

SUSE YES System Certification Kit 9.0

Troubleshooting and Help



Legal Notices

SUSE LLC., makes no representations or warranties with respect to the contents or use of this documentation, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, SUSE LLC., reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.

Further, SUSE LLC., makes no representations or warranties with respect to any software, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, SUSE LLC., reserves the right to make changes to any and all parts of SUSE software, at any time, without any obligation to notify any person or entity of such changes.

Any products or technical information provided under this Agreement may be subject to U.S. export controls and the trade laws of other countries. You agree to comply with all export control regulations and to obtain any required licenses or classification to export, re-export, or import deliverables. You agree not to export or re-export to entities on the current U.S. export exclusion lists or to any embargoed or terrorist countries as specified in the U.S. Export laws. You agree to not use deliverables for prohibited nuclear, missile, or chemical biological weaponry end uses. Please refer to <https://www.suse.com/company/legal/> for more information on exporting SUSE software. SUSE assumes no responsibility for your failure to obtain any necessary export approvals.

Copyright © 2018– 2024 SUSE LLC and contributors. All rights reserved.

Publication Date: August 2024

All files provided in this release are subject to the License Agreement, which can be found in the license.txt file provided in the System Certification Test Kit download.

SUSE LLC., has intellectual property rights relating to technology embodied in the product that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed at <http://www.suse.com/company/legal> and one or more additional patents or pending patent applications in the U.S. and in other countries.

SUSE LLC.
1221 SOUTH VALLEY GROVE WAY
VALLEY GROVE II | SUITE 500
PLEASANT GROVE, UTAH 84062, U.S.A.

www.suse.com

Online Documentation: To access the online documentation for this and other SUSE products, and to get updates, see www.suse.com/documentation.



Online SUSE Developer Services Program Guide Documentation: To access the online SUSE Developer Services Program Guide, see -

<https://links.imagerelay.com/cdn/3404/ql/c0b0ca33142441b99c0e28f58d856629/suse-yes-certification-program-guide.pdf>

Trademarks

For a list of SUSE trademarks, see (<http://www.suse.com/company/legal>).

All third-party trademarks are the property of their respective owners.



Table of Contents

1	Installation	7
1.1	Removing the ELIO Boot Tables	7
1.2	Installing Missing RPMs	8
1.3	PXE Install Issues.....	8
1.4	Test Kit Installation Issues	9
1.5	Copy Kit to SUT Test Issues	9
1.6	Copy Kit to SUT Test – No Popup Window	9
1.7	Install Kit on SUT Test Issues.....	10
1.8	Manual Test Kit Installation	10
1.9	Manual Test Kit Uninstall.....	11
1.10	Automatic Test Kit Uninstall	11
1.11	Test kit (SCK) updates.....	12
2	SLES / SLED Tests	13
2.1	Test Will Not Start on SUT	13
2.2	Time Sync Test(s) fail	13
2.3	Component Check Issues.....	14
2.4	Validate Install Test / Component Check	14
2.5	Product and Report Information – Missing Device.....	15
2.6	Video Test Issues.....	15
2.7	Multiple Test Projects on TC	15
2.8	Stress Test - NIC	15
2.9	USB Test Fails.....	16
2.10	Hibernate or Sleep Test Issues	17
2.11	Stress Tests Run More Than 12 Hours.....	18
2.12	Kdump Test Fails – Change memory Settings	20
2.13	Crashkernel Memory Guidelines.....	20
2.14	Manually Starting the kdump	20
2.15	IP Address Issues with kdump	21
2.16	Kdump issues on ARM with SL Micro	21



2.16	Serial Port Fails.....	22
2.17	Checking Serial Port Functionality	25
2.18	Serial Port Debugging with systemctl or Minicom	26
2.19	Get Test Logs Test	28
2.20	Formatting an External Storage Device.....	29
2.21	Watchdog Timer Test Fails	30
2.22	Firmware BIOS Test Fails	30
2.23	Configuring SLED 15 SP3 for kdump over the network.....	31
2.24	Manual Tests are Failing.....	31
3	Virtualization Tests.....	32
3.1	KVM GUI Not Responding.....	32
3.2	KVM Guest Time is Out of Sync with Host.....	32
3.3	Xen Guest Time is Out of Sync with Host.....	32
3.4	PCI Pass-Through – VM Fails to Start.....	34
3.5	USB Virtualization Pass Through Setup	34
3.6	Optical Media Test for KVM / Xen Guests	35
3.7	Manually Install SCK on Virtual Machine.....	35
3.8	Save Xen VM Image for Future Quick VM Install.....	37
3.9	Quick Install of Virtual Machines.....	37
3.10	Data corruption occurs with the Intel I219-LM network adapter e1000e driver with SLES 15 SP4 KVM.....	38
4	General Issues.....	38
4.1	System Hang After Reboot	38
4.2	Configuring IP Addresses Without YaST	39
4.3	IPv6 Address Generation	39
4.4	Identifying Vendor Device IDs.....	39
4.5	Downloading SLE Products and Patches.....	39
4.6	Using 3 rd -Party Drivers for YES Certification.....	41
5	Installation Server Options.....	42
5.1	Setting up an Installation Server	42
5.2	Set up TC as an Install Server With a non FTP Access	43
6	Configuring SUT to Point to Repositories	44
7	GPU Compute Test Manual Install Instructions	45



8	Document Revision History	48
---	---------------------------------	----

About This Guide

The Troubleshooting and Help document contains a procedure manual for troubleshooting and workarounds for the SUSE Yes Certified™ system certification process.

Audience

This manual is intended for users who have experience with computers, networking, Linux, and Microsoft Windows.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use your partner engineering contact for feedback.

Documentation Updates

For the most recent version of the System Test Tools and documentation, visit System Test Tools for SUSE LINUX <https://www.suse.com/partners/ihv/yes/system-test-tools-for-suse-linux.html>.

Additional Information

For more Information on YES Certification, see:

SUSE YES Certified Program <https://www.suse.com/partners/ihv/yes/>

Partner Resources <https://www.suse.com/partners/become-partner/>

Documentation Conventions

A trademark symbol (®, ™, etc.) denotes a SUSE trademark. An asterisk (*) denotes a third-party trademark.



1 Installation

This guide provides information to assist in troubleshooting issues with certification setup and testing. In addition, there will be tips, tricks and alternative methods that have been observed over time.

1.1 Removing the ELIO Boot Tables

When a system is UEFI enabled, ELIO becomes the boot mechanism for SLES. Changing to the grub boot method may not be easy. The following instructions are intended to remove the ELIO boot information and allow for grub to be used on the hard disk drive.

Method 1:

These instructions will delete any partition including the GPT .

1. Boot the system with a SLES or SLED (latest SP) DVD.
2. Choose Rescue System.
3. Login as user Root. No password is needed.
4. Type: `parted /dev/sdx` (e. g. `/dev/sda`) <Enter>.
5. Type: `mklabel msdos` <Enter>.
6. Type: `yes` <Enter> at the prompt to remove the disk label and all drive data.
7. Type: `quit` <Enter>.
8. Repeat steps 4-7 for each disk drive.
9. Reboot the system.

Method 2:

These instructions will wipe GPT ELILO info from the front and back of the disk drive.

1. Boot the system with a SLES 12 (latest SP) DVD.
2. Choose the rescue mode.
3. Login as user Root. No password is needed.
4. Use `fdisk` to find out the disk size by typing `fdisk -l /dev/sda` <Enter>.

Example: `SUT:~ # fdisk -l /dev/sda`

The following output will appear:

Disk `/dev/sda`: 500.1 GB, **500107862016** bytes

255 heads, 63 sectors/track, 60801 cylinders, total 976773168 sectors Units = sectors of 1 * 512 = 512 bytes

Sector size (logical/physical): 512 bytes / 512 bytes I/O size (minimum/optimal): 512 bytes / 512 bytes Disk identifier: 0xf39173e3



Device	Boot	Start	End	Blocks	Id	System
/dev/sda1		2048	4208639	2103296	82	Linux
swap	Solaris					
/dev/sda2		4208640	109064893	52428127	83	Linux
/dev/sda3		109064894	976773167	433854137	83	Linux

5. Get the size of the disk in bytes. This is the first line of fdisk output. In the example above it is **500107862016**.
6. Divide the size of the disk by 512 bytes. $500107862016 / 512 = 976773168$.
7. Use dd to write zeros to the front of the disk. I used count=100, count=1 would be sufficient. Type `dd if=/dev/zero of=/dev/sda bs=512 count=100`
8. Use dd to write zeros to the end of the disk (seek value is $976773168 - 100 = 976773068$). Type `dd if=/dev/zero of=/dev/sda bs=512 count=100 seek=976773068`

All ELIO information is now removed from the hard disk drive. The hard disk drive is ready to have the OS installed with GRUB as the default boot mechanism.

1.2 Installing Missing RPMs

The installation tool will display a message listing the missing rpm's which are needed. The following instructions should be used in conjunction to add these missing rpms.

1. On the SUT, open a terminal prompt, type `yast2 sw_single` <Enter>.
2. Next to Filter click and select Search.
3. In the search box, type <missing rpm name> <Enter>, and then click Search.
4. Check the <missing rpm name> package for installation.
5. Repeat steps 3-4 for each missing rpm.
6. Click Accept to accept the Software Settings.
7. If prompted for automatic changes due to package dependencies, click Continue.
8. If prompted, insert SLES DVD's as instructed, then click OK.
9. Click No at the Install or remove more packages window.
10. On the TC, go to the test kit install screen and press <Enter> to continue the installation.

