PIERO™

# Platform Ubuntu 22.04 LTS Custom ISO Installation Guide

This document provides the installation procedures and configuration instructions for installing the Ubuntu 22.04 LTS Custom ISO on a client PIERO workstation.

★The Ubuntu installer is intended for authorized hardware such as the M8 2RU or Build Your Own Machine (BYOM). The Ubuntu installer is not supported for any custom client machine built to a specification different from what is recommended.

This information is found in the following sections:


Installation Workflow 2

BIOS Configuration 3

Preparing Installation Media 17

Ubuntu Installation 18

Ubuntu Software Update 29

Ubuntu Desktop Configuration 31

AJA Firmware Update 33 (where applicable)

PIERO Installation 35



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ROSS

# Installation Workflow

This section covers the workflow for installing the Ubuntu Custom ISO.

## Before Installation

Prior to installing the Ubuntu Custom ISO, you will need to do the following:

- Backup your PIERO system and assets.

  ★ **Important!** Ensure that you have backed-up your PIERO system and assets, using the PIERO Asset Manager, before you proceed with the install process.

  For information on how to back-up your PIERO system, see the *Backup and Restore Using the PIERO Asset Manager* document. If you do not have this document, please contact Ross Technical Support.

- Configure the BIOS for your system.
- Prepare the Installation Media.

## Installation

Once you have configured the BIOS and prepared the installation media, you will need to do the following:

- Install the Ubuntu Custom ISO.

## After Installation

After installing the Ubuntu Custom ISO, you will need to do the following:

- Update the Ubuntu software.
- Configure the desktop.
- Update the AJA Firmware (where applicable).
- Install PIERO.

# BIOS Configuration

This section describes the BIOS configuration procedures.

Go to the configuration section that applies to your hardware setup:

BIOS Configuration - M8 Platform 4

BIOS Configuration - M9 Workstation and BYOM 15 Workstation

# BIOS Configuration - M8 Platform

This section describes the BIOS configuration procedures for the M8 platform.

The following procedures are covered in this section:

To configure the Advanced settings 4

To configure the Boot Configuration settings 10

To choose the Bootup Device on startup 14

★ If you are not using an M8 platform, refer to your system documentation for equivalent hardware settings.

**To configure the Advanced settings:**

1. During the POST start-up, access the **BIOS** by pressing the **Delete** key.

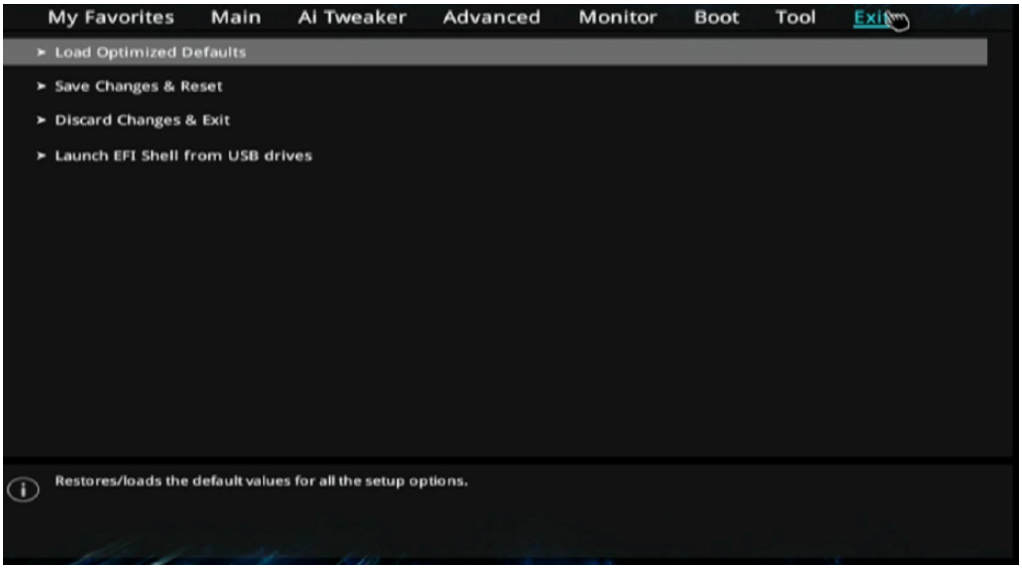
   The **UEFI BIOS Utility - EZ Mode** screen appears.

2. Press F7 to access the **UEFI BIOS Utility - Advance Mode**.

   The **EUFI BIOS Utility - Advanced Mode** screen appears.

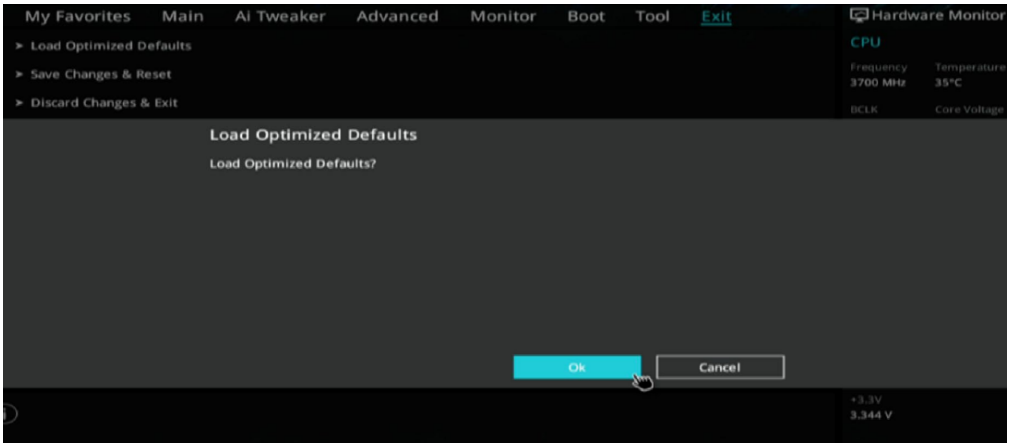
3. Restore the BIOS to baseline defaults as follows:

   a. Go to the **Exit** tab and from the list, select **Load Optimized Defaults**.




*Advanced Mode - Exit Tab*

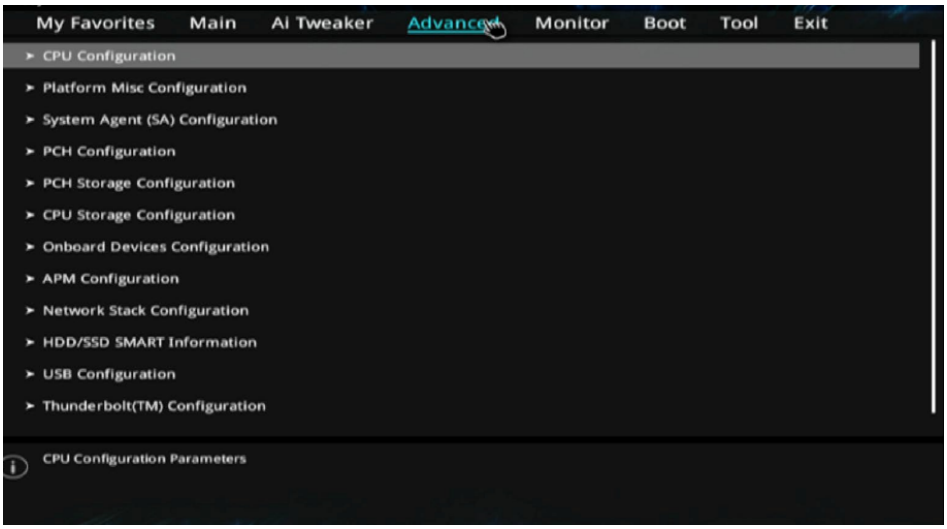
The **Load Optimized Defaults** dialog appears.




*Load Optimized Defaults*

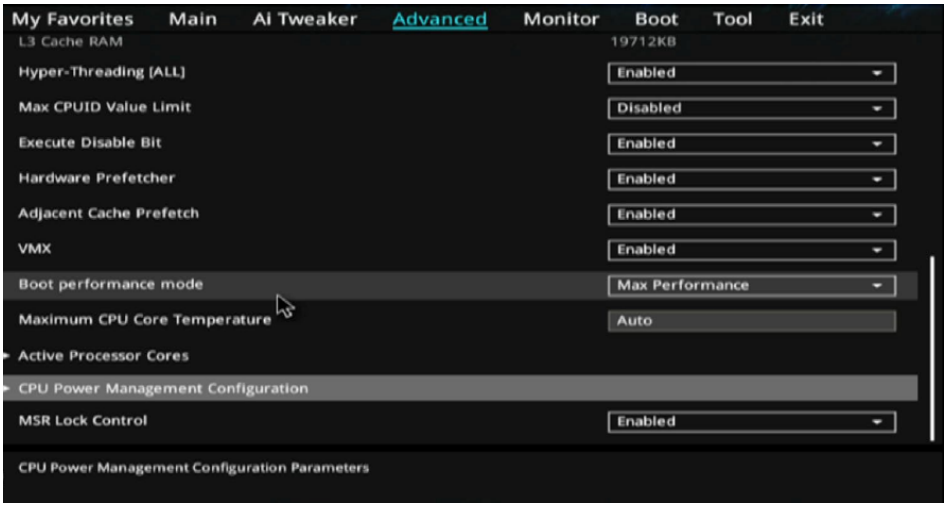
b. Select **OK**.

4. Go to the **Advanced** tab and from the list, select **CPU Configuration**.




*Advanced - CPU Configuration*

The **CPU Configuration** settings appear.




*CPU Configuration Settings*

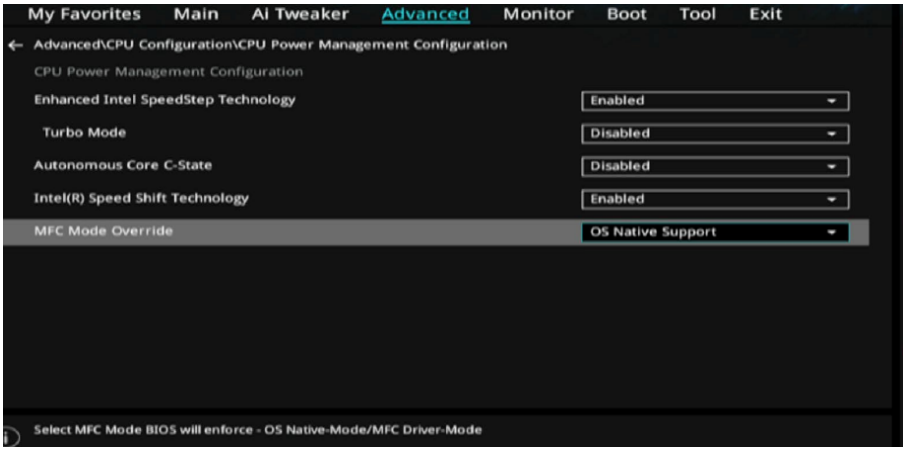
5. Configure the settings as follows:

   a. From the **Hyper-Threading [ALL]** drop-down, select **Enabled**.

   b. From the **Boot performance mode** drop-down, select **Max Performance**.

   c. Select **CPU Power Management Configuration**.

      The **CPU Power Management Configuration** options appear.




*CPU Power Management Configuration*

   d. From the **Enhanced Intel SpeedStep Technology** drop-down, select **Enabled**.

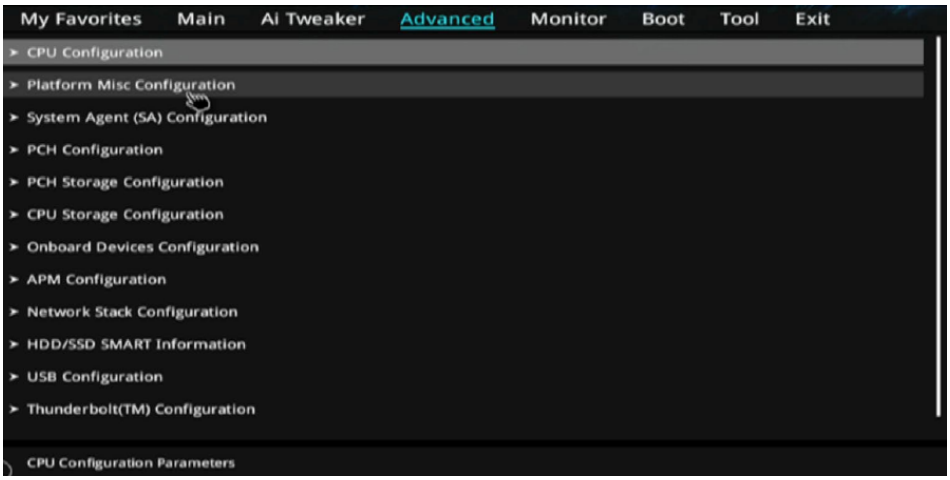
   e. From the **Turbo Mode** drop-down, select **Disabled**.

   f. From the **Autonomous Core C-State** drop-down, select **Disabled**.

   g. From the **Intel(R) Speed Shift Technology** drop-down, select **Enabled**.

