Release Notes & Installation Guide

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1 Release Notes – Living Image 4.8.4

1.1 Instruments

Instruments affected include:

- IVIS Lumina Series III/LT
- IVIS Lumina XRMS
- IVIS Lumina S5
- IVIS Lumina X5
- IVIS Spectrum 2
- IVIS Spectrum
- IVIS SpectrumCT 2
- IVIS Spectrum CT

1.2 Upgrade and Compatibility

Upgradable software versions include:

- Living Image 4.7.3
- Living Image 4.7.4
- Living Image 4.8.0
- Living Image 4.8.1
- Living Image 4.8.2
- Living Image 4.8.3

1.3 Release Objectives

This is intended as an update providing an array of fixes for acquisition and analysis functionality with a most notable change that removes the licensing check for all users.

1.3.1 New Features

- Living Image no longer requires an activated license to run the main application or for plugins such as "3D Multi-Modality Tools" and "Spectral Unmixing and Dyce"
- IVIS instruments installed with an Andor camera have a new acquisition option called "Camera Shutdown" to perform a controlled warmup prior to powering off an instrument

1.3.2 Improvements

- Living Image can be launched by all standard users without administrator privileges.

  Note:
  Administrator privileges are still required to install the software.

- More details are displayed when there is a problem with the specified account credentials associated with the auto background service
- The Windows application installer utilizes Revvity branding
- The registered trademark symbol (®) has been replaced with the trademark symbol (™) to clarify trademark status in various locations globally
- Demand temperature information is included in the dark charge warning display
- Float corrected photograph tif images are now saved when the user preference to save float corrected images is selected
- Help→User Guide is now Help→User Manual to reflect the terminology used on the cover page of the included documents
- Additional support added for galvos on older Spectrums as well as new Spectrum 2 Class instruments.

1.3.3 Resolved Issues

- Default X-ray image binning user setting contained an invalid option of "3"
- X-ray "large animal" imaging position was not maintained across imaging sessions (IVIS Lumina XRMS only)
- Living Image browser continued to show a previous dataset location filepath even after all data in the browser was cleared
- Application installer failed to migrate the "emfilters" directory from the Caliper Life Sciences (LI 4.8.2 and earlier) location to the newer Revvity location
- Applying user credentials for the Auto Background Service would overwrite any user defined start time of the acquisition
- Applying a start time for the Auto Background Service would overwrite any user defined account credentials to use for the service
- Spectrum CT instruments with a CameraLink interface failed to establish connection with the installed X-ray detector
- Application failed to migrate the "config" directory from the Caliper Life Sciences (LI 4.8.2 and earlier) location to the newer Revvity location
- IVIS Lumina machines with removable filter wheels failed to initialize following the selection of a new emission filter
- Sometimes repeated clicks were unnecessarily needed to press "Create" and "Done" when creating a ROI using "Auto 1"
- Total counts statistic for Spectrum CT datasets could be invalid due to an overflow error of a large value
- The last frame of a Spectrum CT dataset was skipped during loading of the volume

- CT co-registration with optical data failed when using data acquired with Living Image 4.8.3
- Auto Background service failed to start at configured time
- Selecting the uninstaller option to restart the computer failed to initiate the restart
- Various files in the Program Data directory on Windows failed to be cleaned up upon uninstalling Living Image
- User preferences could not be saved successfully after upgrading from Living Image 4.8.2 or earlier
- Camera cooling failed to start after application installation
- Log files failed to save when running the application without elevated privileges
- Application icon was missing in Windows installed programs list
- Emission and excitation filter spectra plots failed to display in imaging wizard FLI probe selector dialog when multiple probes were selected
- Named filters were not displayed in the imaging wizard emission filter plots
- Save button was not enabled upon toggling Fluorescent Background Subtraction correction checkbox
- Spelling mistakes were present in various locations of the user interface
- Living Image crashed if an analysis-only install also had an acquisition specific CameraInfo.txt file present on disk
- Warning message did not appear upon trying to do fluorescent imaging at FOV A using transillumination
- Tooltips showing the emission and excitation filters in the spectrum plot of the imaging wizard were missing
- Transillumination Head Homing Issue - When the transillumination head is at the extreme negative edges of travel, the homing routine does not work. This can lead to false positioning during transillumination scanning. **See 1.5.1 below for details**.

