

Java Development

Environment Setup

Version 13.0.1

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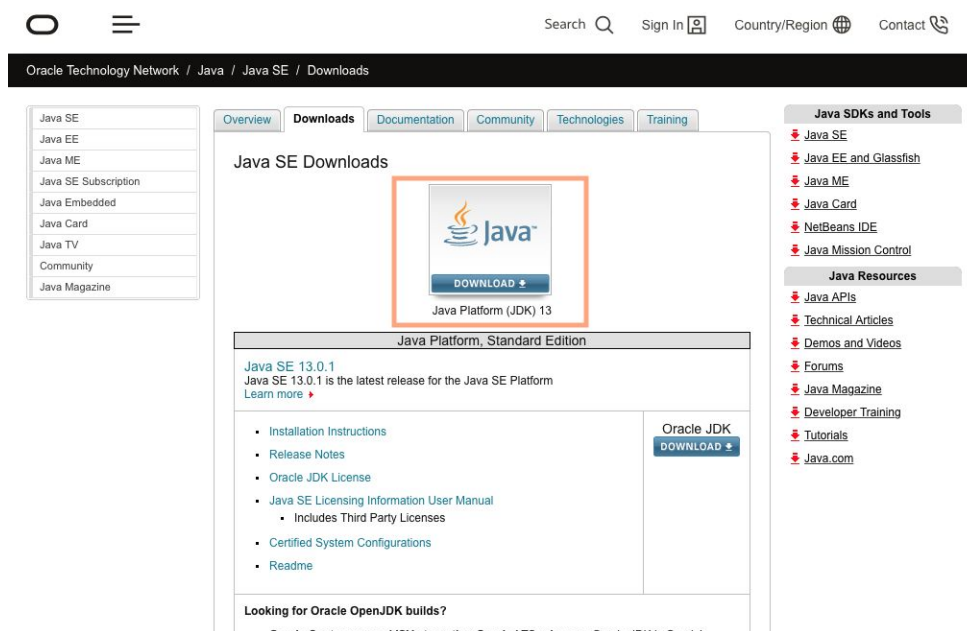
Installing the Java Development Kit (JDK)

Before we can get started, we will need to download and install some necessary software, so that we can design and build full Java applications. The first thing you will need to download is the Java Development Kit, or JDK. You can find the download link in the Reference URL section of the “Environment Setup” task, or here:

- [Java Development Kit Download](#)

On the download page...

1. Click a link to download the JDK. The latest version might be different than what is shown here:



2. Java versions are given as <Major Version><u> for “update”</u><Minor Version> as shown below. Find the latest version, accept the license agreement, and then download the version appropriate to your operating system.



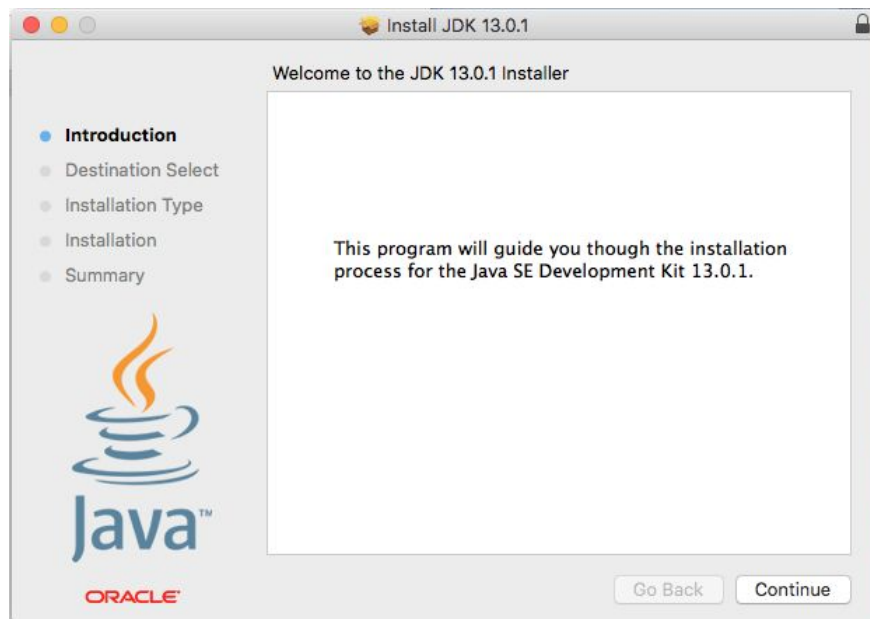
3. After you’ve downloaded the .dmg file, open it



