Vantage Software Installation Instructions

Vantage Software Release 4.0.1-1903121200, 12 March 2019

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1   Your Vantage Software May Already Be Installed

Your Verasonics Vantage hardware unit is controlled by an attached computer system. In our documentation, we often refer to this computer system as the *host controller*.

If you have just received a new Vantage system that was ordered with a host controller supplied by Verasonics, the latest Vantage software was installed and tested with your Vantage hardware unit before the equipment was shipped to you.

In this case, please do not attempt to install the Vantage software again. Please ignore these software installation instructions and proceed directly to setting up your Vantage system as explained in the *Vantage User Manual*, located in the *Documentation* subdirectory of the Vantage project folder directory. A copy of the *Vantage User Manual* will also be found on the desktop of a computer preconfigured by Verasonics.

If, on the other hand, the computer system you will use as your host controller was not supplied by Verasonics, you will need to install the Verasonics Vantage software on it. In this case, please follow the software installation instructions given in this document.

These instructions also apply to installation of the 4.0.1-1903121200 release on a host controller that already has an installation of an older Vantage software release.

Additional information on setting up and using your Verasonics Vantage system can be found in the *Vantage User Manual*. An electronic copy of this document as well as other important information can be found in the *Documentation* folder within your Vantage project folder.

2   Vantage Project Folders

For all Vantage software releases since 2.11, the entire Vantage software installation is contained in a single folder called the Vantage project folder. This replaces the "Matlab Simulator" folder used in releases prior to 2.11.

Please note the following with respect to Vantage project folders:

1. Vantage project folders are self-contained entities.

   The Verasonics application directories used in releases prior to 2.11 are no longer used by the Vantage software. They are not modified by the installation of this release.

2. Vantage project folders are created either by running the Vantage software installer or by copying an existing Vantage project folder. Note that the the first Vantage project folder on a given computer system must be installed by running the Vantage software installer.

3. When a Vantage project folder is created by the installer, it is named according to the Vantage software version contained within it.

   For example, the Vantage software 4.0.1-1903121200 release installer will create a project folder named *Vantage-4.0.1-1903121200* when it runs.

   If you re-run the installer a second time in the same directory, it will not overwrite the existing Vantage project folder. It will notify you that an existing installation was found, and that you must relocate, rename, or delete it before the new installation can be completed.

4. You may create any number of Vantage project folders. They may be located anywhere on your computer system. You can also rename them with any name you wish, for example to identify different installations for each individual user of the system or for each of several distinct projects.

5. In the past, the Vantage software was restricted to use by a single user login, typically named *verasonics*. This requirement has also been removed starting with the 2.11 release. Any user login may create any number of Vantage project folders for their use.

6. Refer to the *Vantage User Manual* for additional instructions on configuring and managing multiple SW installations on the same computer, and on selecting a particular installation from Matlab and then activating it for use. Review these instructions carefully; many aspects of the behavior of a Vantage project folder are very different than the older "Matlab Simulator" installations!

3   Installing or Updating Your Vantage Software

Please follow this procedure when you need to install the Vantage software on a host controller not provided by Verasonics or when you need to update the Vantage software on an existing host controller.

Installing a new Vantage software release is now completely independent of any prior Vantage software installation, and will have no effect on older installations that may be present.

Your customer download folder contains the Vantage software 4.0.1-1903121200 release for all platforms. Please note that a copy of the WinDriver device driver software is included in the software release, should you need to install or reinstall it.

The software installation process does not interact with the Vantage hardware unit, so you can complete the installation either with or without the HW system connected.

To use the Vantage software must have an activated Matlab installation on your host controller, but Matlab is not required to complete the software installation.

If you have any questions or problems with the SW installation, please contact Verasonics Technical Support (support@verasonics.com) for assistance.

4   Downloading

Vantage software releases are always stored under the Vantage folder within your Verasonics customer download folder.

If you have trouble accessing your customer download folder, please contact Verasonics Technical Support (support@verasonics.com) for assistance.

Once connected to the Verasonics download server, open the Vantage folder. You should see one or more Vantage software release folders, with names like "Release 3.4.4," "Release 4.0.1," etc.

> **Note**
>
> The actual set of releases contained within your customer download folder may be different than those listed above.

From time to time, Verasonics may make additional, incremental releases of the Vantage software available in your customer download folder.

In the remaining sections of this document, the Vantage software release folder will be identified as *Release 4.0.1-1903121200*.

To download your software, do the following:

1. Download the release folder to the desktop of the host controller or computer system where the software is to be installed.

   Please copy the folder and its contents to your desktop.

   You should have a folder with the same name (*Release 4.0.1-1903121200*) on your desktop when you have completed this step.