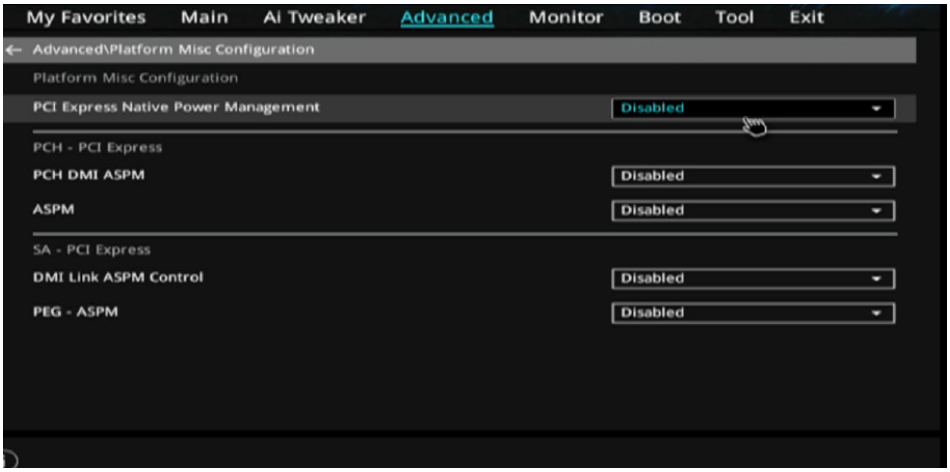
   h. From the **MFC Mode Override** drop-down, select **OS Native Support**.

6. Press the ESC key on your keyboard to return to the **Advanced** screen, and select **Platform Misc Configuration**.



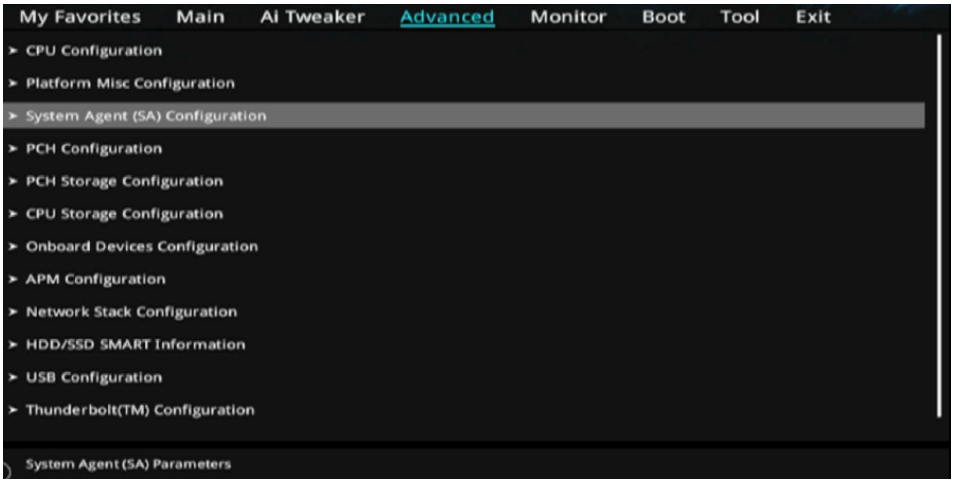

*Advanced Screen - Platform Misc Configuration*

The **Platform Misc Configuration** screen appears.



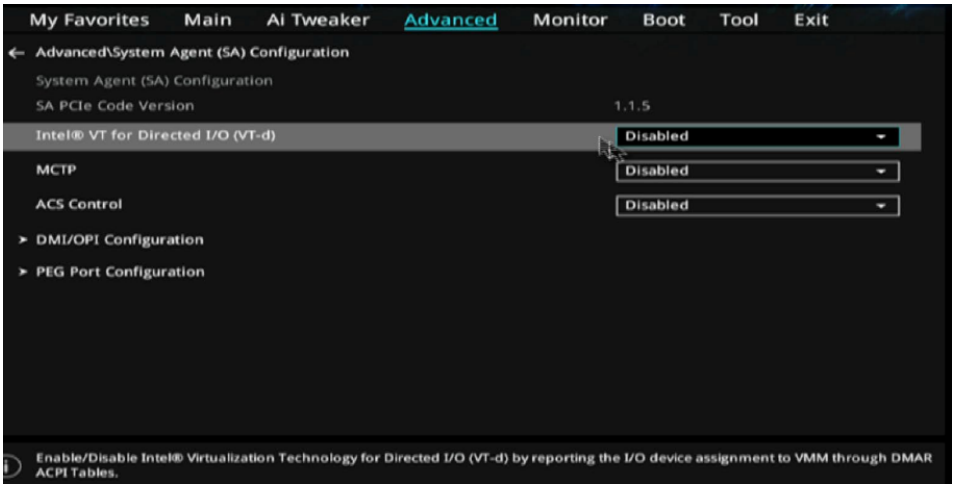

*Platform Misc Configuration*

7. Configure the following setting:
   - From the **PCI Express Native Power Management** drop-down, select **Disabled**.
8. Press the ESC key on your keyboard to return to **Advanced** screen, and select **System Agent (SA) Configuration**.



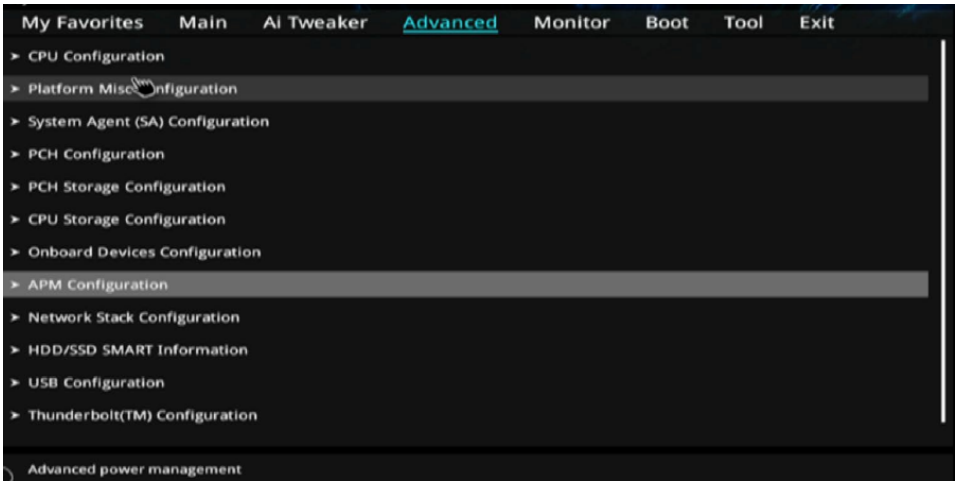

*Advanced - System Agent (SA) Configuration*

The **System Agent (SA) Configuration** options appear.



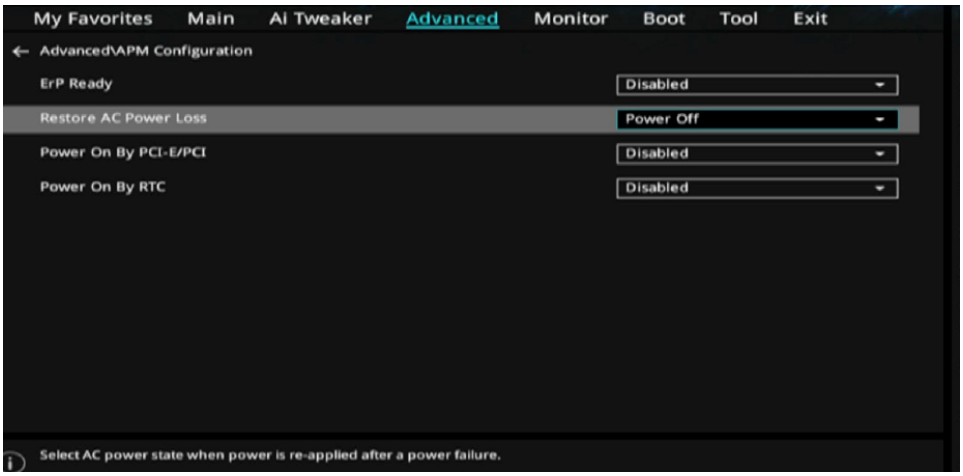

*Advanced\System Agent (SA) Configuration*

9. Configure the following setting:
   - From the **Intel VT for Directed I/O (VT-d)** drop-down, select **Disabled**.
10. Press the ESC key to return to previous screen and select **APM Configuration**.




*Advanced - APM Configuration*

The **APM Configuration** options appear.



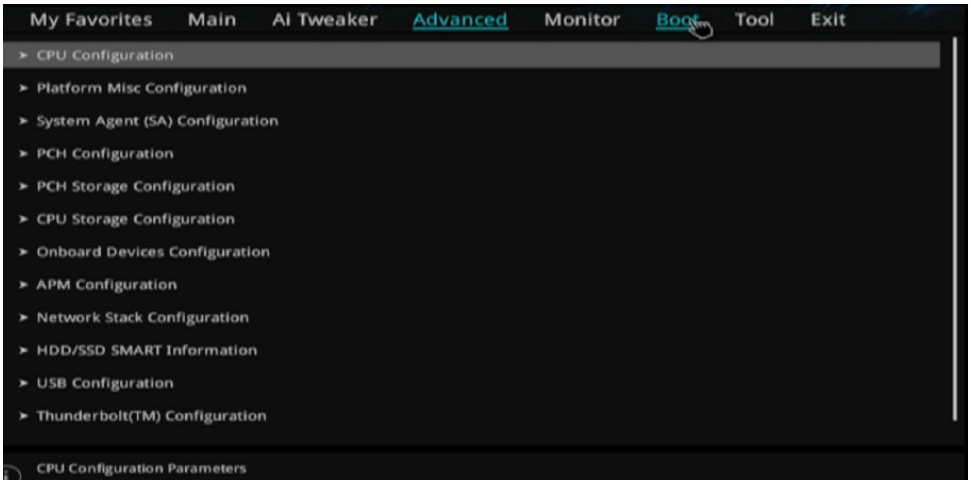

*APM Configuration Options*

11. Configure the following setting:
    - From the **Restore AC Power Loss** drop-down, select **Power Off**.
12. Press the ESC key to return to previous screen and configure the **BIOS Boot** options.

    Proceed to the configure the Boot Configuration settings 10 procedure below.

**To configure the Boot Configuration setting:**

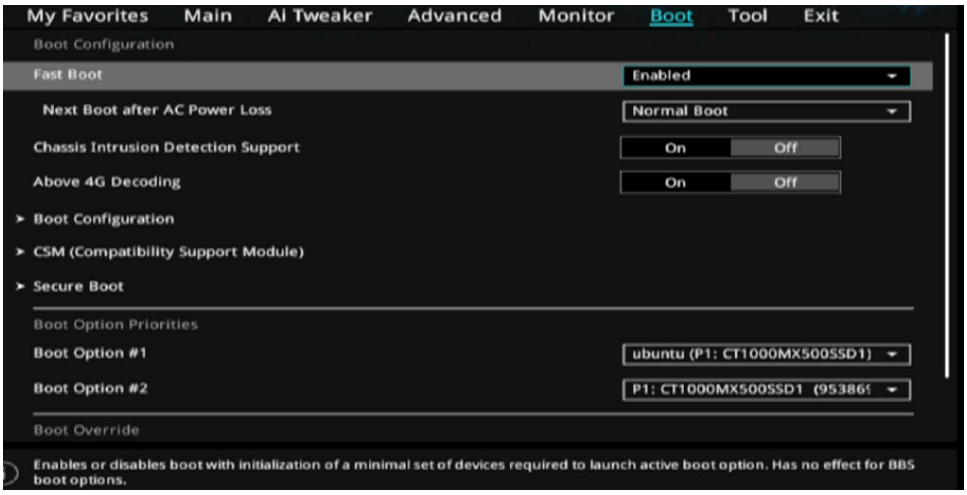
1. In the **UEFI BIOS Utility - Advanced Mode** screen, select the **Boot** tab.




