SUSE* Linux* Enterprise Server for Intel® Server Board S2600WF, S2600BP and S2600ST Product Families

Installation Guide

Detailed instructions to successfully install SUSE* Linux* Enterprise Server v12 SP1 / SP2 on the Intel® Server Board S2600WF, S2600BP and S2600ST product families.

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Document Revision History

Date	Revision	Changes
July 2017	1.00	First Public Release

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1. Introduction

1.1 How to use this guide

This document details step-by-step instructions to successfully install SUSE* Linux* Enterprise Server v12 SP1 / SP2 when local video graphics features are required (use of the optimized ASPEED* graphics controller and X.Org).

If local video graphics features are not required (for example, in headless or remote management environments), follow the installation procedure only (section 2.1). The driver update is not required in these environments.

Table 1. System Update Package (SUP) firmware prerequisites

Item	Version
BIOS	R0001 or later
Intel® ME	04.00.03.202 or later
FRUSDR	1.00 or later
BMC	1.00 or later
Operating System	SUSE* Linux* Enterprise Server v12 SP1 / SP2

1.2 Assumptions

The following assumptions are made in the procedure.

- The server condition is in a healthy state.
- SUSE* Linux* Enterprise Server v12 SP1 / SP2 is being installed locally.
- The Linux/FreeBSD/Solaris driver package v1.03 is downloaded from http://upload.aspeedtech.com/BIOS/v103_linux_freebsd_solaris.zip and extracted to the following locations.
    - The `Linux DRM` folder (AST DRM driver) is on a removable media (i.e. USB drive)
    - The `Linux` folder (AST X.Org driver) is on a removable media

2. Step-by-Step Procedure

2.1 Installing SUSE* Linux* Enterprise Server v12 SP1 / SP2 (SLES v12 SP1 / SP2)

2.1.1 EFI boot mode

Use the following procedure to install SLES v12 SP1 / SP2 in EFI boot mode.

1. Boot from the SLES v12 SP1 / SP2 installation source / media.
2. Press **<E>** to edit the **Installation** boot menu as shown in Figure 1.

Figure 1. Press <E> to edit the Installation boot menu

3. Append the parameter `nomodeset` or `modprobe.blacklist=ast` at the end of the `linuxefi` line as shown in Figure 2. I am using `modprobe.blacklist=ast` for this demonstration

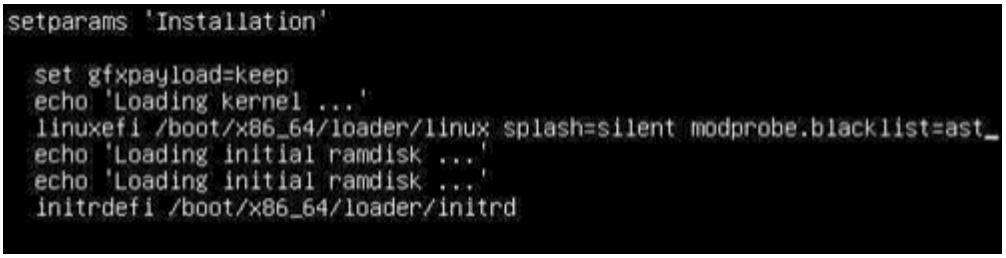

Figure 2. Append `modprobe.blacklist=ast`

4. Press **<Ctrl+X>** to start the installer.
5. Complete the installation as usual. When the installation completes, reboot the server.

2.1.2 Legacy boot mode

Use the following procedure to install SLES v12 SP1 / SP2 in Legacy boot mode.

1. Boot from the SLES v12 SP1 / SP2 installation source / media.
2. Append the parameter `modprobe.blacklist=ast` in the **Boot Options** line at the bottom of the screen as shown in Figure 3.

