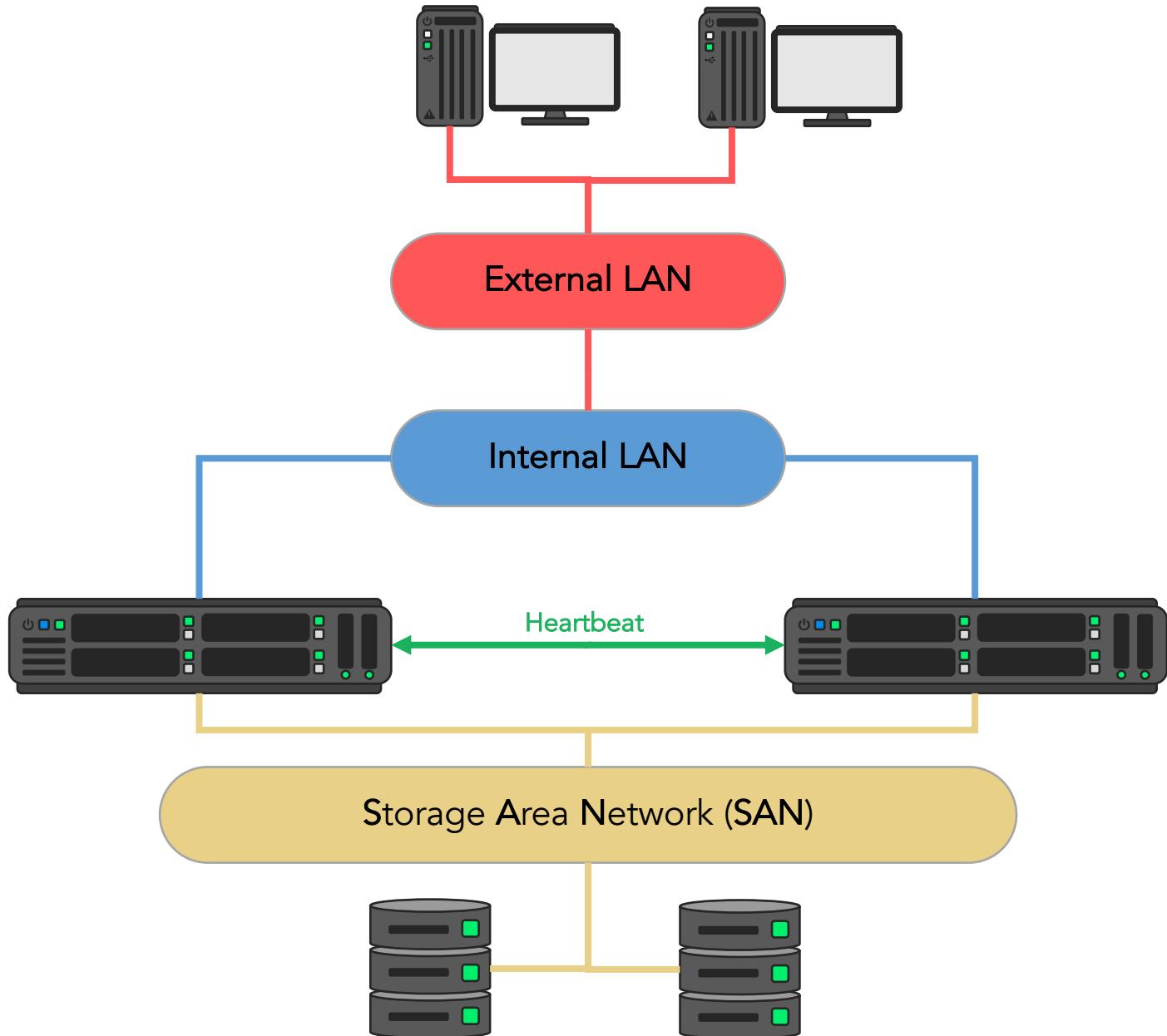


TSM service has to be available 24x7 !!!

- 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/OS problems (failing host, adapter errors..)
- LAN / SAN errors
- Container / Tape inconsistencies
- Driver errors
- Human errors



HADR is good for Db2, but for TSM??