*UEFI BIOS Utility - Boot*

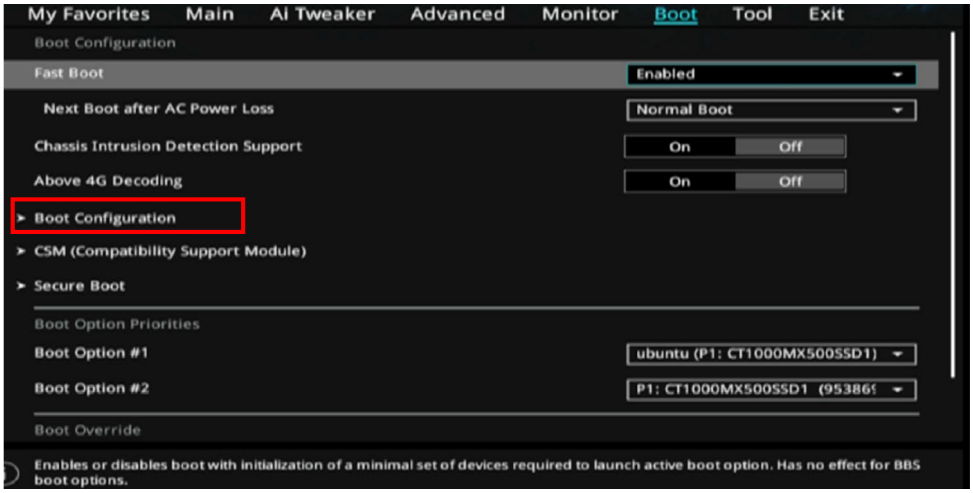
The **Boot Configuration** options appear.

2. From the **Boot Configuration** options, use the **Fast Boot** drop-down and select **Disabled**.



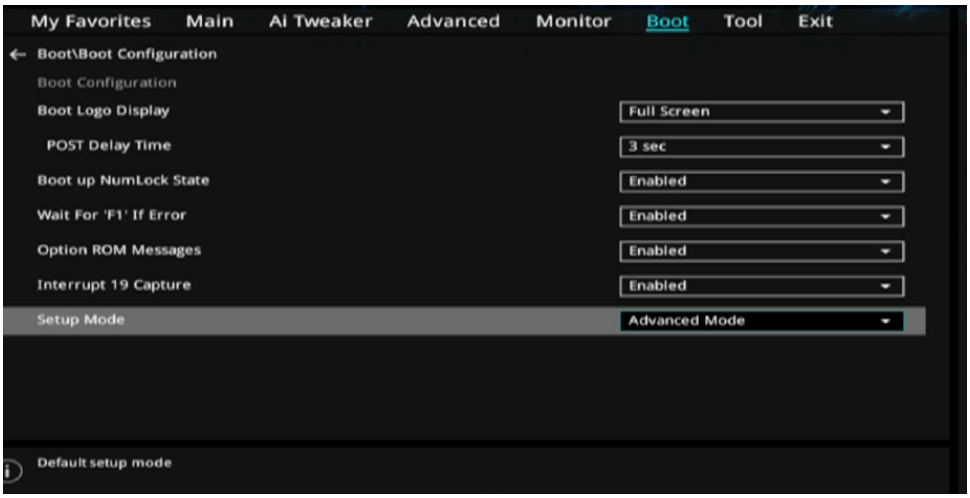

*Boot Configuration - Fast Boot*

3. From the **Boot Configuration** options, select **Boot Configuration.**



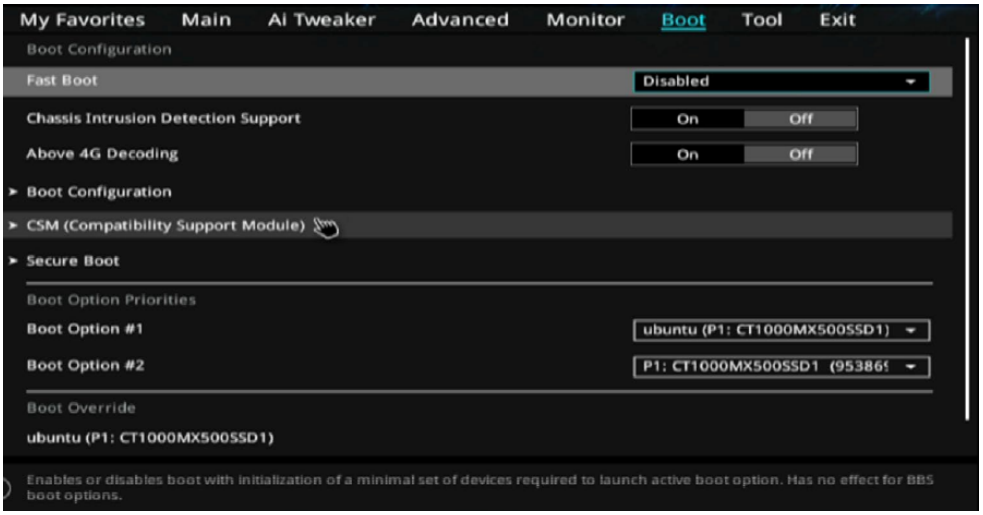

*Boot Configuration*

The **Boot Configuration** settings appear.

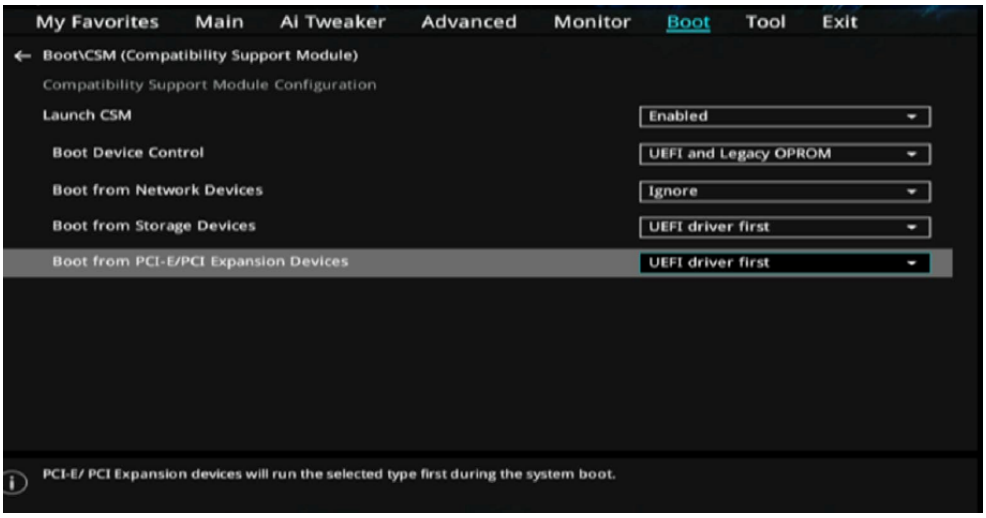



Boot Configuration Settings

4. Configure the settings as follows:
   a. From the **Boot Logo Display** drop-down, select **Full Screen**.
   b. From the **Boot up NumLock State** drop-down, select **Enabled**.
   c. From the **Setup Mode** drop-down, select **Advanced Mode**.
5. Press the ESC key twice to return to the **Boot Configuration** screen, and select **CSM (Compatibility Support Module)**.




The **CSM (Compatibility Support Module)** appears.




6. Configure the settings as follows:
   a. From the **Launch CSM** drop-down, select **Enabled**.
   b. From the **Boot Device Control** drop-down, select **UEFI and Legacy OPROM**.
   c. From the **Boot from Network Devices** drop-down, select **Ignore**.
   d. From the **Boot from Storage Devices** drop-down, select **UEFI driver first**.
   e. From the **Boot from PCI-E/PCI Expansion Devices** drop-down, select **UEFI driver first**.
7. Press the ESC key to return to the **Boot Configuration** screen and select **Secure Boot**.

   The **Secure Boot** configuration options appear.
8. Configure the settings as follows:

a. From the **Select OS Type** drop-down, select **Other OS**.

b. Select **Key Management**.

The **Key Management** options appear.

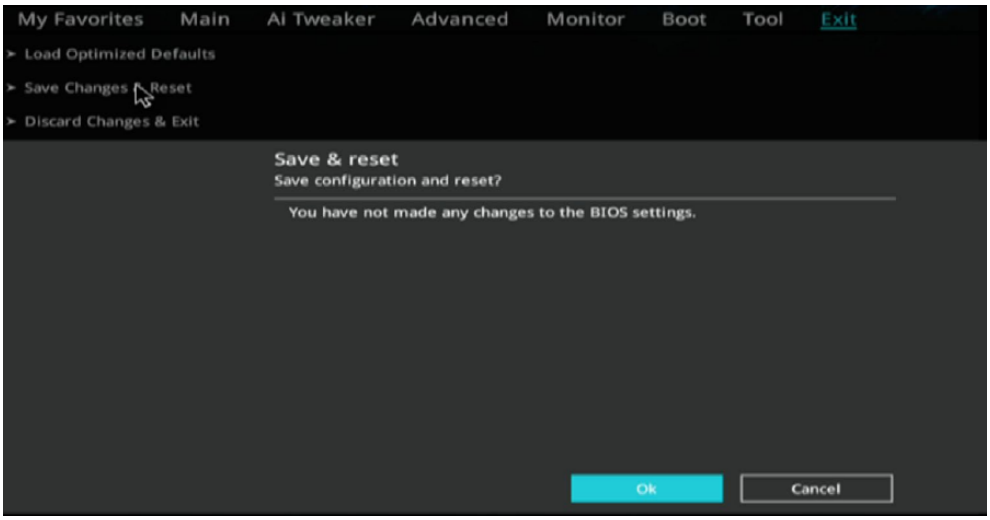
c. From the list, select **PK Management**.

d. Select **Delete Key**.

9. Go to the **Exit** tab.


*Exit Tab*

The **Save & reset** dialog appears.




*Save & Reset Dialog*

10. Select **OK**.

The BIOS configuration is saved and the system will restart.

**To choose the Bootup Device on startup:**

1. Press the F2 key during the POST setup to access the BIOS.
2. Go to the **Boot** tab and in the **Boot Override** section, select the USB flash drive.

   The **Boot Override** is set to the USB flash drive.

# BIOS Configuration - M9 Workstation and BYOM Workstation

This section describes the BIOS configuration procedures for the M9 1RU (HP Z4 Rack G5) Workstation Desktop PC and the BYOM (HP Z4 G5) Workstation Desktop PC.

★ For specific instructions on accessing and navigating the HP Z4 G5 BIOS Utility, see the HP User Guide for additional information.

To configure the BIOS settings, first you need to reset the BIOS to Factory Default 15 and then configure the following settings:

Security 15

Performance Options

Power Management 15

Boot Selection 16

**To reset the BIOS to Factory Default:**

1. Power on your system.
2. During POST, press the F10 key to access the BIOS.

   The BIOS utility opens.
3. From the **Main** menu, select **Apply Factory Defaults and Exit**.

   The BIOS utility closes, and the system restarts.
4. Next, configure the **Security** settings.

**To configure the Security settings:**

1. Return to the BIOS as follows:
   a. During POST, press the F10 key to access the BIOS.
   b. The BIOS utility opens.
2. In the BIOS utility, from the **Security** menu, select **Secure Boot Configuration**.
3. From the **Secure Boot Configuration** settings, disable the **Secure Boot** option.
4. Next, configure the **Performance Options** settings.

**To configure the Performance Options settings:**

1. In the BIOS utility, from the **Advanced** menu, select **Performance Options**.
2. From the **Performance Options** settings, disable the **Turbo-boost** option.
3. From the **Performance Options** settings, for the **Workload Configuration** option, select **I/O focused**.

4. Next, configure the **Power Management** settings.

**To configure the Power Management settings:**

1. In the BIOS utility, from the **Advanced Menu**, select **Power Management Options**.
2. From the **Power Management Options** settings, for the **Energy/Performance Bias Control** option, select **BIOS Controls EPB**.
3. From the **Power Management Options** settings, for the **BIOS Energy/Performance Bias** option, select **Performance**.
4. Next, save the changes and configure the **Boot Selection**.

**To save changes and configure the Boot Selection:**

1. If you haven't already done so, ensure the USB Installation media is attached to your system.
2. In the BIOS utility, from the **Main** menu, select **Save Changes and Exit**.

   The changes are saved and the system restarts.
3. During POST, press the F9 key to access **Boot Selection**.
4. Select your attached USB device to boot from and continue with the Ubuntu installation 18.

# Preparing Installation Media

Before installing the Ubuntu Custom ISO, you will need to create the installation media.

## Requirements

- USB Flash Drive - Minimum 8GB
- Ubuntu Installer ISO File

## Creating a Bootable USB Drive From the Ubuntu Installer ISO File

First you will need to download the Ubuntu Installer ISO file from the Ross Video website. Once you have downloaded the Ubuntu Installer ISO file, you will need to apply it to the flash drive.

For information on creating a bootable USB drive from an ISO file within windows using RUFUS, see https://ubuntu.com/tutorials/create-a-usb-stick-on-windows.

For information on creating a bootable USB drive from an ISO file within Ubuntu, using Startup Disk Creator, see https://ubuntu.com/tutorials/create-a-usb-stick-on-ubuntu.

# Ubuntu Installation

With your BIOS configured and the Installation Media prepared, you can now boot and run the Ubuntu Installer.

