

PC Requirements

The computer you install CEPAS on should be a PC running the Microsoft Windows 7 Operating System. It can be either the 64 bit or 32 bit version of Windows (the program is written in 32 bit so it will work on either). Minimum 4 GByte memory is recommended. As signal processing operations can be processor intensive the faster the better, eg ideally use Core i7.

An important requirement is the graphics screen resolution. The screen needs to be able to display at least 1440 by 920 pixels which is what the front panel of CEPAS program is set to display. Care needs to be taken with a notebook computer as many low end units have a lower resolution like 1366 by 768. This is too small and the program is difficult to use as it does not fit on the screen.

The recommended screen resolution is 1920 by 1080 pixels. This is often called High Definition or Full HD in PC specs. This is the ideal resolution. I do not recommend anything less than that as the more screen space the better for this type of application as you may want to have other applications open at the same time.

Depending on your budget you may find that a Solid State disk drive is a benefit as this makes accessing files from disk very quick. However that is not essential.

Installing CEPAS and the LabVIEW 2011 Run-Time Engine

CEPAS is written using National Instruments LabVIEW software. The appropriate LabVIEW Run-Time engine needs to be installed for the CEPAS executable to be able to run. Rather than sending a new complete installation software package (ie updated CEPAS application plus the same run-time engine) every time CEPAS is updated it is convenient to install the run-time engine once and then install the CEPAS application each time it is updated by simply copying the new version to the desired directory on the hard disk.

Instructions for installing the LabVIEW Run-Time Engine

For LabVIEW 2011 Run-Time engine go to the web page:

<http://joule.ni.com/nidu/cds/view/p/id/2534/lang/en>

which has the instructions for downloading it.

To download software from NI's website you need to register a login with NI. You can do this from the NI home page. Alternatively you will be prompted to login when you try to download the run time engine and there is also opportunity to register then.

You need to download the Standard version called `LVRTE2011f3std.exe`. The download is approximately 210MB in size. Right click the link on the web page. Select Save Target As... If you are already logged in then the Save As dialog appears. Otherwise a page to login or create an account appears. When you complete this login step it will go back to the original page and you can right click the link again and choose where to save the file.

Select a directory location for the download. It doesn't matter where the file is downloaded to. The downloaded file can either be deleted after installing is complete or backed up somewhere in case it is needed for installation on another computer.

The current version of CEPAS (as at November 2011) has been written in the LabVIEW version 2011 development environment. It therefore needs the corresponding runtime engine installed on computers which do not have the development environment, as described above.

Download the Run-Time Engine from the link above. The link can also be found by searching on National Instruments Website www.ni.com using the terms "LabVIEW 2011 run-time engine".

If this is the first time you have used the website to download NI driver software, it will ask you to create an account first with a password before you can download anything.

Once it has been downloaded, run the application `LVRTE2011f3std.exe` and it will install with prompts typical of Windows program installers. Follow the instructions. The various prompts are described in detail in a section at the end of this note.

You can see where the run-time engine is installed under Program Files. See the directory:

`C:\Program Files\National Instruments\Shared\LabVIEW Run-Time\2011`

There may be previous versions of the run-time engine installed on the computer under directories with the corresponding version name (eg 8.6, 2009). It is fine to leave any previous versions on the computer and you should leave them there in order to use older versions of CEPAS.

You can also see if other run-time engine versions are installed using the Control Panel>Add Remove Programs under National Instruments Software.

Installing CEPAS

You will be sent the CEPAS application electronically. I use the service from yousendit.com to send large files. The user is sent a web link which will allow a download of the application in a zip file. I put a password on this download which I provide to the user separately. To install CEPAS, put the CEPAS zip file you have been sent in a directory on your computer you want to run it from. It should be some convenient location near the top of the file directory structure, (eg D:\CEPAS). Unzip the contents of the zip file to that directory. There are several files and directories in the zip archive. They include:

- `CEPAS.exe`
- `CEPAS.ini`
- Various dll's that are needed in addition to the run-time engine that has already been installed (see table below). They should be located in the same directory as `CEPAS.exe`.

dll	Description	Notes
Ivanlys.dll LVDFD.dll	These dll's are needed by CEPAS in addition to the LabVIEW Run-Time Engine	11.0.0.3, 10.0.0.0

lvinput.dll		
LVASPT_WA.dll	Dll with functions used by LabVIEW Toolkit functions: Time Frequency Analysis Time Series Analysis Wavelet Analysis	Version 11.0.0.49152 LabVIEW Support Library of Wavelet Analysis
UniKey.dll	Required for USB License functions.	6.0.1.0
Labview_DLL.dll	dll used to interface to BioSemi hardware acquisition system.	Not needed unless using BioSemi system

There is a directory called `Shared Variables` created. This contains a file `Shared_Variables.lvlib` which is a LabVIEW library file describing the Shared Variables used by CEPAS in its Real-Time mode for acquiring data from an acquisition system.

There is also a file `CEPAS.aliaes` file which is needed by the Shared Variables.

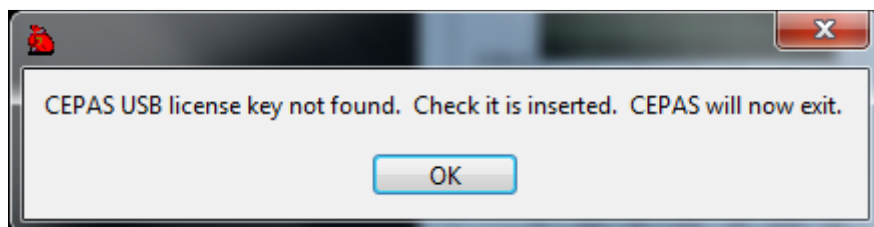
You will never need to edit any of these extra files, other than the `CEPAS.ini` file

Editing `CEPAS.ini` may be useful in some circumstances when you need to manually change some settings in the ini file to set the default behaviour of CEPAS when it starts up. This will be described in detail later. For example settings for the default directory to find data files, when you go `File>Open`, and the default Mesh File to load at startup, can be set from within CEPAS.