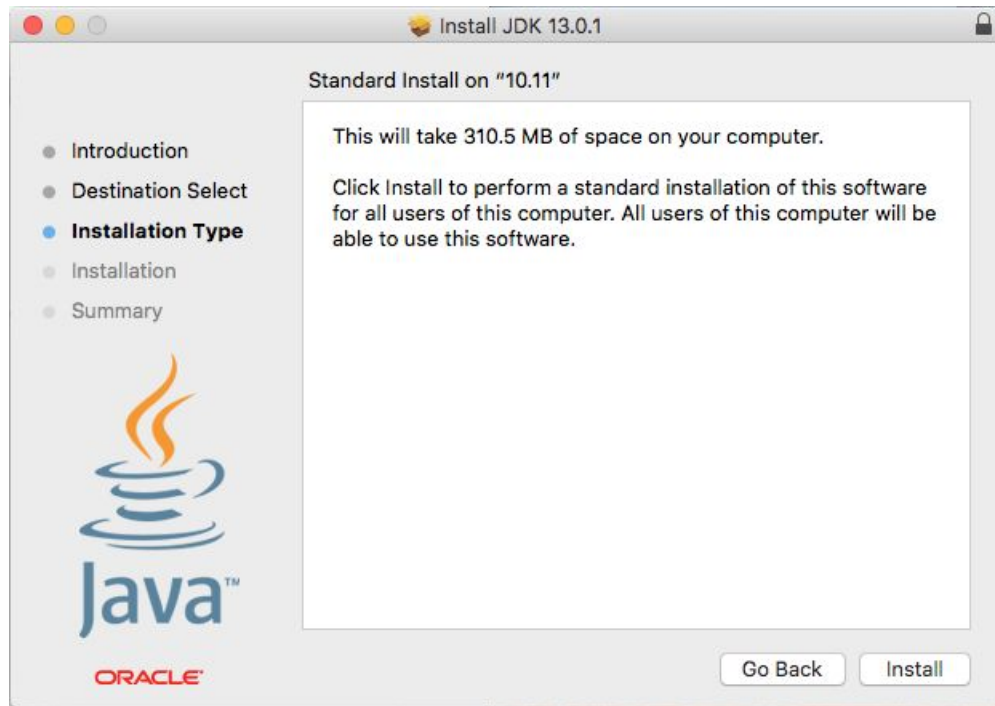
4. The installer will start. Complete the steps and accept any license agreements.

Now, from your download directory...

1. Run the installer you just downloaded. Click “Continue” at the first window:



2. The Java installer should already know the installation destination. Click “Install” at the second window:



3. Let the installation run. Java will now be installed to your machine. When the process is complete, you can close any remaining windows, and eject the mounted Java 13 drive.

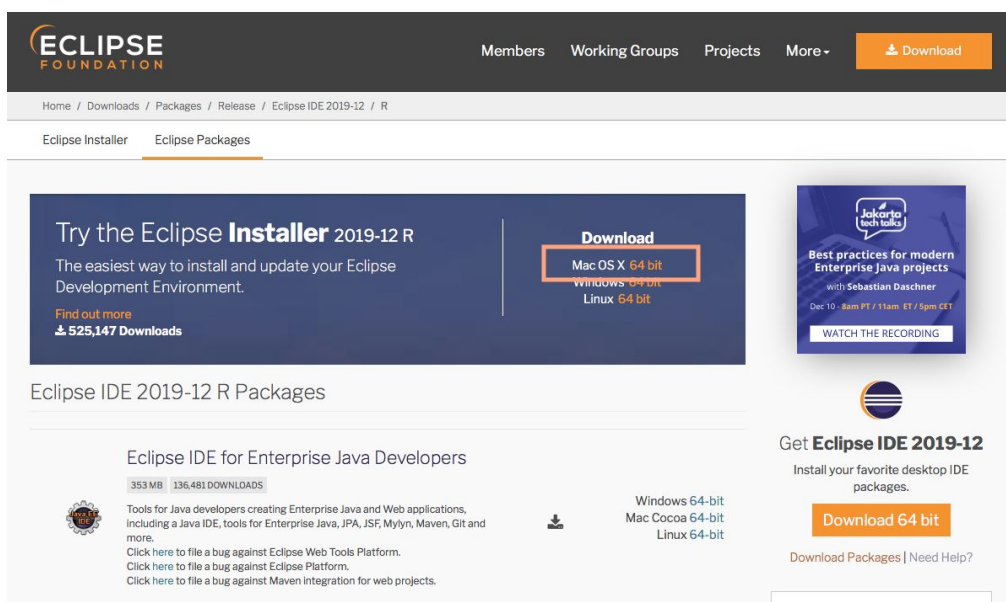
Installing an IDE (Eclipse)

Now that we have Java installed, we will need to download Eclipse. Eclipse is an IDE, or Integrated Development Environment. This is where you will write, deploy and test your code. A good IDE brings many features to the table to make your life easier, like error checking, warnings about dangerous code, and management of any 3rd-party libraries or tools you might be using. You can get the latest version of Eclipse from the download link provided in the reference section, or from here:

- [Eclipse Download](#)

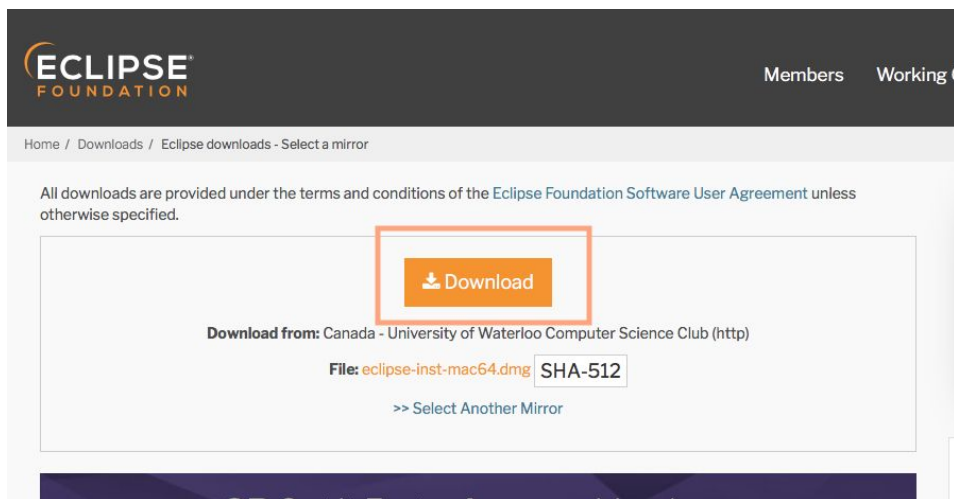
On the download page...

