Installation Guide for Oracle Linux

Logical partitioning manager OS Installation Guide with UEK

FastFind Links

Product Version
Getting Help
Contents
Contents

Preface ................................................................................................................................. V

   Intended Audience ........................................................................................................ vi
   Product Version ........................................................................................................... vi
   Release Notes ............................................................................................................. vi
   Release Notes ............................................................................................................ vii
   Getting Help .............................................................................................................. viii
   Comments ................................................................................................................ viii

Scope ............................................................................................................................... 1-1

   Supported Operating Systems ................................................................................... 1-2
   Supported server hardware and LPAR manager firmware ......................................... 1-2

Installation and Setup .................................................................................................... 2-1

   General Information .................................................................................................. 2-2
       Related documentation .......................................................................................... 2-2
   Notes ......................................................................................................................... 2-3
       Notes on the setup ................................................................................................ 2-3
       Notes on Concurrent Maintenance mode ............................................................ 2-3
   Setting up Oracle Linux 7.1 ...................................................................................... 2-4
       Setup in advance .................................................................................................... 2-4
           Download hfcldd driver file ......................................................................... 2-4
           Write hfcldd driver media ............................................................................ 2-4
           Terminal software setting .............................................................................. 2-4
       LPAR manager settings ....................................................................................... 2-4
       LPAR configuration .............................................................................................. 2-4
   Installing OS ............................................................................................................. 2-5
       Configure environment for setup ........................................................................ 2-5
       Setting the EFI driver ......................................................................................... 2-5
       Creating boot options ......................................................................................... 2-5
Contents

Changing boot orders ................................................................. 2-5
Installing OS ......................................................................... 2-6
OS Option settings .................................................................. 2-8
  Setting runlevel .................................................................. 2-8
  Customizing /etc/default/grub ............................................. 2-8
  Generating grub configuration ............................................. 2-8
  Customizing /etc/sysctl.conf .............................................. 2-8
  multipath Messages Relating to zram .................................. 2-9
  Network Teaming ............................................................... 2-9
  Disabling TCP Checksum Offload function ......................... 2-9
  Disabling EDAC ................................................................. 2-10
OS patches ........................................................................... 2-10

Support .............................................................................. 3-1
  Inquiry ............................................................................ 3-2

Acronyms and Abbreviations .................................................. A-1
Preface

This document describes how to install and setup Oracle Linux 7 on Compute Blade.

This preface includes the following information:

☐ Intended Audience
☐ Product Version
☐ Release Notes
☐ Document Conventions
☐ Getting Help
☐ Comments

Notice: The use of Hitachi Compute Blade servers and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems.
**Intended Audience**

This document is intended for anyone who needs to install and setup Oracle Linux 7 on Compute Blade.

**Product Version**

This document revision applies to Hitachi Compute Blade servers.

**Release Notes**

Release notes contain requirements and more recent product information that may not be fully described in this manual. Be sure to review the release notes before installation.
**Document Conventions**

This document uses the following typographic conventions:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold</strong></td>
<td>Indicates text on a window, other than the window title, including menus, menu options, fields, and labels. Example: Click <strong>OK</strong>.</td>
</tr>
</tbody>
</table>
| *Italic*   | Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: `copy source-file target-file`

**Note:** Angled brackets (`< >`) are also used to indicate variables.

| **screen/code** | Indicates text that is displayed on screen or entered by the user. Example: `# pairdisplay -g oradb`
| **< > angled brackets** | Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: `# pairdisplay -g <group>`

**Note:** Italic font is also used to indicate variables.

| **[ ] square brackets** | Indicates optional values. Example: `[ a | b ]` indicates that you can choose a, b, or nothing. |
| **( ) braces** | Indicates required or expected values. Example: `{ a | b }` indicates that you must choose either a or b. |
| **| vertical bar** | Indicates that you have a choice between two or more options or arguments.