After unzipping the contents of zip file into the directory you want to run CEPAS from, you can move the zip file to another location on disk as a backup.

USB Licensing

CEPAS uses a USB license key which will enable those features that have been purchased. The USB key can be plugged into any USB port on the computer. CEPAS will check for the presence of this key and a valid license in order to run. Otherwise after launching CEPAS a message will advise that the key is not present and the program will shut down.



A directory called `License Updater Tools` has some utilities that are needed in order to upgrade the license remotely.

Running CEPAS for the first time

When you run CEPAS.exe for the first you may be prompted by a Windows Security Alert with a dialog such as that below:



Select Allow Access to CEPAS.

Windows may provide alternative warnings depending on the particular PC's setup.

When you run CEPAS for the first time with a new ini file you will be prompted to load a default Mesh File. Go ahead and do this. This Mesh File location will be written in the ini file so that next time you run CEPAS it will automatically load it.

CEPAS needs a default Data File directory. Unlike the Mesh File you are not prompted to select this default directory the first time CEPAS runs. You need to select it manually. On the Menu select: Tools>Options

Select a Default Data File directory. This Default Data File Directory is also the directory that is the default for saving files when in the Real-Time mode and prompted to select the Study name.

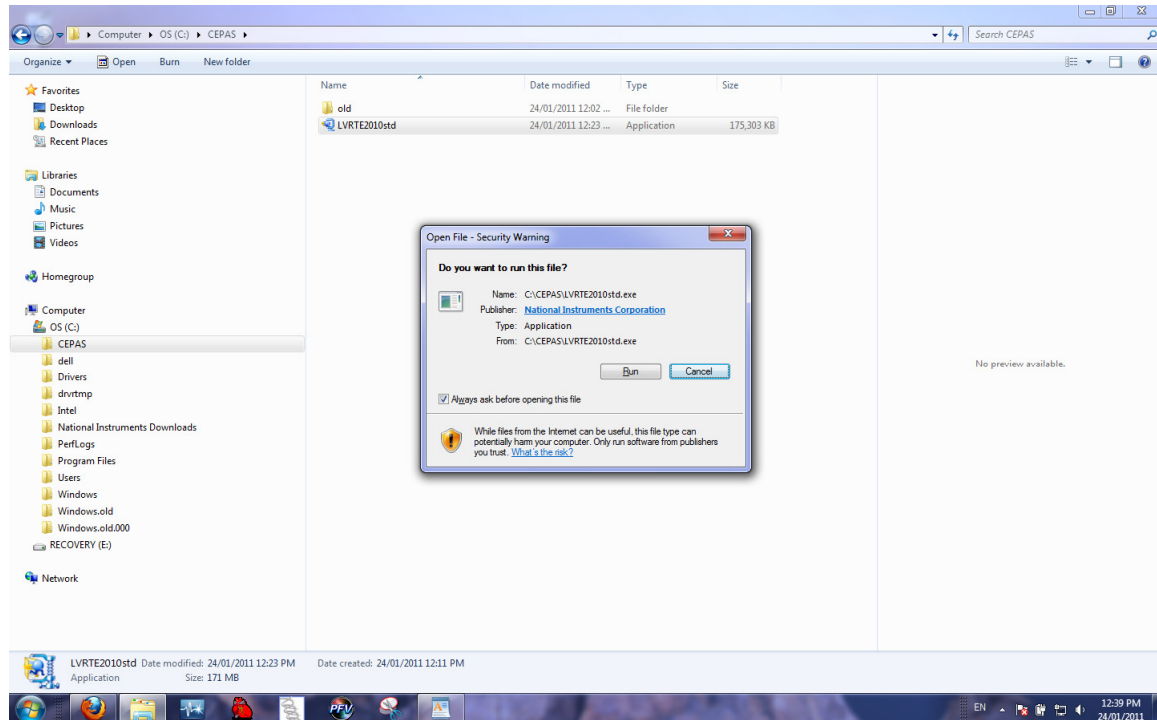
Otherwise the Default Directory is the Desktop. I have noted that there can be permission problems encountered using the Desktop to store files depending on the PC's setup.

Installing the Run-Time Engine

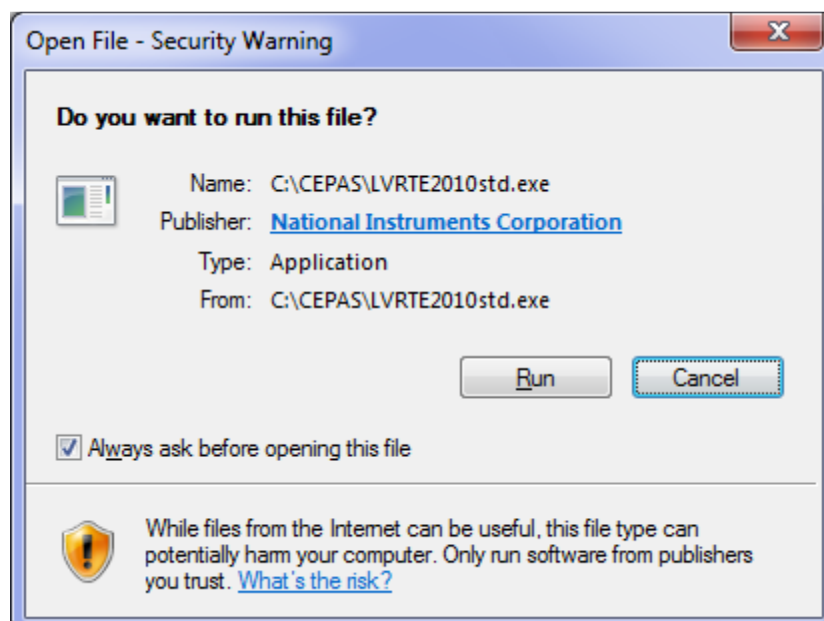
This section describes the detailed steps to carry out to install the LabVIEW Run-Time Engine.