Before you begin, ensure the following:

- The Ubuntu USB Media is attached.
- The network is connected and can reach https://pierouburepo.rossvideo.com.

## Installing Ubuntu

This section describes the procedures for booting and running the Ubuntu Installer and logging in for the first time.

**To boot and run the Ubuntu installer:**

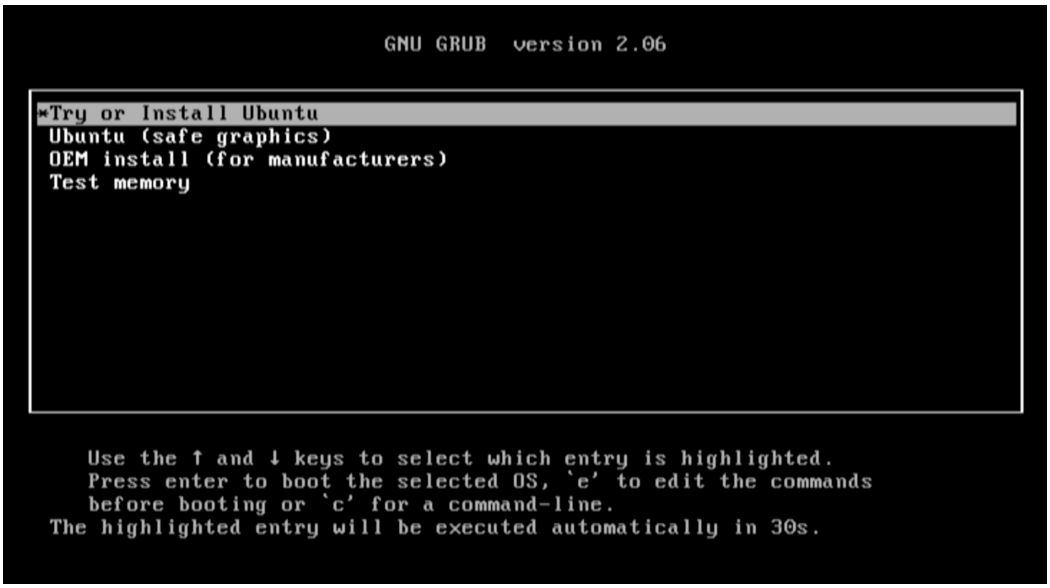
1. Power on the system.

   The system will automatically boot from the USB media and the initial plain text boot installation screen opens.

   If the system does not automatically boot from the USB media, ensure that all other storage is not bootable.

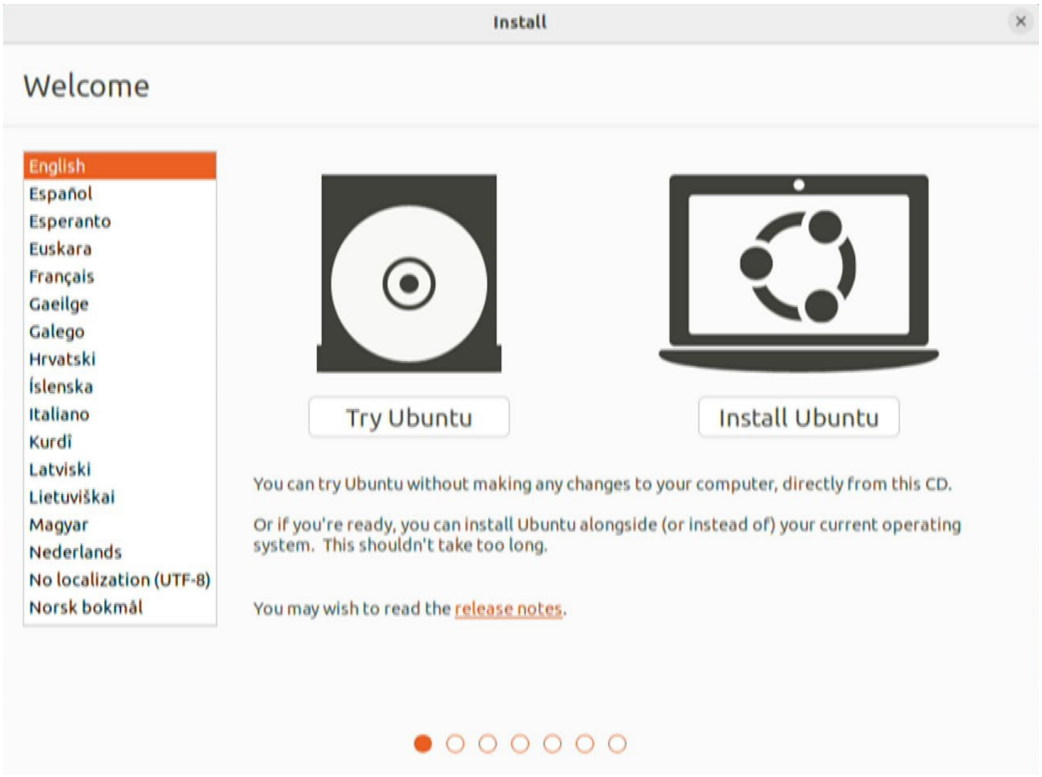
   For custom build systems, refer to your system board documentation to select the boot device on startup.

2. Use the arrow keys to select **Try or Install Ubuntu**.




*Bootloader GRUB Screen - Plain Text Boot Installation Screen*

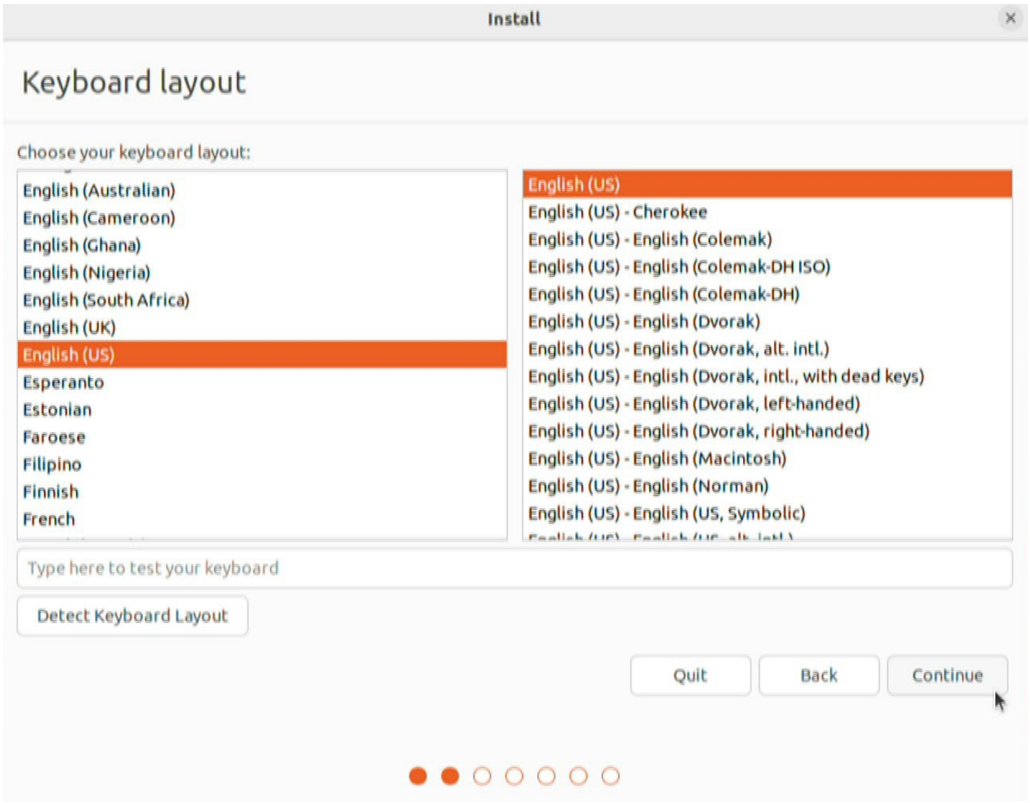
The **Welcome** screen appears.




*Welcome Screen*

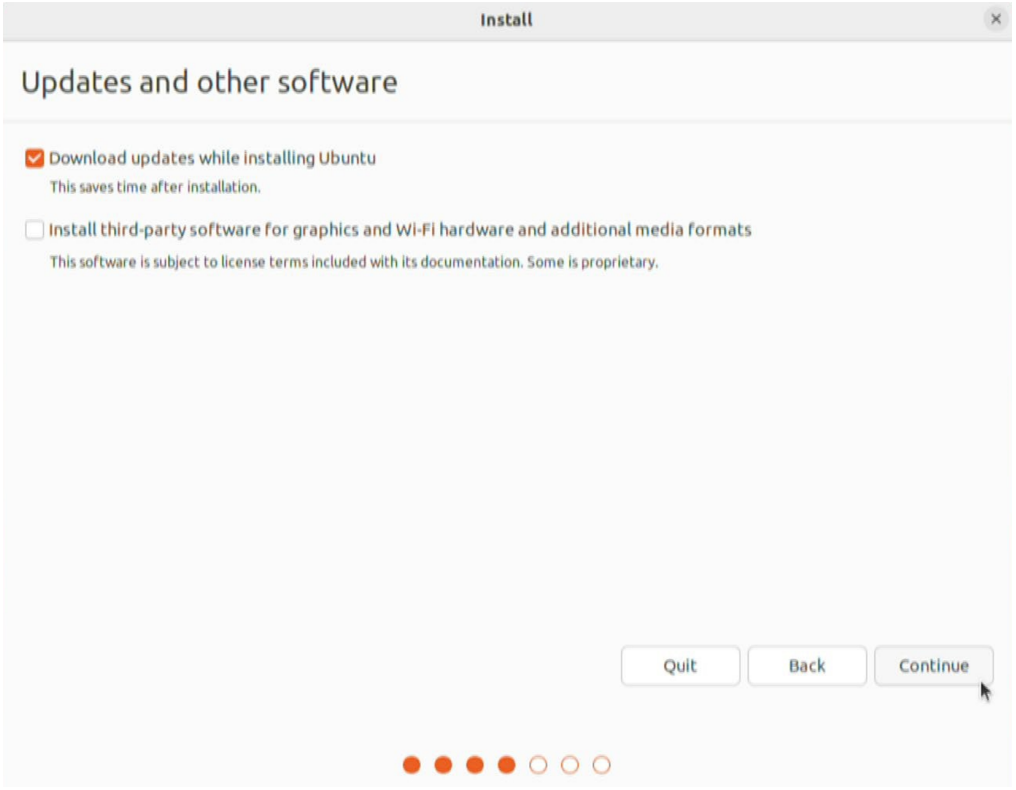
3. From the language list, select **English**.
4. Select **Install Ubuntu**.

   The **Keyboard layout** screen opens.
5. From the **Choose your keyboard layout** lists, select **English (US)** from both the left and the right panels.



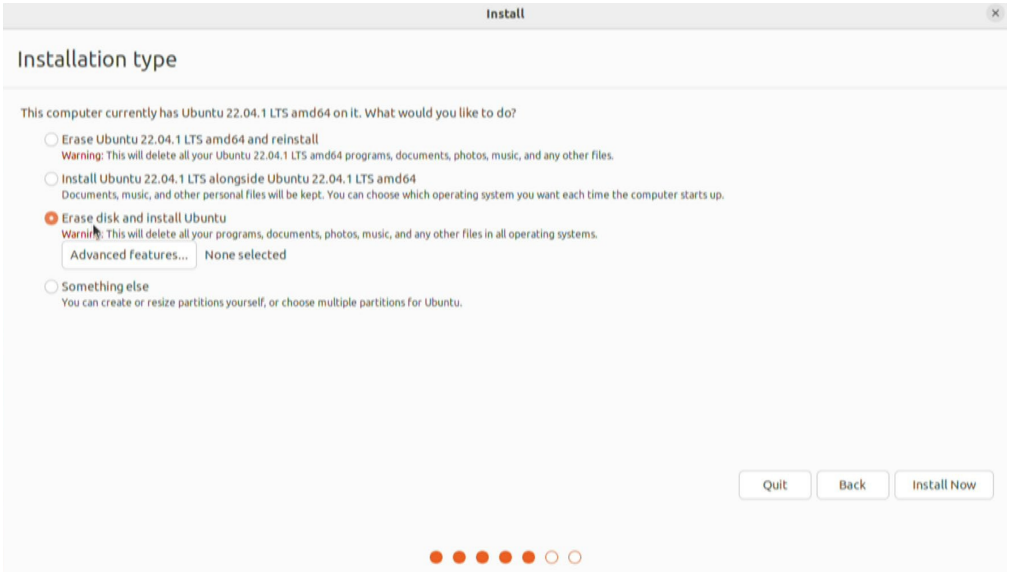

*Keyboard Layout Screen*

6. Select **Continue**.
7. In the **Updates and other software** screen, select **Download updates while installing Ubuntu** (default) and select **Continue**.