Examples:

- `[ a | b ]` indicates that you can choose a, b, or nothing.
- `{ a | b }` indicates that you must choose either a or b.

| **underline** | Indicates the default value. Example: `[ a | b ]` |

This document uses the following icons to draw attention to information:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="warning.png" alt="WARNING Icon" /></td>
<td>WARNING</td>
<td>This indicates the presence of a potential risk that might cause death or severe injury.</td>
</tr>
<tr>
<td><img src="caution.png" alt="CAUTION Icon" /></td>
<td>CAUTION</td>
<td>This indicates the presence of a potential risk that might cause relatively mild or moderate injury.</td>
</tr>
<tr>
<td><img src="notice.png" alt="NOTICE Icon" /></td>
<td>NOTICE</td>
<td>This indicates the presence of a potential risk that might cause severe damage to the equipment and/or damage to surrounding properties.</td>
</tr>
<tr>
<td><img src="note.png" alt="Note Icon" /></td>
<td>Note</td>
<td>This indicates notes not directly related to injury or severe damage to equipment.</td>
</tr>
<tr>
<td><img src="tip.png" alt="Tip Icon" /></td>
<td>Tip</td>
<td>This indicates advice on how to make the best use of the equipment.</td>
</tr>
</tbody>
</table>
Getting Help

If you purchased this product from an authorized HDS reseller, contact that reseller for support. For the name of your nearest HDS authorized reseller, refer to the HDS support web site for locations and contact information. To contact the Hitachi Data Systems Support Center, please visit the HDS website for current telephone numbers and other contact information: http://support.hds.com.

Before calling the Hitachi Data Systems Support Center, please provide as much information about the problem as possible, including:

- The circumstances surrounding the error or failure.
- The exact content of any error message(s) displayed on the host system(s).

Comments

Please send us your comments on this document: doc.comments@hds.com. Include the document title, number, and revision, and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Data Systems Corporation. Thank you!
Scope

This chapter describes the scope and the limitations when installing Operating Systems described in this document on Hitachi Compute Blade servers.

- Supported Operating Systems
- Supported server hardware and LPAR manager firmware

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, INCLUDING BUT NOT LIMITED TO, THE WARRANTY FOR MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. YOU SHALL BEAR THE ENTIRE LIABILITY AND COST FOR ANY PROBLEM OR TROUBLE RELATING TO THIS PUBLICATION.
Supported Operating Systems

The combination of the following OS and kernel is supported.

- Oracle Linux 7.1
- Oracle Unbreakable Enterprise Kernel 3

Supported server hardware and LPAR manager firmware

The following kinds of server hardware and the following versions of LPAR manager firmware are supported. Operate an Oracle Unbreakable Enterprise Kernel on any combination of the following kinds of server hardware and the following versions of LPAR manager firmware.

- Server hardware
  - Hitachi Compute Blade 500 Server Blade 520H B2

- LPAR manager firmware
  - LPAR manager firmware version: 02-27 or higher
This chapter describes how to install and set up Oracle Linux 7 on Hitachi Compute Blade.

- General Information
- Notes
- Setting up Oracle Linux 7.1
General Information

Related documentation

This document refers to the following manuals for the settings of the logical partitioning manager, installation of the target OS or driver, etc.
- Hitachi Compute Blade 500 Series Logical partitioning manager User’s Guide
- HITACHI Gigabit Fibre Channel Adapter INSTALLATION GUIDE (Oracle Linux driver Edition)
Notes

Notes on the setup

- The following table shows the resource requirements on an LPAR. Adjust resources to assign to an LPAR for the system environment.

<table>
<thead>
<tr>
<th>Setting item</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>2 or more</td>
</tr>
<tr>
<td>Memory</td>
<td>2.0 GB or more</td>
</tr>
<tr>
<td>Disk</td>
<td>Partition to install the OS: 40 GB or larger</td>
</tr>
</tbody>
</table>

Notes on Concurrent Maintenance mode

- You cannot perform the Migration function in Concurrent Maintenance mode through HVM Navigator to the LPAR with Oracle Linux 7.1 running on it.
Setting up Oracle Linux 7.1
Outline procedures of setting up the OS are as follows;
- Setup in advance
- LPAR manager settings
- LPAR configuration
- Installing OS
- OS option settings
- OS patches

Setup in advance

Download hfcldd driver file
Please download the image file “dd.iso” in the following directory of CD-ROM media included this product or from Hitachi web site.

Write hfcldd driver media
When you insert a CD/DVD drive with the medium including "dd.iso" into the front USB and then install the hfcldd driver on an LPAR, write "dd.iso" to a CD-R with the appropriate writing software. However, when you mount "dd.iso" with a remote console, it's necessary that you write "dd.iso" to a CD-R.

Terminal software setting
Prepare Terminal software for LPAR manager Boot.
See Hitachi Compute Blade 500 Series Logical partitioning manager User’s Guide > Setup of LPAR manager > Setup of Terminal Software. If you have already Terminal software setting, go on to the next step LPAR manager settings.

