

Installing Red Hat Enterprise Linux on IBM Power System IC922 (9183-22X) servers with virtual media

Quick Start Guide for installing Linux® on IBM® Power® System IC922 (9183-22X) server.

Version 1.0.0

This guide helps you install Red Hat Enterprise Linux on IBM Power System IC922 (9183-22X) server.

Note:

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About this task

Overview

Use this information to install Red Hat® Enterprise Linux 7.X LE ALT on a non-virtualized or bare metal IBM Power System IC922 (9183-22X) server.

To install Red Hat Enterprise Linux on IBM Power System IC922 (9183-22X) servers by using virtual media, use a PC and access the BMC web page by using a browser. You can connect your PC to the OpenBMC port of the server over a configured network so that the service processor can read the `.iso` file from the PC during the installation of the operating system.

For a list of supported distributions, see [Supported Linux distributions for POWER8® and POWER9™ Linux on Power systems](#).

Procedure

1. Completing the prerequisites and booting your firmware

Before you power on the system, ensure that you have the following items:

- Ethernet cable.
- USB Keyboard.
 - Power cords and outlet for your system.
- SSH client.
- PC or Notebook with Linux installed on it.
- **Notes:**
 - You do not need an ssh client and a PC with Linux installed on it, if you are using a VGA screen and keyboard.
 - You do not need a USB keyboard if you are using a serial connection.

Complete these steps:

- Download the ISO image of Red Hat Enterprise Linux 7.X LE ALT from the <https://access.redhat.com/products/red-hat-enterprise-linux/#addl-arch> website to your computer that you use to access the OpenBMC by using a web browser. Take the link for **Downloads for Red Hat Enterprise Linux for Power, little endian**. Log into your Red Hat account (if you have not already done so). Select **Red Hat Enterprise Linux for Power 9** from the Product Variant list. Look for the Red Hat Enterprise Linux for Power 9 (v. 7.x for ppc64le) ISO file. The downloaded ISO file will include *rhel-alt.....iso* rather than *rhel....iso* in the path name.

- If your system belongs in a rack, install your system into that rack. For instructions, see IBM Power Systems information at <https://www.ibm.com/support/knowledgecenter/POWER9/p9hdx/POWER9welcome.htm>.
- Make one of the following connections:
 - Connect an Ethernet cable to the dedicated BMC Ethernet port that is located close to the USB 3.0 port and it is labeled M. Connect the other end to your PC or Notebook which you use to configure the IP address.
 - You can also connect to the serial port of the server by using a serial connection.
- Attach the USB to serial (RS232) adapter cable to the IPMI serial 9-pin D-shell connector on the Power system.
- Attach USB connection to USB port on either PC or Notebook.
- Open a terminal emulator program such as PuTTY or minicom.
- Set the communications to use the following options:
 - 115200 baud rate
 - Data bits of 8
 - Parity of None
 - Stop bits of 1
- Connect the power cords to the system and plug them into the outlets.

At this point, your firmware is booting. Wait for the green LED on the power button to start flashing, indicating that it is ready to use. If your system does not have a green LED indicator light, then wait 1 - 2 minutes.

2. Configuring the IP address

Note: You can use either a serial connection or a keyboard and monitor to connect to the BMC. After the IP details are configured, you can use SSH connection. For more information, see [Managing BMC-based systems](#).

To set up or enable your network connection to the BMC firmware, use the Petitboot bootloader interface. Follow these steps:

- a. Your system will power on to the Petitboot bootloader menu. This process usually takes about 1 - 2 minutes to complete, but might take 5 - 10 minutes on the first boot or after a firmware update. Do not walk away from your system! When Petitboot loads, your monitor becomes active and you will need to push any key to interrupt the boot process.
- b. At the Petitboot bootloader main menu, select Exit to Shell.
- c. Program your BMC IP address by running the following commands:

Note: The shared BMC port is located near to the USB 3.0 port and it is labeled 1 and the dedicated BMC port is located next to the shared BMC port and it is labeled M.

 - 1) Set the mode to static by running this command: `ipmitool lan set 2 ipsrc static`
 - 2) Set your IP address by running this command: `ipmitool lan set 2 ipaddr ip_address` where `ip_address` is the static IP address that you are assigning to this system.
 - 3) Set your netmask by running this command: `ipmitool lan set 2 netmask netmask_address` where `netmask_address` is the netmask for the system.
 - 4) Set your gateway server by running this command: `ipmitool lan set 2 defgw ipaddr gateway_server` where `gateway_server` is the gateway for this system.
 - 5) For the shared BMC port run the following command: `Run ipmitool lan print 1`
 - 6) For the dedicated BMC port run the following command: `Run ipmitool lan print 2`
- d. To reset your firmware, run the following command: `ipmitool mc reset cold`.
- e. You should be able to ping the BMC now. If your ping does not return successfully within a reasonable amount of time (2 - 3 minutes), try these additional steps:

- 1) Power your system off with this command from the petitboot shell: `poweroff`
- 2) Unplug the power cords from the back of the system. Wait 30 seconds and then apply power to boot BMC.

