

Installing Ubuntu on IBM Power System POWER9 servers using network boot



Version 1.0.0

Quick Start Guide for installing Ubuntu on IBM Power System POWER9 servers

This guide helps you install Ubuntu on a Linux on Power Systems server.

Overview

Use this information to install Ubuntu on a non-virtualized or bare metal IBM Power System POWER9 server by using the network boot servers that are provided by Canonical. This procedure follows these general steps:

- Connect to the BMC firmware to set up network connection
- Configure Petitboot for a network installation
- Install Ubuntu from the network connection

1 Step 1: Completing the prerequisites and booting your firmware



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

- Ethernet cable
- VGA monitor. The VGA resolution must be set to 1024x768-60Hz.
- USB Keyboard
- Power cords and outlet for your system.

If you are using the Ubuntu netboot server, the URLs are currently at the following locations:

- Ubuntu 18.04: <http://ports.ubuntu.com/ubuntu-ports/dists/bionic/main/installer-ppc64el/current/images/netboot/>

Look for the `vmlinux` and `initrd.gz` files. If they are not available at the URLs given, then go to <http://cdimage.ubuntu.com/netboot/> and select **your release** > **ppc64el** > **ubuntu-installer** > **ppc64el**. Locate the `vmlinux` and `initrd.gz` files. If this URL is different from the paths that are given previously, record them for future use.

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

Complete these steps:

- 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/>.
- Connect an Ethernet cable to the embedded Ethernet port next to the serial port on the back of your system. Connect the other end to your network.
- Connect your VGA monitor to the VGA port on back of system.
- Connect your USB keyboard to an available USB port
- 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 to 2 minutes.

2 Step 2: Configuring the firmware IP address

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

- a. Power on your server using the power button on the front of your system. Your system will power on to the Petitboot bootloader menu. This process takes about 1 - 2 minutes to complete. Do not walk away from your system! When Petitboot loads, your monitor will become active and you will need to push any key in order to interrupt the boot process. Note that no boot steps are displayed until Petitboot loads.
- b. At the Petitboot bootloader main menu, select Exit to Shell.
- c. Run `ipmitool lan print 1`. If this command returns an IP address, verify that it is correct and continue to step 4. If no IP addresses are returned, follow these steps:
 - i. Set the mode to static by running this command: `ipmitool lan set 1 ipsrc static`
 - ii. Set your IP address by running this command: `ipmitool lan set 1 ipaddr ip_address` where *ip_address* is the static IP address that you are assigning to this system.
 - iii. Set your netmask by running this command: `ipmitool lan set 1 netmask netmask_address` where *netmask_address* is the netmask for the system.
 - iv. Set your gateway server by running this command: `ipmitool lan set 1 defgw ipaddr gateway_server` where *gateway_server* is the gateway for this system.
 - v. Confirm the IP address by running the command `ipmitool lan print 1` again.

Note: This interface is not active until after you perform the following steps.

- d. To reset your firmware, run the following command: `ipmitool mc reset cold`.

This command must complete before continuing the process; however, it does not return any information. To verify that this command has completed, ping your system BMC address (the same IP address used in your IPMItool command). When the ping returns successfully, continue to the next step.

Note: If your ping does not return successfully within a reasonable amount of time (2 - 3 minutes), try these additional steps:

- i. Power your system off with this command: `ipmitool power off`.
- ii. Unplug the power cords from the back of the system. Wait 30 seconds and then apply power to boot BMC.

3 Step 3: Powering on your server with OpenBMC commands

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:

- Default user name: root
- Default password: OpenBmc (where, OpenBMC is using a zero and not a capital O)
- a. Open a terminal program on your PC or notebook.
- b. 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.

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

```
$ root@witherspoon:~# obmcutil poweron
```

- d. 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.

4 Step 4: 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.

Provide the network boot detail to Petitboot by following these steps:

- a. On the Petitboot main screen, select **n** to create new options.
- b. Choose your boot device or select to **Specify paths/URLs manually** and then enter your boot options:
 - i. In the **Kernel** field, enter the path to the kernel. This field is mandatory. Enter a URL similar to this one for a network:

```
http://ports.ubuntu.com/ubuntu-ports/dists/bionic/main/installer-ppc64el/current/images/netboot/ubuntu-installer/ppc64el/vmlinuz
```
 - ii. In the **Initrd** field, enter the path to the init ramdisk. Enter a URL similar to this one for a network:

```
http://ports.ubuntu.com/ubuntu-ports/dists/bionic/main/installer-ppc64el/current/images/netboot/ubuntu-installer/ppc64el/initrd.gz
```
- c. After you set your netboot options, select **OK** and press Enter.
- d. On the **Petitboot** main window, select User Item 1 as your boot option and press Enter.

5 Step 5: Installing Ubuntu

After you select to boot the Ubuntu installer, the installer wizard walks you through the steps.

- a. Follow the installation wizard for Ubuntu to set up disk options, your user name and password, time zones, and so on. The last step is to restart your system.

Note: The Ubuntu installation process uses DHCP by default during installation. If you are not using DHCP, you need to configure the network manually. Follow these steps:

- i. On the Configuring the network with DHCP screen, click Cancel.
 - ii. Click Continue.
 - iii. Select Configure your network manually
 - iv. Enter your IP address and select Continue.
 - v. Enter your Netmask and select Continue.
 - vi. Enter or confirm the gateway for your IP address and select Continue.
 - vii. (Optional) Enter the Name server address and select Continue.
 - viii. Enter a hostname for your system and select Continue.
 - ix. Select a mirror of the Ubuntu archive.
 - x. Confirm the Ubuntu archive mirror.
 - xi. (Optional) Enter HTTP proxy information and select Continue.
- b. After the system restarts, Petitboot displays the option to boot the Ubuntu with Linux *release number*. Select this option and press Enter.

Notes:

- In Ubuntu, the `opal-prd` (Processor Runtime Diagnostics) package that is required for runtime detection and handling of Power processor errors on systems that are running OpenPower firmware is not installed by default. Run the following command to install this package:

```
apt-get install opal-prd
```

More information



For more information, see the following resources:

- Ask Ubuntu website at <http://askubuntu.com/>
- Linux information for IBM systems at <https://ibm.biz/BdFBGG>
- The Linux on Power® developer portal at [Linux on Power developer portal](#).