1.3 PXE Install Issues

Problem:



The SUT has been booted with PXE and cannot see the OS images on TC to begin the OS install. Possible cause: The IP address of the TC was changed after the TC was set up as a PXE install server.

Solution:

On the TC, use the config install server utility (`configinstserver.sh`) to remove all ISO images. and to add the new ISO images. The images should now be available to the SUT for PXE boot installation. See Section 2.2.3, "Setting up the DHCP/PXE server on TC" for details about the config install server utility (`configinstserver.sh`).

1.4 Test Kit Installation Issues

If during install, YAST asks you to change the CD/DVD to the SLE installation disk:

1. Abort out of YAST and type <CTR+C> to kill `sck_install.sh`.
2. Copy the contents of the System Certification Kit (SCK) CD to `/root/Desktop/SCK`.
3. Eject the SCK CD.
4. Run `/root/Desktop/SCK/sck_install.sh`. If step 5 is unsuccessful, note what package it is trying to install.
5. Enter `"cd /"` to change out of the SCK install directory so the CD can be ejected.
6. Enter `"eject"` to eject the System Certification Kit (SCK) CD.
7. Run `yast2` and install the missing package.
8. Eject the SLE installation disk and put the SCK CD in the drive.
9. Re-run `sck_install.sh`.
10. Repeat if necessary.

1.5 Copy Kit to SUT Test Issues

Since the test kit has not been installed onto the SUT yet, the complete file directory structure for the logs does not exist. The first log files for the Copy Kit to SUT Test will be placed in `/tmp`. If the test fails, reboot the TC and SUT and rerun the Copy Kit to SUT Test.

1.6 Copy Kit to SUT Test – No Popup Window

If you ran the Copy Kit to SUT Test and no popup window came up then the problem may be how the test kit was installed on the TC. If you installed the test kit on the TC through remote access or through SSH then the test kit environment variable files will be impacted. In this case you will need to re-install the test kit onto the TC while sitting directly in front of it. DO NOT SSH, DO NOT remote access the TC.



A typical error message in the `sck_copy_install_filestestwrapper-<date>.<time>` for this problem will be as follows:

Fri Feb 15 09:06:36 2019 xsession does not exist. Error code: list index out of range

1.7 Install Kit on SUT Test Issues

If the Install Kit on SUT Test fails, the log files will be placed in `/tmp`. If the test fails then reboot the TC and the SUT then run the Install Kit on SUT Test again.

1.8 Manual Test Kit Installation

The recommended way to install the test kit on SUT is via TestConsole. If a manual method is needed the following steps may be followed on physical or Virtual Machines (KVM or XEN)

Requirements:

- Test kit with pxe/dhcp previously installed on a TC and all needed OS ISO images added to the TC PXE install menu via the `configinstserver.sh` script. In SLE 15 the required ISO images are Installer and Packages. (SLE-15-Installer-DVD-x86_64-GM-DVD1.iso and SLE-15-Packages-x86_64-GM-DVD1.iso). **SLE 12 and SLE 15 SP2 only require DVD1 OS media.**
- SUT OS installed (on the SUT). See test kit documentation for SLE 12 install options. In SLE 15 only the base pattern is needed on the SUT OS prior to test kit installation.
- In SLE 15 the SUT must point to the OS repositories on the TC at `/home/InstSource/<OS version dir>`. If it doesn't, the test kit installer will automatically remove all existing repositories and add two repos that point to SLE 15 Installer and Packages on the TC.
- For booting or installing from an FTP server follow the steps in section 8.

If the install server containing the SLE repositories is not the TC, follow Section 6 **Setting up an Installation Server** to name SLE 15 repositories correctly and Section 7 **Configuring SUT to Point to Repositories**.

1. From TC run the following command to copy the test kit files to SUT and set correct IP address on SUT (if necessary):
`/home/InstSource/sck/sck_copy_install_files.sh`
Or
`/home/InstSource/sck/sck_copy_install_files.sh -i <sut_ip_address>`



Where:

-i IP address to be assigned to SUT machine. If this IP is not the current SUT IP, the installer will change the SUT IP to the one specified here.

2. Still on TC run the following command to install test kit on SUT:

```
/home/InstSource/sck/sck_install.sh -i 10.1.1.30 -t 1
```

Where:

-i IPv4 address of SUT to be installed

-t Type of install (1=SUT this includes KVM/XEN VM)

The installation log is located on TC at `/var/opt/suse/testKits/system/sck_install-
<time_stamp>.log`

1.9 Manual Test Kit Uninstall

The Test Kit may also be uninstalled from SUT by typing the following commands:

1. Open a Terminal window and type `rpm -e sck-sut <Enter>`.
2. Type `rpm -e tclink <Enter>`.
3. Type `rpm -e sck-common <Enter>`.
4. All remaining files will also need to be installed by doing the following:
5. At the shell prompt, type `rm -r /var/opt/suse/TestKits`
6. At the shell prompt, type `rm -r /opt/suse/TestKits`
7. If you would like to verify that the kit was uninstalled, type the following commands at a shell prompt:
8. Type `rpm -q tconsole <Enter>`.
9. Type `rpm -q tclink <Enter>`.
10. Type `rpm -q sck-common <Enter>`.

1.10 Automatic Test Kit Uninstall

1. Log in to the system as root.
2. Open a terminal or shell.
3. At the shell prompt, type `sck_uninstall.sh`
4. Answer Yes all on screen questions to complete the uninstall.
5. All remaining files will also need to be removed by doing the following:
6. At the shell prompt, type `rm -r /var/opt/suse/TestKits`
7. At the shell prompt, type `rm -r /opt/suse/TestKits`



1.11 Test kit (SCK) updates

The test kit can be updated in the field after installation. We provide Test kit updates for fixes and test improvements. The latest test kit updates are available on the SBS entry page. Look for the section listing: ***** SCK Update Files *****. After downloading the sck updates file follow the instructions which are included.



2 SLES / SLED Tests

2.1 Test Will Not Start on SUT

Solution A

When tests do not start on TC, there may be a connection problem between TC and SUT.

1. To check the connection, ping from TC to SUT, then ping from SUT to TC.
2. If ping fails, check all cables and switches.
3. Ensure that the NIC cards are properly configured on TC, and SUT.

Solution B

The problem may be that Tclink is not running, or not running properly on SUT.

1. Open a terminal on SUT.
2. Type the following command: `rctclinkd restart` & <Enter>.
3. On TC start the test again.

2.2 Time Sync Test(s) fail

Please note that SUT and TC both need to be synced to the same exact time. This also means that the Time Zone, and UTC Time must be chosen to be the same on both systems.

1. Delete the AppArmor ntpd profile (SLES 12 only)
2. Verify that TestConsole is functioning as a time server (NTP server).
3. On TC open a terminal and type `/etc/init.d/ntp status`<Enter>.
4. If the status does not state running then type `/etc/init.d/ntp start` <Enter>.
5. Verify that the SUT is using TestConsole as a time server.
6. Ensure that each system can ping each other (Example type: `ping 10.1.1.1` <Enter>).
7. On SUT type `yast2 ntp-client`<Enter>.
8. Enter the IP address of TestConsole in the NTP Server field.
9. Click Finish.
10. Ensure that ntp is running. On SLES 12 type `/etc/init.d/ntp restart`<Enter>. The status should be "done".
11. Wait 60 seconds, the system should synchronize its time with TestConsole.
12. If the time does not synchronize repeat all steps in 2 and 3.
13. Click on Applications.
14. Mouse over System Tools.



15. Click on Yast.
16. Scroll down to the Security and Users section. Click on AppArmor Configuration.
17. Click on Manage Existing Profiles.
18. Scroll down to locate `/usr/sbin/ntpd`. Click on `/usr/sbin/ntpd`.
19. Click on the Delete button.
20. Click on yes to confirm deleting the profile.
21. Click on Next.
22. Close the Administrator Settings window.
23. Open a terminal.
24. Type `systemctl restart ntpd.service` <Enter>.
25. The terminal window can be closed.
26. Run the failed time test again.

2.3 Component Check Issues

If component check will not start, ensure the TC system can ping the SUT. If ping fails, check the LAN wiring, the IP addresses, the masks and gateway addresses.

If the SUT information or any components (LAN, HBA, HDD, etc.) are not showing up in the Product and Report Information Entry tabs, then run the component check again.

2.4 Validate Install Test / Component Check

Problem:

Test doesn't finish - current project was not initialized completely.

Solution:

On the TestConsole of TC, double-click the first IP address in the current project. Backspace over at least one character of the IP address selection and reenter the IP address. Click *OK*.

Problem:

Test doesn't finish - install did not complete successfully.

Solution:

Reinstall the Test kit on the SUT.
Verify the install has completed successfully before restarting the tests.

Problem:

Test doesn't finish - IP address of the SUT was not entered, or entered incorrectly.



Solution:

Reenter the SUT's IP address in TestConsole's current project on the TC.

Restarting TestConsole may be necessary if the test is hung and won't finish.

Worse case, both the TC and SUT may have to be rebooted.

2.5 Product and Report Information – Missing Device

There are instances when a device is missing from the product information, such as a LAN adapter. This can occur if a device is added to the SUT after the component check test is run. If this occurs then ensure that the device is installed and enabled, then run the component check again.

2.6 Video Test Issues

If video does not work properly:

1. Open a Terminal and type `yast2` <Enter>.
2. Change graphics settings as needed.

Note: Any changes made to default video settings require a Configuration Note on the Certification Bulletin.

If the video test fails:

Make sure that you change the settings to Gnome Classic on the password screen when logging into the SUT.

