

Canopy for VERAView Installation Guide

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How to Install Canopy for VERAView

1 Overview

With the addition of the 3D volume slicer widget, VERAView now relies on Mayavi and its dependents. Enthought's Canopy Python environment provides everything VERAView needs, and pre-built Canopy versions for Windows, Mac OSX, and Linux can be downloaded from:

```
https://store.enthought.com/downloads/#default
```

However, after installing Canopy, it is necessary to use the Canopy *Package Manager* to install the *h5py*, *mayavi*, and *wxPython-3* modules VERAView needs. The steps required to install Canopy in order to run VERAView are described here for Windows, Mac OSX, and Linux.

Note:

Enthought is continuously updating Canopy. As of this version of this document, the latest Canopy version is 1.7.4. The screen shots in the instructions below were captured from an install of version 1.6.1. Whenever a newer version of a required package is available, use the latest available. If an error occurs when running VERAView, downgrade the wxPython version to 3.0.2.0-1.

2 Windows

2.1 Step 1: Install Canopy

Download canopy-1.7.4-win-64.msi from the Enthought site.:

```
https://store.enthought.com/downloads/#default
```

Note you can download a 32-bit version from Enthought if needed.

Launch the installer by clicking or double-clicking (as per your Folder options) the file in *Windows Explorer*, typing the filename in *Command Prompt*, or some other method. Note this is a per-user install that does not require elevated privileges.

If you receive a security warning such as shown below, activate the Run button to continue the install.



Activate the *Next* button when the Canopy installer wizard appears as shown below. Note you should use the default per-user install.



Accept the license and activate the Next button.

闄 Enthought Canopy (64-bit) Setup	
End-User License Agreement	\sim
Please read the following license agreement carefully	CANOPY
LICENSE AGREEMENTS TO ENTHOU	GHT CANOPY
This document contains the license agreement for Canopy product. The license applicable to your u terms, conditions and restrictions thereto, is deter specific Canopy product you ordered. The follow Enthought's Canopy products and the license whi such product.	use, including the mined by the ving is a list of
Canony Product	Ticonso
$\boxed{\ensuremath{\mathcal{V}}}$ I accept the terms in the License Agreement	
Print Back	Next Cancel

Continue the installation by activating the *Next* button after being informed of the per-user install and then activating the *Install* button.

🗒 Enthought Canopy (64-bit) Setup	- • •
Installation Scope	\sim
Choose the installation scope and folder	
Enthought Canopy (64-bit) will be installed in a per-user for your user account. You do not need local Administrat	folder and be available just tor privileges.
Back	Next Cancel
岃 Enthought Canopy (64-bit) Setup	
Ready to install Enthought Canopy (64-bit)	CANOPY
Click Install to begin the installation. Click Back to review or installation settings. Click Cancel to exit the wizard.	change any of your
Back	Install Cancel

Complete the installation by checking Launch Canopy when setup exits and activating the Finish button.



2.2 Step 2: Setup the Canopy Environment

Upon the first execution, the Canopy application will set up the environment for your user account. By default, Canopy will install to %homepath%\AppData\Local\Enthought\Canopy. If you change this location, you will need to manually edit the veraview.run.bat file inside your VERAView installation directory. Unless you have good reason to choose an alternate location (via the *Change* button), accept the default directory and activate the *Continue* button.



After a few seconds, a progress dialog will appear. It can take several minutes for the setup process to complete.



When the setup completes, you will be prompted to make Canopy's Python your default Python environment. This is completely up to you, for the VERAView launch script will reference Canopy directly. Activate the *Starting using Canopy* button to relaunch the Canopy application.



2.3 Step 3: Install the h5py Module

From the Canopy application, launch the Package Manager by clicking on its icon.



In *Package Manager*, select *Available Packages* selected and enter "h5py" in the search box. The package named "h5py 2.6.0-2" will appear in the package list panel.

Package Manager - Canopy		
File Edit Tools Window Help		
C Q h5py	CANOPY	Welcome to Canopy! Login
Verification of the second sec	Python interface to the HDF library	FREE
14378 packages available. 1 matches		

Click h5py 2.6.0-2 in the list panel to select it. Activate the Install (or Upgrade to) button to install it.



The module and dependency eggs will be downloaded and installed. When complete, the *Install* button will be renamed to *Remove*.



2.4 Step 4: Install the wxPython-3.0.2 Module

As per Step 3, seach for "wxPython" in *Available Packages*. This will result in *wxPython 3.0.2.0-3* appearing in the list panel. Click *wxPython 3.0.2.0-3* and activate the *Install* (or *Upgrade to*) button to install wxPython and all its dependencies.