1. On the main header, you should see the Eclipse Installer. Click the Mac OS X link.



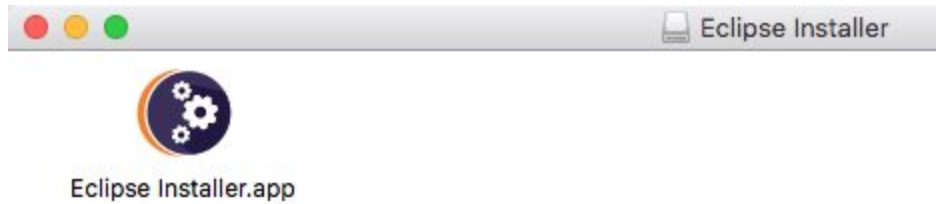
The screenshot shows the Eclipse Foundation website's 'Eclipse IDE 2019-12 R Packages' page. The main header includes the Eclipse Foundation logo and navigation links: Members, Working Groups, Projects, More, and a Download button. Below the header, the page is divided into sections. The top section, 'Try the Eclipse Installer 2019-12 R', describes it as the easiest way to install and update the Eclipse Development Environment, with a 'Find out more' link and a download count of 525,147. To the right, there's a 'Download' button with a list of operating systems: Mac OS X 64-bit, Windows 64-bit, and Linux 64-bit. The 'Mac OS X 64-bit' link is highlighted with an orange box. Below this, there's a section for 'Eclipse IDE for Enterprise Java Developers' with a download count of 136,481. To the right, there's a 'Get Eclipse IDE 2019-12' section with a 'Download 64 bit' button. The bottom of the page features a 'Download Packages | Need Help?' link.

2. Click on the Download button to download the installer.

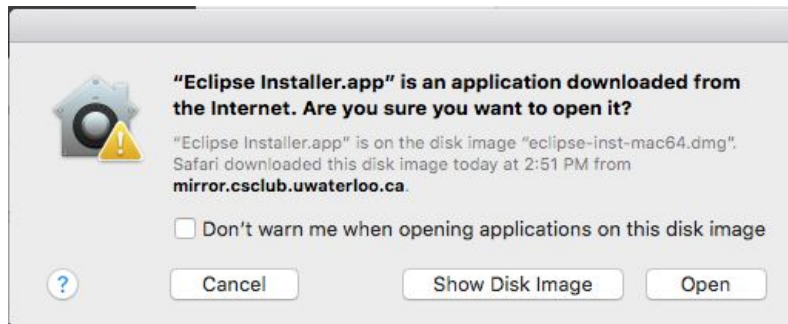


The screenshot shows the Eclipse Foundation website's 'Eclipse IDE 2019-12 R Packages' page. The main header includes the Eclipse Foundation logo and navigation links: Members, Working Groups, Projects, More, and a Download button. Below the header, the page is divided into sections. The top section, 'Try the Eclipse Installer 2019-12 R', describes it as the easiest way to install and update the Eclipse Development Environment, with a 'Find out more' link and a download count of 525,147. To the right, there's a 'Download' button with a list of operating systems: Mac OS X 64-bit, Windows 64-bit, and Linux 64-bit. The 'Mac OS X 64-bit' link is highlighted with an orange box. Below this, there's a section for 'Eclipse IDE for Enterprise Java Developers' with a download count of 136,481. To the right, there's a 'Get Eclipse IDE 2019-12' section with a 'Download 64 bit' button. The bottom of the page features a 'Download Packages | Need Help?' link.

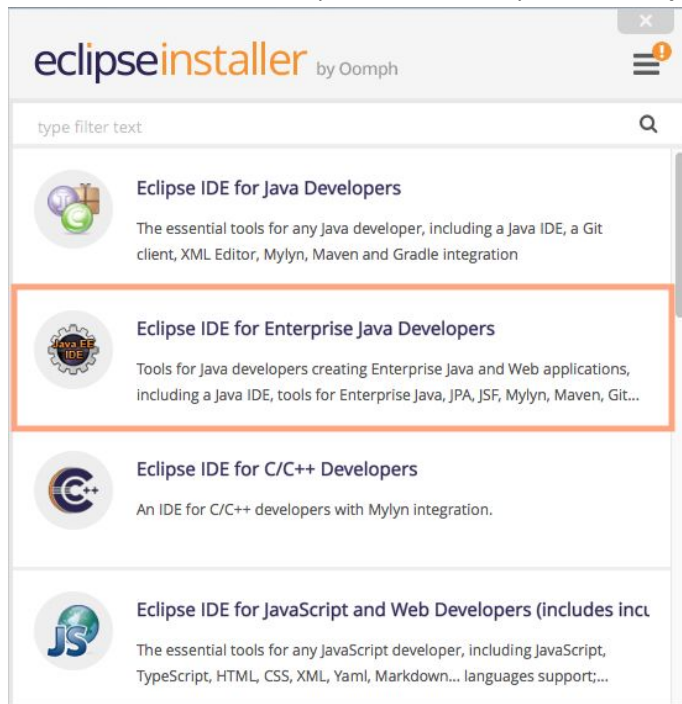
3. Open the .dmg file the downloads and double-click the Eclipse Installer.app file