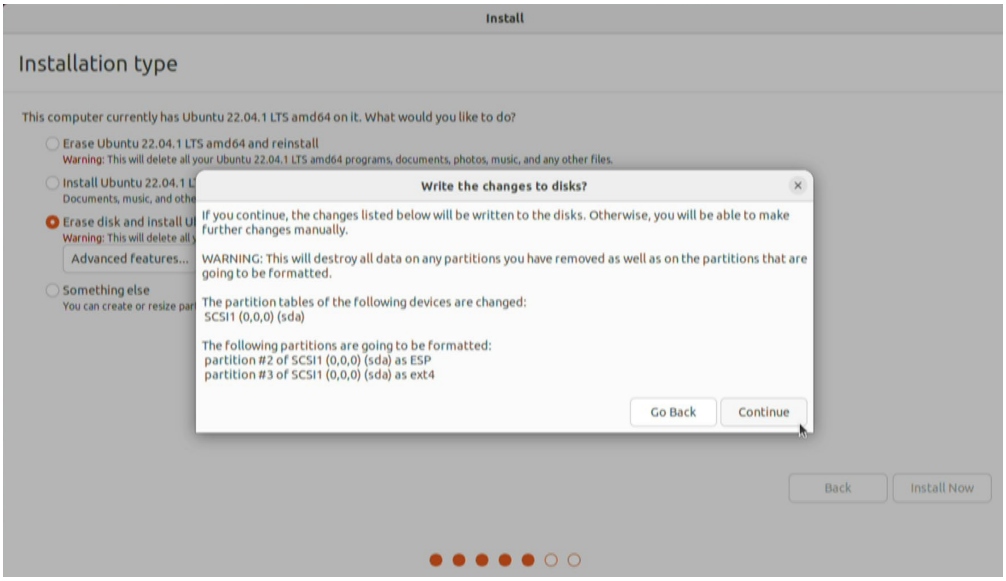

*Updates and other software screen*

8. In the **Installation type screen**, select **Erase disk and install Ubuntu** and select **Install Now**.




*Installation type screen*

The **Write the changes to disk?** dialog appears.




*Write the changes to disk? Dialog*

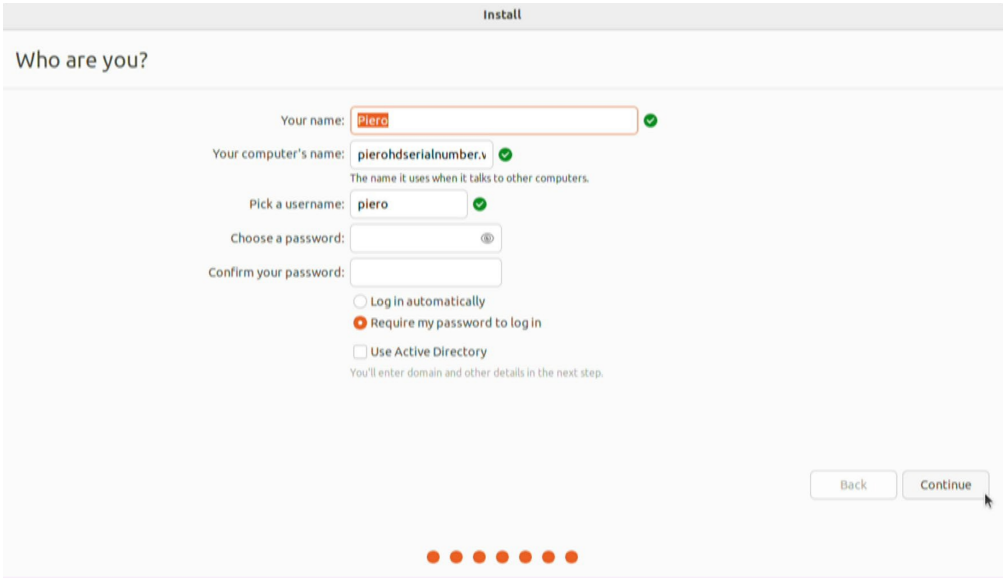
9. Ensure the drive is correct and then select **Continue**.

   The **Where are you?** screen appears.

10. In the **Where are you?** screen, select the timezone for your location and select **Continue**.

    The **Who are you?** screen appears.

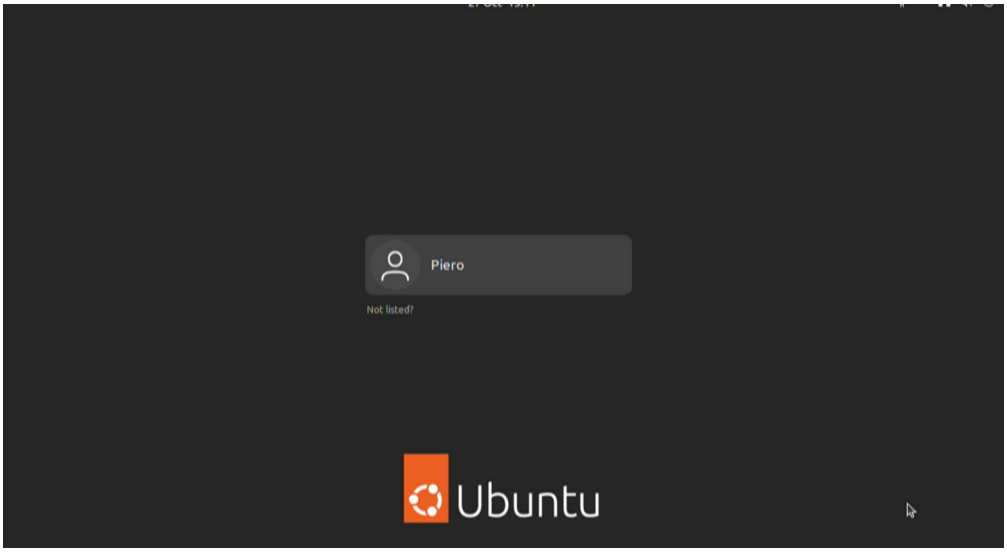
    ★ **Important**: **Do not edit the fields in this screen!** The fields are automatically populated and should remain as they are.




11. Select **Continue**.

The **Ubuntu Login Greeter** screen appears at first boot.

★ **Important**: **Do not log in!** The system will continue to configure drivers and restart several times (approximately 3 times with several minutes between each restart).



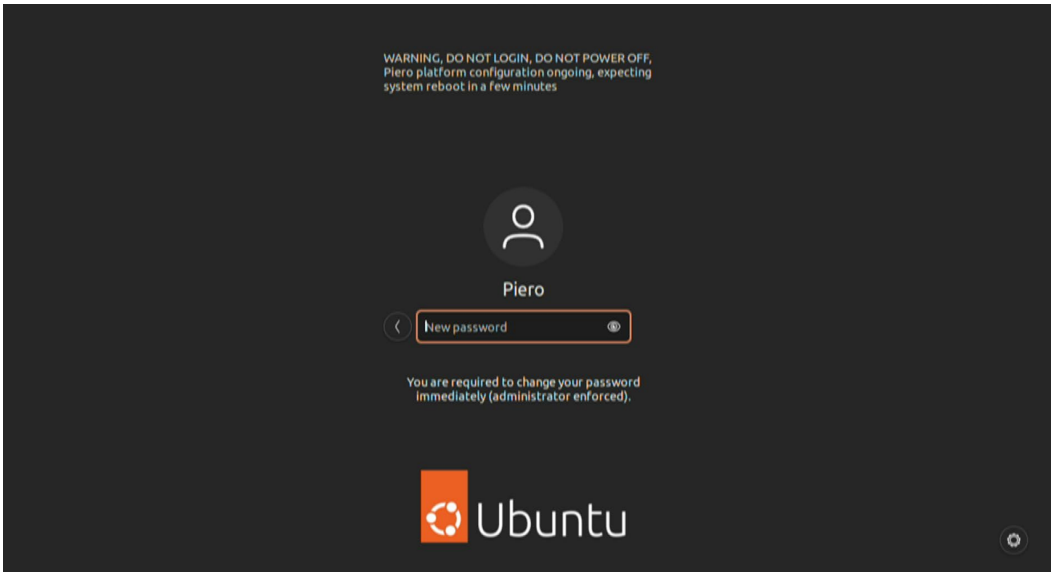

*First Boot - Ubuntu Login Screen*

12. Proceed to the login for the first time 24 procedure.

**To login for the first time:**

★ **Important**: **Do not log in!**

If you do attempt to log in by selecting the Piero entry and see a message at the top of the greeter screen to not log in or power off the system, wait until after the next restart.

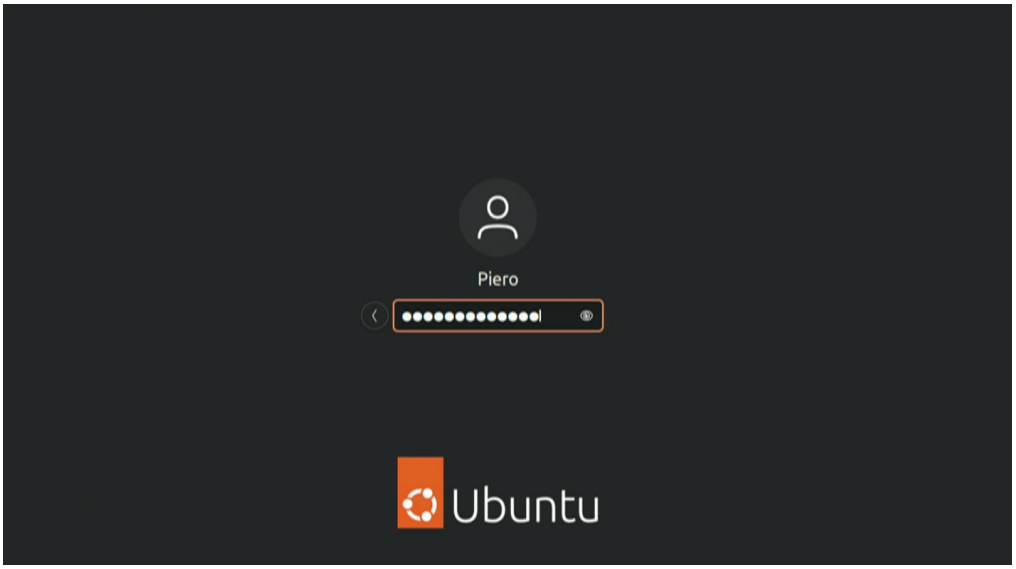



*Ubuntu Login Greeter Screen - Warning Message*

When the warning message is no longer displayed, it is safe to log in and a prompt for the PIERO account password to be set will appear.

1. Choose a new password and ensure the following password conditions are met:
   - The password must have a minimum length of 12 characters.
   - The password must not contain the name PIERO in any form.
   - The password must not be a palindrome.
   - The password will be checked against a common bad password dictionary.

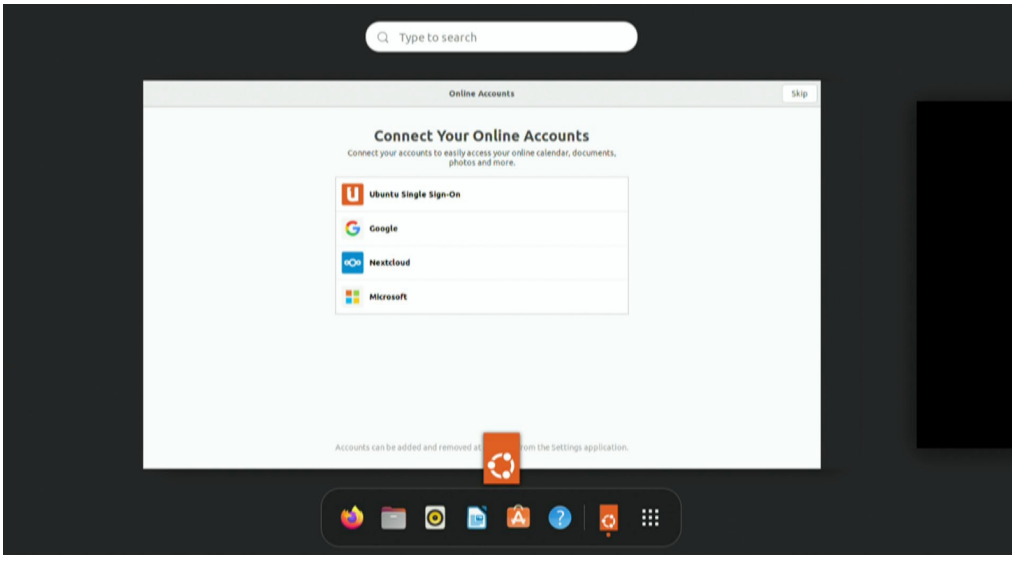
   ★ **Warning**:The responsibility of the password is for the customer to maintain. Ross Video does not maintain password information.
2. You will be prompted to confirm the password.