Basically you choose all the default settings as the installer prompts you. The screenshots shown below are for an older version of the LabVIEW run-time engine (2010) but the steps are generally consistent from version to version.

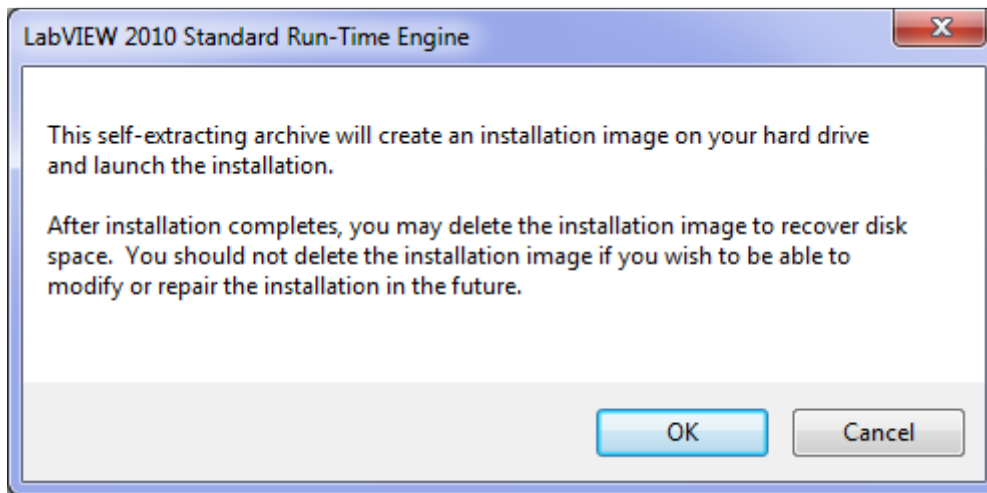
Double click the installer you have downloaded as per the instructions for the current version of CEPAS:



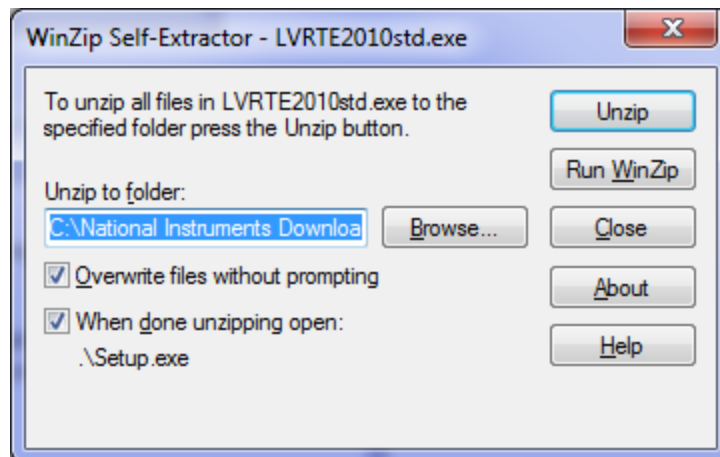
The following dialog appears:



Press Run



Press OK.



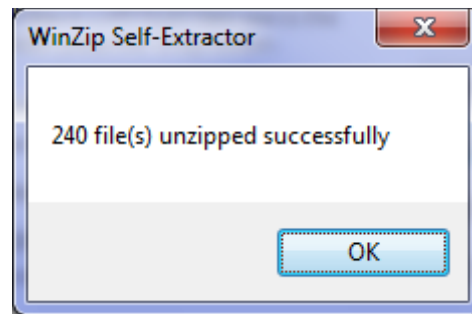
This will default to the directory:

C:\National Instruments Downloads\LabVIEW\Run-Time Engine\2010 32-bit\Standard

for this example of the 2010 version. For later versions of the Run-Time engine it will be named appropriately eg 2011.

You can select a different directory if you want to. However you can always delete these files after if you no longer want it taking up disk space.

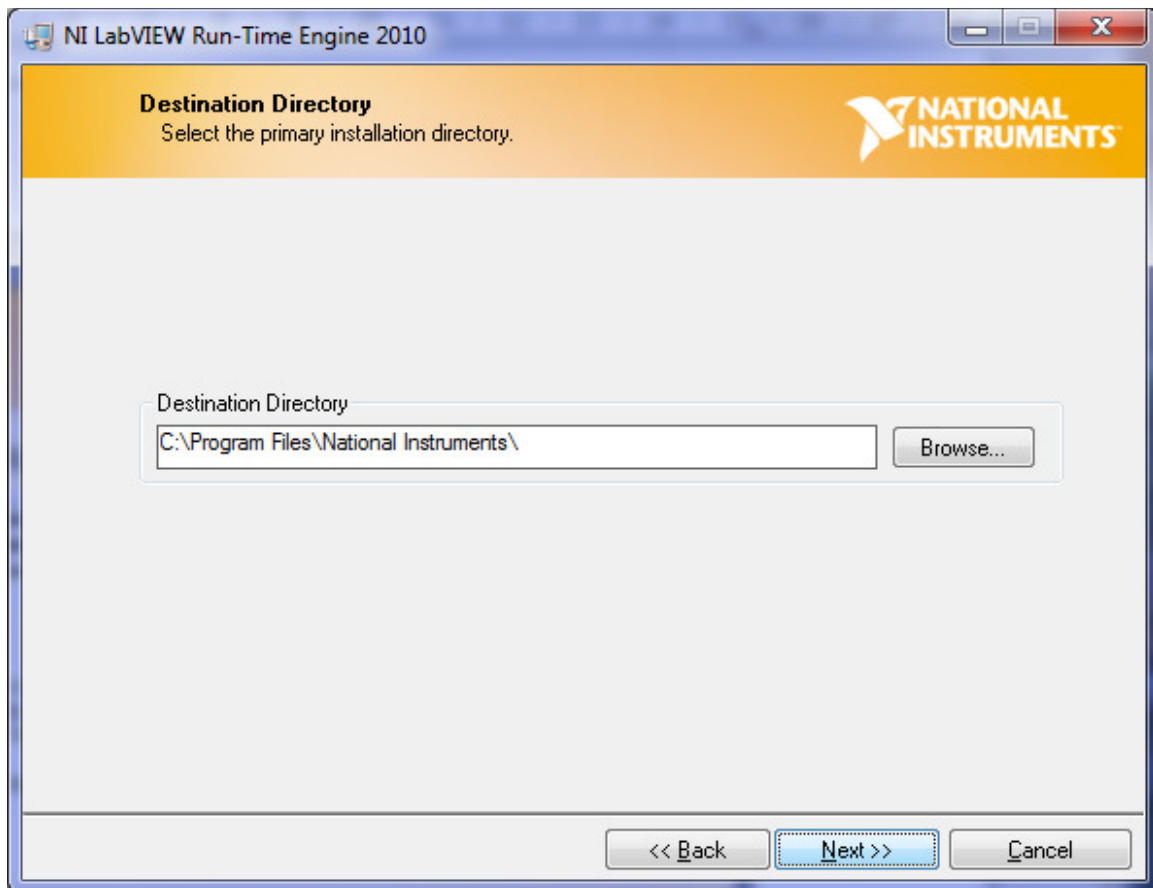
Select Unzip.