1.3.3.1 Transillumination Head Homing Details

If a power outage, or other interruption, occurs while the transillumination head position is at more than 66% of the allowed travel in either the negative X or Y direction (see diagram), the homing routine leaves the head incorrectly placed. This will lead to incorrect Fluorescent transillumination imaging locations.
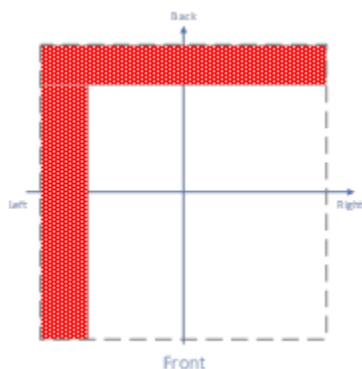
Figure 1. Transillumination Head

Detection and user warning: Living Image will now query the Firmware to report back the Transillumination head position after the homing routine. If the head is within an acceptable range of the home position (0,0: the cross hair in the diagram), then Acquisition continues as normal. However, if the reported (X,Y) position is outside of the acceptable range then the system reports an error, and the user is prompted to power cycle the instrument.

Recovery steps: If the user is prompted to power cycle the instrument, the following steps describe how to do that:

1. Remove the animal currently in the imaging chamber.
2. Exit Living Image.
3. Power off the instrument cabinet. Pressing the EPO switch will suffice.
4. Wait 10-15 seconds.
5. Power the cabinet back on (this will reset the UACC X and Y values to 0,0 from the large stored negative values in the register).
6. Launch Living Image and initialize the instrument.
7. Start the Transillumination sequence.
8. After the FLT point location photo, the transillumination head will be homed.

1.4   Known issues and workarounds

Description	Workaround	Severity
On a Lumina X5, if you run an X-ray only sequence at a different FOV, there will be a scintillator to stage interference during the transitions between FOV.	Add photograph to CT sequence.	Major
When acquiring a sequence with X-ray and the X-ray arm button is not pushed, the acquisition fails without warning.	Scheduled for next version.	Minor
Surface Topography and DLIT/FLIT tool palettes go hidden for a newly acquired dataset if structure light acquisition fails for the next dataset in batch mode.	Select Tool Palette from View menu.	Minor
Missing CT Target type in advanced preferences causes a crash.	Close and relaunch Living Image.	Minor
Customers are reporting that Living Image 4 is also stopping when **Emergency Stop** is used. Correct behavior is that Living Image 4 should not stop.	Launch Living Image again.	Minor

1.5   Service Information

- The installer and uninstaller of Living Image 4.8.4 are set to run as admin by default. This is for the smooth installation and uninstallation of auto-background acquisition and cooler utility services.

- For the machines in which camera cooler is disabled, the cooler utility service may still show as "Running" in windows services. The correct status will be available in the Activity Log and Cooler Activity log files.

- On systems that have removable filter wheels, users must right-click on Living Image, select 'Run as administrator,' and then change the filter wheel for the removable filter wheel option to work properly.

1.6   Technical & Product Documentation

- User Manuals – Located in the Help menu of Living Image software.

- Tech Notes – Located in the Help menu of Living Image software.

- IVISense Fluorescent Probe Selector Guide pdf file - available as a desktop shortcut on the acquisition machines.

2   Before You Begin

2.1   System Requirements

For optimum performance, Living Image software requires hardware and software that meet or exceed the requirements listed below.