*Ubuntu Login Screen*

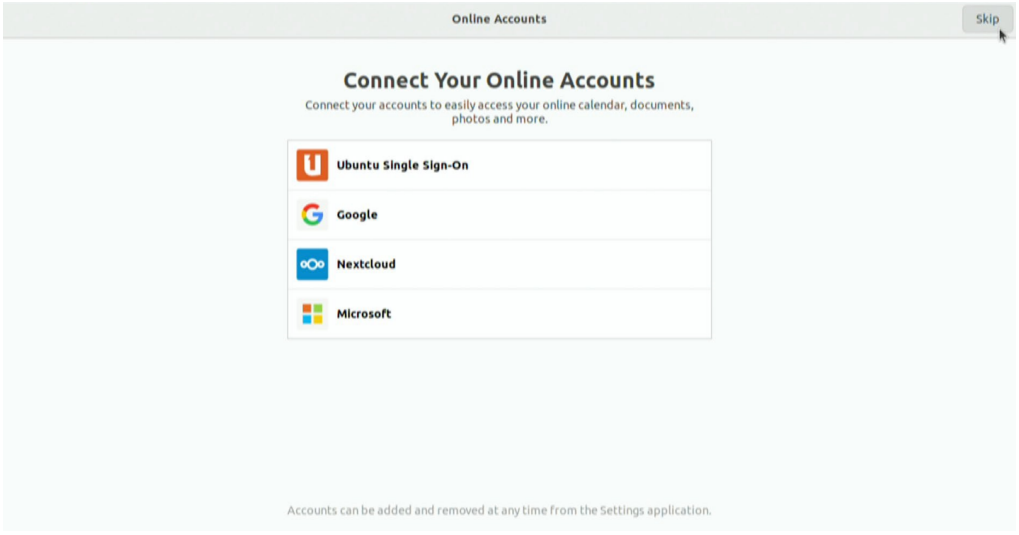
3. Confirm your password.

   The **Online Accounts** screen appears.



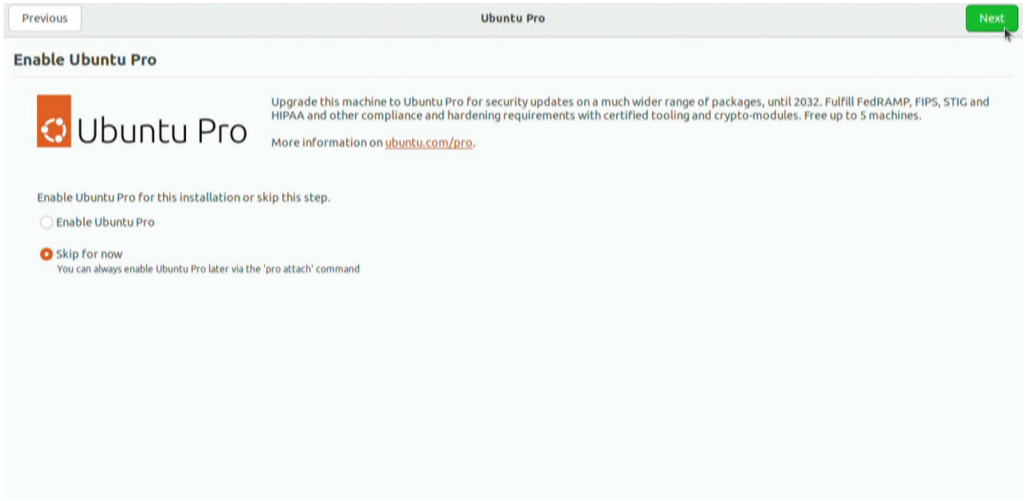

*Connect your Online Accounts Screen*

4. Select the **Online Accounts** window to bring it to focus.
5. At the top-right of the screen, select **Skip**.



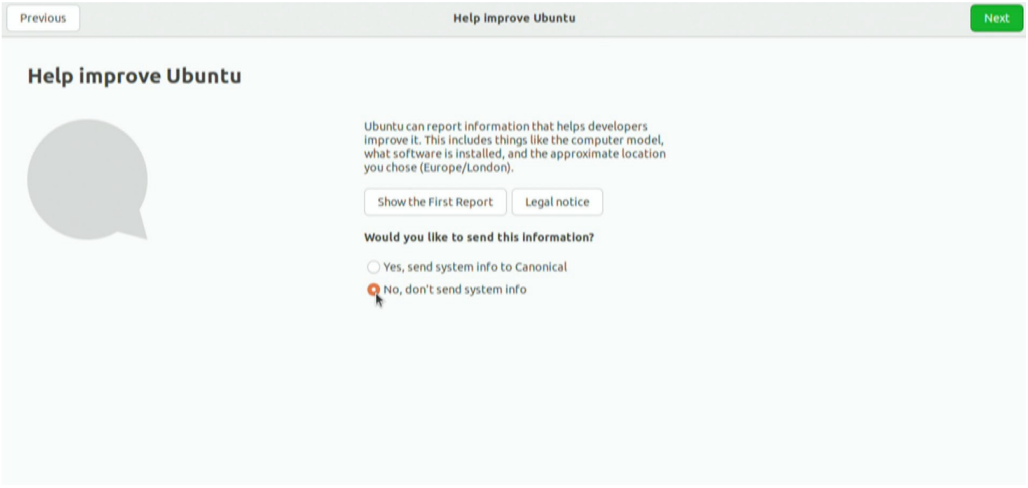

*Online Accounts Dialog*

6. In the **Ubuntu Pro** screen, select the **Skip for now** option and at the top-right of the screen, select **Next**.



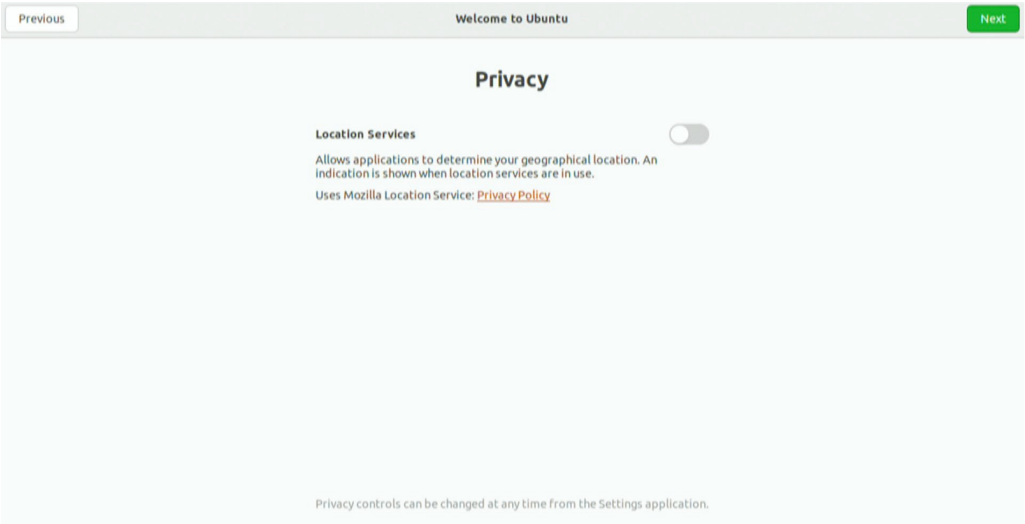

*Ubunto Pro Screen*

7. In the **Help Improve Ubuntu** screen, select the **No, don't send system info** option and at the top-right of your screen, select **Next**.



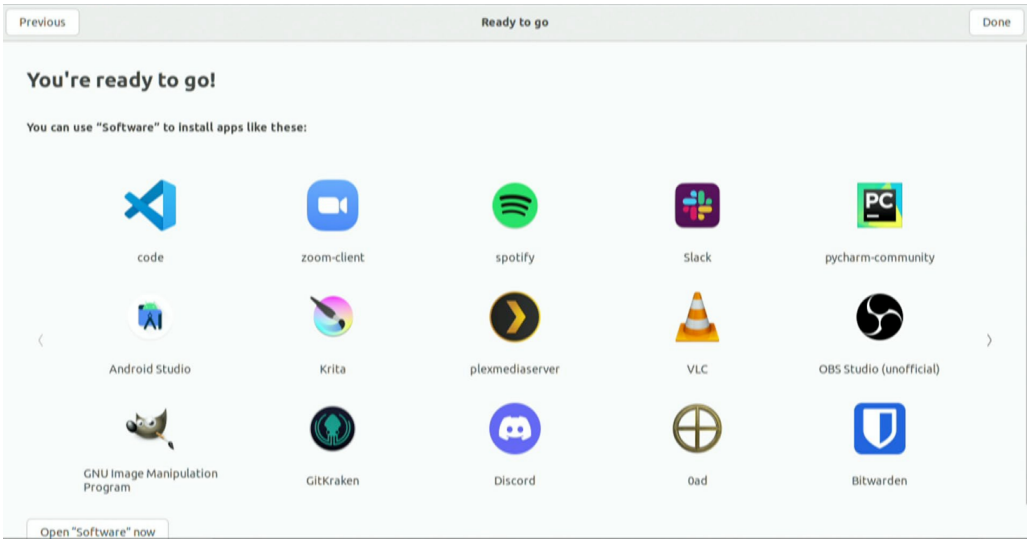

*Help Improve Ubuntu Screen*

8. In the **Privacy** screen, disable **Location Services** and at the top-right of your screen, select **Next**.




*Privacy Screen*

The **Ready to go** screen appears.




*Ready to Go Screen*

9. At the top-right of the screen, select **Done**.

   The Ubuntu installation process is complete.

   You may need to update the Ubuntu Software. For more information on how to update the Ubuntu Software, see the Ubuntu Software Update 29 section.

## Installation Issues

The following table lists known installation errors and recommended solutions. If you continue to have installation issues, please contact Ross Video for support.

| ERROR | Recommended Solution |
|---|---|
| **USB boot error: out of memory** | You encounter this error when trying to boot the USB installer.<br>If you are attempting to boot the UEFI installer, try to boot from the USB drive using the legacy UEFI option. |
| **Boot error: failure reading sector 0x###### from 'hd0'** | When trying to boot the USB, it may have failed to detect the drive and tried to boot without any operating system, resulting in an error.<br>Ensure that all drives are attached correctly and try again. |
| **Ubuntu Settings Fail to Open** | In the **Settings Power** section, if the **Power** mode is set away from performance, the Ubuntu settings fail to display.<br>Open a terminal and use the command:<br>**dconf reset -f /org/gnome/control-center/last-panel**.<br>The **Ubuntu Settings** should open.<br>★Do not change the **Power** mode. |

# Ubuntu Software Update

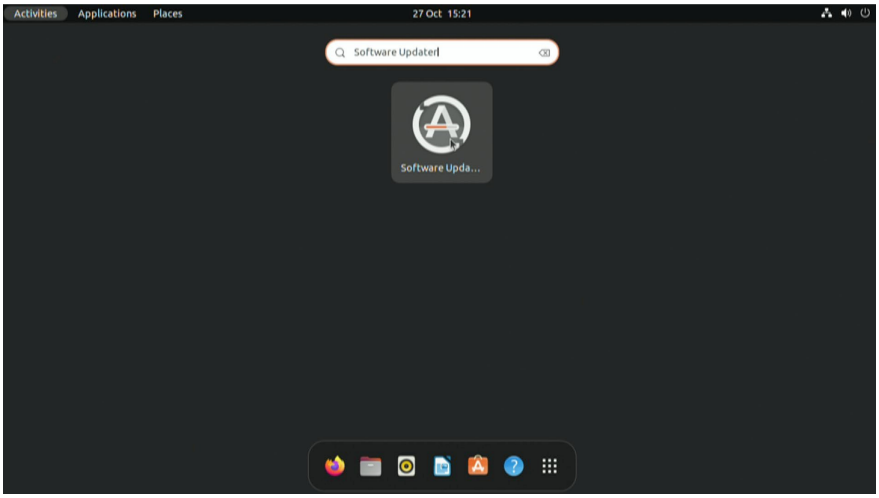
Once you have installed the Custom Ubuntu ISO software, you will need to check for software updates using the **Software Updater**, found in the **Application** menu.

**To update the Ubuntu Software:**

1. In the tool bar, select the **Application** menu.


*Application Menu*

The search field appears.