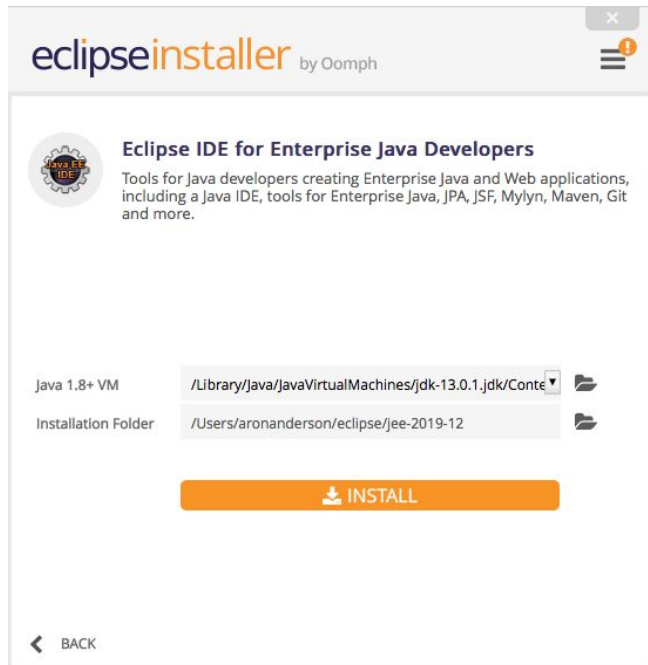
4. Click **Open** on the dialog that appears.



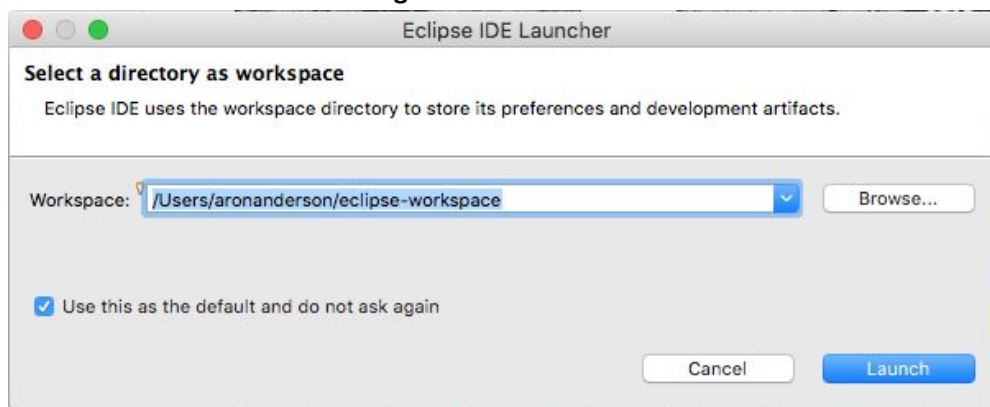
5. The Installer will open. Select the option for **Eclipse IDE for Enterprise Java Developers**



6. Keep the default settings for the location of Java and Eclipse. Click the **INSTALL** button.



7. Accept any license agreements or certificates and complete the installation wizard. Click the **LAUNCH** button after installation completes.
8. Eclipse will open a dialog to select your workspace. This is the location on your computer where all of your project files will be stored. Keep the default settings. Check the box to **Use this as the default and do not ask again**. Click **Launch**.



9. You are now ready to use Eclipse to create Java projects. Go ahead and close Eclipse.










Installing an Application Server (WildFly)

Now that you have Java and Eclipse, let's get your application server installed. The application server is a type of web server that is capable of hosting and running Java applications. With this software running on your machine, you can write web applications. and test them locally. The application we will be using is called WildFly, and setup is pretty simple. Use the download link in the reference section to get started. That link is also here:

- [WildFly Download](#)

On the download page...

1. Select the ZIP download for the latest version of the “**Java EE7 Full & Web Distribution.**” The latest version might be different than what is shown here:

Version	Date	Description	License	Size	Format
10.1.0.Final	2016-08-19	Java EE7 Full & Web Distribution	LGPL	134 MB	 ZIP
				133 MB	 TGZ
		Update Existing 10.0.0.Final Install	LGPL	94 MB	 ZIP
		Servlet-Only Distribution	LGPL	28 MB	 ZIP
				28 MB	 TGZ
		Application Server Source Code	LGPL	27 MB	 ZIP
				15 MB	 TGZ
		Quick Start Source Code	AL		 Source
		Release Notes			 Notes

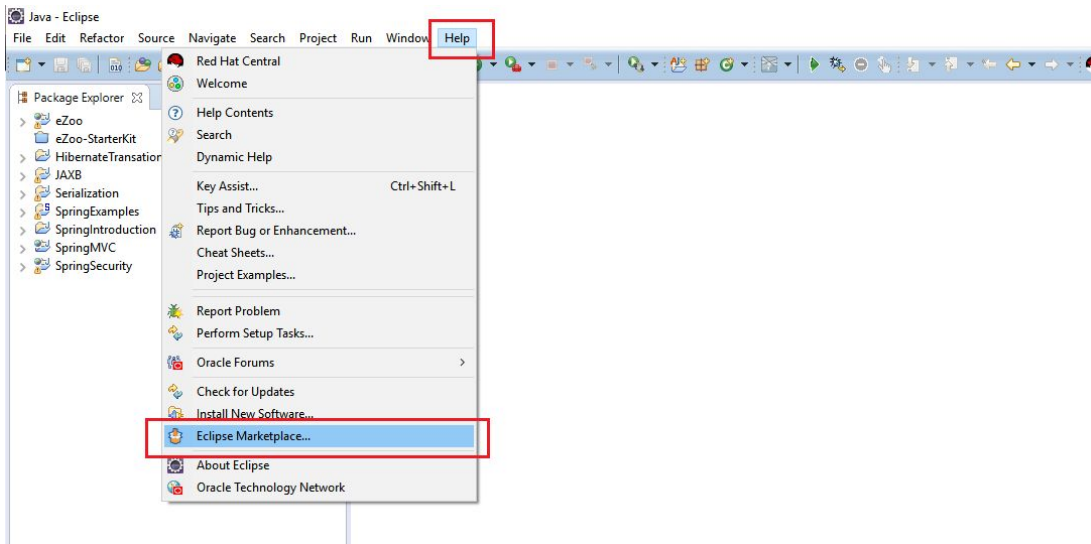
Now, from your download directory...