2.1.1   Computer Requirements

Table 1. Analysis Workstation System Requirements

Item	Specification
Operating System	Windows 10, 11 macOS 10.15+
RAM	Minimum: 16 GB Recommended: 32 GB or greater 64 GB for Spectrum CT datasets

2.1.2   Graphics Card

If you will be using the 3D Multi-Modality tools, the graphics card must meet the requirements below.

NOTE:

If the GPU does not meet these specifications, the 3D multi-modality tools will not appear in the tool palette.

Table 2. Graphics Card Requirements for 3D Multi-Modality Tools

Item	Specification
OpenGL Version	OpenGL 2.0 and above.
OpenGL Extension	GL_EXT_Texture3D
Graphics Card Memory	Minimum: 1GB (Dedicated)

3　Installing Living Image Software on Windows

3.1　Installing the Software

Living Image software installs at the following location:

LOCATION
C:\Program Files\Revvity\Living Image

1. Go to the In Vivo Imaging Software Downloads page.

2. Under Living Image Software (IVIS Imaging Systems), click the link to download the Living Image installer for Windows. The installer file is in the form of LI<version>_WIN_64Bit_Install.zip.

3. After the download is complete.

   a. Navigate to the installer zip file using Windows Explorer.

   b. Unzip the file.

   c. Right-click the unzipped installer file and click **Run as administrator** from the shortcut menu, then enter the local administrator's username and password. The installation will begin.

4. Choose a language and click **OK** on the Welcome screen that appears. The Introduction screen appears.

Figure 2. Living Image Software

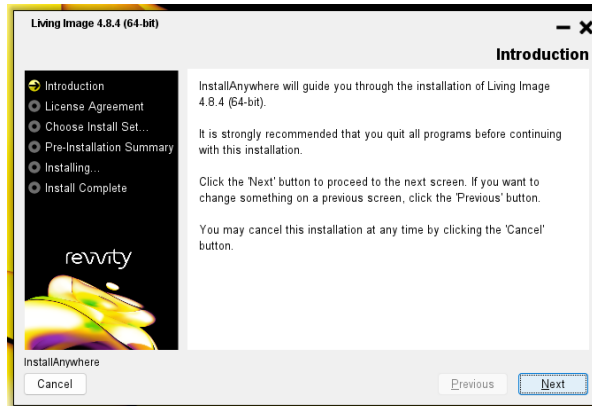5. Review the introductory information and click **Next**.

Figure 3. Introduction window

6. Read the license agreement. To continue with the installation, accept the terms of the license agreement and click **Next**.
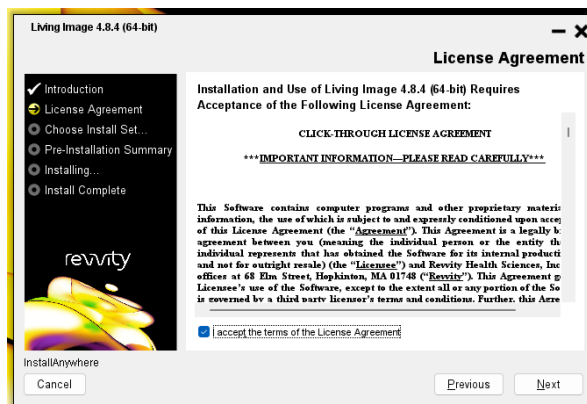

Figure 4. License Agreement window

7. If you are installing the optional 3D Multi-Modality and/or DyCE tools, choose these options in the Choose Install Set screen (Figure 5). Click **Next**. The installation proceeds.
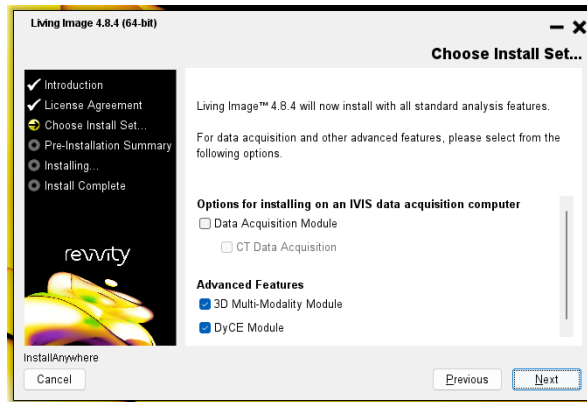
Figure 5. Choose Install Set

8. Living Image software is now ready to install the standard analysis features.

    - **Data Acquisition Module** - Choose this option if you are installing the software on an acquisition workstation.