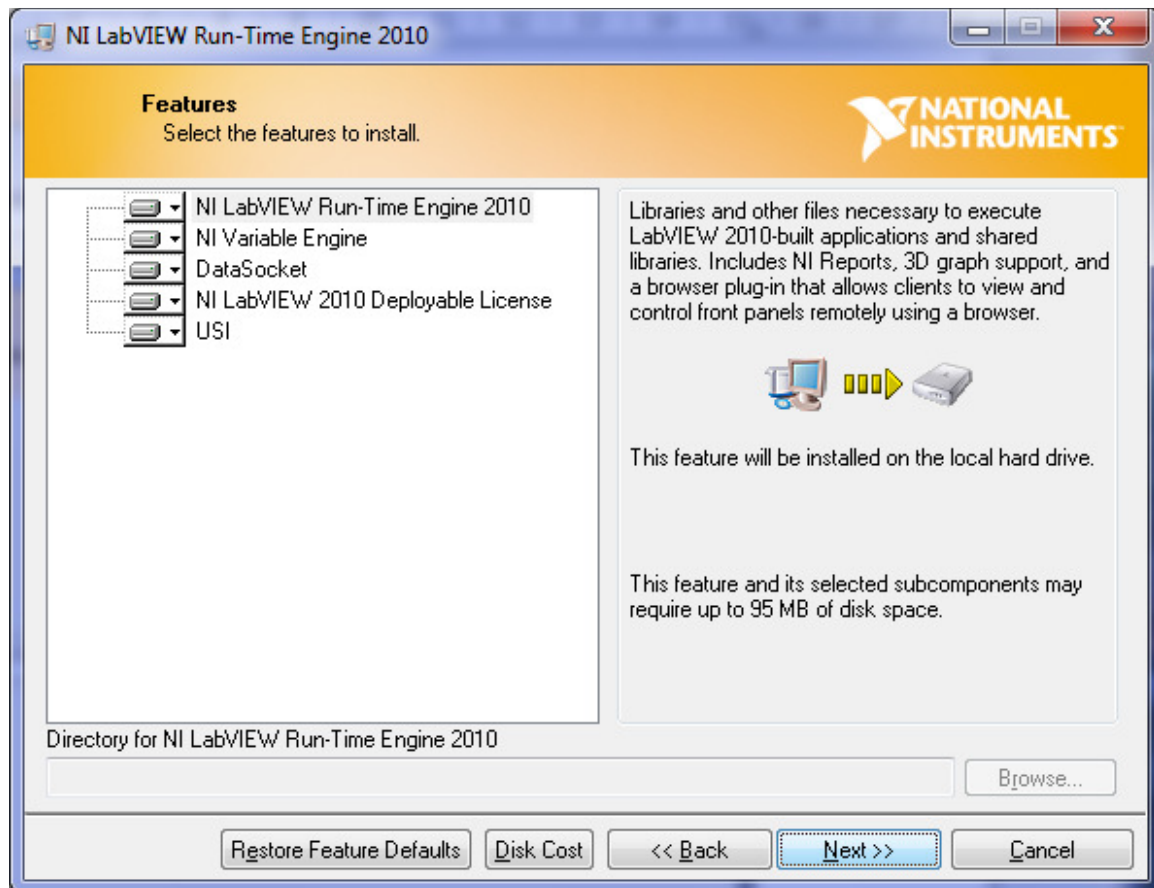
Press OK and installation will commence.



Click Next>> on the Splash Screen.

