



# **Red Hat\* Enterprise Linux\* for Intel® Server Boards S2600WFQ, S2600BPQ and S2600STQ**

## ***Intel® Quick Assist Technology Installation Guide***

Detailed instructions to successfully install the Intel® Quick Assist Technology driver v1.0.x for Red Hat\* Enterprise Linux\* (RHEL\*) v7.3 on the Intel® Server Boards S2600WFQ, S2600BPQ and S2600STQ product families (Intel® C62X chipset).

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## ***Document Revision History***

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# 1. Introduction

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## 1.1 How to use this guide

This document details step-by-step instructions to successfully install the Intel® Quick Assist Technology (QAT) updated driver v1.0.x for Red Hat\* Enterprise Linux\* (RHEL\*) v7.3.

**Table 1. System Update Package (SUP) firmware prerequisites**

Item	Version
BIOS	R0004 or later
Intel® ME	04.00.03.219 or later
FRUSDR	1.04 or later for S2600BP and S2600WF / 1.02 or later for S2600ST
BMC	1.04 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 Intel® QuickAssist Technology driver v1.0.x (e.g., `QAT1.7.Upstream.L.1.0.3_42.tar.gz` which is used in this guide) has been downloaded from [HERE](#) and the tarball file stored at the root of a removable media (e.g., USB drive).

## 2. Step-by-Step Procedure

### 2.1 Installing RHEL\* v7.3

Note the `<ast>` driver is also being blacklisted in the below steps. For details on updating that driver, please refer to the Technical Advisory TA-1125, located [HERE](#).

#### 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.

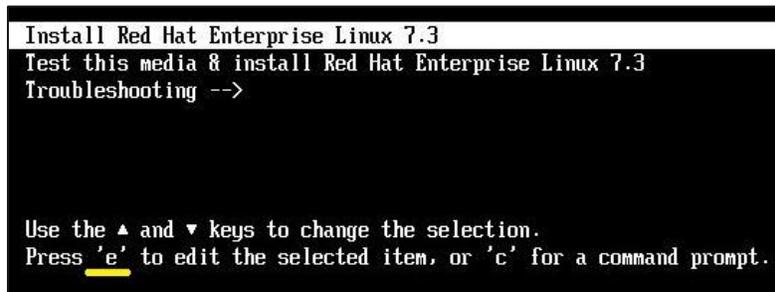


Figure 1. Press `<E>` to edit the selected GRUB menu option

3. Append the parameter `modprobe.blacklist=ast,qat_c62x` before the `quiet` parameter at the end of the `linuxefi` line as shown in Figure 2.

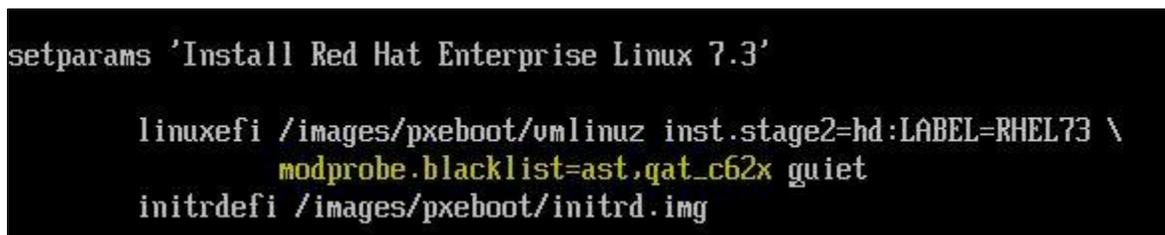


Figure 2. Append `modprobe.blacklist=ast,qat_c62x`

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,qat_c62x` 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 the `<Tab>` key to edit the boot options.
3. Append `modprobe.blacklist=ast,qat_c62x` to the end of the options line.



Figure 3. Installing RHEL\* v7.3 in Legacy Boot mode

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

## 2.2 Updating Drivers

Before continuing with this procedure and, if local video graphics features are required (use of the optimized ASPEED\* graphics controller and X.Org), please make sure you have completed the steps described in the Red Hat\* Enterprise Linux\* Installation Guide to update the BMC video driver as described in TA-1125 [HERE](#).