    - **3D Multi-Modality Module** - Choose this option to install the 3D Multi-Modality tools.

    - **DyCE Module** - Choose this option to install the DyCE tools.

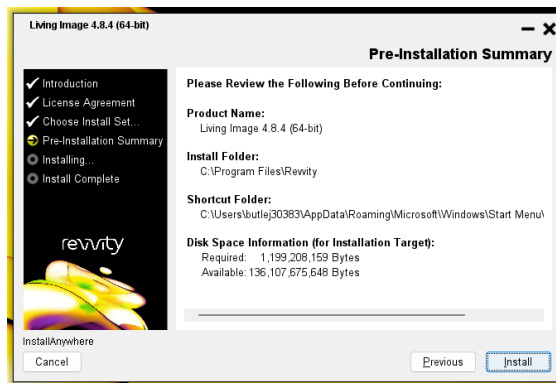9. Confirm that the installation information is correct, then click **Install**.

Figure 6. Pre-installation Summary window
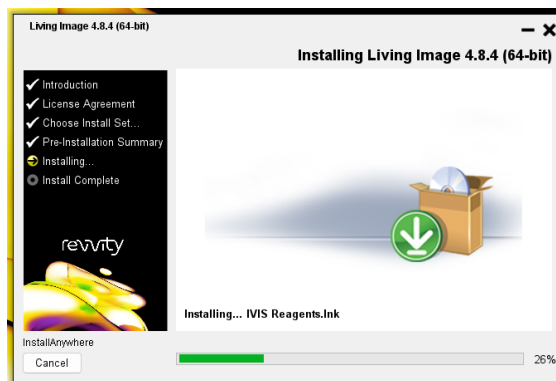
Figure 7. Installing Living Image window

10. If the installer detects a previous Living Image installation (analysis or acquisition version), you will be prompted to confirm un-installation of the earlier version.

11. Click **Yes** in the confirmation message to uninstall the previous Living Image software and install the Living Image 4.8.4 software. Click **No** to terminate the installation program.

    NOTE:

    If older Living Image software is installed on the acquisition computer, the installer uninstalls the old software and copies all essential calibration files (CameraInfo.txt, CameraLog.txt, Background folder, LI_AutoBkgList.csv, Emfilters folder, FLReference folder, SLReference folder, CCDCal folder, if such exists) to the Living Image directory.
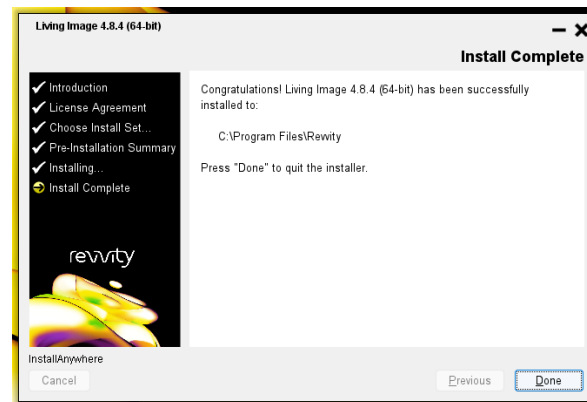
    NOTE:

    *If the message shown below appears, click **OK**. The installation proceeds.*
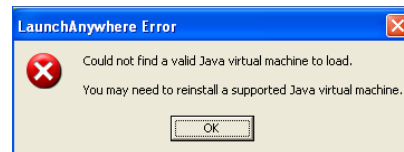
Figure 8. Launch Anywhere Error message

12. Click **Done** in the Install Complete screen after the installation is finished. When you see the message "System must be rebooted to complete the configuration", reboot the computer right away or at a later time.