Package Manager - Canopy File Edit Tools Window Help		
File Edit Tools Window Help	CANOPY	Welcome to Canopy! Login
 Available Packages Installed Packages Updates 35 History 	WXPython 3.0.2.0-1 (installed 2.8.10.1) wrapper around the wxWidgets C++ GUI library More Info Version: 3.0.2.0 Size: 25.33 MB	
lote:		
	essage about image formats, you should downgrad at version from the <i>Available</i> combo box and tton.	•

2.5 Step 5: Install the mayava-4.4.3 Module

As per Steps 3 and 4, search for "mayavi" in *Available Packages*. This will result in *mayavi 4.4.3-10* appearing in the panel. Click *mayavi 4.4.3-10* and activate the *Install* (or *Upgrade to*) button.



2.6 Step 6: Test the Environment

This is an optional but recommended step that involves launching a Command Prompt and running Python from the command line shell. The shell can be launched in one of two ways. First, using *Windows Explorer* locate the file <code>%userprofile%\AppData\Local\Enthought\Canopy\User\python.exe</code> and "open" it by clicking or double-clicking as per your Folder options. This should bring up an interactive prompt window.

Install Canopy for VERAView, 2016-09-12

C:Users\re7\AppData\Local\Enthought\Canopy\User\python.exe Enthought Canopy Python 2.7.10 { 64-bit { (default. v.1500 64 bit (AMD64) on vin32		ht > Canopy > User > v 4) Search User	
v.1500 64 bit (AMD64)] on win32 Type "help", "copyright", "credits" or "license" for >>>	Organize 🔻 💼 Open New folder		≋ - □ @
	Adobe Citrix Diagnostics DoD-PKE Enthought Chopy	Name Date modified Doc 1/9/2016 10:02 AM E EGG-INFO 1/9/2016 10:02 AM E EGG-INFO 1/9/2016 10:02 AM E EGG-INFO 1/9/2016 10:00 AM Include 1/9/2016 10:01 AM Ib 1/9/2016 10:01 AM Ib 1/9/2016 10:01 AM Ib 1/9/2016 10:01 AM Ibs 1/9/2016 10:02 AM Scripts 1/9/2016 10:22 AM enpkg.hist 1/9/2016 10:02 AM repkg.hist 1/9/2016 10:02 AM repkg.hist 1/9/2016 10:02 AM	A File folder A File folder File folder File folder A HIST File
	Include Lib Bibs LOCAL-REPO Scripts share Entrust	■ python.pdb Date created: 1/9/2016 9:57 AM Size: 26.5 KB /2016 9:57 AM > python27.dl Date created: 1/9/2016 9:57 AM > pythor27.pdb 1/9/2016 9:57 AM > pythor27.pdb 1/9/2016 9:57 AM > pythor27.pdb 1/9/2016 9:57 AM > pythorw.exe 1/9/2016 9:57 AM > pythorw.pdb 1/9/2016 9:57 AM > pyvenv.cfg 1/9/2016 9:57 AM > 9:57 AM Date created: 1/9/2016 9:57 AM	Application extens Source Browser D. Application Source Browser D.

Second, open Command Prompt and execute the path above.



Download the following script to test that needed modules are available .:

https://casl:rocks@newton.ornl.gov/~re7/xfer/casl/test/test-install.py

Run the test script from the command line .:

```
> %userprofile%\AppData\Local\Enthought\Canopy\User\python.exe test-install.py
Importing h5py and wx...
wx.version= 3.0.2.0 msw (classic)
Importing numpy...
Importing mayavi...
Good to go!
```

3 Mac OSX

3.1 Step 1: Install Canopy

Download canopy-1.7.4-osx-64.dmg (or the latest version) from the Enthought site:

```
https://store.enthought.com/downloads/#default
```

Open or mount the installer image by double-clicking it in Finder or using the open command in a Terminal bash shell:

```
$ open canopy-1.7.4-osx-64.dmg
```

A Finder window will appear when the image is mounted.



In the Finder window, drag the *Canopy.app* icon onto the *Applications* folder icon to initiate the install. A progress window will appear during the copy.

3	Copying "Canopy.app" to "Applications"	
	2.4 MB of 684.8 MB - Estimating time remaining	

Note, if you are an *Admin* user, the install will copy the application into the root level /Applications. Otherwise, it will be installed in ~/Applications.