1. Like Eclipse, WildFly requires no installation - it's nicely self-contained inside a ZIP archive. Unzip it to a location of your choosing.
2. You will be controlling WildFly from within Eclipse, so there is no need to create a shortcut.

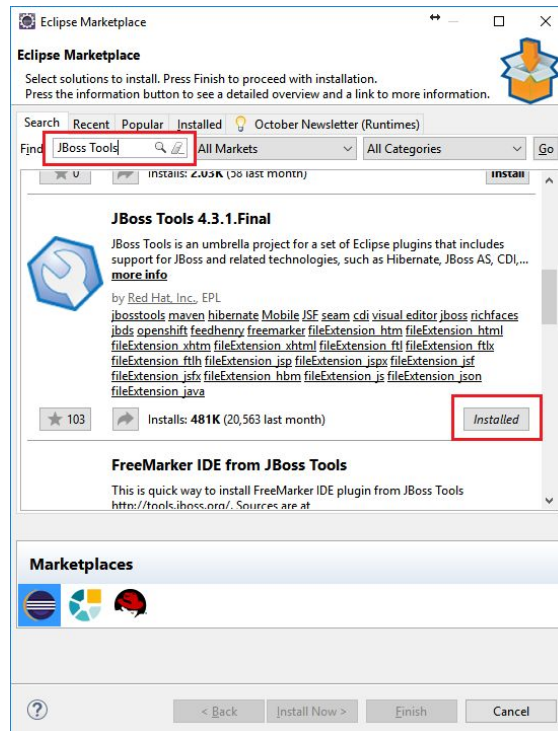
Integrating Your Application Server with Your IDE (JBoss Tools)

Now that we have WildFly and Eclipse, we will install a utility that will let us deploy our Java web applications to our WildFly application server from directly inside Eclipse.

1. Open up Eclipse
2. Open the "Help" file menu, and then select "Eclipse Marketplace...":



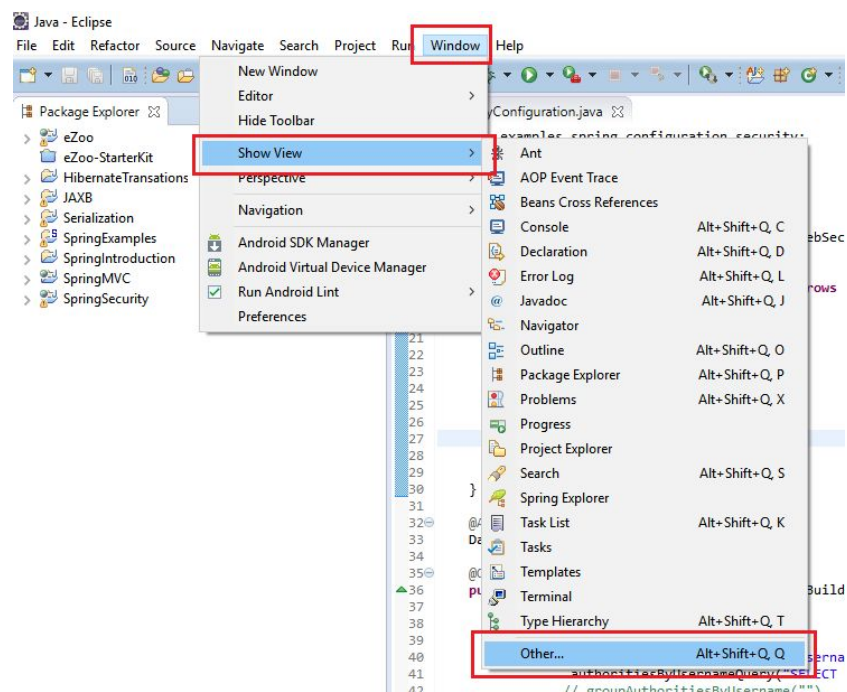
3. In the search window that pops up, search for "JBoss Tools" and hit enter. JBoss Tools should be in the first page of results. Click the "Install" button:

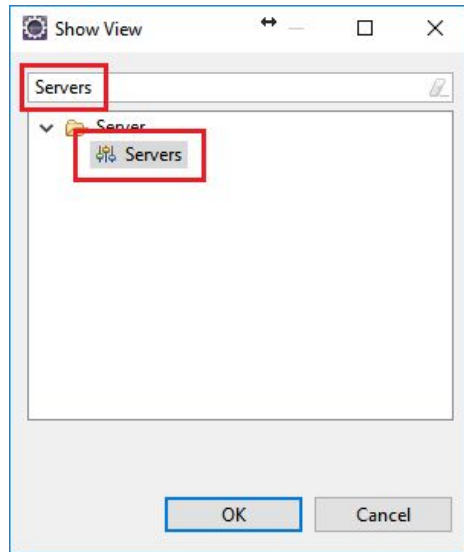


4. Leave all of the options selected, and click "confirm."
5. Accept the license agreement, and click "Finish."

Now that we have WildFly and Eclipse integrated, let's get a WildFly virtual server created in Eclipse.