Figure 9. Install Complete Window

13. After successful installation on an acquisition computer, start the Living Image software and verify that you can initialize the IVIS Imaging System. If you are unable to initialize the imaging system, contact Revvity technical support.

14. If your computer is equipped with multiple graphic cards, please follow the next figure to default Living Image to use the highest performing graphics card for the Living Image software. Otherwise, the Living Image 3D viewer, especially with the 3D Multi-Modality tool, may not function correctly when running on low-end integrated graphics hardware. The image below shows an example of a laptop with both Intel integrated graphics and NVIDIA graphics. Open the NVIDIA control panel and click on "Manage 3D settings." In the "Program Settings" tab, add the Living Image executable (livingimage.exe) as the program to customize and then set the preferred graphics processor to "High-performance NVIDIA processor."
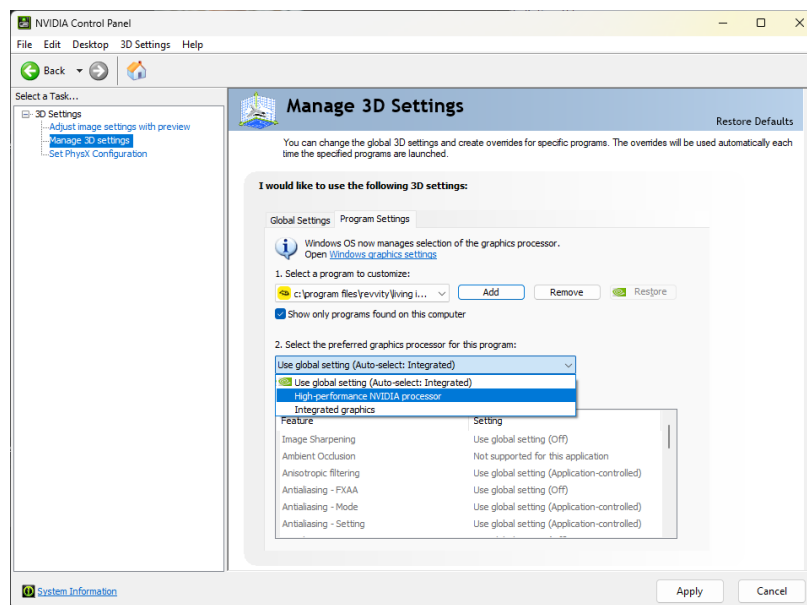
Figure 10. Nvidia control panel

3.2   Troubleshooting Installation

If the error message shown below appears, it indicates that the installation cannot proceed due to limited user privileges. Click **OK** to cancel the installation.
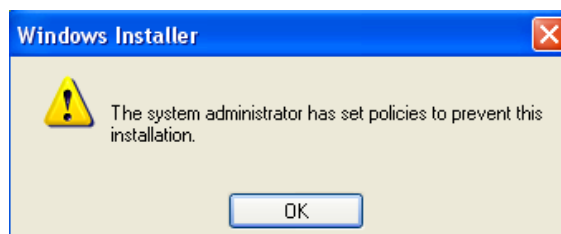

Figure 11. Windows Installer window-Error message

To resolve this issue:

- Login with the Administrator user account and start the installation.

OR

- Right-click the unzipped installer file and click **Run as administrator** from the shortcut menu, then enter the local administrator's username and password. The installation will begin.

If installation does not proceed, please contact your IT department.

4   Installing Living Image Software on macOS

1. Copy the **Revvity-macOS-installer-x64-4.8.4.pkg** to the desktop.

Figure 12. macOS installer package

2. Double-click on Revvity-macOS-installer-x64-4.8.4.pkg from the workstation computer. The Welcome to Revvity Installer screen opens.