3. Creating a bootable virtual media

- a. Open a supported web browser. In the address bar, enter the IP address of the BMC that you want to connect to. For example, you can use the format `https://<BMC IP>` in the address bar of the web browser.
- b. From the OpenBMC logon window, enter the Host address of the BMC and the username and password that is assigned to you.
- c. Then select **Server control** → **Virtual Media** to network-attach the ISO image to the IBM Power System IC922 (9183-22X) server. After clicking Start, the ISO is available to the server to start the operating system installation process.

4. Powering on your server by using a PC or Notebook

Note: After your system powers on, the Petitboot interface loads. If you do not interrupt the boot process by pressing any key within 10 seconds, Petitboot automatically boots the first option.

To power on your server from a PC or Notebook that is running Linux, follow these steps:

- a. Connect an Ethernet cable from the BMC port to a PC or Notebook. Or you can also make sure your PC or Notebook is on the same network as the BMC firmware.
- b. Open a terminal program on your PC or Notebook.
- c. Log in to the BMC by running the following commands.

```
ssh root@<BMC server_ip_address>
root@<BMC server password>
```

where *BMC server_ip_address* is the IP address of the BMC and *BMC server password* is the password to authenticate.

Note: The default username is `root` and the default password is `0penBmc` (where, `OpenBmc` is using a zero and not a capital O).

- d. To power on your server, run the following command:

```
$ root@<BMC server_ip_address>:~# obmcutil poweron
```

- e. Connect to OS console and use the default password `OpenBmc`.

```
ssh -p 2200 root@<BMC server_ip_address>
root@
```

where *BMC server_ip_address* is the IP address of the BMC and *BMC server password* is the password to authenticate.

5. Configuring Petitboot

After the system powers on, the Petitboot bootloader scans local boot devices and network interfaces to find boot options that are available to the system.

- a. After you start the system, Petitboot displays the virtual media boot device, and you can select the boot entry, but do not start the installation. If you start the installation, you might not be able to finish the installation and the system might show errors similar to the following string:

```
dracut-initqueue[3537]: Warning: dracut-initqueue timeout - starting timeoutscripts
```

Note: Select Rescan devices if the virtual media boot device does not appear.

- b. Record the UUID of the virtual media boot device. The UUID of the virtual media boot device in the following example is `2018-10-10-22-13-55-00`.

```
Petitboot (v1.11)                                9183-22X 78002BA
-----
```

```

[USB: sdc / 2018-10-10-22-13-55-00]
Rescue Red Hat Enterprise Linux Alternate Architectures system (64 bit ke
Test this media & Install Red Hat Enterprise Linux Alternate Architectures
*   Install Red Hat Enterprise Linux Alternate Architectures 7.6 (64 bit kernel

System information
System configuration
System status log
Language
Rescan devices
Retrieve config from URL
Plugins
Exit to shell

-----
Enter = accept, e=edit, n=new, x=exit, l=language, g=log, h=help

```

- c. Select **Install Red Hat Enterprise Linux Alternate Architectures 7.6 (64 bit kernel)** and press **e** (Edit) to open the Petitboot Option Editor window.
- d. Move the cursor to the Boot arguments section and add the following information: `inst.text inst.stage2=hd:UUID=your_UUID` where *your_UUID* is the UUID that you recorded.

```

Petitboot Option Editor
-----
Device:          ( ) sda2 [3cb1868c-7fd4-466a-a7b0-70942ca452cd]
                 (*) sdb1 [2018-10-10-22-13-55-00]
                 ( ) Specify paths/URLs manually

Kernel:         /ppc/ppc64/vmlinuz
Initrd:         /ppc/ppc64/initrd.img
Device tree:
Boot arguments: ro inst.text inst.stage2=hd:UUID=2018-10-10-22-13-55-00

                 [ OK ] [ Help ] [ Cancel ]

-----
tab=next, shift+tab=previous, x=exit, h=help

```

- e. Select **OK** to save your options and return to the **Main menu**.
 - f. Verify that **Install Red Hat Enterprise Linux Alternate Architectures 7.6 (64 bit kernel)** is selected and then press **Enter** to begin your installation.
6. Completing your installation
- After you select to boot the Red Hat Enterprise Linux 7.X LE ALT installer, the installer wizard walks you through the steps.
- a. Follow the installation wizard for Red Hat Enterprise Linux to set up disk options, your username and password, time zones, and so on. The last step is to restart your system.
 - b. After the system restarts, Petitboot displays the option to boot the Red Hat Enterprise Linux *release number*. Select this option and press **Enter**.

Note: Be sure to check for firmware updates. See https://www.ibm.com/support/knowledgecenter/POWER9/p9ei8/p9ei8_fixes_kickoff.htm

What to do next

More information

For more information, see the following resources:

- IBM Knowledge Center at <https://www-01.ibm.com/support/knowledgecenter/>.
- IBM Power System IC922 (9183-22X) server Redbook at <http://www.redbooks.ibm.com/redpapers/pdfs/redp5584.pdf>.
- The Linux on Power developer portal at [Linux on Power developer portal](#).