

Script Troubleshooting Guide

Applicable to: Sun StorEdge 3000 Family Arrays

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This troubleshooting guide is for the **s3kdlres upgrade script** used to upgrade from 3.xx to 4.xx controller firmware. The flowcharts in this guide refer to error messages generated by the script under specific conditions. The TS-xx numbers refer to additional information for each message provided on pages 6-12.

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For detailed upgrade information, refer to the README file in this patch.

Prerequisites for Performing a Scripted Firmware Upgrade.

1. Confirm that you are connected to the Ethernet port of your array, have an IP address or device name, and can access the array out-of-band.
2. Create a complete, verified backup of all data.
3. Upgrade SAF-TE/SES prior to running the script:
 - SAF-TE = 1170 for SCSI
 - SES = 1046 for FC
 - SES = 0420 for SATA
4. Make sure PLD is at 1000 prior to running script.
5. Make sure SATA router is at 555a prior to running script.
6. Make sure that no logical drive has more than 32 partitions.
7. Make sure that you have an RS-232 serial connection to the RAID controller serial port if performing a controller upgrade.
8. Record any masking or filtering from `View and Edit Host LUNs`.
9. Record heads, cylinders, and sectors drive geometry via the serial interface: “`View and Edit Configuration Parameters > Host Side > Heads, Cylinders, Sectors`”
10. Make sure `sccli 2.1.0` (or higher) is installed on the host that will be used to perform the upgrade.
11. Stop all background processes (e.g. SSCS, Diagnostic Reporter, StorADE, etc).
12. Stop all I/O activity to the RAID system to be upgraded:
 - a. Unmount any mounted LUNs.
 - b. Stop all databases and software that access the system.
13. Verify that all files to be used during the upgrade are in the correct directory.
14. Shut down all hosts that boot from the system to be upgraded.
15. If the controller is using password protection *and* out-of-band is used, record the password.

Preliminaries

1. Verify communication with RAID.
2. Save configuration parameter information using `sccli`.
 - a. Save `show config` as a text file (suggested filename: `se3xxx-chassisSN.txt`)
 - b. Save `show config` as an XML file (suggested filename: `se3xxx-chassisSN-bkup.xml`)

Description of Error Messages

The following error message sections are referenced in the flowcharts by TS-xx number and provide additional information.

TS-1

Message: `A filename is required`

Occurs: Startup check

Meaning: You must supply a filename as part of the `s3kdres` command to save the XML data to that file (that is, in order to hold the XML configuration).

Likely Cause: Usage error.

Resolution: Restart using a filename:
`s3kdres saved-XML-filename --device=<device>`

TS-2

Message: `<sccli-cmd> not found or not executable`
`Enter full pathname for sccli to continue`

Occurs: Startup check

Meaning: The script relies on the `sccli` program being installed properly. `sccli` is normally installed as `/opt/SUNWsscs/sbin/sccli` for Unix/Linux or `C:\Program Files\Sun\sccli` for Microsoft Windows. `<sccli-cmd>` is the full path name searched for by the script.

Likely Cause: Usage error.

Resolution: Confirm the package is installed correctly and the location of `sccli` is correct.
Restart script with:
`s3kdres saved-XML-filename --cli=path-to-sccli --device=<device>`

TS-3

Message: `Failed to contact RAID controller device: <device>`
`Please correct the problem, or enter a new device, and try again`

Occurs: Startup check

Meaning: The script attempts a simple `sccli` command to confirm communication with the RAID controller. `<device>` is the inband or out-of-band device specified on the command line or the default device: 192.168.1.1

Likely Cause: Usage error or device cannot be reached.

Resolution: Confirm `<device>` is correct. Manually check communication with:
`# sccli <device> about`
Restart script.

TS-4

Message: `Failed to contact RAID controller.`
`Please correct the problem and try again.`

Occurs: After firmware download and nvram reset

Likely Cause: Failure to set IP address for out-of-band or map LUN for inband after nvram reset.

Meaning: The script attempts a simple `cli` command to confirm communication with the RAID controller. `<device>` is the inband or out-of-band device specified on the command line or the default device: 192.168.1.1

Resolution: Set the IP address for out-of-band communication or map a LUN for inband communication.

Confirm communication with the controller with:
sccli <device> about

Restart the script with the `--restore=all` option using the existing XML configuration file saved:
s3kdlres <XMLfile> --device=<device> --restore=all

See the s3kdlres man page for details on the `--restore` option.

TS-5

Message: Unknown Access Mode: <access-mode>
Wanted "inband" or "out-of-band"

Note: Inband access is not supported by the upgrade script. Out-of-band mode is required.

Occurs: Startup check

Meaning: The access mode is used for certain conditionals. An unknown access mode was encountered.

Likely Causes: Bad XML data, a sccli bug, or a script bug.

Resolution: Reset the controller via the serial port.

Confirm access mode with:
sccli <device> show access

Restart the script.

Contact Tech Support if the problem persists.

TS-6

Message: Password is required.
Password is not correct.

Occurs: Startup check

Meaning: For out-of-band only. The controller password is set. Either the password was not supplied on the command line, or the password was incorrect.