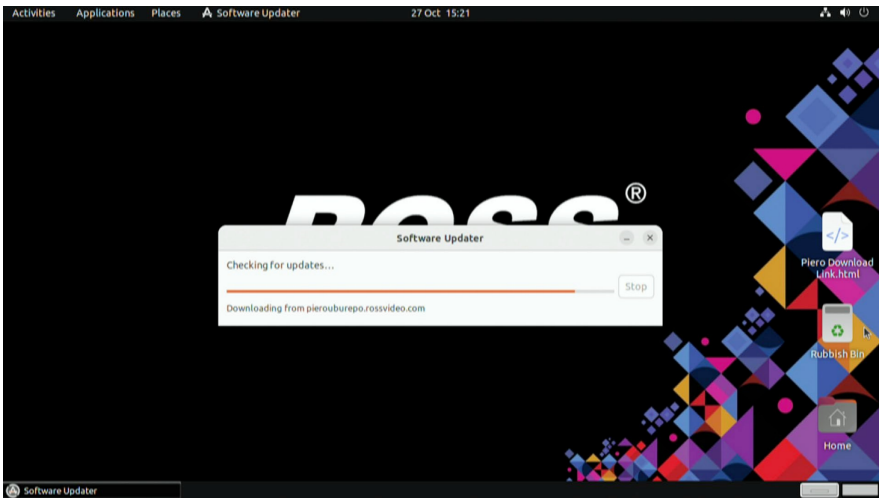



*Search Field - Software Updater*

2. In the search field, enter **Software Updater**.

Alternatively, you can go to the **Applications** menu and from the **System Tools** option, select **Software Updater**.

The **Software Updater** launches and displays available updates.




*Software Updater*

3. If any updates are available, select **Install Now**.

   The **Software Updater** downloads and applies the available updates.

4. If the **Software Updater** prompts to remove unused software packages, select **Install Now**.

5. Once the **Software Updater** has finished installing updates, restart the system.

   The Ubuntu software is updated.

# Ubuntu Desktop Configuration

This section provides information on installing additional applications and adding keyboard layouts.

## Installing Additional Applications

You can install additional software on the system using the Ubuntu Software App center, however you are responsible for testing, administering, and supporting the software that you install.

For specific information on installing additional applications, see Ubuntu's official documentation.

★**Important**: Adding additional software may affect the system performance while operating PIERO.

## Installing TeamViewer

TeamViewer is not available from the Ubuntu Software catalog.

If you need to install TeamViewer, you will need to download the full client version required for Linux, Ubuntu/Debian, x86-64bit directly from the TeamViewer website.

★ For specific instructions on installing TeamViewer, see the TeamViewer Installation documentation on the TeamViewer website for additional information.

## Adding Keyboard Layouts

The Ubunutu application offers users several keyboard layout options to support different languages.

**To add an additional keyboard layout:**

1. Open the **Activities** menu and in the search field, enter **Settings**.
2. Select **Settings**.
3. In the sidebar, select **Keyboard**.
4. In the **Input Sources** section, select the **+** button.
5. Select the language you want associated with the keyboard layout.
6. Select the keyboard layout you want and select **Add**.

**To switch between keyboard layouts:**

1. At the top-right of the screen, select the **Language** drop-down.
2. From the drop-down, select the keyboard language layout you want.

# AJA Firmware Update

This section describes the AJA Firmware update procedure.

1. At the top-left of the screen, select **Activities**.

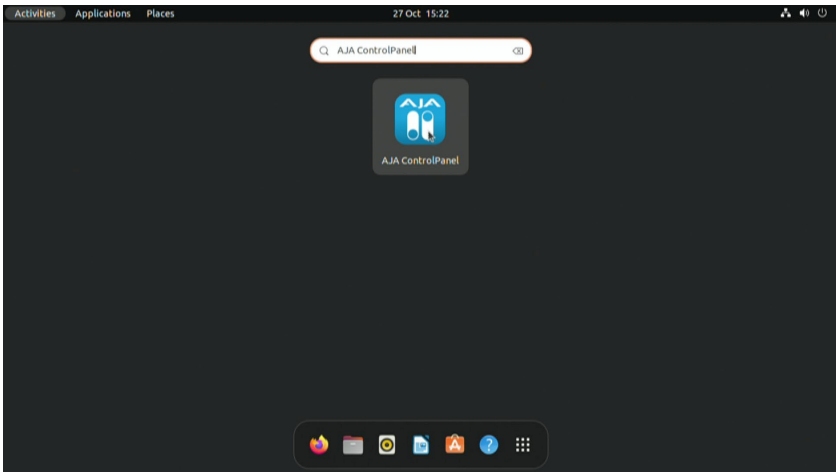

*Activities*

The search field appears.

2. In the search field, enter **AJA ControlPanel**.

The **AJA ControlPanel** icon appears.

Alternatively, you can go to the **Applications** menu, use the **Sound & Video** option and select **AJA ControlPanel**.




*Search Field - AJA Control Panel*

The **AJA ControlPanel** opens.

After the **AJA ControlPanel** launches, you maybe be prompted to update the firmware.

★The minimum required version for the AJA Covid 88 SDI card is 2019/05/17. If you have a later version installed and receive a prompt to install an earlier version, cancel the prompt to dismiss the alert.


*AJA Firmware Update*

3. If an update is required, update the firmware as follows:

   a. In the **Firmware Update Needed** dialog, select **OK**.

   b. In the **Firmware Information** section, select **Install**.

   c. Select **Continue**.

   The update will take several minutes and the system will restart. The **Firmware Updated** dialog will appear when the update is finished.

4. Select **Shut Down**.

   ★ Before you can power the system back on, the system must completely shut down, which will take a few minutes.

   The **AJA Firmware** is updated.

# PIERO Installation

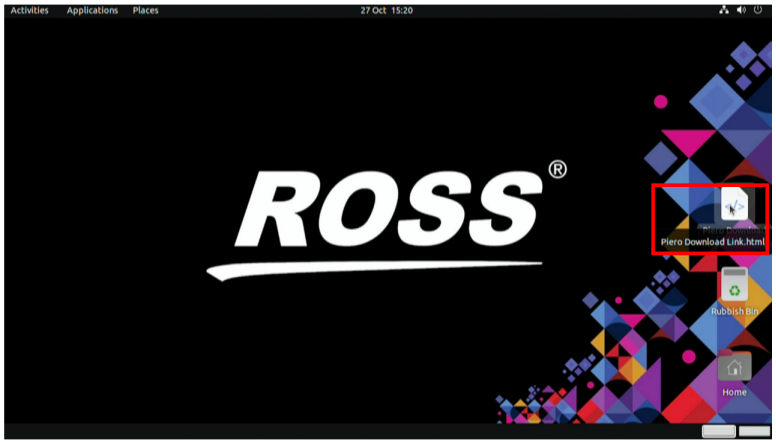
This section provides instructions for downloading and installing PIERO on the Ubuntu system.

Installing a PIERO release has two stages:

- Download the PIERO release file.
- Install PIERO.

**To download a PIERO release:**

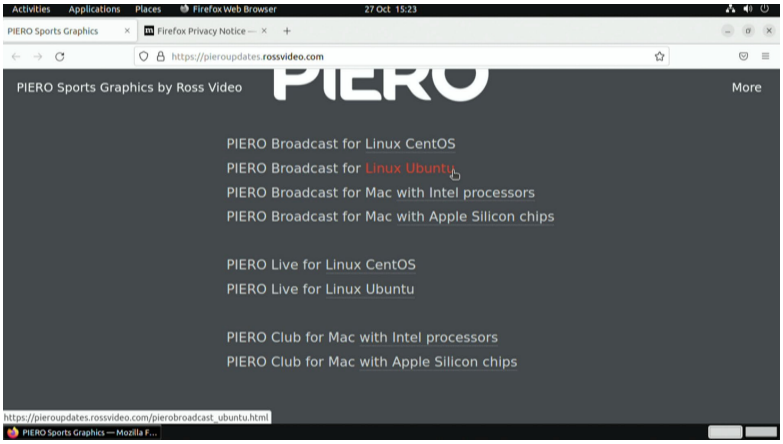
1. On the desktop, select the **Piero Download Link.html** link.




*PIERO Download Link*

You will be directed to the **PIERO Sports Graphics by Ross Video** page to download the the specific Ubuntu PIERO release for which you have a license (**PIERO Broadcast** or **PIERO Live**).

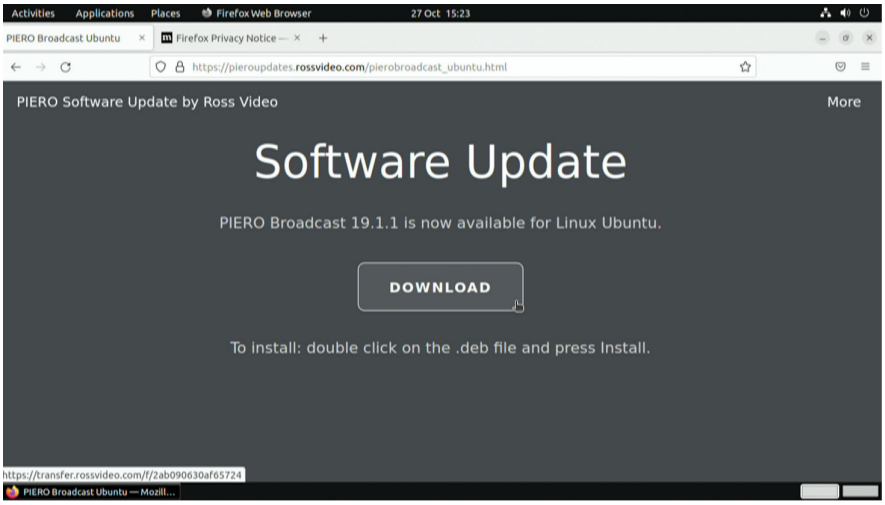
2. From the list, select the PIERO release for which you have a license.




*PIERO Sports Graphics by Ross Video*

The **Software Update** screen appears.

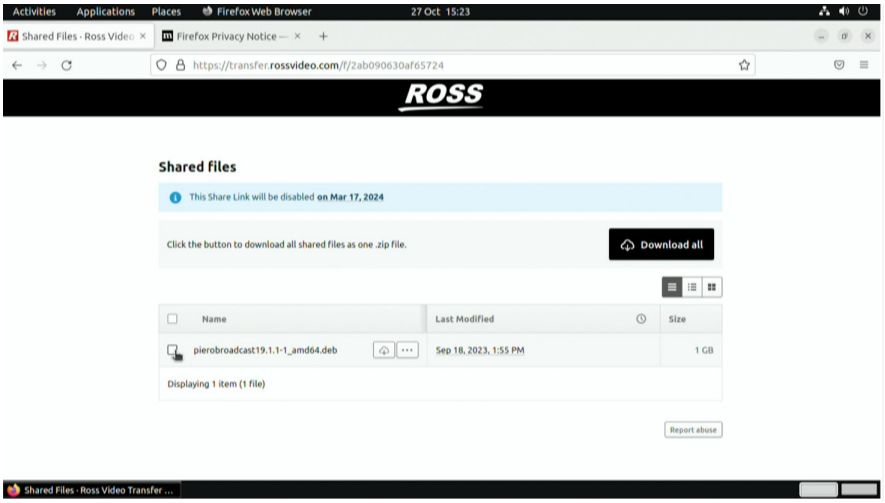
3. Select **Download**.




*Software Update Screen*

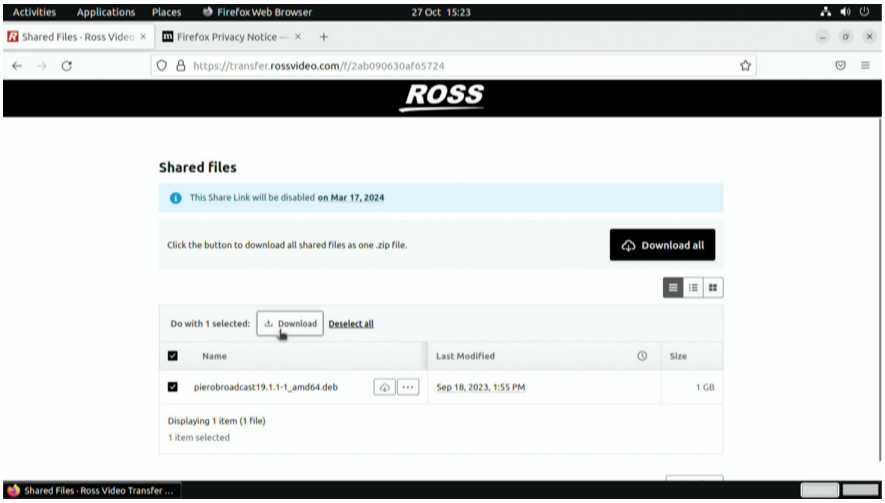
The **Shared Files** window opens.