2.7 Multiple Test Projects on TC

TestConsole can store multiple projects, but can only run one project instance at a time. If more than one SUT needs to be tested at a time, additional TCs are required.

2.8 Stress Test – NIC

When re-configuring the IP address of a NIC in the SUT, YaST consistently reboots after you click the **Finish** button at the **Save Configuration Files** window. The only way to edit the IP addresses is to edit the files that start with the following: `/etc/sysconfig/network/ifcfg-eth`



There will be a file for each NIC which include the IP address and mask of the NIC. To enable IP forwarding when YaST2 does not allow you to save the configuration:

Edit the contents of the **/proc/sys/net/ipv4/ip_forward** file to be "1" instead of "0":

This will enable IP forwarding, however the value will reset to the original value when the system reboots. To make the configuration persistent, edit the **/etc/sysconfig/sysctl** file with the line that has "IP_FORWARD" to read `IP_FORWARD='yes'`

If the steps above don't work, try the following:

1. Open a Terminal and type `ls /srv/ftp/` and verify the following files are listed:
 - 300kb.md5sum
 - 300kb
 - 400mb
 - 400mb.md5sum
2. If your LAN connection is having issues, see the checklist below.
 - How are you determining that the NIC speed is correct?
 - Is the certification testing in a secluded network?
 - How many computer systems are on the certification testing network? There should only be 2.
 - What speed of the switch(s) in the certification testing network?
3. The Ethernet cables must support the highest speed NICs in the SUT.
 - What is the speed of Ethernet cables being used between TC and SUT?
 - What is the IP address of the SUT?
 - What is the IP address of the TC?
 - What OS is installed on the TC?
 - What OS is installed on the SUT?
4. If the NIC test fails, it could be because the old Test Kit was not uninstalled completely on the TC and SUT. Remove old files on TestConsole:
 - a. Open a terminal on TestConsole.
 - b. Type `rm -rf /srv/ftp/*`<Enter>.
 - c. Type `run configure_tc`<Enter>.

2.9 USB Test Fails

If the USB test fails, try the following steps.

1. Log into SUT as root.
2. Open a terminal and type the following: `hwinfo --disk` <Enter>.
3. Write down each USB disk device "Device File" information in order from top to bottom. Each disk section will have information such as:
Vendor: usb...



Device: usb...

-
-
-

Device File: /dev/xxx (example /dev/sda)

4. Notice the order of the USB devices. The first USB device listed will be USB disk 1 and will correspond to the USB 1 Test. The second USB device listed will be USB disk 2 and will correspond to the USB 2 Test.
5. If a disk device has a line which states has a "Drive status: no medium" then some type of memory or disk must be put into the device in order for the test to pass.

2.10 Hibernate or Sleep Test Issues

Hibernate test Failure

If the hibernate test fails, the cause may be that the swap file is too small. The swap files combined should be at least 2/5 (40%-50%) the size of the memory of the machine on SLE 15 and SL Micro. For help see the information in Section 10.1.6.2 Using swap, *Procedure 10.2*

Adding a swap file manually located at this URL:

<https://documentation.suse.com/sles/15-SP5/html/SLES-all/cha-expert-partitioner.html>

Pass with Warning

If the Hibernate or Sleep test result is PASS w/WARNING, it may be caused by a device in the SUT which did not recover from the hibernate or sleep process. In order to investigate the problem, the log files will be needed. The best way to discover the problem is to look through the time stamps which correlate to the time of the hibernate test. These files may or may not exist and may or may not contain information about the issue, it depends on the cause of the PASS w/WARNING. The log files are as follows:

Hibernate logs

/var/log/messages (This file can be overwritten and needs to be reviewed soon after the PASS w/WARNING)

/var/log/pm-suspend.log (If this file exists it will contain information about the last suspend and can be overwritten. The file needs to be reviewed soon after the PASS w/WARNING)

/var/log/suspend2disk.log (If this file exists it will contain information about the last suspend and can be erased. The file needs to be reviewed soon after the PASS w/WARNING)



/var/log/boot.msg (This file can be overwritten at boot and needs to be reviewed soon after the PASS w/WARNING)

Sleep Logs

/var/log/messages (This file can be overwritten and needs to be reviewed soon after the PASS w/WARNING)

/var/log/suspend2ram.log (If this file exists it will contain information about the last suspend and can be overwritten. The file needs to be reviewed soon after the PASS w/WARNING)

/var/log/pm-suspend.log (If this file exists it will contain information about the last suspend and can be erased. The file needs to be reviewed soon after the PASS w/WARNING)

/var/log/boot.msg (This file can be overwritten at boot and needs to be reviewed soon after the PASS w/WARNING)

2.11 Stress Tests Run More Than 12 Hours

Possible Problem 1:

There are 2 instances of TestConsole running on the TC.

Possible solution 1:

1. Close all instances of TC.
2. Then open TestConsole and the project
3. Start from where you left off.

Possible Problem 2:

The system clock is running slow:

Possible solution 2:

1. Look at the clock display on the main screen. If it is the same or close to the same time as the Test Console machine, go to Possible Problem 3.
2. Remove apci and/or acpi functionality from your machine:
3. Edit /boot/grub/menu.lst
4. Append each line that starts with "module" with: acpi=off, acpi=off
5. Save the file and reboot the machine.
6. Run the tests again and verify the symptoms have disappeared.

Possible Problem 3:

Hardware/OS incompatibility – The test process is hung, indefinitely waiting for an I/O or an event to complete.

Possible Solution 3:

Check the process state to see if the test process is hung:

1. Open a terminal and type “top” <Enter>.
2. Determine the test process name from the test being run.

Test	Test Process Name	Location

Floppy	badblocks, dd, or mke2fs	SUT
Serial	wget, md5sum, or sync	SUT
CD/DVD	cmpdir, dd, cmp, or ls	SUT
CDW	cmpdir, or cdrecord	SUT
DVDW	cmpdir, or cdrecord	SUT
USB	bonnie	SUT
Hard Disk	bonnie	SUT
Raid	bonnie	SUT
CPU/Memory	eatmem	SUT
NIC	md5sum, wget, or sync	SUT
Router	md5sum, wget, or sync	TC

3. Look for any of the Test Process Names of the test that is still running. If the test process name shows up in top's list, go to **Possible Problem 4**.
4. Repeat the following step for each test process name:
 - a. Run the following command: "ps aux | grep -f <Test_Process_Name>"
 - b. Look at the process state code. If it is consistently one of the following codes you probably have a hung process.

PROCESS STATE CODES:

- D Uninterruptible sleep (usually IO)
- S Interruptible sleep (waiting for an event to complete)

5. Get an Engineer involved and try to find out why the process is hung and fix the problem. Then either kill the process (with -9) or reboot the machine.
6. Run the tests again and verify the incompatibility has been fixed.

Possible Problem 4:

The tests have been run twice.

Possible solution 4:



1. Verify that the process is not hung (see above). If it is not, cancel all the tests making sure they have all finished before starting over.
2. Run the test group "Stress Tests" to avoid starting a test twice.

2.12 Kdump Test Fails – Change memory Settings

If the kdump test fails, change the kdump settings on the SUT.

1. On the SUT, open kdump by typing `yast2 kdump` from a terminal.
2. If kdump is not enabled, click **enable kdump**.
3. Select the Dump filtering.
4. Unselect/uncheck the following:
 - Pages filled w/zero
 - Free pages
5. Select startup and increase or decrease the memory amount.
6. See the Crashkernel Memory Guidelines below for more information.
7. Click OK to save the changes.
8. Reboot the SUT.
9. Run the kdump test again.

2.13 Crashkernel Memory Guidelines

SLE 12/15 (latest SP)

The system should automatically adjust the high and low memory kdump parameters. If kdump does not function then try increasing or decreasing the low or high memory amount. The low memory setting uses RAM below 4GB. The high memory setting is intended for systems with more than 4GB of RAM.

Examples:

Low memory: 256

High memory: 128

2.14 Manually Starting the kdump

kdump can be started manually as a sanity check. To manually run kdump do the following:

1. On the SUT open a terminal.
2. Type `sync` <Enter>.
3. Type `echo c > /proc/sysrq-trigger` <Enter>. The kdump process will begin.



2.15 IP Address Issues with kdump

If the test harness (SUT and TC) are not on a secluded network or one of the LAN adapters is on a different network, it is possible that the IP address configuration on TC is causing problems with the kdump test. This happens when eth0 is configured for a different IP address than the testing network. The steps to change this on TC are as follows:

1. Open a Terminal on TC.
2. Type `yast2 lan<Enter>`.
3. Select the adapter.
4. Click edit.
5. Click on the hardware Tab.
6. Click change next to the device name.
7. Select, by check mark, to change the device name.
8. Type the name of the new adapter into the name field. If an eth0 adapter already exists, then it must first be changed to something else (e.g. eth9).
9. Click OK.
10. Click next.
11. Click OK. The YaST2 LAN window will close.
12. Run the kdump test again.

2.16 Kdump issues on ARM with SL Micro

The SCK resets the kdump settings on SL Micro SUT back to the default settings. This causes the kdump test to fail. The work around is as follows:

On the SL Micro SUT:

1. Edit `/etc/default/grub` file and modify the `GRUB_CMDLINE_LINUX_DEFAULT=` values of `crashkernel` low and high as needed.
2. Type: `transactional-update grub.cfg <Enter>`.
3. Reboot the SUT.
4. Run the kdump test again.



2.16 Serial Port Fails

If you experience a failure with the serial port test, it may be that the mgetty process is hung or not responding or the pppd may not be responding. This issue can occur on either the TC or SUT. There are a number of corrections to try.