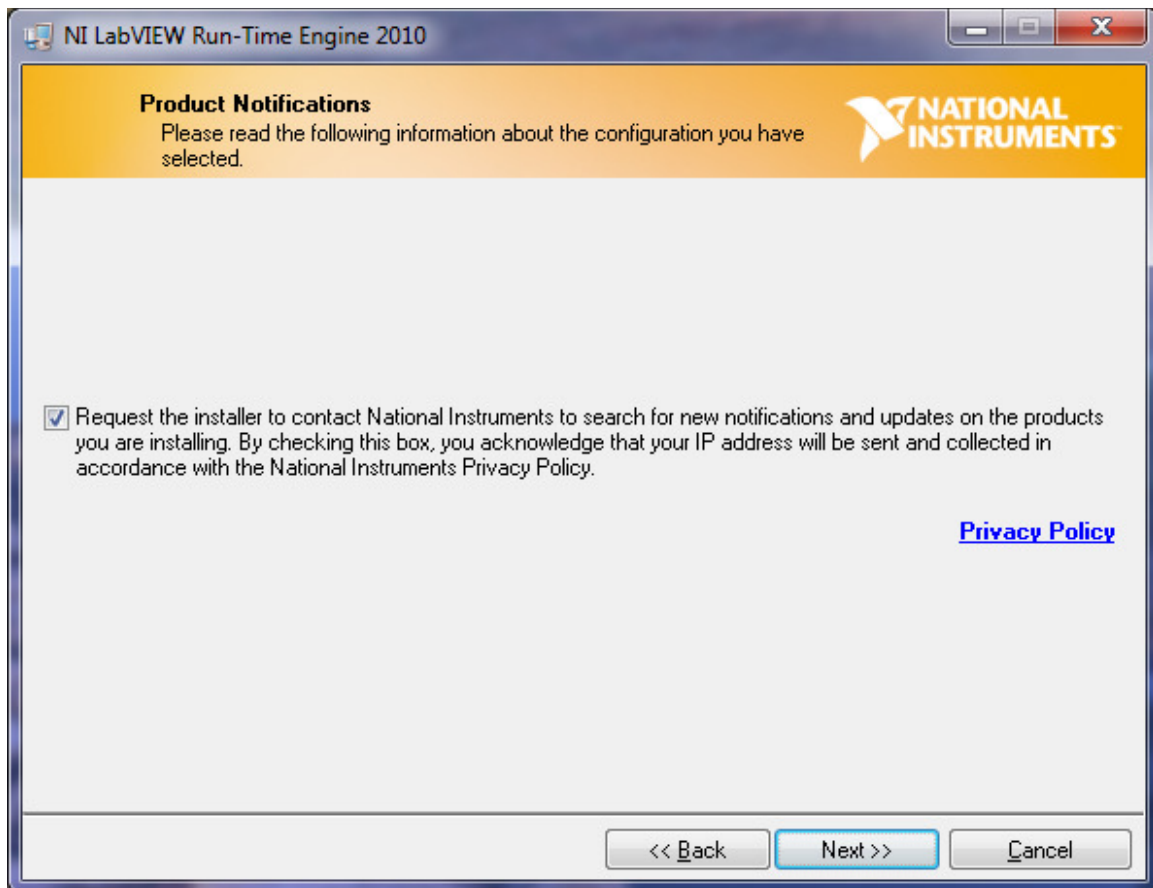


Accept the default location (important) and press Next>>

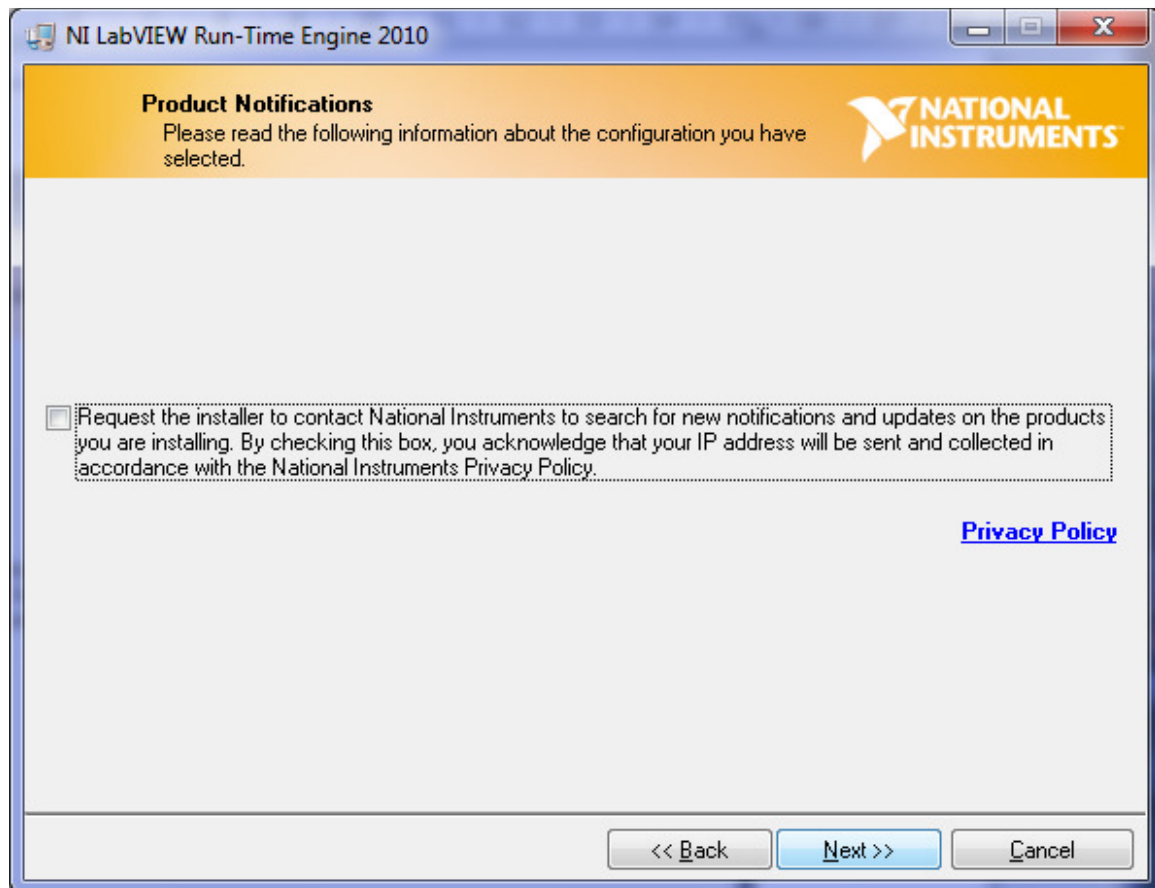


There is no need to customise the installation.

