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

Installation Guide

Detailed instructions to successfully install Red Hat* Enterprise Linux* (RHEL*) v7.3 on the Intel® Server Board S2600WF, S2600BP and S2600ST product families.

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Document Revision History

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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 Red Hat* Enterprise Linux* (RHEL*) v7.3 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	RHEL* v7.3 kernel 3.10.0-51.4

1.2 Assumptions

The following are made for the procedure to succeed.

- The server condition is in a healthy state.
- RHEL* v7.3 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 the extracted folders stored at the root of a removable media (i.e. USB drive).
        - The `Linux DRM` folder (AST DRM driver) is used in this guide.
        - The `Linux` folder (AST X.Org driver) is also used in this guide.

2. Step-by-Step Procedure

2.1 Installing RHEL* v7.3

2.1.1 EFI boot mode

Use the following procedure to install RHEL* v7.3 in EFI boot mode.

1. Boot from the RHEL* v7.3 installation source / media.
2. Press **<E>** to edit the **Install Red Hat Enterprise Linux 7.3** installation option as shown in Figure 1.

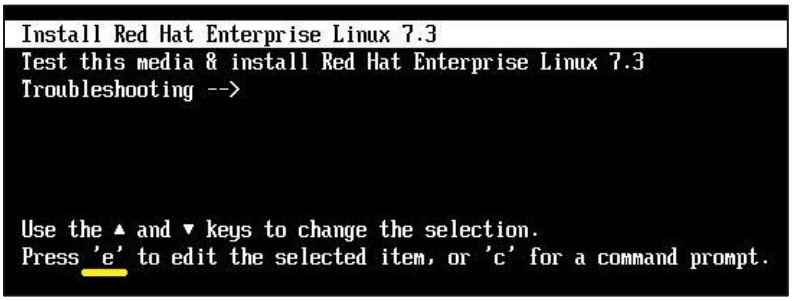

Figure 1. Press <E> to edit the selected GRUB menu option

3. Append the parameter `modprobe.blacklist=ast` before the `quiet` parameter at the end of the `linuxefi` line as shown in Figure 2.

Before

```
setparams 'Install Red Hat Enterprise Linux 7.3'

        linuxefi /images/pxeboot/vmlinuz inst.stage2=hd:LABEL=RHEL-7.3\x20Server.x86_64 quiet
        initrdefi /images/pxeboot/initrd.img
```

After

```
setparams 'Install Red Hat Enterprise Linux 7.3'

        linuxefi /images/pxeboot/vmlinuz inst.stage2=hd:LABEL=RHEL-7.3\x20Server.x86_64 \
        modprobe.blacklist=ast quiet
        initrdefi /images/pxeboot/initrd.img
```

Figure 2. Append `modprobe.blacklist=ast`

Note the '\' (backslash) symbol at the end of the `linuxefi` line is a continuation marker so that Linux interprets the next line of text as part of the first line. While writing `modprobe.blacklist=ast` before the `quiet` parameter, it will automatically add a '\' when the line is full of characters, you do not need to type it.

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 RHEL* v7.3 in Legacy boot mode.

1. Boot from the RHEL* v7.3 installation source / media.
2. Use the arrow keys to select **Install Red Hat Enterprise Linux 7.3** and press **<Tab>** to edit options.
3. Append `modprobe.blacklist=ast` to the end of the options line.
4. Press **<Enter>** to start the installer.
5. 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>**.

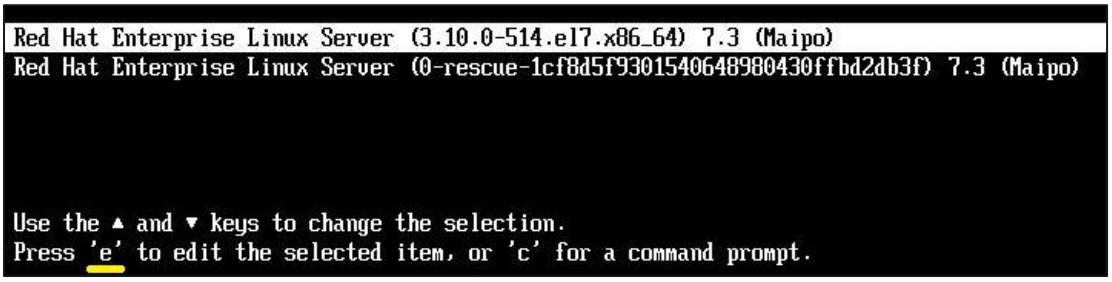

Figure 3. Press <E> to edit selected GRUB menu option

2. Append a '2' (to boot the system in runlevel 2 with only command line environment) at the end of the line beginning with `linuxefi` in EFI boot mode or `linux16` in legacy boot mode. Then press **<Ctrl+X>** to boot the operating system.