Likely Cause: Usage error.

Resolution: Restart the script with:
s3kdlres saved-XML-filename IP-address --password=<controllerpassword>

TS-7

Message: sccli version <version> not supported. Please upgrade sccli.

Occurs: Startup check

Likely Causes: Installation error, or incorrect sccli specified on command line.

Meaning: sccli version 2.1.0 or later is required.

Resolution: Verify that earlier versions are removed, and if using the `--cli=path-to-cli` option, verify that the path is correct. Make sure sccli 2.1.0 or later is installed.

Restart script with:
s3kdlres saved-XML-filename --device=<device>

TS-8

Message: <saftes|ses> <rev> not supported
*** Out of rev. SES or SAF-TE code detected.
Please update SES or SAF-TE code with the following sccli command
Update out of rev. <saftes|ses> code <rev>
sccli <device> download <saftes|ses>-firmware <fn>
Where <fn> is name of the firmware file

Occurs: Startup check

Likely Causes: Out-of-date SAF-TE/SES code.

Meaning: Minimum SAF-TE code 1170 and SES code 1046 (FC) or 0420 (SATA) is required.

Resolution: Confirm SAF-TE or SES code with:
sccli <device> show safte
sccli <device> show ses
Upgrade SAF-TE/SES code using the command listed.
Restart the script.

TS-9

Message: Can't open XML file: <XMLfile>: <error>
Failed to save XML file: <XMLfile>: <error>

Occurs: Startup check

Likely causes: Insufficient privileges. File system full.

Meaning: An error was encountered creating or saving the XML configuration. The <error> tag may provide additional information such as "permission denied."

Resolution: Confirm the user has sufficient privileges by creating a file in the file system. Check file system space. **Note:** The XML file created is typically less than 100K bytes.
Restart the script.

TS-10

Message: The following devices have too many partitions for this upgrade.
Please delete partitions 32 and above:

<logical-drive|volume>: Id: <id>, Partitions: <nPartitions>

Occurs: Startup check

Likely cause: More than 32 partitions detected.

Meaning: Firmware 4.xx supports up to 32 partitions per logical drive or logical volume. More than 32 partitions were found.

Resolution: Back up or move all data on all partitions of the listed logical drives or volumes. All partitions must be deleted and then restored with a new layout of less than 32 partitions per logical drive or volume.
Delete all partitions on the specified logical drives or volumes with:
sccli <device> configure partition <partition> delete
See the sccli man page for details on the configure partition command.
Note: Deleting the partition destroys the data. Data cannot be recovered. Consult the sccli man page for details on deleting partitions.
Restart the script.

Note: Deleting partitions can also be completed using controller firmware commands. Refer to the *Sun StorEdge 3000 Family RAID Firmware 4.1x User's Guide* for detailed instructions.

TS-11

Message: Please change the Controller Assignment for the following:
`<logical-<drive|volume>: Id: <id>, Change Assignment to <Primary|Secondary>`
Then rerun the script with the option:
`--restore=maps`

Occurs: Restoring maps

Likely cause: sccli failed to change the logical drive or volume assignment.

Meaning: After nvram reset, all logical drives and volumes are changed to Primary. Any logical drives that were originally Secondary must be reassigned as Secondary but sccli failed to do so.

Resolution: Change the logical drive or volume assignment using the serial interface.

Restart the script with the `--restore=maps` option using the existing XML configuration file saved:
`# s3kdlres <XMLfile> --device=<device> --restore=maps`

See the s3kdlres man page for details on the `--restore` option.

TS-12

Message: Redundancy status after controller reset does not match original
Redundancy status.
Original Redundancy Status: *<status>*
New Redundancy Status: *<status>*
Correct problem and rerun script from the beginning.

Occurs: After firmware download, before nvram reset

Likely causes: Controllers did not bind as a pair after the firmware upgrade OR the firmware upgrade was attempted on a unit in degraded mode (that is, the controller failed).

Meaning: The controller redundancy status is read and saved before the firmware download happens. After the firmware download, the redundancy status is read again and compared to the original. There is a one-minute timeout for redundant controllers to bind as a pair after the firmware download and controller reset.

Resolution: Using the serial port, reset the controller, and restart the script using a new, unique filename to save the XML configuration data:

```
# s3kdlres new-saved-XML-file --device=<device>
```

A firmware download will be re-attempted even if the upgrade was successful.

If the problem persists:

TS-12a:

If the New Redundancy Status shows "Detecting," check the redundancy status with:

```
# sccli <device> show redundancy
```

TS-12b:

If the redundancy status continues to show "Detecting," the controllers are not binding as a pair. Contact Tech Support.

TS-12c:

If the redundancy status shows "Enabled," the controllers have now bound as a pair. Possibly, the script timed out before the controllers bound.

Confirm the correct firmware revision with:

```
# sccli <device> show inquiry
```

If the firmware is correct, reset the nvram with:

```
# sccli <device> reset nvram
```

```
# sccli <device> reset controller
```

After the reset completes, set the IP address for out-of-band communication or map a LUN for inband communication.