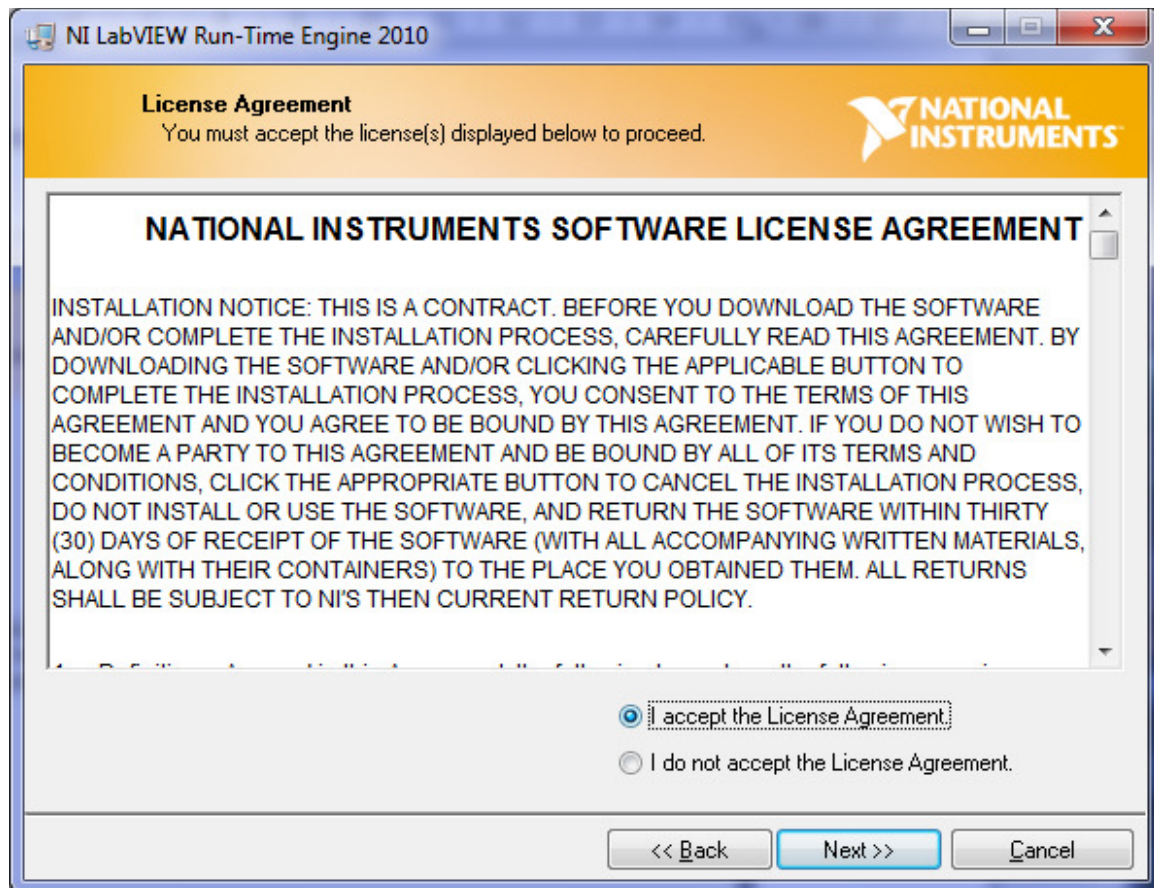
Select Next>>



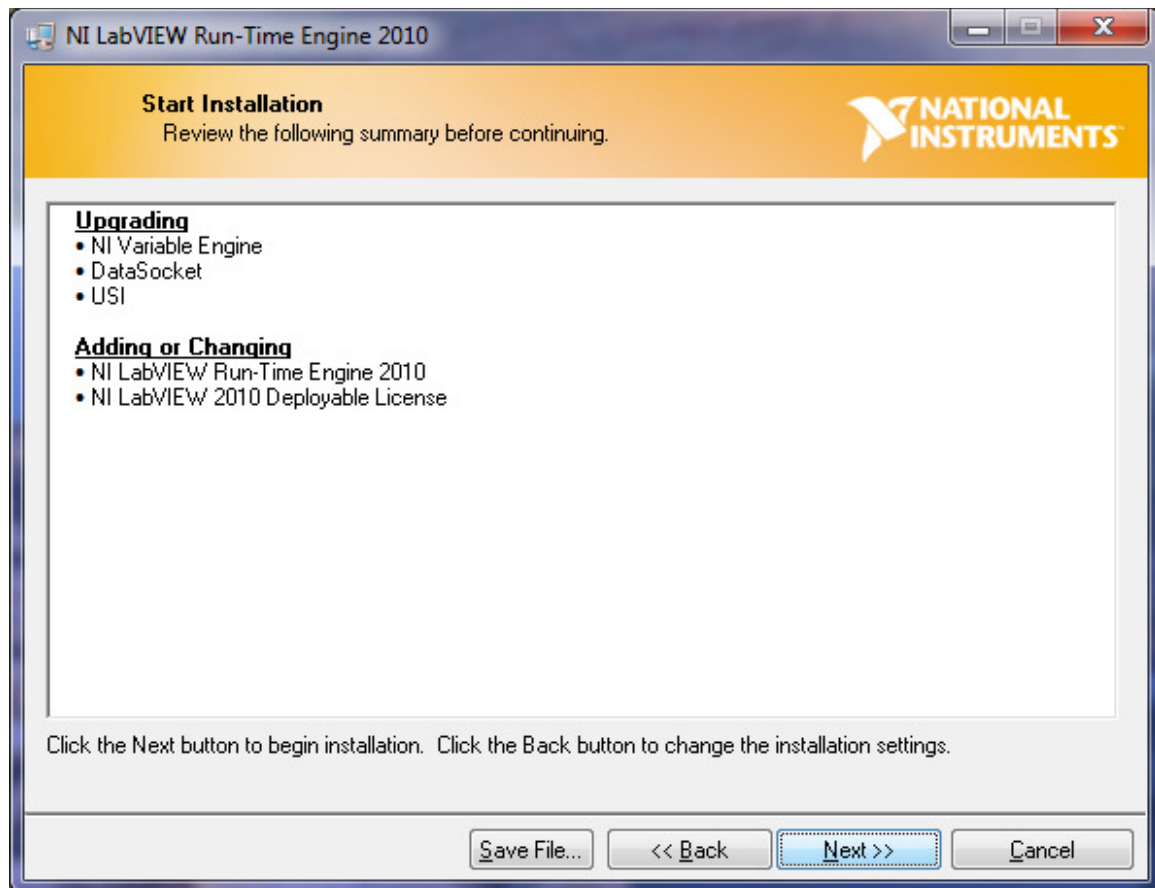
Uncheck the box so you don't get annoyed by National Instruments. I will alert you instead when it is time to update something.