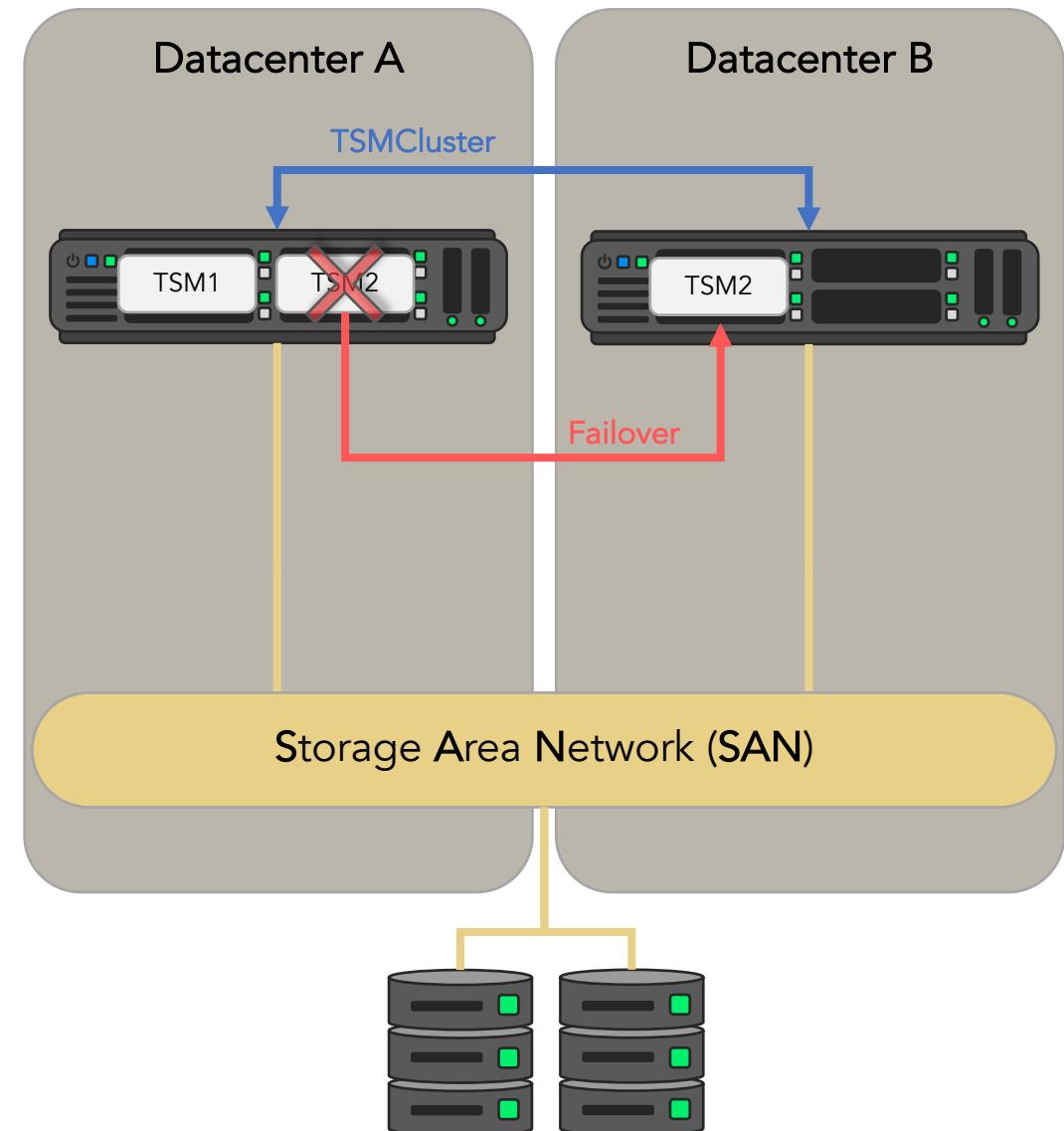
HADR (high availability disaster recovery) is a „log-shipping“ methodology to replicate a Db2 database from one Db2 system to another.

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
- Replication errors in 8.1.14 and 8.1.16 and 8.1.21 and...