Correction attempt 1:

Do the following on SUT:

1. Login as root and open a terminal.
2. Check to see if pppd is stuck by typing: `ps aux | grep pppd | grep -v grep` <Enter>. If pppd is listed, it is stuck.
3. Kill the stuck pppd process by typing the following command: `killall -9 pppd` <Enter>.

Do the following on TC:

1. Login as root and open a terminal.
2. Check to see if mgetty is listed by typing: `ps aux | grep mgetty | grep -v grep` <Enter>.
3. If mgetty is listed then restart the mgetty process by typing the following command: `killall -9 mgetty` <Enter>.
4. Run the serial port test again as described in the testing section of this documentation.

Correction attempt 2:

1. Reboot the SUT
2. Once the SUT is shutdown and rebooting, then reboot TC.
3. Once the SUT and TC are up and running, login to each as root.
4. Run the serial port test again as described in the testing section of this documentation.

Correction attempt 3:

Run the commands below to start the Point-to-Point Protocol Daemon (pppd).

1. Open a terminal window on TC and type: `pppd ttyS0 115200 -crtsets local passive persist 192.168.101.1:192.168.101.2` <Enter>.
2. Open a terminal window on SUT and type: `pppd ttyS0 115200 -crtsets local passive persist 192.168.101.2:192.168.101.1` <Enter>.
3. The output will be as follows:



```
TC (or SUT) # pppd ttyS0 115200 -crtscts local passive persist
192.168.101.1:192.168.101.2

Script echo finished (pid 8135), status = 0x0

Serial connection established.

using channel 5

Using interface ppp0

Connect: ppp0 <--> /dev/ttyS0

sent [LCP ConfReq id=0x1 <asyncmap 0x0> <auth pap> <magic 0x9c21455d> <pcomp>
<accomp>]

sent [LCP ConfReq id=0x1 <asyncmap 0x0> <auth pap> <magic 0x9c21455d> <pcomp>
<accomp>]

rcvd [LCP ConfReq id=0x1 <asyncmap 0x0> <magic 0x26b79e39> <pcomp> <accomp>]
sent [LCP ConfAck id=0x1 <asyncmap 0x0> <magic 0x26b79e39> <pcomp> <accomp>]
rcvd [LCP ConfAck id=0x1 <asyncmap 0x0> <auth pap> <magic 0x9c21455d> <pcomp>
<accomp>]

sent [LCP EchoReq id=0x0 magic=0x9c21455d]
rcvd [LCP EchoReq id=0x0 magic=0x26b79e39]
sent [LCP EchoRep id=0x0 magic=0x9c21455d]
rcvd [PAP AuthReq id=0x1 user="zertpppclient" password=<hidden>]
sent [PAP AuthAck id=0x1 "Login ok"]

PAP peer authentication succeeded for zertpppclient

sent [CCP ConfReq id=0x1 <deflate 15> <deflate(old#) 15> <bsd v1 15>]
sent [IPCP ConfReq id=0x1 <compress VJ 0f 01> <addr 192.168.101.1>]
rcvd [LCP EchoRep id=0x0 magic=0x26b79e39]
rcvd [IPCP ConfReq id=0x1 <addr 192.168.101.2>]
sent [IPCP ConfAck id=0x1 <addr 192.168.101.2>]
rcvd [LCP ProtRej id=0x2 80 fd 01 01 00 0f 1a 04 78 00 18 04 78 00 15 03 2f]

Protocol-Reject for 'Compression Control Protocol' (0x80fd) received

rcvd [IPCP ConfRej id=0x1 <compress VJ 0f 01>]
sent [IPCP ConfReq id=0x2 <addr 192.168.101.1>]
rcvd [IPCP ConfAck id=0x2 <addr 192.168.101.1>]

local IP address 192.168.101.1

remote IP address 192.168.101.2
```



```
Script /etc/ppp/ip-up started (pid 8139)
```

```
Script /etc/ppp/ip-up finished (pid 8139), status = 0x0
```

4. If it fails, you will get the following repeated until it times out:

```
.  
.
.
```

```
sent [LCP ConfReq id=0x1 <asynctest 0x0> <auth pap> <magic 0x6d515702>  
<pcomp> <accomp>]
```

```
sent [LCP ConfReq id=0x1 <asynctest 0x0> <auth pap> <magic 0x6d515702>  
<pcomp> <accomp>]
```

```
sent [LCP ConfReq id=0x1 <asynctest 0x0> <auth pap> <magic 0x6d515702>  
<pcomp> <accomp>]
```

```
sent [LCP ConfReq id=0x1 <asynctest 0x0> <auth pap> <magic 0x6d515702>  
<pcomp> <accomp>]
```

```
sent [LCP ConfReq id=0x1 <asynctest 0x0> <auth pap> <magic 0x6d515702>  
<pcomp> <accomp>]
```

```
LCP: timeout sending Config-Requests
```



2.17 Checking Serial Port Functionality

Performing the steps below helps determine if the serial port is functioning correctly. These steps should be performed after **Section 2.16** and before restarting the serial port test.

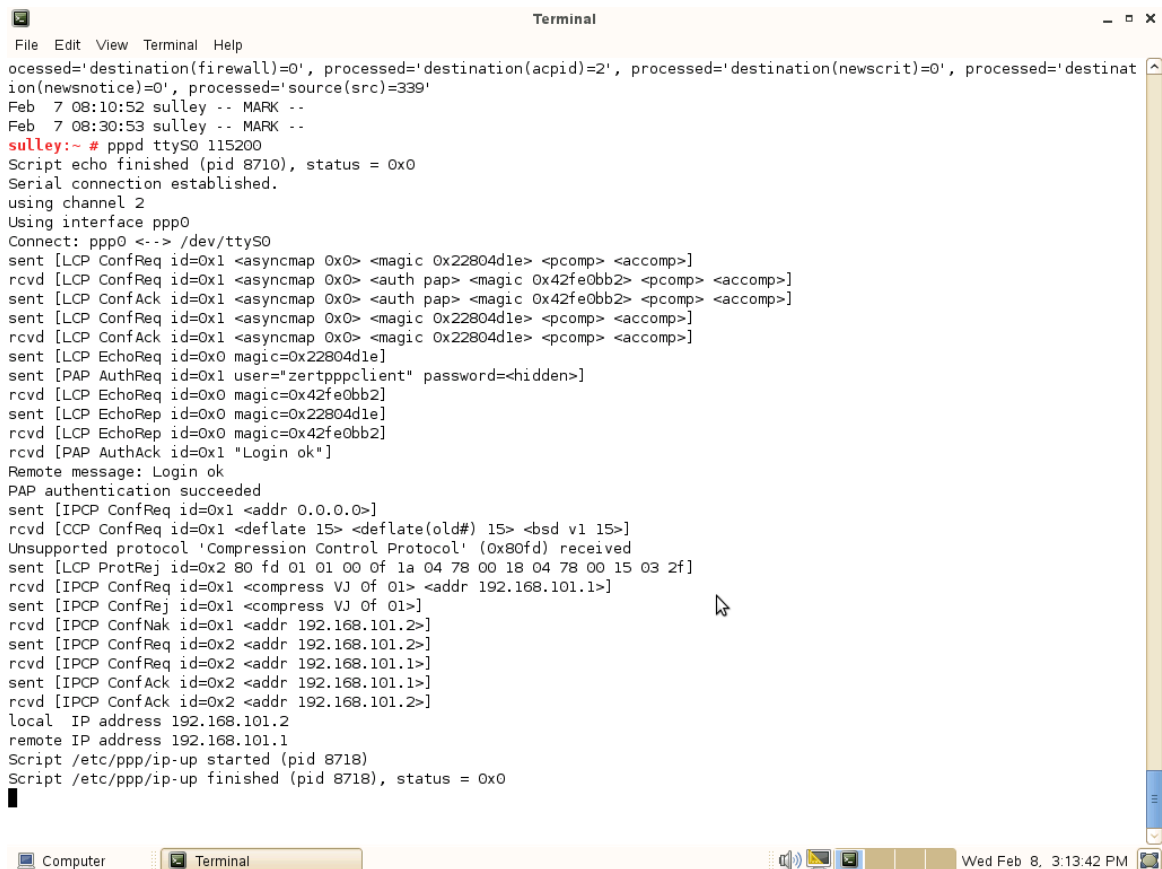
1. Open a terminal on SUT.
2. Type `pppd ttyS0 115200` <Enter>.

There will be a series of onscreen messages. If there is a failure message then the serial port is either not configured correctly or not functioning correctly.

The graphic below displays a normal functional serial port message screenshot.