When the install finishes, you can unmount the installer image by clicking the unmount/eject icon in the main Finder window (under "Devices") or by using the diskutil command in a Terminal window:

```
$ diskutil unmount /Volumes/Enthought
```

3.2 Step 2: Run the Canopy Application

Run the Canopy application by double-clicking the Canopy.app icon under Applications in the Finder.



Depending on your *Security & Privacy* configuration, you may be presented with a security challenge since Canopy is not a signed application.

	"Canopy.app" can't be opened because it is from an unidentified developer.
	Your security preferences allow installation of only apps from the Mac App Store and identified developers.
	Google Chrome.app downloaded this file on December 6, 2015 from store.enthought.com.
?	ОК

If so, click *OK* to remove the dialog. Return to the Finder window. Instead of double-clicking the *Canopy.app* icon, type and hold the *<*Control> key while left-clicking *Canopy.app* and choose *Open* from the popup menu. This will bring up another dialog verifying you want to run Canopy. Click *Open* on that dialog.



If for some reason this does not work, it may be necessary to open *System Preferences* from Apple menu. Click *Security & Privacy*.

			System P	references	\sim	Q, Se	arch
General	Desktop & Screen Saver	oteo Dock	Mission Control	Language & Region	Security & Privacy	Spotlight	Notification
CDs & DVDs	Displays	Energy Saver	Keyboard	Mouse	Trackpad	Printers & Scanners	Sound
iCloud	Internet Accounts	Extensions	Network	Bluetooth	Sharing		
Users & Groups	Parental Controls	App Store	Dictation & Speech	Date & Time	Startup Disk	Time Machine	Accessibilit
DivX	Flash Player	Flip4Mac WMV	Java	Perian			

Select the General tab. If necessary, click the lock icon to make changes.

General FileVault Firewall Privacy
A login password has been set for this user Change Password Require password immediately C after sleep or screen saver begins
Show a message when the screen is locked Set Lock Message
✓ Disable automatic login
Allow apps downloaded from:
O Mac App Store
Mac App Store and identified developers
Anywhere "Canopy.app" was blocked from opening because it is Open Anyway not from an identified developer.
ck the lock to make changes. Advanced

At least temporarily, click the Anywhere radio button under *Allow apps downloaded from. you may restore your original Allow apps downloaded from settings.

	Observe D		
A login password has been	set for this user Change Patient Cha		
	nen the screen is locked Set		
 Disable automatic lo 		Look mosago	
Allow apps downloaded fro Mac App Store Mac App Store and Anywhere "Canopy app was blocked not from an identified deve	identified developers from opening because it is	Open Anyway	

Re-launch *Canopy.app* from Finder. After Canopy runs, you may restore your original *Allow apps downloaded from* settings.

3.3 Step 3: Install the h5py Module

From the Canopy application, launch the Package Manager by clicking on the icon.

• • •	Welcome to Canopy
CANOPY	Hi, welcome to Canopy! Log in to your Enthought account or create one.
Editor Doc Browser	Package Manager Package Manager Deckage Manager v2 (beta)
Recent files	Restore previous session C
	Open an existing file 👘
	Version: 1.6.1.3253 No updates found.

With *Available Packages* selected, enter "h5py" in the search box. The package named "h5py 2.6.0-2" will appear in the package list.

		Package	Manager - Canopy		
	•	Package Manager		2 Refresh • /	Not logged in.
CANO	ΡY	Install, update or remove your	r Python packages	Q h5py	0
Installed	1/94	Package Name	Latest Available	Version	
Available	1/480	● h5py	2.6.0-2		
Updates	1/58	9			
History	В				
		No package selected.			

Click h5py 2.6.0-2 to select it. Activate the Install (or Upgrade to) button to install it.

	Package Manager - Canopy		
C (h5py		CANOPY	Welcome to Canopy! Login
Image: Second system Image: Second system Image: Secon	h5py 2.5.0-4 Python Interface to the HDF library Version: 2.5.0 More Info Size: 1.02 MB		Install
14497 packages available. 1 matche	es		

The module and dependency eggs will be downloaded and installed. When complete, the *Install* button will be renamed to *Uninstall*.

3.4 Step 4: Install the wxPython-3.0.2 Module

As per Step 3, seach for "wxPython" in *Available Packages*. This will result in *wxPython 3.0.2.0-3* appearing in the list panel. Click *wxPython 3.0.2.0-3* and activate the *Install* (or *Upgrade to*) button to install wxPython and all its dependencies.