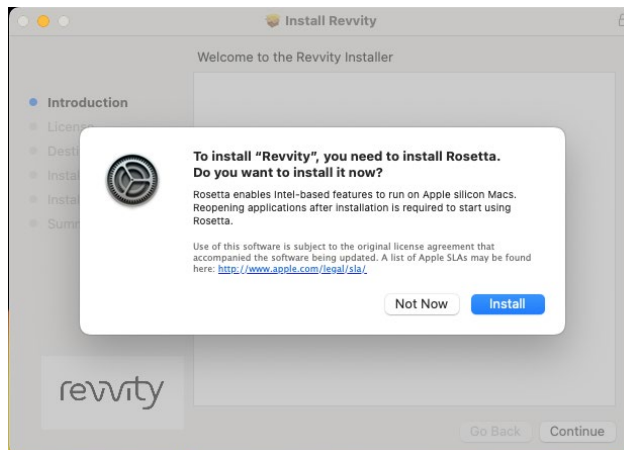3. If prompted, install Rosetta following the on-screen instructions.

Figure 13. Rosetta Install window

4. If prompted, sign into the admin account using the admin username and password.

5. Review the Welcome to Revvity Installer Screen and click **Continue** to continue installation
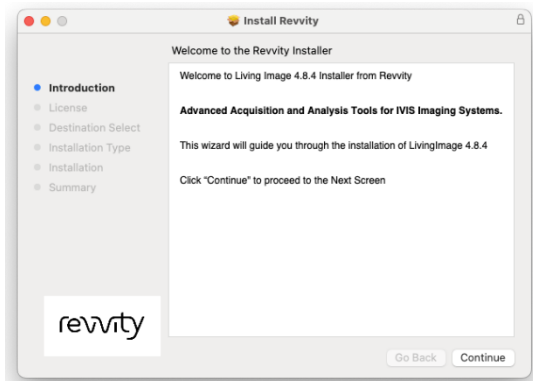

Figure 14. Install Revvity Installer window
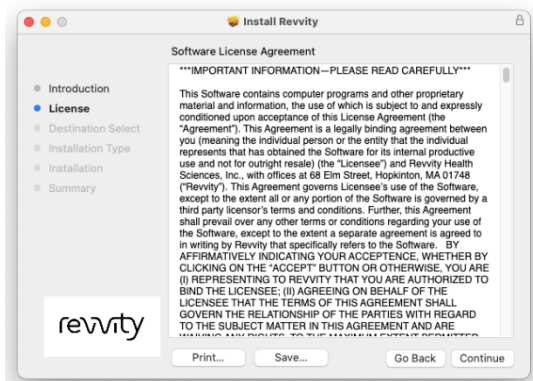
6. Read the license agreement, click **Continue**.

Figure 15. Software License Agreement window
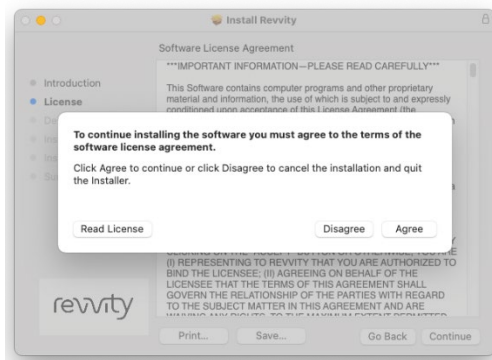
7. Click **Agree** to accept the license agreement.