3. Press <Ctrl-c> to kill this process.

Example Normal Functioning Serial Port Message



```

File Edit View Terminal Help
processed='destination(firewall)=0', processed='destination(acpid)=2', processed='destination(newscrit)=0', processed='destination(newnotice)=0', processed='source(src)=339'
Feb  7 08:10:52 sulley -- MARK --
Feb  7 08:30:53 sulley -- MARK --
sulley:~ # pppd ttyS0 115200
Script echo finished (pid 8710), status = 0x0
Serial connection established.
using channel 2
Using interface ppp0
Connect: ppp0 <-> /dev/ttyS0
sent [LCP ConfReq id=0x1 <asynmap 0x0> <magic 0x22804d1e> <pcomp> <accomp>]
rcvd [LCP ConfReq id=0x1 <asynmap 0x0> <auth pap> <magic 0x42fe0bb2> <pcomp> <accomp>]
sent [LCP ConfAck id=0x1 <asynmap 0x0> <auth pap> <magic 0x42fe0bb2> <pcomp> <accomp>]
sent [LCP ConfReq id=0x1 <asynmap 0x0> <magic 0x22804d1e> <pcomp> <accomp>]
rcvd [LCP ConfAck id=0x1 <asynmap 0x0> <magic 0x22804d1e> <pcomp> <accomp>]
sent [LCP EchoReq id=0x0 magic=0x22804d1e]
sent [PAP AuthReq id=0x1 user="zertpppclient" password=<hidden>]
rcvd [LCP EchoRep id=0x0 magic=0x42fe0bb2]
sent [LCP EchoRep id=0x0 magic=0x22804d1e]
rcvd [LCP EchoRep id=0x0 magic=0x42fe0bb2]
rcvd [PAP AuthAck id=0x1 "Login ok"]
Remote message: Login ok
PAP authentication succeeded
sent [IPCP ConfReq id=0x1 <addr 0.0.0.0>]
rcvd [CCP ConfReq id=0x1 <deflate 15> <deflate(old#) 15> <bsd v1 15>]
Unsupported protocol 'Compression Control Protocol' (0x80fd) received
sent [LCP ProtReq id=0x2 80 fd 01 01 00 0f 1a 04 78 00 18 04 78 00 15 03 2f]
rcvd [IPCP ConfReq id=0x1 <compress VJ 0f 01> <addr 192.168.101.1>]
sent [IPCP ConfReq id=0x1 <compress VJ 0f 01>]
rcvd [IPCP ConfNak id=0x1 <addr 192.168.101.2>]
sent [IPCP ConfReq id=0x2 <addr 192.168.101.2>]
rcvd [IPCP ConfReq id=0x2 <addr 192.168.101.1>]
sent [IPCP ConfAck id=0x2 <addr 192.168.101.1>]
rcvd [IPCP ConfAck id=0x2 <addr 192.168.101.2>]
local IP address 192.168.101.2
remote IP address 192.168.101.1
Script /etc/ppp/ip-up started (pid 8718)
Script /etc/ppp/ip-up finished (pid 8718), status = 0x0

```



2.18 Serial Port Debugging with systemctl or Minicom

The following steps can help determine if the serial port functions properly with systemctl.

1. Ensure that the serial port cable is connected between TC and SUT.
SUT and TC Com port 1 must = 3f8 IRQ4. The speed used during testing is 115,200.
2. To xfer data from SUT to TC do the following:
3. On SUT in a terminal window type: `systemctl start mgetty@ttyS0` <Enter>.
4. On SUT in a terminal window type: `systemctl status mgetty@ttyS0` <Enter> to make sure it is running.
5. On TC in a terminal window type: `cat /dev/ttyS0` <Enter>.
6. On SUT in a terminal window type: `echo "hello" > /dev/ttyS0` <Enter>. You should see "hello" appear on the TC.
7. On TC in a terminal window type: <Ctrl> c to end the cat process.
8. On SUT in a terminal window type: `systemctl stop mgetty@ttyS0` <Enter>.
9. To xfer data from TC to SUT:
10. On TC in a terminal window type: `systemctl start mgetty@ttyS0` <Enter>.
11. On TC in a terminal window type: `systemctl status mgetty@ttyS0` <Enter> to make sure it is running.
12. On SUT in a terminal window type: `cat /dev/ttyS0` <Enter>.
13. On TC in a terminal window type: `echo "hello" > /dev/ttyS0` <Enter>. You should see "hello" appear on the SUT.
14. On SUT in a terminal window type: <Ctrl> c to end the cat process.
15. On TC in a terminal window type: `systemctl stop mgetty@ttyS0` <Enter>.

Below are Minicom instructions for serial port testing and debugging. Please make sure that the Minicom terminal windows are closed before starting the serial port test because the serial port test will fail if the minicom terminal windows are left open.

1. In the system BIOS set the SUT and the TC Com port 1 to = 3f8 IRQ4 (if the setting is changeable in the BIOS). The speed used during the serial port testing is 115,200. Set this speed if possible, in the BIOS.
2. Below are the System BIOS serial port settings that were used at the time of this testing on a TC (Dell PE T150) Server and a SUT (Dell) Server:
Serial Communication = Auto



Serial Port Address = Serial Device1=COM1, Serial Device2=COM2
 External Serial Connector = Serial Device 1
 Failsafe Baud Rate = 115200
 Remote Terminal Type = VT100/VT220
 Redirection After Boot = Enabled

3. Log into the TC.
4. Open a terminal on TC.
5. Type minicom <Enter>.

If minicom needs to be installed, then install the Minicom Terminal Emulator by typing: `zypper in -y minicom` <Enter>.

- a. In the minicom terminal press Ctrl-a. This will put minicom in a mode to accept key commands.
 - b. Press z to display the minicom command summary.
 - c. Press o to access the configure minicom menu.
 - d. Scroll down then select Serial Port Setup <Enter>.
 - e. Ensure that the serial port device = `/dev/ttyS0`. Edit this if needed.
 - f. The Bps/Par/Bits must be 115200 BN1. Edit this if needed.
 - g. In our testing we left the default hardware flow control to No.
 - h. In our testing we left the default Software flow control to No.
 - i. Press <esc> to return to the configuration menu screen.
 - j. Scroll down to Save setup as dfl then press <Enter>.
 - k. Scroll down to exit the press <Enter>.
 - l. Press Ctrl-a. The bottom red line will display the speed setting(115200) and the serial port (ttyS0). Repeat the steps above if the speed or the serial port need to be changed.
6. Repeat steps 1 through 5 above on the SUT.
 7. Connect a serial port to the SUT and to the TC.
 8. On SUT Send output to TC via the serial port by typing a message in the minicom screen.
 9. On TC Send output to SUT via the serial port by typing a message in the minicom screen.
 10. Exit minicom on SUT and on TC by closing the terminal windows.
 11. In a terminal type `setserial /dev/ttyS0` <Enter>. The correct output should be `/dev/ttyS0, UART:16550A, Port: 0x03f8, IRQ: 4`
 If setserial needs to be installed, in a terminal window type `zypper install setserial` <Enter>.



2.19 Get Test Logs Test

Problem:

Test doesn't finish - current project was not initialized completely.

Solution:

On the TestConsole of TC, double-click the first IP address in the current project.

Backspace over at least one character of the IP address selection and reenter the IP address and Click OK.

Problem:

Test doesn't finish - install did not complete successfully.

Solution:

Reinstall the Test kit on the SUT (see 2.3.3 Installing the Test Kit on the SUT)

Verify the install has completed successfully before restarting the tests.

Problem:

Test doesn't finish - IP address of the SUT was not entered, or entered incorrectly.

Solution:

Reenter the SUT's IP address in TestConole's current project on the TC.

Restarting TestConsole may be necessary if the test is hung and won't finish.

Worse case, both the TC and SUT may have to be rebooted.

Problem:

Failure to gather test logs.

Solutions:

1. Reboot SUT and TC, then restart TCLink.
2. Ensure TestConsole is running locally (not remotely or via SSH)
3. Ensure Mount Point exists.
 - a. Open a Terminal on TC.
 - b. Type `ls /mnt/<IP address of SUT>` <Enter>.

If the root directory of SUT does not get listed, then this is the cause of the failure.

The nfs mount point is missing from TC or not working correctly.



Note: If mount point is missing or corrupt, do not use df

To re-establish the mount point do the following:

1. Open a Terminal on TC.
2. Type `umount -l /mnt/<IP address of SUT>` <Enter>.
3. Type `mkdir -p /mnt/<IP address of SUT>` <Enter>
4. Type `mount -t nfs <IP address of SUT>:/ /mnt/<IP address of SUT>` <Enter>.
5. Open Terminal on SUT and type `rtclinkd restart` & <Enter> to restart TCLink

Test Log Location

The test log files are located on the SUT and on the TC at or below the following path:

`/var/opt/suse/testKits/system/<project name on TestConsole>`

Look for .log files in and below this directory for the various tests. These log files will not be deleted from the TC or SUT systems. It is advisable to manually delete the test directories when hard disk drive space is needed.

2.20 Formatting an External Storage Device

External storage devices (such as USB, FireWire, SSD, etc.) need to be partitioned with a Linux-compatible partition prior to being used during YES certification testing. Once partitioned, they can be used for any test that requires an external storage device. Steps to format an external storage device follow:

1. Plug the storage device into the appropriate port.
2. At a terminal prompt, type `yast2 disk` <Enter>.
3. Click *Yes* at the warning.
4. Double click the new storage device (e.g., `sdb` or `sdc`).
5. Remove existing partitions on the storage device and Click *Delete*.
6. If prompted click *Continue* at the warning screen about unmounting the drive.
7. Click *Yes* to really delete the partition.
8. If prompted click *Continue* to unmount the drive.
9. Create a new partition on the storage device and Click *Add*.
10. Click the *Primary Partition* radio button then click *Next*.
11. Click *Next*, for the default partition size.
12. On SLE 12 ensure that the *Do not mount partition* radio button is selected, then click *Finish* and Click *Next*.
13. Click *Finish* to format the USB storage device.
14. On SLES 12 click *Next* on the Expert Partitioner screen.



15. Click Finish on the next screen.
16. Mount the newly partitioned storage device by unplugging the device.
17. Wait 20 seconds and then plug it back in. This should cause it to mount under /media.

2.21 Watchdog Timer Test Fails

1. Make sure Watchdog Timer is enabled in BIOS.
2. Determine which watchdog module(s) are loaded by opening a console prompt and typing "lsmod | grep -e dog -e wdt".
3. Unload any non-needed modules by typing "rmmod <wrong_module>" (replace <wrong_module> with module to be removed).
4. Load the correct module by typing "modprobe <module>" (where module is the watchdog module being loaded).