LPAR manager settings
See Hitachi Compute Blade 500 Series Logical partitioning manager User’s Guide > Setup of LPAR manager > LPAR manager Settings. If you have already LPAR manager settings, go on to the next step LPAR configuration.

LPAR configuration
See Hitachi Compute Blade 500 Series Logical partitioning manager User’s Guide > Setup of LPAR manager > Creating LPAR. If you have already LPAR configuration, go on to the next step OS setup.
Installing OS

**Configure environment for setup**

Perform “Remote CD/DVD” from the remote console, and have the server blade recognize the DVD image file for installation to start the LPAR.

Or

Connect a USB CD/DVD drive direct to the server blade, and insert the installation DVD to the CD/DVD drive to start the LPAR.

**Setting the EFI driver**

See Hitachi Compute Blade 500 Series Logical partitioning manager User’s Guide > Setup of LPAR manager > Boot order setting > **Boot setting**.

**Creating boot options**

See Hitachi Compute Blade 500 Series Logical partitioning manager User’s Guide > Setup of LPAR manager > Boot order setting > **Creating boot option**.

**Changing boot orders**

See Hitachi Compute Blade 500 Series Logical partitioning manager User’s Guide > Setup of LPAR manager > Boot order setting > **Changing Boot order**.
Installing OS

Installing Oracle Linux 7.1

1. Select “Install Oracle Linux 7.1” and then push the “tab” key.

2. Input “inst.dd” at the end and then push the “Enter” key.

3. When the message “Driver disk device selection” is displayed, remove the installation DVD, and then insert an appropriate driver CD into the CD/DVD drive.

4. Type “r” and then push the “Enter” key.
   Type “1” and then push the “Enter” key.
   Type “1” and then push the “Enter” key.
   Type “c” and then push the “Enter” key.

5. Insert the installation DVD into the CD/DVD drive again. Next, type “r” and then push the “Enter” key. After that, type “c” and then push “Enter” key.

Perform operations according to messages to follow.
**Installing HBA Driver for UEK**

See HITACHI Gigabit Fibre Channel Adapter INSTALLATION GUIDE (Oracle Linux driver Edition) > Install driver on Linux > Driver installation for UEK > **Installing OEL7 driver**.
OS Option settings

Start the Terminal and then operate the following settings.

Setting runlevel

Execute `systemctl set-default multi-user.target` to change the runlevel from 5 to 3.

Customizing `/etc/default/grub`

Edit `/etc/default/grub` as follows.

1. Delete the following settings from the row `GRUB_CMDLINE_LINUX`.
   - `quiet rhgb`

2. Add the following settings to the row `GRUB_CMDLINE_LINUX`.
   - `crashkernel=512M@48M mce=0 no_timer_check pci=noaer vga=792 console=tt0,115200`

Note that you are required to set arbitrary values for the parameters that follows “crashkernel=“.

Generating grub configuration

Execute the following command to reflect the settings in `/etc/default/grub`.

```
grub2-mkconfig -o /boot/grub2/grub.cfg
```

Customizing `/etc/sysctl.conf`

Add the following settings to `/etc/sysctl.conf`.

```
kernel.sysrq = 1
kernel.unknown_nmi_panic = 0
kernel.panic_on_unrecovered_nmi = 1
kernel.panic_on_io_nmi = 1
kernel printk = 3 4 1 7
kernel.nmi_watchdog = 0
```
**multipartpath Messages Relating to zram**

Running the multipath -ll command under UEK R3 produces messages such as the following:

```
zram0: No fc_host device for 'host'
zram0: No fc_host device for 'host'
zram0: No fc_remote_port device for 'rport--1-1-0'
```

You can ignore these messages as there is no effect on multipath functionality. You can prevent the messages from occurring by blacklisting the zram device in `/etc/multipath.conf`, for example:

```
blacklist {
    devnode "^(ram|zram|raw|loop|fd|md|dm-[sr|scd|st])[0-9]*"
}
```

**Network Teaming**

Network teaming is not currently supported for use with UEK R3. The workaround is to use bonding instead. Each bonding device must be set to any of the following modes.