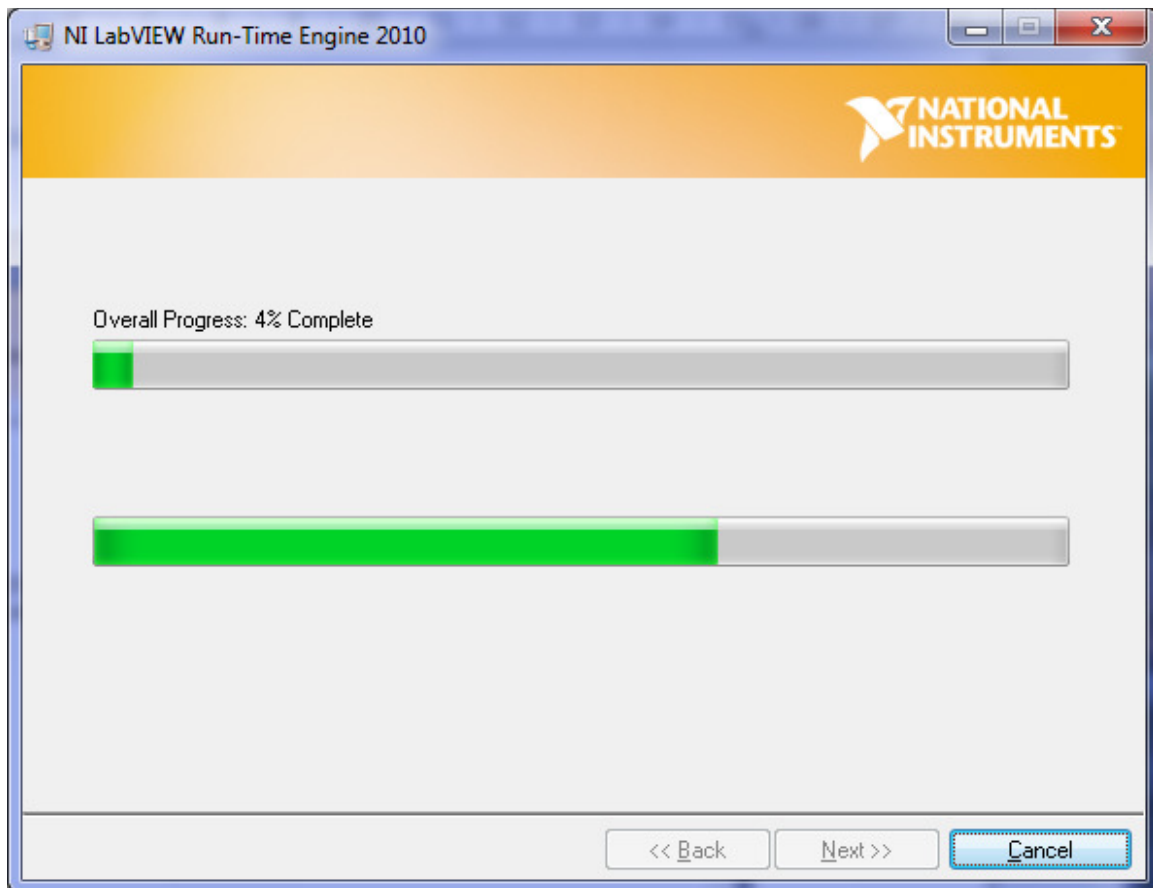
Then select Next>>



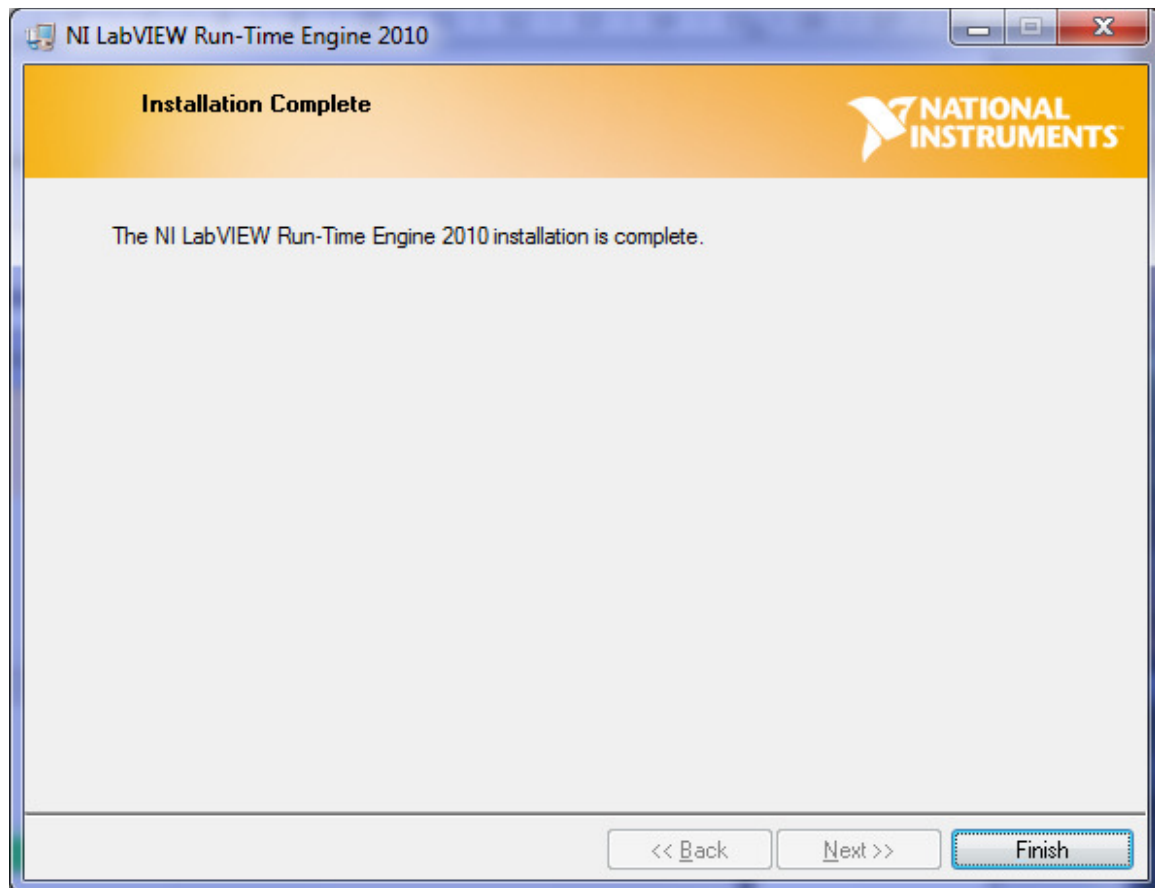
Accept the License Agreements. Select Next>>