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



Common tools

tsmcctl health
tsmcctl security
tsmcctl dsh
tsmcctl snap
tsmcctl smitty

System analysis that can influence the stability of instances and TSMCluster
Adjustments of security recommendations
Cross node command execution / file distribution
Log collector for TSMCluster support
TSMCluster smitty extension for AIX

Instance tools

tsmcctl instance create
tsmcctl instance check
tsmcctl instance backup
tsmcctl instance restore
tsmcctl instance update*
tsmcctl instance delete

Creates instances based on custom preferences
System and environment checks to ensure the stability and executability of instances on nodes
Create full instance db backups
Controlled restore of instances (supports disaster recovery)
Managed instance updates
Clean deletion of instances (total or partial)

* Planned for Q126

Examples

tsmcltool instance backup

- Checks the environment before doing the backup
 - > 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 tsmcltool instance backup v8.1.4.0-r2601
```

EXECUTION:

```
INFO: Instance TSMCluster membership
|--instances
| |--tsm05 -> available
```

```
DATA: Get instance user, node and status data
|--tsm05
| |--user -> tsm05
| |--node -> exnfsr8n1
| |--status -> started
```

```
CHECK: Available instance user on current node
|--tsm05 [user=tsm05] -> yes
```

```
Get instance dsmserv.opt
|--tsm05 -> /apps/cluster/instances/tsm05/conf/dsmserv.opt
```

```
Get instance volhist and devconfig from dsmserv.opt
|--tsm05
| |--volhist -> /apps/cluster/instances/tsm05/conf/tsm05_volhist
| |--devconfig -> /apps/cluster/instances/tsm05/conf/tsm05_devconfig
```

```
...
```

```
BACKUP: Get instance backup information
```

```
|--tsm05
| |--DEVTYPE -> FILE
| |--FULL_DEV_CLASS -> DBFILE
| |--DIRECTORY -> /apps/cluster/backups/tsm05
| |--PROTECT_MASTER_KEY -> Yes
| |--SERVER_PASSSET -> YES
```

```
Estimated backup time
|--tsm05 -> 0 hour(s), 0 minute(s), 22 second(s)
```

```
Start backup
|--tsm05 -> running
```

Examples

tsmcltool instance restore

- Checks the environment before doing the restore
> API, certificates, encryption key, file access rights...
- Clean-up before recovery
- Key verification
- Disaster recovery option
- Preview option

```
Starting tsmcltool instance restore v8.1.4.0-r2601
```

EXECUTION:

```
INFO: Instance TSMCluster membership
|--instances
|  |--tsm05 -> available
```

```
XML: Reading config data -> done
...
```

```
CHECK: Available instance user on current node
|--tsm05 [user=tsm05] -> yes
```

```
Get instance dsmserv.opt
|--tsm05 -> /apps/cluster/instances/tsm05/conf/dsmserv.opt
```

```
Get backups from instance volhist and verify requested restore date
|--tsm05 -> use latest backup [date=2026/01/26]
```

```
Get instance db container path from SQLSPCS.1 and verify structure
|--tsm05 -> intact
```

```
[!]: Disaster recovery is enabled but there are intact db containers for instance: tsm05
...
```

```
BACKUP: Backup and compress important instance files
|--tsm05 -> 10 [compress=done]
```

```
  |  |--/apps/cluster/instances/tsm05/conf/tsm05_vohist
  |  |--/apps/cluster/instances/tsm05/conf/tsm05_devconfig
```

```
...
```

```
RESTORE: Restore information and settings
```

```
|--tsm05 [restore date=2026/01/26 point-in-time=disabled keys=yes]
  |  |--home -> /apps/cluster/instances/tsm05/conf
  |  |--recovery
```

```
...
```

```
Start instance db restore
|--tsm05 -> successful [restore date=01/26/2026 02:48:10]
```

Examples

tsmcltool security

- 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 tsmcltool security v8.1.4.0-r2601

CHECK:

NODE: Hostname: exnfsr8n1
System: GNU/Linux
Kernel-Version: 4.18.0-553.81.1.el8_10.x86_64
OS-Version: redhat-release-8.10-0.3.el8.x86_64

EXECUTION:

INFO: Reading config file -> **done**

Node/Instances TSMCluster membership
|--node [exnfsr8n1] -> **available**
|--instances
| |--tsm05 -> **available**

DATA: Get instance user, node and status data
|--tsm05 -> **done**

FILES: Manage file configuration
|--data -> **ok**
|--check -> **ok** [changes=0]

Analyse and log file/folder report -> **ok**

APP: Check instance application
|--tsm05 -> **ok**

Analyse and log application report -> **ok**

RESULT:

FILES: /opt/tsmcluster/log/tsmcltool.log
/tmp/tsmcltool_security_report_1769437160.log

Reporting

Automatic reporting via mail*

tsmcltool report from node 'RHEL8CL01'

⚠ tsmcltool health

5 Warning(s)