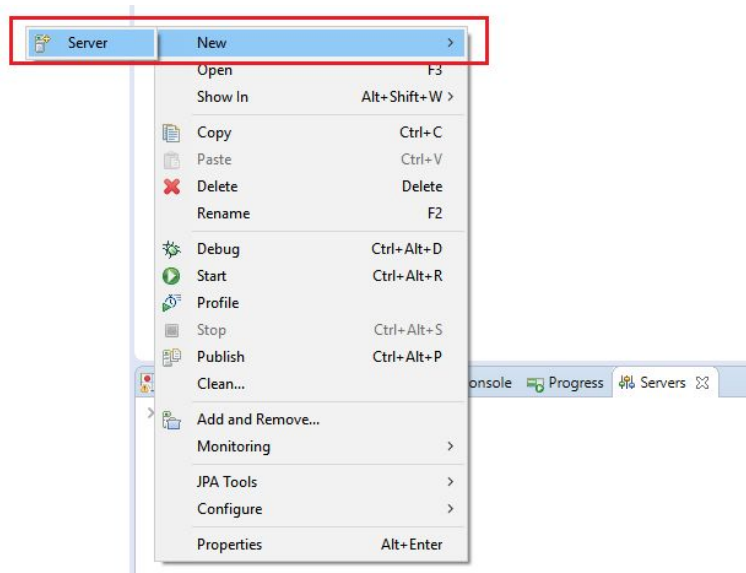
1. Now, at the bottom of the screen, you may have a view tab labeled "Servers." If you do not, go to Window -> Show View -> Other..., search for 'Servers,' and click add.



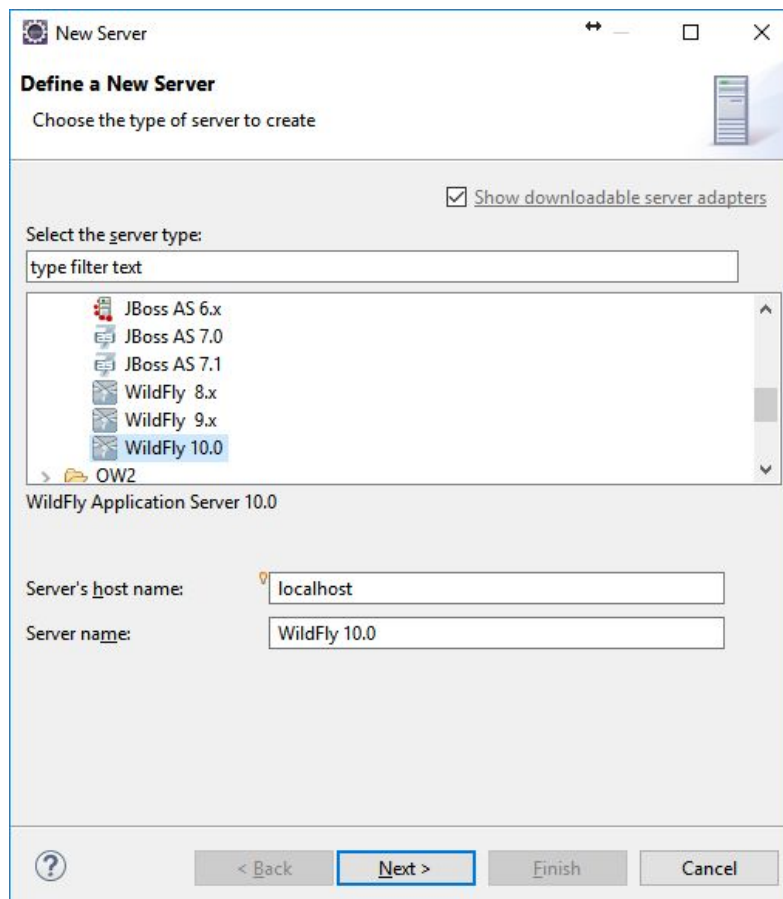


2.

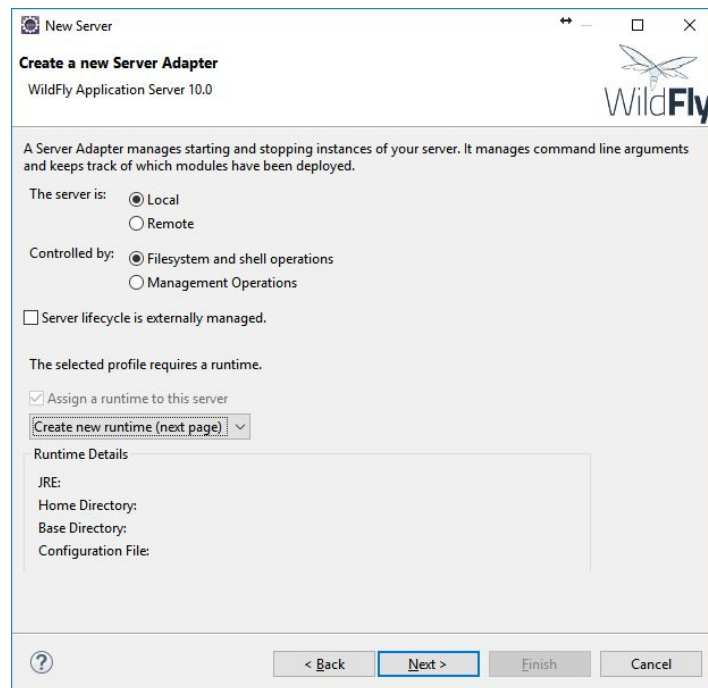
In the "Servers" view, right-click anywhere, and select New -> Server.