1. After completing the installation, reboot the server. Press **<E>** to edit the GRUB menu option.

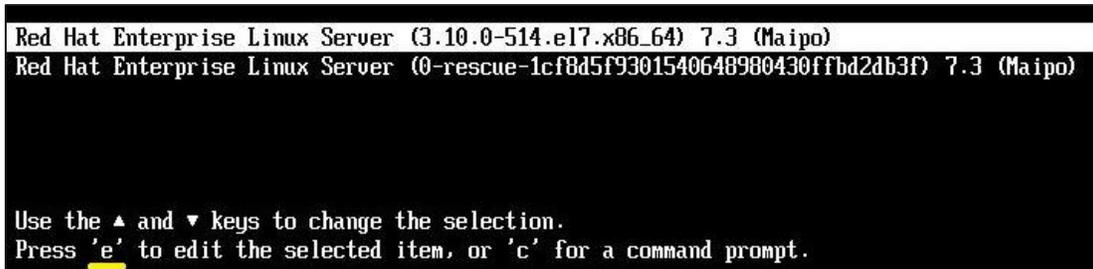


Figure 4. Press **<E>** to edit selected GRUB menu option

2. Append the parameter `modprobe.blacklist=qat_c62x` (if the AST driver update has not yet been completed, append instead the parameter `modprobe.blacklist=ast, qat_c62x`) 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.
3. Login as root.
4. If it has not yet been completed, please perform the steps required to update the AST video driver at this time.
5. Mount the removable media and copy the driver to `/root/QAT/`.
6. Unmount the removable media.
7. Change directories to "QAT" and extract the tarball located there with the command:

```
tar xzf QAT1.7.Upstream.L.1.0.3_42.tar.gz
```

8. [Optional] You can set up a local **yum** environment by creating a local repository to install all the dependencies. Please follow the instructions for RHEL\* v7.x [HERE](#).
9. After extraction is complete, ensure the following dependencies are present as shown in Figure 5.

**pciutils, zlib-devel, boost-devel, libudev-devel, kernel-devel, openssl-devel, gcc and gcc-c++** with the command:

```
yum -y install pciutils zlib-devel boost-devel libudev-devel kernel-devel \
openssl-devel gcc gcc-c++
```

```
[root@apollo-bpg ~]# yum -y install pciutils zlib-devel boost-devel libudev-devel kernel-devel gcc gcc-c++ openssl-devel
Loaded plugins: product-id, search-disabled-repos, subscription-manager
Package pciutils-3.5.1-1.e17.x86_64 already installed and latest version
Package zlib-devel-1.2.7-17.e17.x86_64 already installed and latest version
Package boost-devel-1.53.0-26.e17.x86_64 already installed and latest version
Package systemd-devel-219-30.e17.x86_64 already installed and latest version
Package kernel-devel-3.10.0-514.e17.x86_64 already installed and latest version
Package gcc-4.8.5-11.e17.x86_64 already installed and latest version
Package gcc-c++-4.8.5-11.e17.x86_64 already installed and latest version
Package 1:openssl-devel-1.0.1e-60.e17.x86_64 already installed and latest version
Nothing to do
```

**Figure 5. Dependencies check**

10. Issue the command:

```
./configure
```

11. Issue the command:

```
make && make install
```

```
There is 2 QAT acceleration device(s) in the system:
qat_dev0 - type: c6xx, inst_id: 0, bsf: 3d:00.0, #accel: 5 #engines: 10 state: up
qat_dev1 - type: c6xx, inst_id: 1, bsf: 3f:00.0, #accel: 5 #engines: 10 state: up
```

**Figure 6. QAT Acceleration Devices are "up"**

12. Reload the driver by running the commands:

```
modprobe -r qat_c62x && modprobe qat_c62x
```

The Intel® QAT driver update is now complete.

Additional Intel® QAT resources can be found [HERE](#).

## ***Appendix A. Glossary***

<b>Term</b>	<b>Definition</b>
<b>BMC</b>	Baseboard Management Controller
<b>EFI</b>	Extensible Firmware Interface
<b>FRUSDR</b>	Field Replaceable Unit/Sensor Data Record
<b>GRUB</b>	Grand Unified Bootloader
<b>Intel® ME</b>	Intel® Management Engine
<b>RHEL*</b>	Red Hat* Enterprise Linux*
<b>QAT</b>	Intel® Quick Assist Technology