A list of possible modules are as follows:

hpwdt – for HP and HPE hardware.

itCO_wdt – for systems with an Intel TCO (Ex. Dell, Fujitsu, and Lenovo).

vmwatchdog – for a z/VM on an IBM mainframe.

xen_wdt – for a Xen VM (aka DomU).

softdog – for systems requiring a generic driver.

diag288_wdt – for Linux on Z Systems.

For more information, see your current SUSE Linux Enterprise Administration Guide and search for Watchdog.

2.22 Firmware BIOS Test Fails

In the event of a failure, check the Firmware BIOS Test log file, located on the SUT in /var/opt/suse/testkits/system/<Your test project name>/misc/

Open the Firmware-BIOS-<date>.<time>.log where <date> and <time> reflect the date/time the test was run.

There are 3 main failure codes to search for when determining root cause:

- **Failed [HIGH]** – Generated by FWTS
- ******* – indicates a failure summary message generated by test script
- **error** – indicates a failure found during firmware recompile where the test script checks for SLE software compatibility. (Ex. found errors in acpi_validate)



2.23 Configuring SLED 15 SP3 for kdump over the network.

1. Open a terminal on the SUT.
2. Type "yast2 Kdump" <Enter>.
3. Make sure Kdump is enabled.
4. On the left menu select Dump Target.
5. In the Select Target dropdown choose NFS.
6. In the Server Name field type the IP address of the TC (example 10.1.1.2).
7. In the Directory on Server field type /.
8. Click the OK button at the bottom of the window.

2.24 Manual Tests are Failing.

If the manual tests are failing it could be because wayland was chosen during the systems role selection then installed on the SUT. Do not install wayland on the SUT or on the TC. We recommend installing Gnome Desktop(x11). If wayland is installed then please reinstall the OS and choose Gnome Desktop(x11) in the system role screen.

To check if wayland was installed on the SUT do the following on the SUT.

1. Open a terminal on the SUT.
2. Type: `loginctl` <Enter>. The output will be something like:

SESSION	UID	USER	SEAT	TTY
c2	1000	yourusername	seat0	
3. Take note of the session ID above. In the example the session ID is C2.
4. Type: `loginctl show-session <SESSION_ID> -p Type` <Enter>.
Example for the C2 session: `loginctl show-session C2 -p Type` <Enter>.
5. If wayland was installed, the command will return:
Type=wayland.

The failing test log files will have the following message when wayland is installed:

Authorization required, but no authorization protocol specified



Warning: This program is an suid-root program or is being run by the root user.
The full text of the error or warning message cannot be safely formatted
in this environment. You may get a more descriptive message by running the
program as a non-root user or by removing the suid bit on the executable.
/usr/bin/xterm: Xt error: Can't open display:

3 Virtualization Tests

3.1 KVM GUI Not Responding

Symptom: KVM GUI is non-responsive where the Virt Manager appears to be confused, causing the guests to look like they are hung.

Possible Solution 1:

Close all Guest windows and restart the Virt Manager. Then open each Guest window.

Possible Solution 2:

The system or the KVM guest(s) does not have the minimum memory requirements assigned. See the KVM section for memory requirements and make appropriate adjustments.

3.2 KVM Guest Time is Out of Sync with Host

Below are boot parameters which can be used to attempt to correct this problem. Try using both parameters during the KVM guest boot.

- notsc
- divider=10

3.3 Xen Guest Time is Out of Sync with Host

Below are boot parameters which can be used to attempt to correct this problem. Only use one parameter at a time during the Xen guest boot.



- notsc
- divider=10
- independent_wallclock=1

Below are steps that do not require rebooting the VM.

1. From a Xen VM, open a terminal as root.
2. Type: `echo 1 > /proc/sys/xen/independent_wallclock` <Enter>.
3. Modify `/etc/sysctl.conf` configuration file per below:

```
# Set independent wall clock time
xen.independent_wallclock=1
```



3.4 PCI Pass-Through – VM Fails to Start

Problem:

VM fails to start after passing-through a NIC in KVM or XEN. The error is:

"Error starting domain: internal error: Unable to reset PCI device 0000:02:00.0: internal error: Active 0000:02:00.1 devices on bus with 0000:02:00.0, not doing bus reset"

Solution:

The passed-through NIC card has ports 02:00.0 and 02:00.1 as shown below:

```
linux-y5w9:/home # lspci | grep Ethernet
```

...

```
02:00.0 Ethernet controller: Broadcom Corporation NetXtreme II BCM5709 Gigabit Ethernet (rev 20)
```

```
02:00.1 Ethernet controller: Broadcom Corporation NetXtreme II BCM5709 Gigabit Ethernet (rev 20)
```

Convert colon and dot to underlines to find the address in correct format:

```
linux-y5w9:/home # virsh nodedev-list | grep 02_00_0 pci_0000_02_00_0
```

Detach the passed-through NIC with command "virsh nodedev-detach ..." and detach each port:

```
linux-y5w9:/home # virsh nodedev-detach pci_0000_02_00_0
```

```
Device pci_0000_02_00_0 detached
```

```
linux-y5w9:/home # virsh nodedev-detach pci_0000_02_00_1
```

```
Device pci_0000_02_00_1 detached
```

Attempt to start VM again, it should start at this point.

3.5 USB Virtualization Pass Through Setup

A physical USB device may be passed from the VM Host to the VM Guest. Given the very wide variety of USB devices, it is anticipated that some devices may not work properly.

1. Plug the USB drive into the SUT.
2. On the Host type `lsusb`.
3. Write down the bus and device information.



4. Make sure that the SLES VM (Guest) is installed but not running.
5. In the virt manager for the SLES VM (Guest) click on the info button along the top of the screen.
6. Click on USB Controller.
7. On the right side of the screen, click USB Type drop down. Choose Default for USB 1.1 or USB 2 for a USB 2.0, or choose a USB 3 for a USB 3.0 device. Make sure to choose the USB version which matches the USB port which will be used.
8. Click on add hardware.
9. Choose the USB Host device.
10. Click on the device detected in step 2.
11. Click on Finish.

The USB device will mount and be displayed in the VM (Guest) GUI.

3.6 Optical Media Test for KVM / Xen Guests

This test works on the second installed VM. This test is enabled by default and will run with the stress tests. Messages generated during this test will pop up on the TC.

1. Ensure that the KVM guest or a FV Xen guest is installed.
2. Ensure that the Test Kit is installed on the KVM guest or the FV Xen guest.
3. Insert the optical media into the optical media device.
4. Using the VM manager, shut down a KVM guest or a Xen guest.
5. Click on View → Details on the KVM Guest or Xen Guest which is shutdown.
6. Click on the Add Hardware button.
7. Ensure that storage is selected in the left hardware screen listing.
8. Click on the radio button next to "Select Managed or Other existing Storage"
9. In the text field next to the browse button type the following `/dev/sr0`. 10 Click on the drop down next to the device type and select IDE cdrom. 12 Click Finish.
10. The IDE cdrom or the Xen cdrom will be displayed in the left window.
11. Click View → Console.
12. Click the power on button for the KVM guest or the Xen guest. It appears as a right pointing triangle.

The system is now prepared to run the optical read test during the stress tests.

3.7 Manually Install SCK on Virtual Machine

1. On the SUT, log in as root and start all VM's.



2. On the TC, log in as root and open a terminal
3. Type `sck_copy_install_files.sh` <Enter>. The file is located in `/home/InstSource/sck/`.
4. Enter the IP address of the Guest VM to install the Test Kit onto then press <Enter>.
5. Follow the on screen instructions on the TC. The on screen instructions will include which guest VM to run `sck_install`.
6. A terminal window will display the System Test Kit install prompt.
7. Choose "Xen Guest" install by pressing 2 <Enter>.
8. When prompted, enter the IP address of TC (default = 10.1.1.2) then press <Enter>.
9. The NIC Configuration Menu will appear. The proposed IP address numbers will be listed. Confirm or change the IP address information as needed by typing the NIC number (example 1 then <Enter>). Press C <Enter> if the displayed information is correct and all changes have been made.
10. When prompted, press <Enter> to exit Test Kit installation.



3.8 Save Xen VM Image for Future Quick VM Install

Once a system has been certified with Xen, follow this procedure to save the VM images so they can be reused with a simple procedure (file copy of the image and quick install). This should save you hours when setting up an SUT for testing Xen.

1. Locate or build a stable machine (that you don't intend to re-install the OS) with enough free disk space to hold at least 3 Virtual Machine Images (typically 8GB each).
2. On the stable machine, change directory to where you want to store the images.
Example: `cd /xen-images/`
3. Create a unique directory to copy the image file to.
Example: `md ./sles10-sp42-i386-pv/`
4. Copy the image file from the SUT to the newly created directory on the stable machine.
Example 1: `scp -rp <IP_Of_SUT>:/var/lib/xen/images/sles10/* ./sles10-SP4-i386-pv/`
Example 2: `scp -rp 10.1.1.1:/var/lib/xen/images/sles10/disk0 ./sles10-SP4-i386-pv/`
5. If prompted about the RSA key fingerprint... continue connecting? Enter yes
6. Enter the root password of the machine being copied from.

3.9 Quick Install of Virtual Machines

Copy an existing Xen image.

