Installing Ubuntu on IBM Power System LC servers with a USB device
Version 1.0.6

Quick Start Guide for installing Linux on IBM Power System LC servers

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

Overview

Use this information to install Ubuntu on a non-virtualized or bare metal IBM Power System LC server. This procedure follows these general steps:

- Download the Ubuntu ISO file
- Create a bootable USB device
- Connect to the BMC firmware to set up network connection
- Connect to the BMC firmware with IPMI
- Install Ubuntu from USB device

Download your ISO files from the Ubuntu release website. Look for the *PowerPC64 Little-Endian server install image*. Supported Ubuntu releases include:

- Ubuntu 18.04: http://cdimage.ubuntu.com/releases/18.04/release/
- Ubuntu 16.04: http://cdimage.ubuntu.com/releases/16.04/release/
- Ubuntu 14.04: http://cdimage.ubuntu.com/releases/14.04/release/

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

1 Step 1: Creating a bootable USB device

Use one of the following USB devices:

- USB attached DVD player with a single USB cable to stay under 1.0 Amps
- 8 GB 2.0 USB flash drive

To create the bootable USB device, follow the instructions in the Ubuntu Community Help Wiki at https://help.ubuntu.com/community/Installation/FromUSBStick

2 Step 2: 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.
- PC or notebook that has IPMItool level 1.8.15 or greater. Find instructions to determine your level of IPMItool and how to update at the end of the guide.
- Bootable USB device

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.

3   Step 3: Configuring the 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.

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 is correct and continue. To set a static IP address, 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 network 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.

4 | Step 4: Powering on your server with IPMI

Intelligent Platform Management Interface (IPMI) is the default console to use when connecting to the OPAL firmware.

Use the default values for IPMI:

- Default user: ADMIN
- Default password: admin

As the system powers up, you might notice the following actions:

- The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
- The power LED on the control panel stops flashing and remains on, indicating that system power is on.

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. Open a terminal program on your PC or notebook.
b. To power on your server, run the following command:

```
ipmitool -I lanplus -H server_ip_address -P ipmi_password chassis power on
```

where *server_ip_ipaddress* is the IP address of the Power system and *ipmi_password* is the password set up for IPMI.

Note: If your system is already powered on, continue to active your IPMI console.

c. Activate your IPMI console by running this command:

```
ipmitool -I lanplus -H server_ip_address -P ipmi_password sol activate
```

Note: Use your keyboard up arrow to display the previous ipmitool command. You can edit previous commands to avoid typing the entire command again. If you need to power off or reboot your system, deactivate the console by running this command:

```
ipmitool -I lanplus -H server_ip_address -P ipmi_password sol deactivate
```

To reboot the system, run this command:

```
ipmitool -I lanplus -H server_ip_address -P ipmi_password chassis power reset
```

5 | Step 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. Insert your bootable USB device into the front USB port. Petitboot displays the following option:

Note: Select Rescan devices if the USB device does not appear. If your device is not detected, you may have to try a different type.

b. On the Petitboot main screen, select the Debian GNU/Linux installer boot option and then press Enter.

6 │ Step 6: Completing your installation

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.

Note: While your system is restarting, remove the USB device.

b. After the system restarts, Petitboot displays the option to boot the Ubuntu with Linux *release number*. Select this option and press Enter.

Notes:

- Ubuntu 14.04.3 may not contain the latest version of IPMItool. To install the latest version, run the following commands:

```
apt-get update
apt-get install ipmitool
```

- 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
```

7 │ Step 7: Determine your level of IPMItool

In order to connect to the Power server, you must be using IPMItool level 1.8.15 or greater on the PC or laptop that you are using to connect to the Power system.

To determine your current level of IPMItool, run the following command: `ipmitool -V`. If this command returns a version earlier than 1.8.15, update your IPMItool version. Follow these steps:

a. Download the IPMItool file: `wget http://sourceforge.net/projects/ipmitool/files/latest/ download/ipmitool-1.8.15.tar.bz2` .
b. Unzip it by running these commands:

```
bzip2 -d ipmitool-1.8.15.tar.bz2
tar xvf ipmitool-1.8.15.tar
```

c. Configure it by running these commands:

```
cd ipmitool-1.8.15
./configure
```

d. Build it by running this command: `make`
e. Install it by running this command: `sudo make install`
f. Validate the installation by checking the version again: `ipmitool -V`

More information

For more information, see the following resources:

- IBM Knowledge center at https://www-01.ibm.com/support/knowledgecenter/
- The Linux on Power® developer portal at Linux on Power developer portal.