Figure 16. License Agreement window

8. If you are installing the advanced feature Package 3D Multi-Modality or DyCE tools, choose these options in the Custom Install screen, click **Continue**.
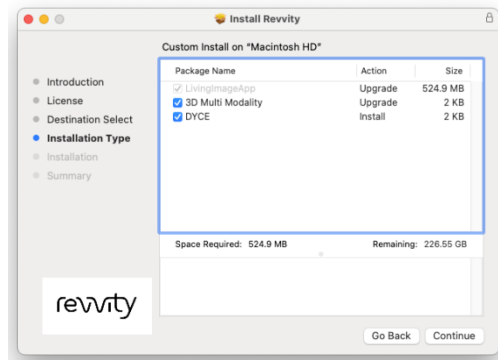
Figure 17. Custom Install window

9. In the Standard Install screen, review the information then click **Install**.
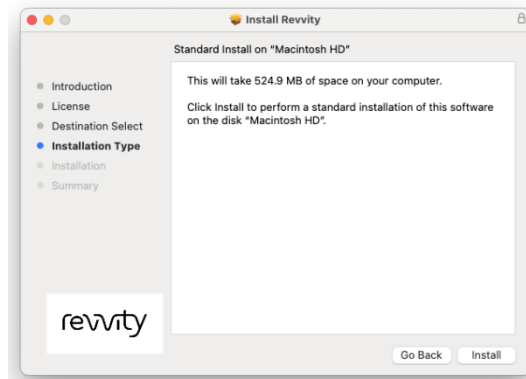

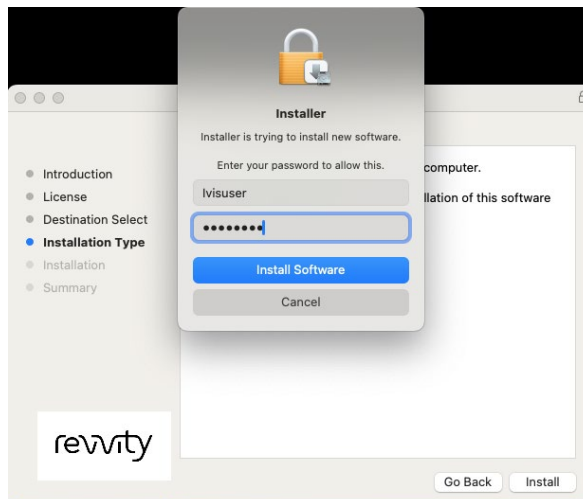**Figure 18. Standard Install window**

10. Click **Use Password**.

Figure 19. Use Password window

11. Enter your password in the Authenticate dialog box that appears and click **Install Software** to start Installation. The Installation window opens.
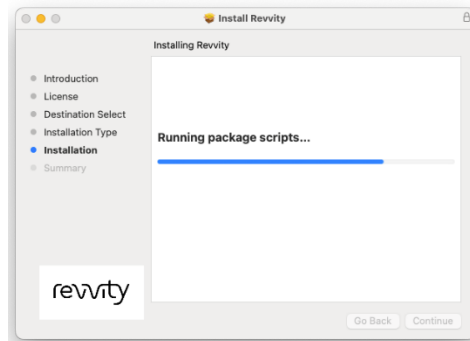

Figure 20. Installing Software progress bar

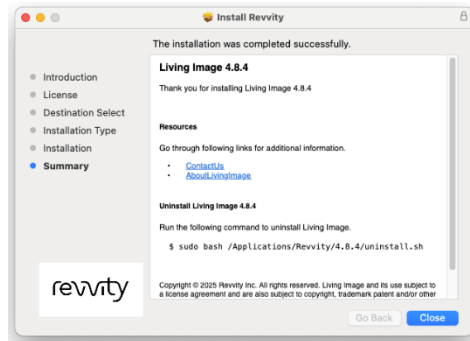12. Review the Installation summary screen and click **Close** to complete the Installation procedure.

Figure 21. Installation Completed window

13. Verify the Living Image icon has been installed on the dock.

Figure 22. Living Image Icon on the dock

5 Contact Revvity

If you have a question about a product that is not answered in this manual, or if you need assistance regarding this product, please contact Revvity Technical Support Center at https://www.revvity.com/contact-us.

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