1. On the SUT, change directory to `/var/lib/xen/images/`
2. Create a unique directory to copy the image file to.
Example: `md ./sles10-SP4-i386-fv-1/`
3. Copy the image file from the stable machine to the SUT using the scp utility.
Example 1: `scp -rp`
`<IP_Address_Of_Stable_Machine>:/<Path_To_Images>/<image_dir>/*`
`./<new_image_dir>`
Example 2: `scp -rp 10.1.1.1:/xen-images/sles10-SP4-i386-fv/disk0 ./sles10-SP4-i386-fv-1/`
4. If prompted about the RSA key fingerprint... continue connecting? Enter yes.
5. Enter the root password of the machine being copied from.
6. Do steps 6-10 of Section 4.1 "Installing a Virtual Machine".
7. Select I have a disk or disk image with an installed operating system.
8. Click Forward.



9. Click the type of operating system you are installing (based on the descriptive name of the directory that contains the disk image that you copied in step 1).
10. Click Forward.
11. Do steps 15–18 of Section 4.1 “Installing a Xen Virtual Machine”.
12. Click Hard disk.
13. Click Browse and browse to the image file that was copied in step 1. 10 Do steps 21–22 of Section 4.1 “Installing a Xen Virtual Machine”.
14. At this point the virtual machine should boot up.
15. Make sure the IP address is unique, if it is not, change it:
16. For SLE see Section 2.3.1, “Installing SLE on the SUT through PXE”.
17. Make sure the certification Test Kit is up to date, if not, reinstall it:
18. For SLES see Section 2.4 “Installing the Test Kit on the SUT”.
19. At this point, the virtual machine should be ready use for testing.

3.10 Data corruption occurs with the Intel I219-LM network adapter e1000e driver with SLES 15 SP4 KVM

If you encounter issues while using the Intel I219-LM in a virtualized environment, then please reference the TID located at <https://www.suse.com/support/kb/doc/?id=000018696>

4 General Issues

4.1 System Hang After Reboot

If the SUT hangs after reboot, the problem may be that the USB hard drive cannot be mounted. Follow the steps below to remove the USB Hard drives from the SLES configuration and recover. The `/etc/fstab` file can be edited after a reboot with the USB drives attached.

1. Log in as root.
2. Open a terminal and type `vi /etc/fstab<Enter>`.
3. Place the cursor on the line with the USB entries (i.e., `/media/tc/usb1` or `/media/tc/usb2`) and press D two times in a row. This will delete the line.
4. Unplug the USB hard drives from the system (if you have not already done so).
5. Reboot the system. The USB hard drives will not be configured with the system.



4.2 Configuring IP Addresses Without YaST

If you are having trouble using YaST to configure the IP addresses of your NICs, you may use the following commands.

Command	Description
<code>ip addr show dev eth0</code>	Show the configuration of the first NIC (eth0)
<code>ip addr del dev eth0 10.1.2.2</code>	Remove an IP address from the first NIC (eth0) ifconfig
<code>eth0 10.1.2.2 netmask 255.255.255.0</code>	Change the IP address of the first NIC (eth0)

4.3 IPv6 Address Generation

IPv6 address on TC:

The TC's IPv6 addresses are generated during the install of the Yes Certification Test Kit. If you change any IP address on the TC, you must re-install the Yes Certification Test Kit.

IPv6 address on SUT:

The SUT's IPv6 addresses are generated during the NIC test.

Test Kit IPv6 address generation:

The address starts with fc00 or fd00, then the IPv4 network address is converted to hex and added after fc00 or fd00. (example: 10.1.1.0 network becomes IPv6 address fc00:a1:100. Then the MAC address is added to the end (example: 00:0E:0C:64:DE:6C MAC becomes IPv6 address fc00:a1:100::e0c:64:de6c.

4.4 Identifying Vendor Device IDs

The Linux PCI ID Repository (<http://pciids.sourceforge.net/>) can help you identify various vendor and device IDs.

4.5 Downloading SLE Products and Patches

The same account username which is used to access SBS is also used to download SLE products and patches.

To access the download site:



1. Open a web browser to <https://download.suse.com/index.jsp>
2. Click on Login at the top right of the webpage.
3. Enter your username and password, then click GO.
4. Click on the drop-down fields to select OS product criteria, then click on the Submit Query button.
5. Click on the OS product in the bottom search results which best matches your criteria.
6. If this is the OS product which you are looking for then click on the proceed to download (red font) button on the upper right side of the webpage.
7. If prompted, login.
8. If prompted, answer the questionnaire then click submit.
9. Click on the download (red font) button on the right side of the DVD size.
DVD 1 is the OS installation DVD (the binary packages).
DVD2 contains the source code.
10. Follow the in-browser onscreen prompts to save the product OS ISO file onto your computer drive.

To access and download SUSE patches do the following:

1. Open a web browser to www.suse.com
2. Click on Login at the top right of the SUSE webpage.
3. Enter your username and password, then click GO.
4. Click on Support → Downloads → Patches. The patches search page will open.
5. Click on the drop-down fields to select the patch criteria then click on the Search button. The search results will be listed at the bottom. Moussing over a patch will display patch information.
6. Click on the patch in the bottom search results which best matches your criteria.
7. If prompted, login.
8. If prompted, answer the questionnaire then click submit.
9. Click the proceed to download (red font) button on the upper right side of the webpage.
10. Click on the accept (red font) button.
11. Click on the download (red font) button on the right side of the DVD size.
12. Follow the in-browser onscreen prompts to save the patch ISO file onto your computer drive. The Subscriber Portal is available to request software registration codes and download software.

To access the Subscriber Portal do the following:

1. Open the Subscriber Portal: <https://download.suse.com/index.jsps/portal/spc>



2. Login at the Please sign in screen.
3. Click on Professional Resource Suite Electronic – Partner (in the blue square box at the bottom). The choices on this screen will include Download Software, Request Software Registration Codes and more.

To request software registration codes do the following:

1. Click on Request Software Registration Codes.
2. Locate the software to request registration code for.
3. Click on request a code. The code will be sent to you via email. The code will activate the software for 1 year.

To download software do the following:

1. Click Download Software.
2. Locate the software desired to be downloaded, then click on it. The download page for the software will open.
3. Click **proceed to download** (red font) button on the upper right side of the webpage.
4. Click **download** (red font) button on the right side of the DVD size.
5. Follow the in-browser onscreen prompts to save the software ISO file.

4.6 Using 3rd-Party Drivers for YES Certification

1. When 3rd-party drivers are used during Yes Certification testing, the driver must be made available for download and a configuration note must be added to the YES bulletin stating where the driver is being hosted.
2. Recompiling the kernel to add a driver is not permitted for Yes Certification testing.

SUSE SolidDriver Program

- Only Drivers from the SUSE SolidDriver Program will be supported by SUSE.
- Drivers from other sources are permitted for use during Yes Certification testing but will not be supported by SUSE.
- Drivers that are built through the SUSE SolidDriver Program are accompanied by a support agreement. These drivers do not have a tainted kernel issue.

These drivers can be download from: <http://drivers.suse.com/>

For more information about the SUSE SolidDriver Program, please visit:
<http://drivers.suse.com/doc/SolidDriver/>



5 Installation Server Options

5.1 Setting up an Installation Server

Follow SLES product documentation to set up and configure an installation server. For SLE 15, the Installer and Packages media must be contained in a directory named following the System Test Kit ISO naming convention.

E.g. /srv/ftp/SLE-15-SP0-Installer-x86_64-GM-Media1/
 /srv/ftp/SLE-15-SP0-Packages-x86_64-GM-Media1/

ISO (case sensitive) naming convention for the System Test Kit:

<OS_Ven>-<OS_Ver>-<SP>-<Media_Type>-<Arch>-<Build>-<Media#>-<Custom>.iso

Where:

OS_Ven= OS Vendor: Possible values: SLE.

OS_Ver = OS Version: Possible values: 12, or 15.

SP = Service Pack: Possible values: SP0, SP1, SP2, SP3, SP4 or SP5.

Media_Type = Possible SLE 12 values: Server, Desktop, KISO.

Possible SLE 15 values: Installer, Packages, KISO.

For SLE 15, this program will try to add the "Packages" ISO automatically. The "Packages" ISO must follow the same naming convention as all other OS ISO's to be added to the PXE boot.

Arch = Possible SLE 12 values: x86_64, s390x, ppc64, or ia64.

Possible SLE 12 & 15 values: x86_64, aarch64, ppc64le, or s390x.

Build = Possible Values: GM, GMC, BETA1, etc. (Do not use dashes in this field).

Media# = Media number: Possible values: Media1.

Custom = Custom Information (optional): Any string to uniquely identify the ISO. This information can also be used to match an ISO with a custom autoyast file.



Example: A KISO for SLE 12 x86_64 would be named as follows:

```
mv <your_kiso_name><your_build>.iso SLE-12-SP0-KISO-x86_64-<your_build>-Media1-  
<your_kiso_name>.iso
```

5.2 Set up TC as an Install Server With a non FTP Access

1. Open the `/etc/vsftpd.conf` file in a text editor (create if it doesn't exist)
2. Set `anon_root=/home/InstSource`
3. Save the file and exit text editor.
4. Move all 300kB and 400MB files from `/srv/ftp` to `/home/InstSource`
5. Restart vsftpd by typing `systemctl restart vsftpd.service`



6 Configuring SUT to Point to Repositories

Follow SLES product documentation to set up and configure an installation server. For SLE 15, the Installer and Packages media must be contained in a directory named following the System Test Kit ISO naming convention.