2. The release folder on your desktop should contain a Documentation folder and three software installers, each of which is an executable file.

   The Documentation folder contains a copy of this document (*Vantage Software Installation Instructions*), and all of the other documentation files that are included with the release. This is to allow you to review the system documentation prior to starting the installation process, if you wish.

   The installer filenames are as follows:

Platform	Installer Filename
Windows	win64-install-vantage-4.0.1-1903121200-release.exe
Mac	mac64-install-vantage-4.0.1-1903121200-release
Linux	lnx64-install-vantage-4.0.1-1903121200-release

5   Installing The Vantage 4.0.1-1903121200 Software Release

> **Note**
>
> Please ensure that you have a current backup of your host controller before installing this software.

1. Read the *Your Vantage Software May Already be Installed* section of this document, above, and confirm that installation of this release is necessary.

2. Exit the Matlab application if it is running. We recommend that you exit any other non-essential applications that may be running on the host controller.

3. Copy the installer for your platform (Windows, Mac or Linux) from the release folder you downloaded previously to your host controller desktop.

4. If your host controller platform is Windows 64:

   a. Open a Windows Command Prompt:
      Click the *Start* button; open the *Accessories* folder and click on the *Command Prompt* menu item.

   b. In the Command Prompt window, change your current directory to the Windows Desktop and then run the installer:

```
> cd Desktop
> win64-install-vantage-4.0.1-1903121200-release.exe
```

Carefully read and follow the instructions and prompts from the installer. Note that the installer will notify you that installation of the driver will be required, if it does not detect an existing driver. If this is the case, you must complete the Vantage software installation first, and then follow the device driver installation instructions in the following section.

5. If your host controller platform is Mac 64:

   a. Launch the Terminal application.

      You can find the Terminal application in your system *Utilities* folder. You can open the *Utilities* folder from the *Go* menu of the *Finder*.

      Alternatively, you can type *Terminal* into the *Spotlight* search menu and then click on the *Terminal* application in the list of files returned by *Spotlight*.

   b. In the Terminal window, change your current directory to the Macintosh Desktop and then run the installer:

      ```
      $ cd Desktop
      $ chmod a+x ./mac64-install-vantage-4.0.1-1903121200-release
      $ ./mac64-install-vantage-4.0.1-1903121200-release
      ```

      Please note that the installer is invoked by prefixing a dot and a slash character before its filename, so that the shell can locate it properly.

      Carefully read and follow the instructions and prompts from the installer. Note that the installer will notify you that installation of the driver will be required, if it does not detect an existing driver. If this is the case, you must complete the Vantage software installation first, and then follow the device driver installation instructions in the following section.

6. If your host controller platform is Linux 64:

   a. Launch the Terminal application.

      Note that you can find the Terminal from the Ubuntu Desktop search icon, which is located in the upper left-hand corner of the desktop.

   b. Verify that you have (at least) the minimum required Linux kernel version:

      ```
      $ uname -r
      3.19.0-32-generic
      $
      ```

   c. Verify that your kernel is not too new to be supported by the version of WinDriver used in this release. The newest kernel supported is version 4.12.8.

   d. If you need to use a different kernel (one that is between 3.19.0 and 4.12.8, inclusive) then do the following to install and use the 4.12.8 kernel:

      ```
      $ cd /tmp
      $ wget kernel.ubuntu.com/~kernel-ppa/mainline/v4.12.8/\
      linux-headers-4.12.8-041208_4.12.8-041208.201708161815_all.deb
      $ wget kernel.ubuntu.com/~kernel-ppa/mainline/v4.12.8/\
      linux-headers-4.12.8-041208-generic_4.12.8-041208.201708161815_amd64.deb
      $ wget kernel.ubuntu.com/~kernel-ppa/mainline/v4.12.8/\
      linux-image-4.12.8-041214-generic_4.12.8-041214.201709200843_amd64.deb
      $ sudo dpkg -i linux-headers-4.12*.deb linux-image-4.12*.deb
      $ sudo reboot -h now
      ```

      If you install this new kernel, please return to step "a", above, when you have booted the new kernel. Please do verify that the reboot did in fact boot the proper kernel version.

   e. In the Terminal window, change your current directory to the Desktop and then run the installer:

      ```
      $ cd Desktop
      $ chmod a+x ./lnx64-install-vantage-4.0.1-1903121200-release
      $ ./lnx64-install-vantage-4.0.1-1903121200-release
      ```

Please note that the installer is invoked by prefixing a dot and a slash character before its filename, so that the shell can locate it properly.