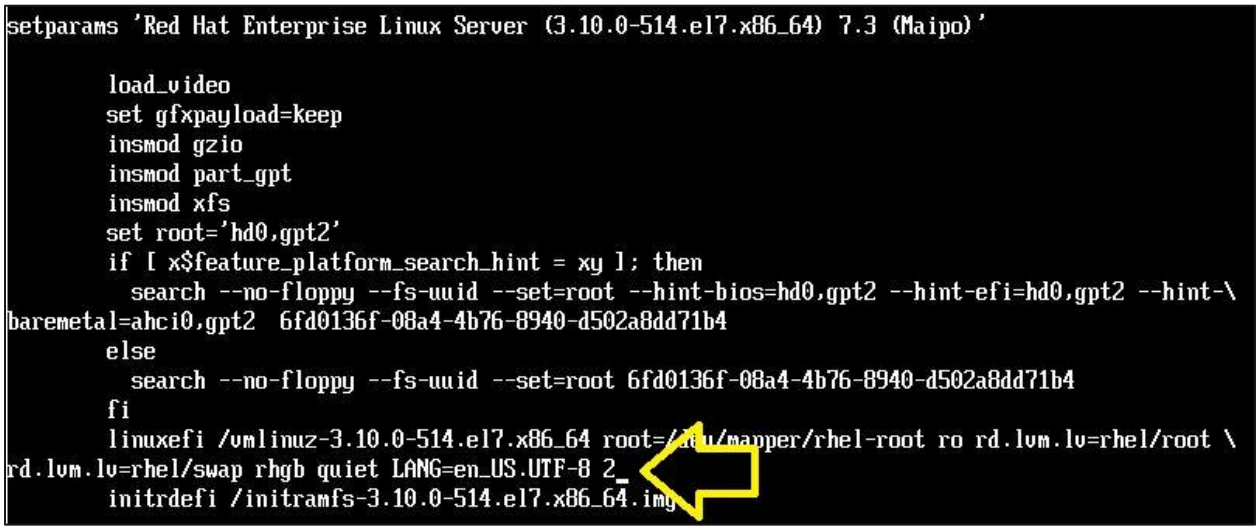

Figure 4. Edit kernel module parameters

3. Login as root. Mount the removable media and copy the directories **Linux DRM** and **Linux** to `/root/`.
4. Unmount the removable media. 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.

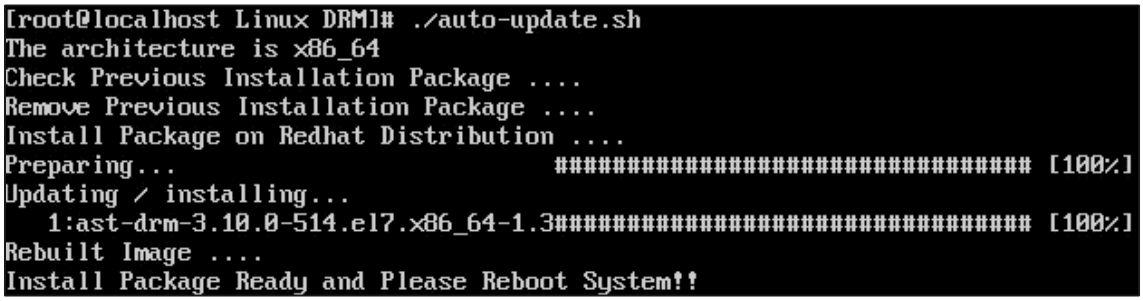

Figure 5. Update AST DRM driver

5. (Optional. If graphics mode is not required, skip this step. If graphical environment is desired but not installed, install it before continuing with this step.) Change to the **Linux** directory in the copied driver

directory. Unpack the tarball with the command `tar zxf lxdrv.tar.gz`. If the graphical environment has already been installed, but not launched, take the following steps:

a. Issue the command `startx` to start the graphical interface desktop.
b. Click the down arrow next to the power icon in the upper corner of the screen and click the right arrow next to **root**.
c. Click **Log Out** and confirm in the pop-up dialog.
d. Execute the command `./auto-update.sh` to perform a kernel module update for the AST X.Org driver.

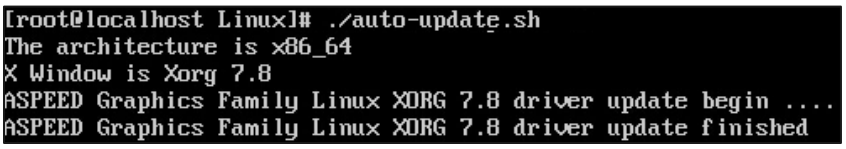

Figure 6. Update AST X.Org driver

6. 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
RHEL*	Red Hat* Enterprise Linux*