E.g.

```
/srv/ftp/SLE-15-SP0-Installer-x86_64-GM-Media1/
```

```
/srv/ftp/SLE-15-SP0-Packages-x86_64-GM-Media1/
```

ISO (case sensitive) naming convention for the System Test Kit:

```
<OS_Ven>-<OS_Ver>-<SP>-<Media_Type>-<Arch>-<Build>-<Media#>-<Custom>.iso
```

Where:

OS_Ven= OS Vendor: Possible values: SLE.

OS_Ver = OS Version: Possible values: 12, or 15.

SP = Service Pack: Possible values: SP0, SP1, SP2, SP3, or SP4.

Media_Type = Possible SLE 12 values: Server, Desktop, KISO.

Possible SLE 15 values: Installer, Packages, KISO.

For SLE 15, this program will try to add the "Packages" ISO automatically. The "Packages" ISO must follow the same naming convention as all other OS ISO's to be added to the PXE boot.

Arch = Possible SLE 12 values: x86_64, s390x, ppc64, or ia64.

Possible SLE 12 & 15 values: x86_64, aarch64, ppc64le, or s390x.

Build = Possible Values: GM, GMC, BETA1, etc. (Do not use dashes in this field).

Media# = Media number: Possible values: Media1.

Custom = Custom Information (optional): Any string to uniquely identify the ISO. This information can also be used to match an ISO with a custom autoyast file.

Example: A KISO for SLE 12 x86_64 would be named as follows:



```
mv <your_kiso_name><your_build>.iso SLE-12-SP0-KISO-x86_64-<your_build>-Media1-  
<your_kiso_name>.iso
```

7 GPU Compute Test Manual Install Instructions

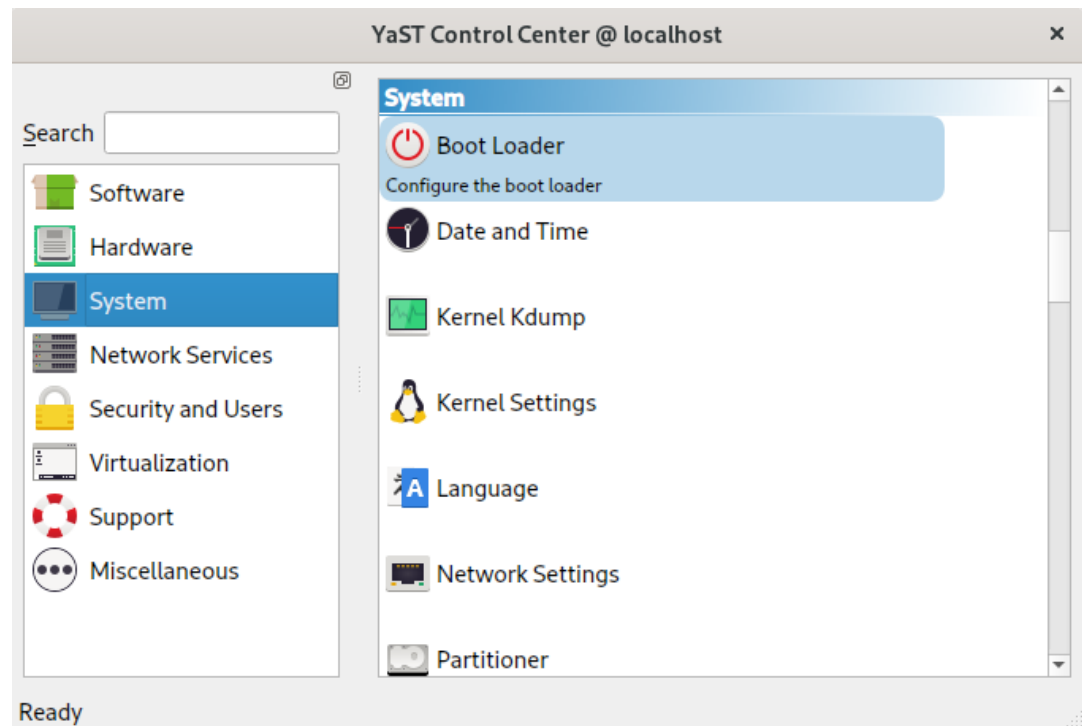
This test is designed to test Accelerator/GPU functionality of video adapters and embedded GPU chipsets. At this time only NVIDIA adapters and GPUs are tested all other GPU technologies will result in a **NOT APPLICABLE** test result. The test will automatically download the GPU tests at the time when the test is started. If you would rather manually download the GPU compute test and install it then follow the instructions below.

1. Make sure the system has a GPU-enabled chipset or video adapter installed in SUT.

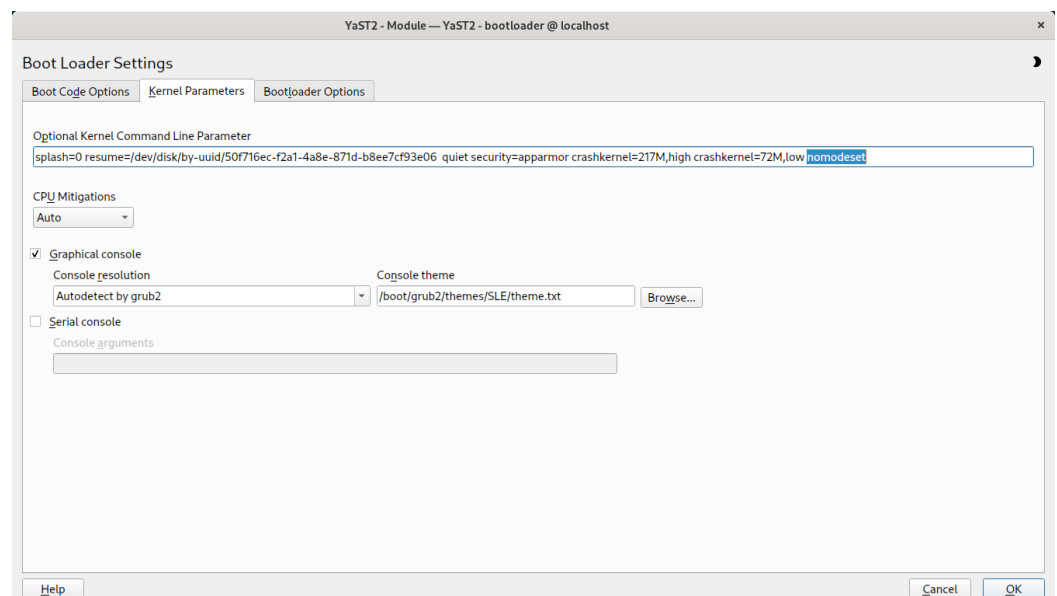
Note: Secure Boot must be disabled in the system BIOS in order for the `nvidia_drm` driver to be active.

2. Set kernel boot parameters
 - a. On the SUT, open a terminal and type “`yast2`” <Enter> to open **YaST Control Center**.
 - b. On the left, choose **System** then **Boot Loader**.





- c. Click the **Kernel Parameters** tab.
- d. Append the **Optional Kernel Command Line Parameter** with "nomodeset" and click the **OK** button.



- e. Close **YaST Control Center**.
- f. Reboot the SUT.



3. Manually download and install the CUDA Toolkit 11.6 or newer for x86_64.
 - a. Open a console window.
 - b. For x86_64, type “wget
https://developer.download.nvidia.com/compute/cuda/11.6.2/local_installers/cuda-repo-sles15-11-6-local-11.6.2_510.47.03-1.x86_64.rpm”
 - c. For x86_64, type “sudo rpm -i cuda-repo-sles15-11-6-local-11.6.2_510.47.03-1.x86_64.rpm”
 - d. For ARM64, type “wget
https://developer.download.nvidia.com/compute/cuda/11.6.2/local_installers/cuda-repo-sles15-11-6-local-11.6.2_510.47.03-1.aarch64.rpm”
 - e. For ARM64, type “sudo rpm -i cuda-repo-sles15-11-6-local-11.6.2_510.47.03-1.aarch64.”
 - f. Type “sudo zypper refresh”
 - g. Type “sudo zypper install -y cuda”
 - h. Reboot system.
4. On the TC, double-click **GPU Compute Test** in the TestConsole project for the SUT.
The test automatically downloads and installs the Cuda NVIDIA drivers needed and launches the test.



8 Document Revision History

Date	Description
August 2024	Added Minicom instructions to section 2.16 Serial Port Fails
June 2024	Removed section 4.5 ARM Certification, kdump not supported on ARM
April 2024	Added section 2.16 Kdump issues on ARM with SL Micro
April 2024	Added Hibernate test failure information to section section 2.10 Hibernate or Sleep Test Issues
March 2024	Added section 2.24 Manual Tests are Failing.
March 2024	Updated for the 9.0 testkit
October 2023	Added section 1.11 Test kit (SCK) updates.
May 2023	Added section 3.10.
February 2023	Updated for SCK 8.8. Removed SLED 15 SP3 hibernate fix instructions.
June 2022	Added information for when the video test fails. Changed page size to 8.5 x 11.
April 2022	Moved 2 sections into this doc: "Configuring SLED 15 SP3 for kdump over the network" and "Hibernate fix for SLE 15 SP3" from other docs. Added the GPU Compute test manual installation instructions.
January 2022	Converted to new corporate branding
May 2021	Updated to the 8.6 version
July 2020	Converted to new corporate branding
June 2020	Added wireless-tools install
May 2020	Updated for SLE 15 SP2



January 2020	Updated copyright
October 2019	Updated NIC Verify. Added NIC Setup and WE Install.
February 2019	Updated in preparation for 8.3 SCK
November 2018	Additional updates during beta and RC test cycles.
September 2018	Updated in preparation for SLES 12 SP4 and the 8.2 SCK.
July 2018	First release of this document.