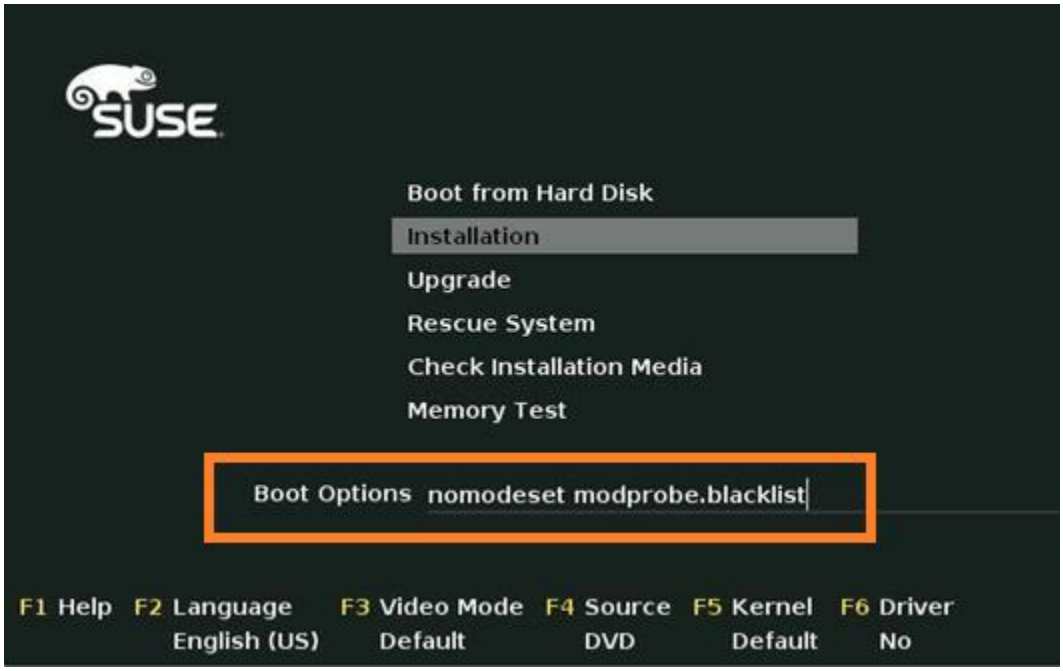

Figure 3. Append `modprobe.blacklist=ast`

3. Press **<Enter>** to start the installer.
4. Complete the installation as usual. When the installation completes, reboot the server.

2.2 Updating drivers

Depending on the boot mode, follow these steps to update the AST and X.Org drivers.

1. Edit the GRUB menu option by pressing **<E>**.

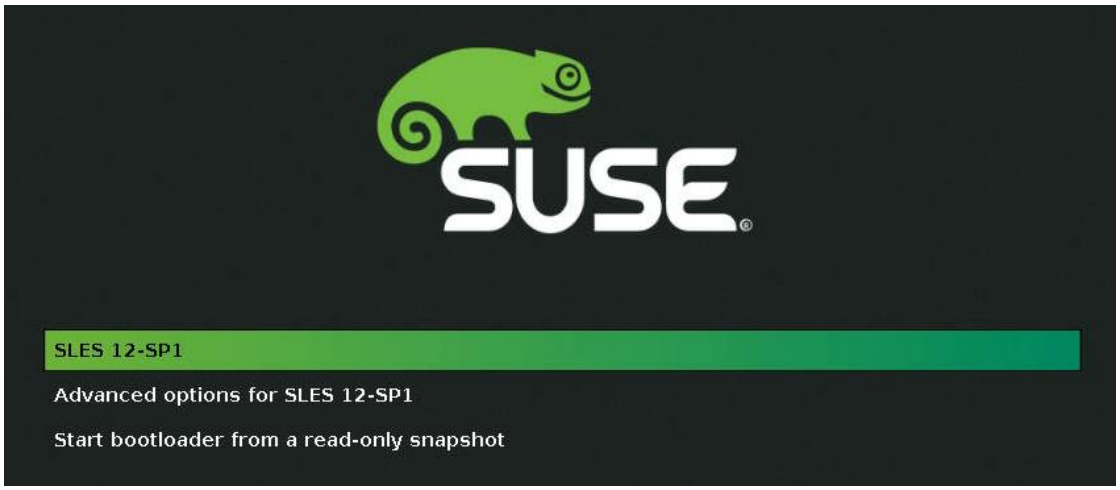

Figure 4. Press <E> to edit selected GRUB menu option

2. Append a '3' (to boot the system in runlevel 3 with only command line environment) at the end of the line beginning with `linuxefi` in EFI boot mode or `linux` in Legacy boot mode. Confirm the `modprobe.blacklist=ast` is present (if you used `nomodeset`, then confirm its presence too). Then press **<Ctrl+X>** to boot the operating system.