Carefully read and follow the instructions and prompts from the installer. Note that the installer will notify you that installation of the driver will be required, if it does not detect an existing driver. If this is the case, you must complete the Vantage software installation first, and then follow the device driver installation instructions in the following section.

f. Please modify your Linux start-up files so that the LD_LIBRARY_PATH environment variable will include the "lib" folder of your home directory.

You may wish to modify your ".profile" file, which resides in your home directory. If you would like to do this, please add the following to the file:

```
# set LD_LIBRARY_PATH so it includes user's private lib
export LD_LIBRARY_PATH="$HOME/lib"
```

g. Once the installer has finished, run the *linux-setup.sh* script as the super-user on your system:

```
$ cd Vantage-@FULL_RENAME@
$ cd Hal/lib/linux64
$ sudo ./linux-setup.sh
```

Carefully read and follow the instructions and prompts from the *linux-setup.sh* script.

7. (For all three operating systems) If the software installer has competed successfully, you should now see a copy of the installed software folder, named *Vantage-4.0.1-1903121200*, on your desktop. Move this entire folder with all of its contents to the directory location from which you intend to use it. The default directory location used by Verasonics when we pre-configure a host controller for a customer is *users / verasonics / Documents*; the remainder of these installation instructions assume you are using that location. If desired, you can now delete the Release folder and installer files from the desktop.

8. After all of the preceding steps have completed, please be sure to shut down and then reboot your host controller before attempting to use the Vantage software.

9. Your Vantage software is now installed. If the installer did not notify you that a new driver installation was required, skip the following section and proceed directly to *Configuring MATLAB to use the* Vantage 4.0.1-1903121200 *Software*.

6   Installing The WinDriver Device Driver

If this is the first time you are installing Verasonics software on your host controller you must install the device driver we use for communication between your host controller and the Vantage hardware. Note that if a previous Vantage SW installation was already present on your host controller, the driver will already be installed and you can skip this step. But if there is a problem with the driver installation, or if it needs to be updated to a more recent revision level, follow these instructions to overwrite the older driver installation.

The driver installation utilities are contained within the Vantage software. You must complete the Vantage software installation as explained in the previous section before you can install the driver.

> **Note**
>
> In this release of the Vantage software, installation of this device driver is still required for Mac- and Linux-based computers, even for a stand-alone software installation where you will never connect Vantage hardware to this computer. For a Windows-based computer, you do not need to install the driver for a stand-alone software installation.

If you need to install the WinDriver device driver, please do the following:

Procedure for Windows-based Systems

1. If you are running Windows 10, you must allow unsigned device drivers to be installed. If you do not do this, the WinDriver device driver may appear to be installed, but will not be fully installed, and the Vantage software will not operate properly.

   On a Windows 10 system, please do the following:

   1. On the Windows login screen or under the Charms bar, open the power options menu.
   2. Hold the Shift key while you click Restart from the power options menu.
   3. After your computer reboots, select the Troubleshoot option.
   4. Select Advanced Options.
   5. Select Startup Settings.
   6. When prompted, click Restart to reboot your computer.
   7. When the Startup Settings menu appears, press the F7 key to choose Disable driver signature enforcement option.

   After your computer restarts, you can install unsigned drivers, such as the WinDriver driver provided with your Vantage software.

2. Open a Windows Command Prompt with Administrator privileges:

   Click the *Start* button; open the *Accessories* folder and right-click on the *Command Prompt* menu item. Select *Run As Administrator* from the drop-down menu.

   When the Command Prompt window opens, confirm that the window title bar says "Administrator: Command Prompt" in the upper left-hand corner.

3. Change directory to the *System/wd-install/windows64* subdirectory within your Vantage project folder.

4. Run the WinDriverInstall batch file:

   ```
   > WinDriverInstall
   ```

5. Fully power down and then reboot your host controller before attempting to use your Vantage software.

Procedure for Mac-based Systems

1. Open a Terminal window.

2. Change directory to the *System/wd-install/mac64* subdirectory within your Vantage project folder.

3. Run WinDriverInstall.sh script via sudo (1):

   ```
   $ sudo sh WinDriverInstall.sh
   ```

4. Fully power down and then reboot your host controller before attempting to use your Vantage software.

Procedure for Linux-based Systems

On Linux systems, the WinDriver installation is done within the context of the *linux-setup* script, rather than as a separate installation procedure.

1. Open a Terminal window.

2. Change directory to the *System/wd-install/linux64* subdirectory within your Vantage project folder.

3. Run the *linux-setup.sh* script as the super-user on your system:

   ```
   $ sudo ./linux-setup.sh
   ```

   Carefully read and follow the instructions and prompts from the *linux-setup.sh* script.

4. Fully power down and then reboot your host controller before attempting to use your Vantage software.

7   Configuring Matlab to use the Vantage 4.0.1-1903121200 Software

Note that to complete these steps, you must have Matlab installed on your host controller with a currently active license.