Note:

If VERAView fails with a message about image formats, you should downgrade to *wxPython* 3.0.2.0-01 by selected that version from the *Available* combo box and activating the *Downgrade to* v3.0.2.0-1 button.

3.5 Step 5: Install the mayava-4.4.3 Module

As per Steps 3 and 4, search for "mayavi" in *Available Packages*. This will result in *mayavi 4.4.3-10* appearing in the panel. Click *mayavi 4.4.3-10* and activate the *Install* (or *Upgrade to*) button.

	Package Manager - Canopy		
C a mayavi		CANOPY	Welcome to Canopy! Login
 Available Packages Installed Packages Updates 34 S History 	mayavi 4.4.3-2 interactive 3D visualization Wore into Size: 12.57 MB		Remove
4497 packages available. 1 matche	98		

3.6 Step 6: Test the Environment

This is an optional but recommended step that involves launching a Terminal window and running Python from a shell. If you installed to the default location, the path to Python will be as shown below.:

```
$ ~/Library/Enthought/Canopy_64bit/User/bin/python
Enthought Canopy Python 2.7.11 | 64-bit | (default, Jun 11 2016, 03:41:56)
[GCC 4.2.1 Compatible Apple LLVM 6.0 (clang-600.0.57)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Download the following script to test that needed modules are available .:

https://casl:rocks@newton.ornl.gov/~re7/xfer/casl/test/test-install.py

Run the test script from the command line .:

```
$ ~/Library/Enthought/Canopy_64bit/User/bin/python test-install.py
Importing h5py and wx...
wx.version= 3.0.2.0 osx-cocoa (classic)
Importing numpy...
Importing mayavi...
Good to go!
```

4 Linux

4.1 Step 1: Install Canopy

Download canopy-1.7.4-rh5-64.sh from the Enthought site or locally:

```
https://store.enthought.com/downloads/#default
```

Note you can download a 32-bit version from Enthought if needed.

Note this Canopy environment is built on Red Hat 5 and thus should be binary compatible with recent versions of most Linux distributions. Also, this is a per-user install that does not require root privileges.

Execute the installer by running canopy-1.7.4-rh5-64.sh with a bash shell. When prompted to review the license type <Enter>.:

```
$ bash canopy-1.7.4-rh5-64.sh
Welcome to the Canopy 1.7.4 installer!
To continue the installation, you must review and approve the license term
agreement.
Press Enter to continue
>>>
```

Press <Space>> to view each license page. When all pages have been viewed, you will be prompted to approve the license. Type "yes" and <Enter> to continue.:

```
Do you approve the license terms? [yes|no]
[no] >>> yes
```

Next, you will be prompted for the directory in which to install Canopy. The default will be a Canopy subdir in your home directory. Accept this default by typing <Enter>.:

```
or by selecting 'Canopy' in your Applications menu.
On your first run, your Canopy User Python environment will be initialized,
and you will have the opportunity to make Canopy be your default Python
at the command line. Details at support.enthought.com/forums
Thank you for installing Canopy!
```

4.2 Step 2: Setup the Canopy Environment

Execute the Canopy GUI application to set up the environmet for your user account by executing the path shown.:

```
$ ~/Canopy/canopy
```

By default, Canopy will install to an Enthought subdirectory in your home directory, \$HOME/Enthought/Canopy_64bit. If you change this location, you will need to manually edit the veraview-linux.run.sh file inside your VERAView installation directory. Unless you have good reason to choose an alternate location (via the *Change* button), accept the default directory and activate the *Continue* button.

Canopy Environment Setup	×
Canopy System and User environment locations Your Canopy environment will be installed in the location shown below. You may change it, if you wish to. <u>What's this</u> Canopy environment directory Change	
/home/re7/Enthought/Canopy_64bit	
Continue	

After a few seconds, a progress dialog will appear. It can take several minutes for the setup process to complete.

	Canopy	×
Setting up yo	ur Canopy env	rironment
<i></i>		67%

When the setup completes, you will be prompted to make Canopy's Python your default Python environment. This is completely up to you, for the VERAView launch script will reference Canopy directly. Activate the *Starting using Canopy* button to launch the Canopy application.



4.3 Step 3: Install the h5py Module

From the Canopy application, launch the Package Manager by clicking on the icon.

		Wel	come to Canopy		
<u>F</u> ile <u>E</u> dit	<u>T</u> ools <u>N</u>	<u>N</u> indow	<u>H</u> elp		
			relcome to Canopy to your Enthought acco		X
Edi	tor		Package Manager	Package Manager	v2 (beta)
Doc Br	rowser		Training on Demand		
Recent	files				
No recent	files.			Restore previous session	C
				Open an existing file	-
				Version: 1.6.1. No updates fo	

With *Available Packages* selected, enter "h5py" in the search box. The package named "h5py 2.6.0-2" will appear in the package list panel.

	Package Manager - Canopy	
<u>File Edit T</u> ools <u>W</u> indow <u>H</u>	elp	
	CANOP	Welcome to Canopy! Y Login
Available Packages Installed Packages Updates 37 S History	Python interface to the HDF library	FREE
14645 packages available. 1 matc	hes	

Click h5py 2.6.0-2 in the list panel to select it. Activate the Install (or Upgrade to) button to install it.

	Package Manager - Canopy	
<u>File E</u> dit <u>T</u> ools <u>W</u> indow <u>F</u>	<u>H</u> elp	
Q h5py	CANC	Welcome to Canopy!
Available Packages Installed Packages Installed Packages Updates 37 S History	h5py 2.5.0-4 Python Interface to the HDF library Version: 2.5.0 Size: 2.55 MB	Install
14645 packages available. 1 mate	ches	

The module and dependency eggs will be downloaded and installed. When complete, the *Install* button will be renamed to *Remove*.

			Package Manager - Canopy	
<u>F</u> ile	<u>E</u> dit <u>T</u> ools	<u>W</u> indow	Help	
Ç	🔍 h5py		CANOPY	Welcome to Canopy! Login
	Available Pa Installed Pa Updates 30 History	ckages	hSpy 2.5.0-4 Python interface to the HDF library Version: 2.5.0 Size: 2.55 MB	Remove
14645	packages ava	ilabla 1 m	atches	
14045	packages ava	nable. I m	attics	

4.4 Step 4: Install the wxPython-3.0.2 Module

As per Step 3, seach for "wxPython" in *Available Packages*. This will result in *wxPython 3.0.2.0-3* appearing in the list panel. Click *wxPython 3.0.2.0-3* and activate the *Install* button to install wxPython and all its dependencies.

	Package Manager - Canopy	
<u>F</u> ile <u>E</u> dit <u>T</u> ools <u>W</u> indow	<u>H</u> elp	
C Q wxpython	CANOPY	Welcome to Canopy! Login
 ● Solution ● Available Packages ● O ● Installed Packages ● Updates 36 ● O ● History 	wxPython 3.0.2.0-1 (installed 2.8.10.1) wrapper around the wxWidgets C++ GUI library Version: 3.0.2.0 More Info Size: 39.88 MB	FREC
14645 packages available. 1 ma	trhes	
14045 packages available. 1 ma		

Note:

If VERAView fails with a message about image formats, you should downgrade to *wxPython* 3.0.2.0-1 by selected that version from the *Available* combo box and activating the *Downgrade* to v3.0.2.0-1 button.

4.5 Step 5: Install the mayava-4.4.3-2 Module

As per Steps 3 and 4, search for "mayavi" in *Available Packages*. This will result in *mayavi 4.4.3-10* appearing in the list panel. Click *mayavi 4.4.3-10* and activate the *Install* button.

	Package Manager - Canopy	
<u>F</u> ile <u>E</u> dit <u>T</u> ools <u>W</u> indow	Help	
C Q mayavi	CAL	Welcome to Canopy!
Available Packages Installed Packages Updates 35 History	More Into Visualization Version: 4.4.3 Size: 12.34 MB	Install
14645 packages available. 1 ma	tches	

4.6 Step 6: Test the Environment

This is an optional but recommended step that involves launching a Python shell and interactively entering *import* statements. Run the Python shell by entering the path to the Python executable in a bash shell. If you installed to the default location, the path will be as shown below.:

```
$ ~/Enthought/Canopy_64bit/User/bin/python
Enthought Canopy Python 2.7.11 | 64-bit | (default, Jun 11 2016, 10:32:30)
[GCC 4.1.2 20080704 (Red Hat 4.1.2-55)] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Download the following script to test that needed modules are available.:

https://casl:rocks@newton.ornl.gov/~re7/xfer/casl/test/test-install.py

Run the test script from the command line.:

```
$ ~/Enthought/Canopy_64bit/User/bin/python test-install.py
Importing h5py and wx...
wx.version= 3.0.2.0 gtk2 (classic)
Importing numpy...
Importing mayavi...
```

Good to go!

Note:

There are many Linux distributions for which the Linux Canopy install will just not work. We will address this in a future version with a Docker image that can be run on most distros.