



**NAME**

saptune-migration – migration of saptune version 1 to saptune version 2

**DESCRIPTION**

As there are too many logical and structural changes between the saptune versions 1 and 2 the migration has to be planned carefully and performed manually.

To determine the current version please run 'saptune version'.

The section MIGRATION will guide you through it step by step. The sections SOLUTIONS and SAP NOTES will help you planning the migration.

**FILES TO REMOVE AFTER MIGRATION**

The package update from version 1 to version 2 creates or copies some files during post install to allow this smooth migration. But after finishing the migration these files should be removed manually.

**/etc/saptune/extra/SAP\_BOBJ-SAP\_Business\_OBJects.conf**

**/etc/saptune/extra/SAP\_ASE-SAP\_Adaptive\_Server\_Enterprise.conf**

**/etc/tuned/saptune/tuned.conf** and the directory **/etc/tuned/saptune**

**/etc/sysconfig/saptune-note-\***

**IMPORTANT**

**Only a migration from version 1 to version 2 is supported!**

**SOLUTIONS**

The following solutions are shipped:

SOLUTION	Version 1	Version 2
BOBJ	1275776* 1557506** 1984787 SAP_BOBJ	941735 1771258 1984787 SAP_BOBJ
HANA	1275776* 1557506** 1984787 2205917	941735 1771258 1980196 1984787 2205917 2382421 2534844
MAXDB	1275776* 1557506** 1984787	941735 1771258 1984787
NETWEAVER	1275776* 1557506** 1984787	941735 1771258 1984787
NETWEAVER+HANA	-	941735 1771258 1980196 1984787 2205917 2382421 2534844
S4HANA-APP+DB	-	941735 1771258 1980196 1984787 2205917 2382421 2534844
S4HANA-APPSERVER	1275776* 1557506** 1984787	941735 1771258 1984787
S4HANA-DBSERVER	1275776* 1557506** 1984787 2205917	941735 1771258 1980196 1984787 2205917 2382421 2534844
SAP-ASE	1275776* 1557506** 1984787 2205917 SAP_ASE	941735 1410736 1680803 1771258 1984787

\* SAP Note **1275776** has been rewritten and therefore removed in version 2.

\*\* SAP Note **1557506** has been removed from the solutions in version 2 because it is only required in a few workload specific use cases.

Note: In version 1 the solutions BOBJ and SAP-ASE were not available on ppc64 little-endian.

For details about the SAP Notes see section **SAP NOTES**.

## **SAP NOTES**

The following SAP Notes are shipped:

\* Configuration was partially hard coded in version 1.

\*\* Configuration was fully hard coded in version 1.

In version 1 part of configuration was hard coded or configurable via `/etc/sysconfig/saptune-note-*`, `/etc/saptune/extra/{SAP_BOBJ-SAP_Business_OBjects.conf,SAP_ASE-SAP_Adaptive_Server_Enterprise.conf}` and `/etc/tuned/saptune/tuned.conf`.

Due to tuned CPU tuning (see SAP Note 2205917) was always active.

In version 2 everything can be configured via an override file in `/etc/saptune/override/`.

For details and defaults read the configuration in the corresponding Note definition files in `/usr/share/saptune/notes/`.

Version 1 of saptune uses the following configurations:

1275776: `/etc/sysconfig/saptune-note-1275776`

The following parameters are hardcoded:

```
size of TMPFS_PERCENT      : 75%
nofile limit @sapsys, @sdba, @dba : 32800 (if lower)
kernel.shmmax              : VSZ*1024*1024*1024 (if lower, min. 20GB)
kernel.shmall              : VSZ*1024*(1024/PSZ) (if lower, min. 20GB)
SHM_COUNT_REF_VALUE       : max(2048, SHM_COUNT_REF_VALUE, 32768)
vm.max_map_count           : 2147483647 (if lower)
kernel.sem                 : max(current,1250) max(current,256000) max(current,100) max(current,8192)
```

1557506: everything is configurable in `/etc/sysconfig/saptune-note-1557506`

1984787: no configuration file

systemd version : done on installation by RPM requirements

UserTasksMax : RPM installation creates `/etc/systemd/login.d/sap.conf`

2161991: no configuration file

The following parameters are hardcoded:

IO\_SCHEDULER : noop

2205917: no configuration file

The following parameters are hardcoded:

```
THP      : never
KSM      : 0
numa_balancing : disable
```

The following parameters are handled by tuned:

```
[cpu] energy_perf_bias
[cpu] governor
[cpu] force_latency
```

[cpu] min\_perf\_pct

SAP\_ASE: everything is configurable in /etc/saptune/extra/SAP\_ASE-SAP\_Adaptive\_Server\_Enterprise.conf

SAP\_BOBJ: everything is configurable in /etc/saptune/extra/SAP\_BOBJ-SAP\_Business\_OBJECTs.conf

## MIGRATION

### Migration Planning:

Before starting the migration, familiarize yourself with saptune version 2. Please read the man pages of saptune\_v2(8) and saptune-note(5).