Disabling Vantage Software Installations Older than 2.11

If you have a Vantage software release older than 2.11 installed on your host controller, please follow these instructions to ensure that it does not interfere with your new software.

It is not practical to try to maintain the ability to run these older releases of the Vantage software after installing any newer release and Verasonics does not support attempts to do so.

If your host controller does have a Vantage software installation at level 2.10 or earlier, you must use the following procedure to disable it.

Procedure for Windows-based Systems

1. Check for the presence of a folder named *MATLAB* under your *My Documents* folder.

2. Within the *MATLAB* folder, please rename any existing file named *startup.m* to *startup.m.old*.

   The intent of this action is to prevent Matlab from running start-up code associated with previous releases of the Vantage software.

   (Please note if that if you previously added custom code of your own to the *startup.m* file that you just renamed, you are welcome to copy it back to a newly created version of *startup.m*.)

3. Your system may contain Windows shortcuts to older Verasonics software installed on your system. For example, you may have references to "Verasonics Startup" or "Verasonics ReFlash" within your Windows Start Menu hierarchy.

   Please disable these shortcuts as they point to older versions of the Vantage software that should no longer be used after installing this release.

   To delete them:

   a. Open a Windows Command Prompt with Administrator privileges.

   b. Change directory to the root of your system drive:

      ```
      C:\Users\verasonics> cd c:\
      ```

   c. Search for shortcuts named "Verasonics Startup.lnk" and then delete them:

      ```
      c:\>del "Verasonics Startup.lnk" /s/p
      ```

   d. Search for shortcuts named "Verasonics ReFlash.lnk" and then delete them:

      ```
      c:\>del "Verasonics ReFlash.lnk" /s/p
      ```

Procedure for Mac-based Systems

1. Check for the presence of a folder named *Documents/MATLAB* in your home directory.

2. Within this folder, please rename any existing file named *startup.m* to *startup.m.old*.

   The intent of this action is to prevent Matlab from running start-up code associated with previous releases of the Vantage software.

   (Please note if that if you previously added custom code of your own to the *startup.m* file that you just renamed, you are welcome to copy it back to a newly created version of *startup.m*.)

Procedure for Linux-based Systems

1. The directory where Matlab is installed on your system will have a *toolbox/local* directory within it.

2. Within the *toolbox/local* folder, please rename any existing file named *startup.m* to *startup.m.old*.

   The intent of this action is to prevent Matlab from running start-up code associated with previous releases of the Vantage software.

   (Please note if that if you previously added custom code of your own to the *startup.m* file that you just renamed, you are welcome to copy it back to a newly created version of *startup.m*.)

Selecting and Activating the Vantage 4.0.1-1903121200 Installation

To use the Vantage 4.0.1-1903121200 software, you must always complete the following two steps every time you start Matlab:

1. Navigate to and select the desire Vantage project folder (for example, *Vantage-4.0.1-1903121200*) as the Matlab working directory.

2. Run the *activate* function at the Matlab command prompt. This function initializes the links to the libraries used by the Vantage software, and it adds the Vantage project folder and its subdirectories to the Matlab path.

You can do these two steps manually, but if you will always be using the same Vantage project folder it is more convenient to automate them by creating a new *startup.m* function in the Matlab default directory. This new startup function only needs to contain the following two lines:

```
cd('../Vantage-4.0.1-1903121200')
activate
```

Modify the first line if needed, to state the actual path to the location where you have placed your Vantage project folder and the actual name if you changed it.

To confirm this new startup function is working properly, close Matlab and then restart it. It should automatically go to the Vantage project folder as you specified. You can confirm the activate function completed successfully if all of the Vantage project folder subdirectories are highlighted in the directory listing as having been added to the Matlab path. Next run the *Version* command from the Matlab command prompt. It should report the system configuration and 4.0.1-1903121200 Vantage software release level, with no errors reported. If a Vantage hardware system is connected, it may inform you that FPGA code needs to be updated in the HW since there are some new FPGA files included in the 4.0.1-1903121200 release.

8   Read The *Vantage User Manual*

The Vantage software installation is now complete and ready to use!

Your next step should be to review the *Vantage User Manual*. It contains instructions on setting up and operating the system, tests to verify the entire system is functioning properly, information on how to use new features included in the current SW release, and important safety warnings. It also contains references to other documentation provided with the system. These documents will all be found in the *Documentation* subdirectory of the Vantage project folder directory on your computer after completing the Vantage software installation. All documents are in pdf format; you can open and read them while running Matlab, or you can navigate to that directory and open them directly without running Matlab. Note that you must have a pdf viewer installed on your system to read these documents.