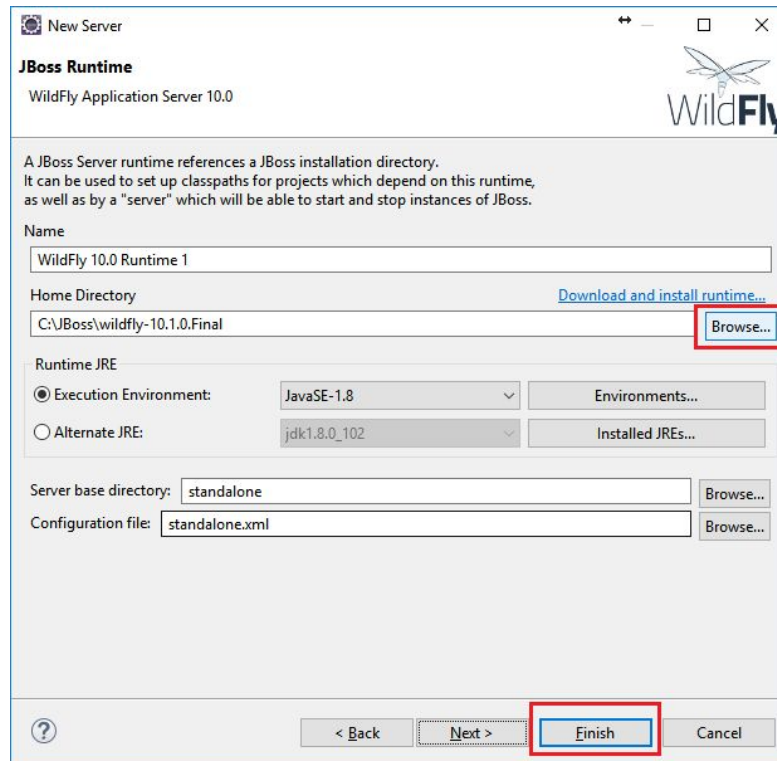
3. In the "Define a new server" window, search for the latest version of WildFly (in the JBoss Community folder). Select your version, and click next:



4. Go ahead and click next again:



5. Now, you will need to define a runtime. All you need to do is select the folder where you installed the WildFly server. Then click finish:



Installing a Database (PostgreSQL)

Finally, we will need to install PostgreSQL Database. This is the database we will be using for our applications to store information. PostgreSQL is the largest, most widely-used open source database, and is widely used in the Software Development industry. You can find a download link in the Reference URL section of the “Environment Setup” task, or below:

- [PostgreSQL Download](#)

On the download page...

1. Select the latest version for your operating system. The latest version may be different than shown here:

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[EDB Postgres
Advanced Server®](#)
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Download PostgreSQL

Please Note: Cookies should be enabled for the download process to function correctly

Installer version **Version 9.6.1** [[Readme](#) file for customers interested in using PL/Perl, PL/Python or PL/Tcl]