Confirm communication with the controller:

```
# sccli <device> about
```

Restart the script with the `--restore=all` option, using the existing XML configuration file saved:

```
# s3kdlres <XMLfile> --device=<device> --restore=all
```

See the `s3kdlres` man page for details on the `--restore` option.

If the firmware is incorrect, contact Tech Support.

If the problem persists, use the manual upgrade procedure, or contact Tech Support.

Note: The following errors are considered exceptions, and are accompanied by a back trace providing details on the failure. Back-trace details may be useful to Tech Support. Exceptions should be reported to Tech Support.

TS-13

Message: Failed to run command: <cmd>: <error>
result: <result>

Occurs: Varies

Likely Causes: Failure to contact device (see TS-13a below), unexpected XML tag (see TS-13b), or command exceeded 20-minute timeout (see TS-13c).

Meaning: The script uses `sccli` to perform all operations on the controller. The command passed to `sccli` resulted in a non-zero exit status (failure), or the command timed out. The <error> tag may provide additional information. The <result> tag is the output result of `sccli`.

Resolution:

TS-13a:

If the <result> tag indicates a failure to contact the device as reported by `sccli`, it may be the result of an inband device going offline during the process. If possible, use an out-of-band device.

During the process, the inband device will be "unmapped" from the RAID controller. This happens during the nvram reset, and after "Restoring Channel Ids."

If it happens after the nvram reset, it may be possible to recover by resetting the controller, mapping the LUN, and continuing with:

```
# sccli <device> about
```

Restart the script with the `--restore=all` option using the existing XML configuration file saved:

```
# s3kdlres saved-XML-filename --device=<device> --restore=all
```

See the `s3kdlres` man page for details on the `--restore` option.

If it happens after "Restoring Channel Ids," it may possible to recover with `--restore` options:

```
# s3kdlres saved-XML-filename --device=<device> --restore=settings
```

```
# s3kdlres saved-XML-filename --device=<device> --restore=channels
```

At this point, a controller reset is required to cause the channel settings to apply. An inband device may be offline again.

Remap the LUN using the serial interface, and restore the remaining LUN maps:

```
# s3kdlres saved-XML-filename --device=<device> --restore=maps
```

See the `s3kdlres` man page for details on the `--restore` option.

TS-13b:

The script uses data supplied from the XML file to construct `sccli` commands. If the XML data is not valid or unexpected, an invalid `sccli` command may be constructed.

It may be possible to edit the XML file, and restart the script with the `--restore=all` option using an existing XML configuration file edited and saved:

```
# s3kdlres saved-XML-filename --device=<device> --restore=all
```

See the s3kdlres man page for details on the `--restore` option.

Editing the XML file should generally only be done under the direction of Tech Support.

TS-13c:

Twenty-second and other timeouts are generally the result of hardware issues. Inband devices are discussed above.

For out-band-devices, there may be underlying network issues such as a stale arp cache.

Check network connectivity with:

```
# ping <out-of-band device>
```

```
# sccli <device> about
```

Other conditions should be reported to Tech Support.

TS-14

Message: Cannot find Channel Assignment for ch: <ch>, tgt: <tgt>, found: <assignment>

Occurs: Restoring Channels

Likely Cause: Bad XML data.

Meaning: The script cannot determine the assignment (Primary or Secondary) for the channel and target listed from the XML data.

Resolution: Restore the channel settings manually with the `sccli` command:

```
# sccli <device> configure channel channel { host | drive } options
```

See the `sccli` man page for details on the `configure channel` command.

Reset the controller, and continue to restore LUN maps with the existing saved XML file:

```
# sccli <device> reset controller
```

```
# s3kdlres <XMLfile> --device=<device> --restore=maps
```

See the s3kdlres man page for details on the `--restore` option.

Note: Resetting the controller and restoring the channel settings can also be completed using controller firmware commands. Refer to the *Sun StorEdge 3000 Family RAID Firmware 4.1x User's Guide* for detailed instructions.

TS-15

Message: Cannot find Channel Assignment for ld/lv: <id>, found: <assignment>

Occurs: Restoring Maps

Likely Cause: Bad XML data.

Meaning: The script cannot determine the assignment (Primary or Secondary) for the logical drive or logical volume listed.

Resolution: Restore the LUN mappings manually with the `sccli` command:

```
# sccli <device> map partition ch.tgt.lun [ wwpn ]
```

See the `sccli` man page for details on the `map partition` command.

Note: Restoring the LUN mappings can also be completed using controller firmware commands. Refer to the *Sun StorEdge 3000 Family RAID Firmware 4.1x User's Guide* for detailed instructions.

TS-16

Message: No id found
Occurs: Startup Check
Likely Cause: Bad XML data.
Meaning: A logical drive or logical volume was found in the XML file, but some attribute information is corrupt or missing.
Resolution: Reset controller. Restart the script.
If the problem persists, contact Tech Support.

TS-17

Message: Can't find product: <product> in product table
Occurs: Startup check
Likely Cause: Unsupported product.
Meaning: The script confirms the product to be upgraded is supported.
Resolution: Reset the ontroller. Restart the script. If the problem persists, contact Tech Support.