4. In the **Name** section, select the checkbox next to the name of the PIERO download file.



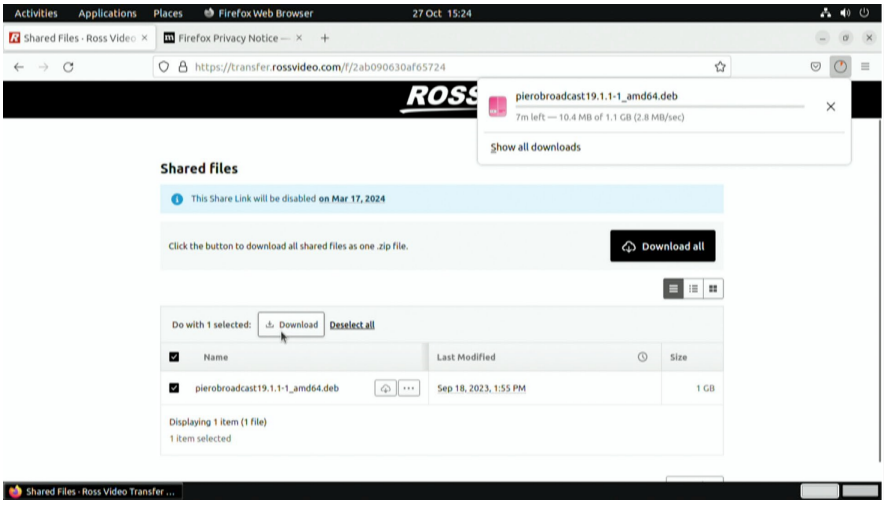

*Shared Files - PIERO Release Checkbox*

5. Select **Download**.




*Shared Files - Download*

The download progress pop-up appears, indicating the file download progress.

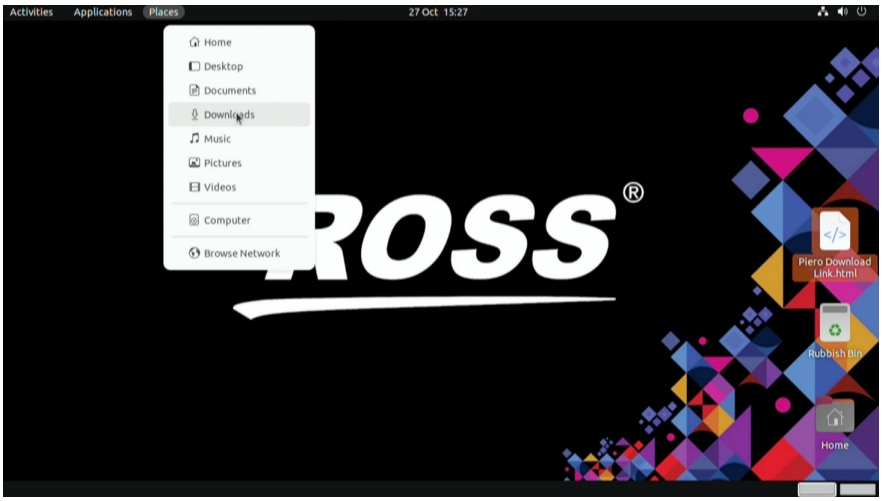



*PIERO Installation - Screen 6*

6. Once the file has been downloaded, you will need to install PIERO. Proceed to the Install PIERO 38 procedure.

**To Install PIERO:**

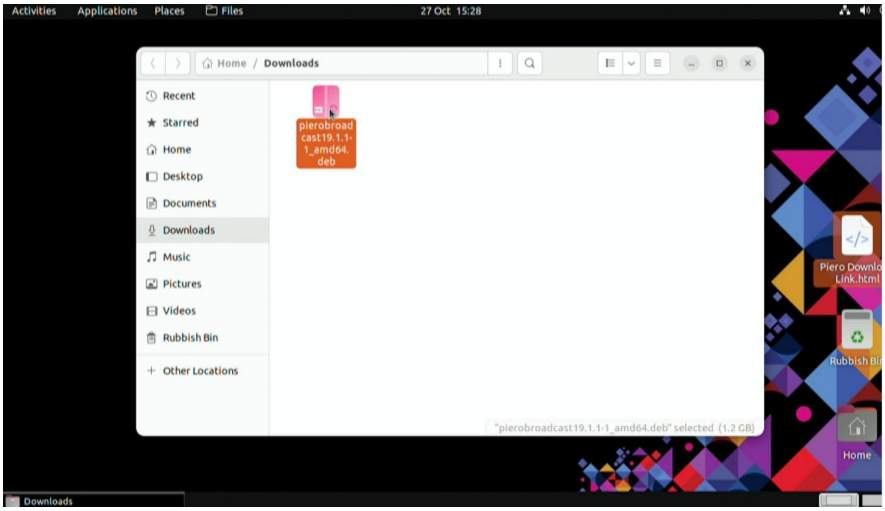
1. Go to **Places** and select **Downloads**.




*Places - Downloads*

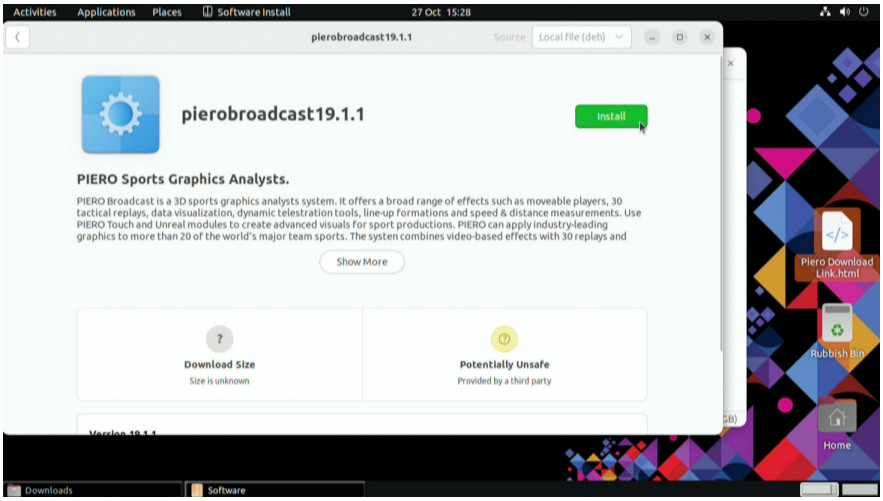
The **Downloads** window opens.

2. Double-click the PIERO installation file to launch the software installer.




*Downloads - PIERO Installation File*

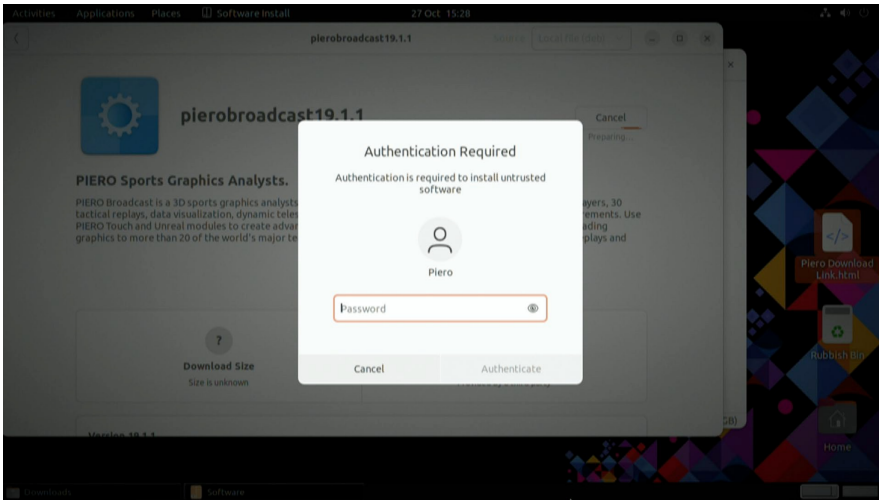
The software installer opens.




*Software Launcher*

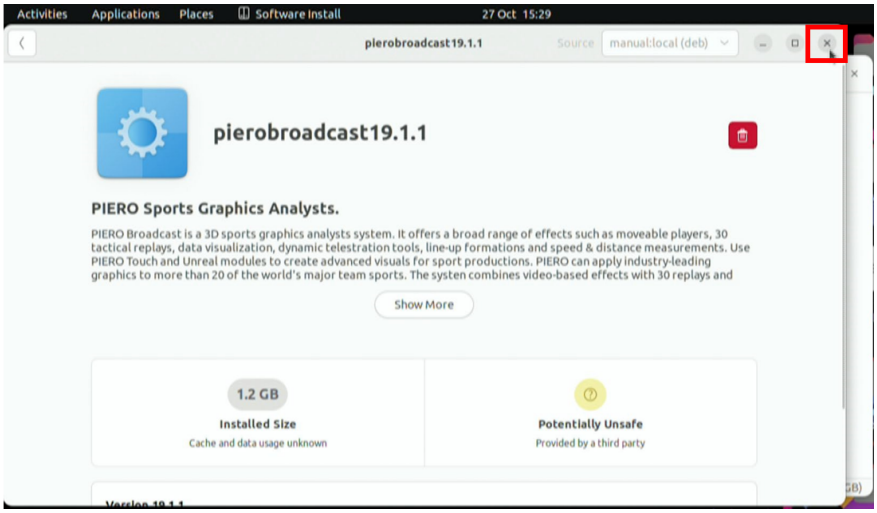
3. Select **Install** to start the installation process.

   The **Authentication Required** window opens.




*Authentication Required Window*

4. Enter the PIERO password to authenticate.
5. Once the installation process has finished, select the **Exit** button to close the window.

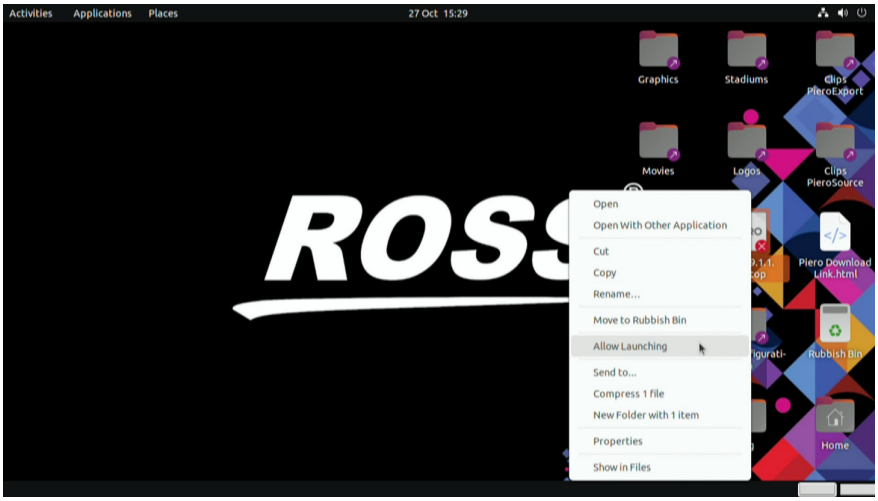



*Software Launcher - Exit Button*

The **Software Launcher** closes and new icons appear on the desktop.


*Desktop - New Icons*

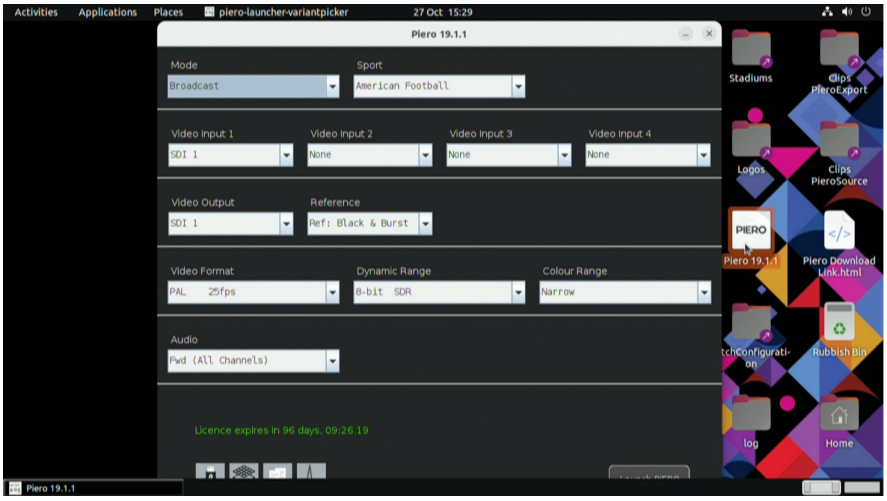
6. On the desktop, select the **PIERO desktop** icon and then right-click on the icon to reveal the options menu.
7. From the menu options, select **Allow Launching**.




*Desktop - PIERO Options Menu*

The **PIERO Launcher** opens.

8. At the bottom of the launcher window, the license expiry date is displayed in green text.




*PIERO Launcher - License Expiry Date*

The installation process is complete and PIERO is installed on your system.

For instructions on how to use PIERO, see the PIERO User Guide for additional information.