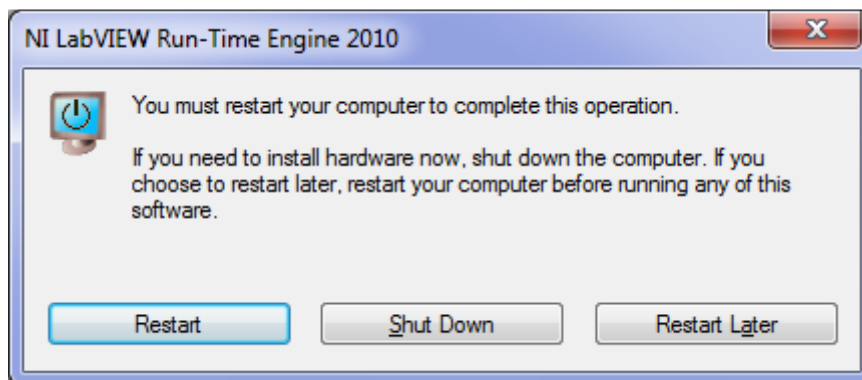
Select Next>> to start the installation. Wait till it completes. This can take some time as the LabVIEW run-time engine continually gets more and more complex.



When complete the following dialog appears:



Click Finish. You will be prompted to restart the computer.



Press Restart and the computer will reboot.

NI Distributed System Manager

If using CEPAS in its Real-Time mode where LabVIEW Shared Variables are used to communicate between the acquisition program and CEPAS it can be useful to have the National Instruments Distributed System Manager installed. This provides an independent view of the Shared Variables and can be useful if there are setup problems. It is found at:

<http://joule.ni.com/nidu/cds/view/p/id/2267/lang/en>

This version is for LabVIEW 2010 and has not been updated for 2011 but it is an independent program and therefore still works with the latest application.

(previous version: <http://joule.ni.com/nidu/cds/view/p/id/1209/lang/en>)

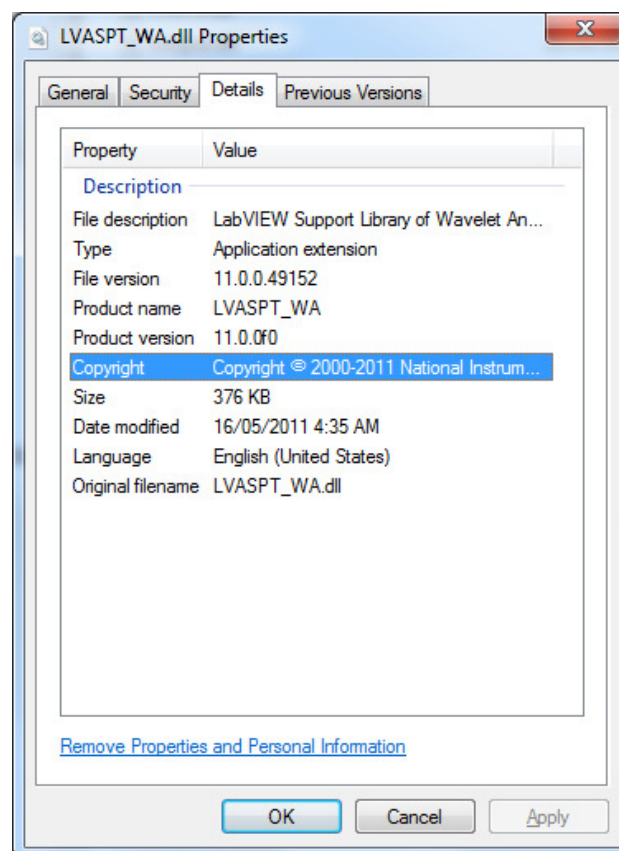
However there are not normally problems with the Shared Variables implementation in CEPAS and this tool is only necessary for special investigations.

Determining dll versions

In the future National Instruments are likely to update dlls as they update their software. Every time I update CEPAS I send all the dll's with the CEPAS exe so there should be no confusion as to which is the correct version of any dll. To remove the previous versions of CEPAS just delete everything in the directory of the CEPAS application except the ini file which you may have customised.

If you keep the original zip file which will be dated, you will always be able to recover previous versions in case you want to compare behaviour with a later version I send.

In the case you need to check a version of a dll in Windows Explorer right click the dll and inspect the Details tab. See the example below.



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