```
[2023-03-06 11:24:49]  WARN  task='plan files'           message='either value 'planprefix' or 'dbbexpiredays' is undefined or empty on instance 'red801''
[2023-03-06 11:24:53]  WARN  task='backup'             message='instance 'red801' has not had a database backup in the last 24 hours'
[2023-03-06 11:24:58]  WARN  task='archlog'            message='last db backup timestamp of instance 'red801' is not available'
[2023-03-06 11:25:03]  WARN  task='tomcat'              message='tsmcluster gui is not installed on node 'RHEL8CL01''
[2023-03-06 11:25:04]  WARN  task='tomcat'              message='tsmcluster gui is not installed on node 'RHEL8CL02''
```

⌚ tsmcltool instance backup

3 Error(s)

```
[2023-03-06 11:25:22]  ERROR task='server'            message='couldn't find file '/opt/tivoli/tsm/server/bin/dbbkapi/dsm.sys' on node 'RHEL8CL02''
[2023-03-06 11:25:22]  ERROR task='script'            message='removed instance 'red801' from list due to the missing servername in the server dsm.sys'
[2023-03-06 11:25:22]  ERROR task='script'            message='no TSMCluster instance left'
```

⌚ tsmcltool instance check

1 Error(s) / 5 Warning(s)

```
[2023-03-06 11:25:33]  WARN  task='memory'            message='7.58 GB of system memory is not enough on node 'RHEL8CL01''
[2023-03-06 11:25:34]  WARN  task='memory'            message='7.58 GB of system memory is not enough on node 'RHEL8CL02''
[2023-03-06 11:25:36]  WARN  task='ulimit'             message='setting(s) 'open files' of user 'red801' do not match the recommendations on node 'RHEL8CL01''
[2023-03-06 11:25:37]  WARN  task='ulimit'             message='setting(s) 'open files' of user 'red801' do not match the recommendations on node 'RHEL8CL02''
[2023-03-06 11:25:37]  WARN  task='server'             message='server 'TSMDBMGR_RED801' doesn't use COMMMETHOD 'SharedMem' in file '/opt/tivoli/tsm/server/bin/dbbkapi/dsm.sys'
[2023-03-06 11:25:37]  ERROR task='server'            message='couldn't find file '/opt/tivoli/tsm/server/bin/dbbkapi/dsm.sys' on node 'RHEL8CL02''
```

⚠ tsmcltool security

2 Warning(s)

```
[2023-03-06 11:25:41]  WARN  task='md5'               message='couldn't find file '/opt/tsmcluster/scripts/tsmcltool/tsmcltool_security_md5.conf''
[2023-03-06 11:25:42]  WARN  task='security'          message='8 file(s) detected to change permission'
```

tsmcltool report from node 'RHEL8CL02'

⚠ tsmcltool security

4 Warning(s)

```
[2023-03-06 11:25:53]  WARN  task='md5'               message='couldn't find file '/opt/tsmcluster/scripts/tsmcltool/tsmcltool_security_md5.conf''
[2023-03-06 11:25:56]  WARN  task='security'          message='1 symlink(s) detected and not supported for permission changes'
[2023-03-06 11:25:56]  WARN  task='security'          message='7 file(s) detected to change permission'
[2023-03-06 11:26:05]  WARN  task='configuration'      message='instance 'red801' settings unhealthy for 'server_passset''
```

NOTE: For more information about not executed tools or more detailed analysis of their logs, please look into `$EXSM_HOME/log/tsmcltool.log` on the following node(s): `RHEL8CL02, RHEL8CL01`

*all tools or parts of them

Available Januar 2026

- Support for ...
 - TSM 8.2.0.0 and 8.1.27 or higher
 - IBM Db2 version 12.1
 - eLMM 1.6
 - SLES15 SP7
 - Redhat 9.4 and higher
 - Storage Scale 5.2
- Extensions of the tsmcltools
- Updated Admin Guide
- OSSM support on AIX
- **New!** Bash completion for the tsmcl commands
- **New!** checkmk sensor and script

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