Figure 5. Edit kernel module parameters

3. Login as root. Mount the removable media and copy the directories **Linux DRM** and **Linux** to `/root/`. Unmount the removable media.
4. **(Skip this step if you are running SLES* v12 SP1).** Change directories to "`Linux\DRM`" and extract the tarball located there with the command `tar zxf lxdrm.tar.gz`. After extraction is complete, execute the command `./auto-update.sh` to perform a kernel module update for the AST DRM driver.
5. (Optional) To update the XORG driver, depending on your Service Pack, issue the appropriate command:

   SLES* v12 SP1

   ```
   cd Linux
   tar zxf lxdrv.tar.gz
   cd x86_64/xorg76_1
   ./update.sh
   ```

   SLES* v12 SP2

   ```
   cd Linux
   tar zxf lxdrv.tar.gz
   cd x86_64/xorg78_15
   ./update.sh
   ```

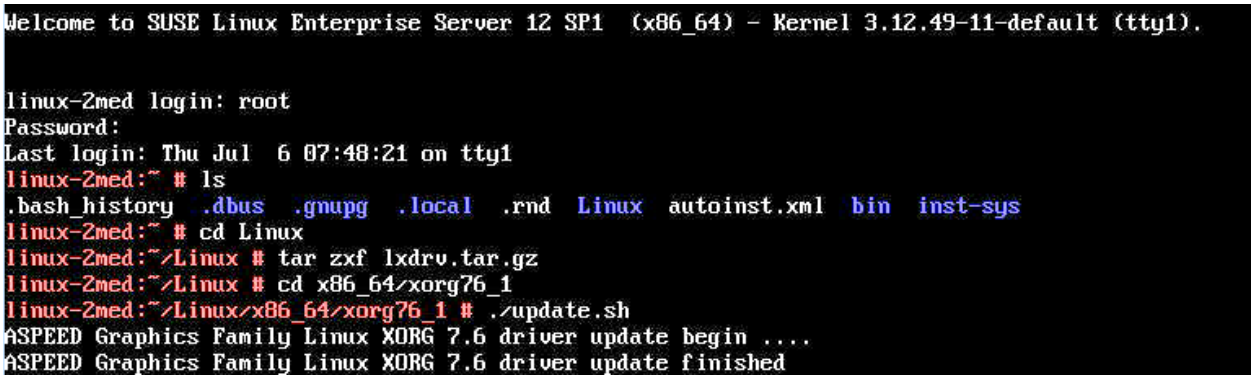

Figure 6. Update AST X.Org driver

6. Issue the following two commands to change configuration file and update the GRUB. (It is possible to use a text editor instead of the `sed` command to remove the `nomodeset` or the `modprobe.blacklist=ast` from the `/etc/default/grub` file).

```
sed -i -e 's/nomodeset modprobe.blacklist=ast//' /etc/default/grub
grub2-mkconfig > /boot/grub2/grub.cfg
```

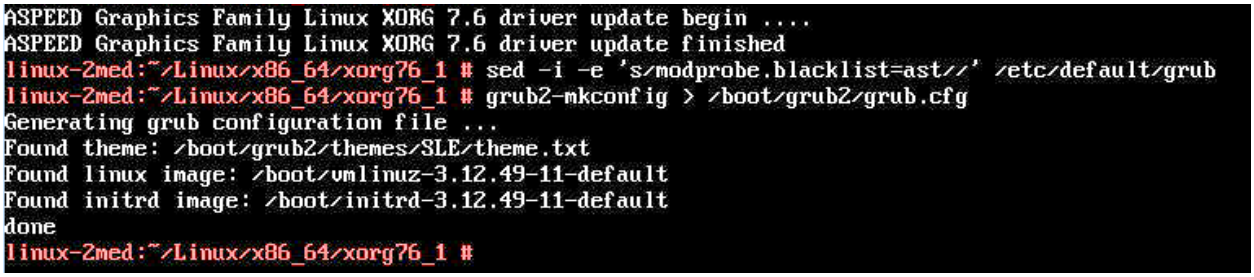

Figure 7. Change GRUB configuration file

7. Reboot the server. The boot up continues to the graphical interface automatically. Further GRUB file editing is not required.

The kernel module updates for AST DRM and AST X.Org (optional) are complete.

Appendix A. Glossary

Term	Definition
AST	ASpeed Technology
BIOS	Basic Input/Output System
BMC	Baseboard Management Controller
DRM	Direct Rendering Manager
EFI	Extensible Firmware Interface
FRUSDR	Field Replaceable Unit/Sensor Data Record
GRUB	Grand Unified Bootloader
Intel® ME	Intel® Management Engine
SLES*	SUSE* Linux* Enterprise Server
SP#	Service Pack number