- active-backup
- balance-tlb
- balance-alb

**Disabling TCP Checksum Offload function**

Create the following file. At that time, you make sure to set its permissions to 644 and to set the owner of the file to a root user.

```
/etc/udev/rules.d/80-hitachi-net-dev.rules
```

Next, add the following settings to the file.

```
ACTION="add", SUBSYSTEM="net", DRIVERS="igb",
RUN="/usr/sbin/ethtool -K %k rx off"
```

Finally, reboot the OS.
Disabling EDAC

Create the following file.

/etc/modprobe.d/disable_edac.conf

Next, add the following settings to the file.

install *_edac /bin/true
install edac_* /bin/true

Finally, reboot the OS.

OS patches

Please apply patches, fixes, and updates on an OS at your own risk though the OS can run normally with no patches, fixes, and updates. You can download the latest binaries from the Oracle download site.
This chapter describes the support inquiries.

- Inquiry
**Inquiry**

- Hitachi Compute Blade servers are certified for each OS version by Operating System distributor. Any inquiries related to OS or the outbox drivers provided from I/O device vendor should be sent to OS distributor or the I/O device vendor based on the customer’s Support Agreement with them.

- The I/O options which are explained in this installation guide may not be supported in combination with the servers and the OS. Please contact sales representative or contracted support representative for the I/O options on Compute Blade servers.
## Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSMI</td>
<td>Bureau of Standards, Metrology and Inspection</td>
</tr>
<tr>
<td>CD</td>
<td>Compact Disk</td>
</tr>
<tr>
<td>CPU</td>
<td>Central Processing Unit</td>
</tr>
<tr>
<td>CRU</td>
<td>Customer Replaceable Units</td>
</tr>
<tr>
<td>DBS</td>
<td>Deep Brain Stimulation</td>
</tr>
<tr>
<td>DCB</td>
<td>Direct Copper Bonding</td>
</tr>
<tr>
<td>DIMM</td>
<td>Dual Inline Memory Module</td>
</tr>
<tr>
<td>DVD</td>
<td>Digital Versatile/Video Disk</td>
</tr>
<tr>
<td>EFI</td>
<td>Extensible Firmware Interface</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>FC</td>
<td>Fibre Channel</td>
</tr>
<tr>
<td>FCC</td>
<td>Federal Communications Commission</td>
</tr>
<tr>
<td>FD</td>
<td>Floppy Disk</td>
</tr>
<tr>
<td>FTP</td>
<td>File Transfer Protocol</td>
</tr>
<tr>
<td>HDD</td>
<td>Hard Disk Drive</td>
</tr>
<tr>
<td>ID</td>
<td>Identity Document</td>
</tr>
<tr>
<td>IO</td>
<td>Input/Output</td>
</tr>
<tr>
<td>IP</td>
<td>Internet protocol</td>
</tr>
<tr>
<td>iSCSI</td>
<td>Internet Small Computer System Interface</td>
</tr>
<tr>
<td>KVM</td>
<td>Keyboard, Video and Mouse</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network</td>
</tr>
<tr>
<td>LED</td>
<td>Light Emitting Diode</td>
</tr>
<tr>
<td>OS</td>
<td>Operating System</td>
</tr>
<tr>
<td>PC</td>
<td>Personal computer</td>
</tr>
<tr>
<td>PCI</td>
<td>Peripheral Component Interconnect</td>
</tr>
<tr>
<td>SAN</td>
<td>Storage Area Network</td>
</tr>
<tr>
<td>SAS</td>
<td>Serial Attached SCSI</td>
</tr>
<tr>
<td>SNMP</td>
<td>Simple Network Management Protocol</td>
</tr>
<tr>
<td>SSD</td>
<td>Solid State Drive</td>
</tr>
<tr>
<td>SVP</td>
<td>SerVice Processor</td>
</tr>
<tr>
<td>USB</td>
<td>Universal Serial Bus</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>VLAN</td>
<td>Virtual LAN</td>
</tr>
<tr>
<td>WEEE</td>
<td>Waste Electrical and Electronic Equipment</td>
</tr>
<tr>
<td>WWN</td>
<td>World Wide Name</td>
</tr>
</tbody>
</table>
Hitachi Data Systems

Corporate Headquarters
2845 Lafayette Street
Santa Clara, California 95050-2639
U.S.A.
www.hds.com

Regional Contact Information

Americas
+1 408 970 1000
info@hds.com

Europe, Middle East, and Africa
+44 (0) 1753 618000
info.emea@hds.com

Asia Pacific
+852 3189 7900
hds.marketing.apac@hds.com