Solutions of version 2 can encompass more SAP Notes than in version 1.

Please check section SOLUTIONS for details. You might want to deselect some SAP Notes, change or disable parameters.

SAP notes are more comprehensive in version 2.

Please check section SAP NOTES for details. You might want to change or disable parameters.

Some SAP notes have been removed in version 2.

Please check section SAP NOTES for details. You might want to add your own configuration file.

In version 1 multiple solutions can be applied, in saptune version 2 only one at the same time.

If you had multiple solutions in the past, choose the most suitable one and add additional notes.

Version 1 has changed system parameters only when the current value was lower.

Version 2 will set the parameter always to the configured value, no matter the current value.

### Migration Steps:

The following steps describe the easiest way to migrate from version 1 to version 2.

1. Determine current solutions and SAP Notes for version 1 and plan the ones for version 2.

Use these commands to get a list of selected solutions and notes.

saptune solution list

saptune note list

Use the sections SOLUTIONS and SAP NOTES above to familiarize yourself with the changes and create a list

of the solution and SAP Notes you are going to use with version 2.

2. (Skip, if saptune defaults are acceptable) Check each chosen SAP Note and former configuration.

Verify that the shipped defaults of version 2 meet your requirements.

**Since saptune is running in version 1 prior to migration you cannot use 'saptune note show' yet. Please check the files in /usr/share/saptune/notes/ directly.**

Verify the version 1 configuration (see SAP NOTES above) for settings to carry over.

For step 8 you need to prepare a list with all parameters that have to be added, altered or disabled.

3. Revert *\*all\** solutions and notes.

Use the following commands:

```
saptune solution revert <solution>
saptune note revert <note>
```

Please check if the following variables in `/etc/sysconfig/saptune` are empty:

```
TUNE_FOR_SOLUTIONS=""
TUNE_FOR_NOTES=""
NOTE_APPLY_ORDER=""
```

4. Change saptune version variable to "2".

Open `/etc/sysconfig/saptune` in an editor and set the variable `SAPTUNE_VERSION` from "1" to "2".

5. Remove the configuration directory `/etc/tuned/saptune/`.

During the package upgrade a compatibility configuration `/etc/tuned/saptune/` was created, which has to be removed to run version 2 properly.

It is possible that it was created manually in the past to alter the configuration. In this case verify the configuration and extend your future saptune configuration (step 2). Saptune version 2 performs all tuning settings itself and no longer uses tuned for tuning.

The line `"#stvlto2#"` is an indicator that the configuration file was created by the update process and not manually.

6. Remove files which are not needed anymore.

**Please copy each file to a safe location before deleting it! You might need it to check for former configuration values.**

- Delete the configuration files `SAP_BOBJ-SAP_Business_OBJECTS.conf` and `SAP_ASE-SAP_Adaptive_Server_Enterprise.conf`.

```
rm /etc/saptune/extra/{SAP_BOBJ-SAP_Business_OBJECTS.conf,SAP_ASE-SAP_Adaptive_Server_Enterprise.conf}
```

- Delete old note configuration files.

```
rm /etc/sysconfig/saptune-note-*
```

- Delete `/etc/systemd/logind.conf.d/sap.conf`.

**Be aware that the file also is used by `sapconf` and is only created on package installation! Saptune will create its own configuration file dynamically, if needed.**

```
rm /etc/systemd/logind.conf.d/sap.conf
```

- Delete obsolete log directory `/var/log/saptune/`.

```
rm -rf /var/log/saptune/
```

- Remove 'nofile' entries for @sapsys, @sdba and @dba in /etc/security/limits.conf.  
This is now handled by individual files in /etc/security/limits.d/.

- Remove all entries in /etc/sysctl.conf or files in /etc/sysctl.d/\*.conf which are handled by saptune.  
Consider moving SAP-related settings from there to a saptune extra file.

7. Restart tuned.

```
systemctl restart tuned.service
```

8. Apply the new configuration.

- (Skip, if saptune defaults are acceptable) Create override files for SAP Notes, if you need do change or disable parameters:

```
saptune note customize <id>
```

- (Skip, if saptune defaults are acceptable) Create your own configuration for parameters not covered by an existing SAP Note:

```
saptune note create <id>
```

- Apply the chosen solution:

```
saptune solution apply <solution>
```

- Revert any SAP Note of the solution you do not need:

```
saptune note revert <id>
```

- Apply all additional SAP Notes:

```
saptune note apply <id>
```

9. Use saptune verify to check your configuration:

```
saptune note verify
```

10. Check the log file /var/log/tuned/tuned.log for any errors.

11. (Optional) Do a reboot and verify that everything works as expected.

The migration is completed.

Please verify, that any configuration management system or scripts which interact with saptune are adjusted accordingly.

## SEE ALSO

saptune-note(5) saptune(8) saptune\_v1(8) saptune\_v2(8) tuned(8) tuned-adm(8)

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