Linux x86-32

Linux x86-64

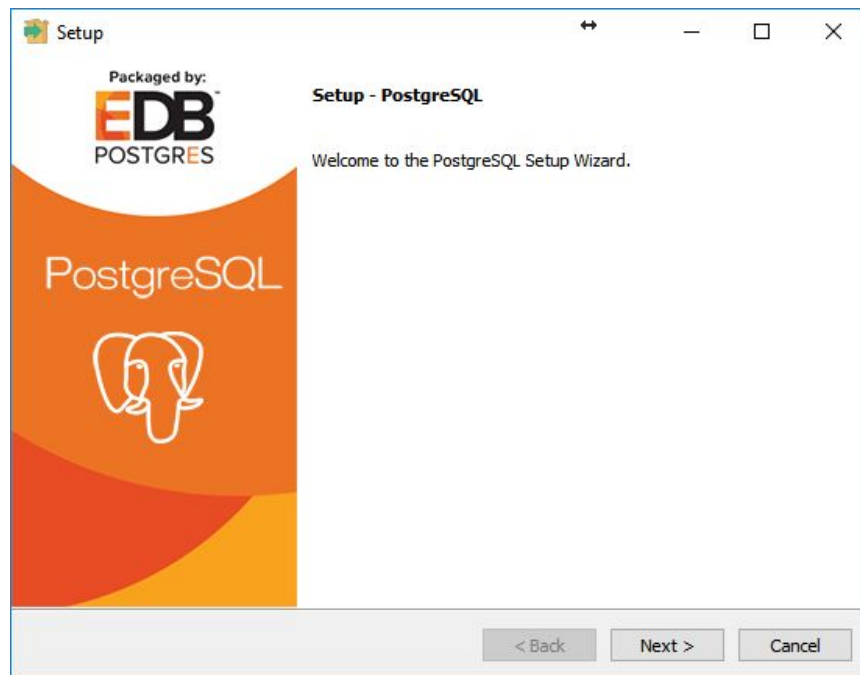
Win x86-32

Win x86-64

Mac OS X

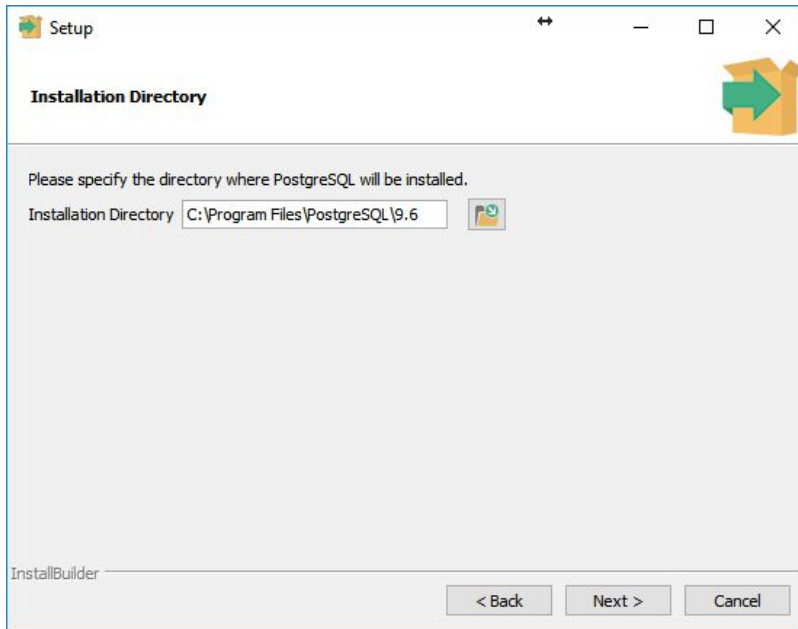
Now, from your download directory...

1. The installer is downloaded inside a tar.gz file. Double-click the file to extract it, then drag and drop the included installer application anywhere. Next, run the installer. On the first window, click "Next":

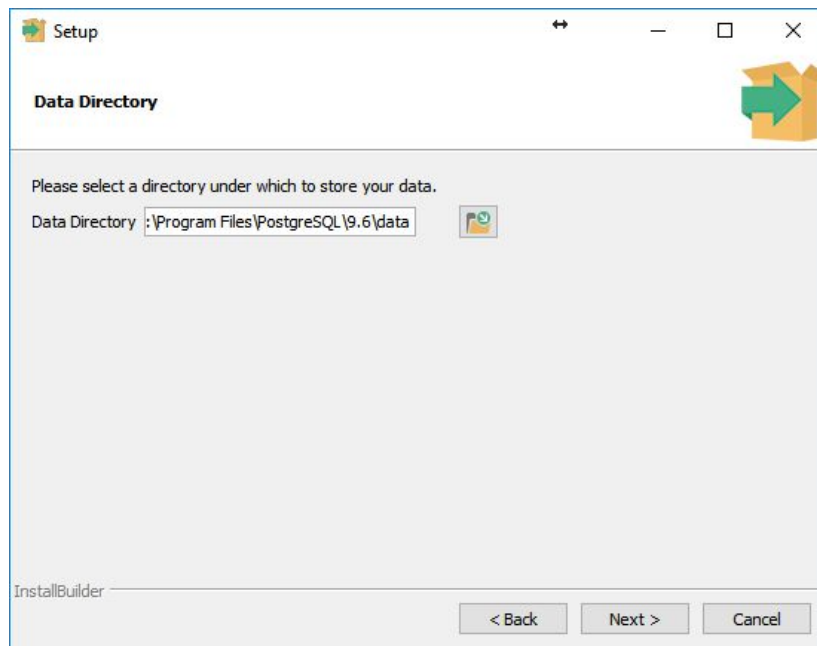


- 2.

Select an installation directory – the default shown is acceptable, so click “Next”:

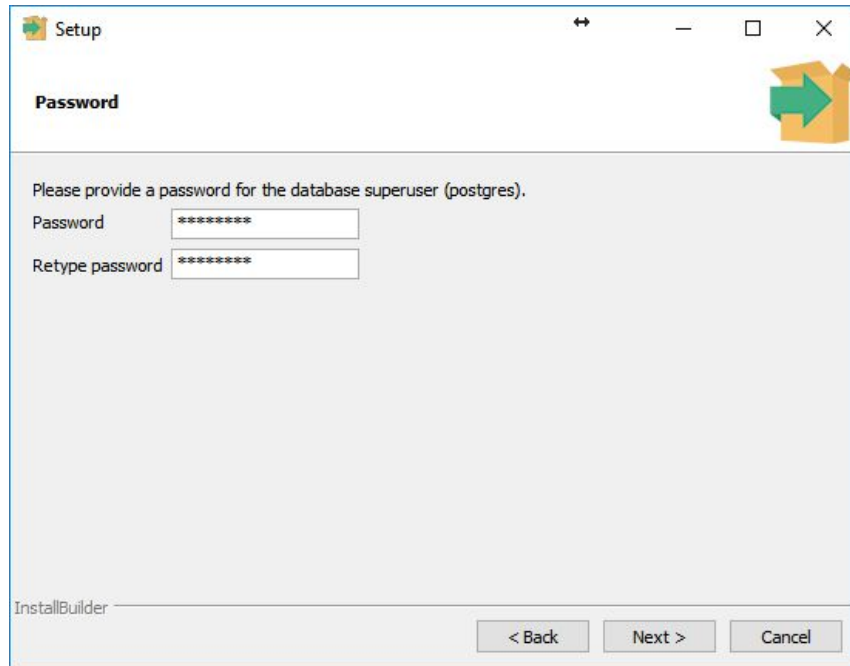


3. Select a data directory, where your database's data files will be stored. Again, the default will be acceptable, so just click “Next”:



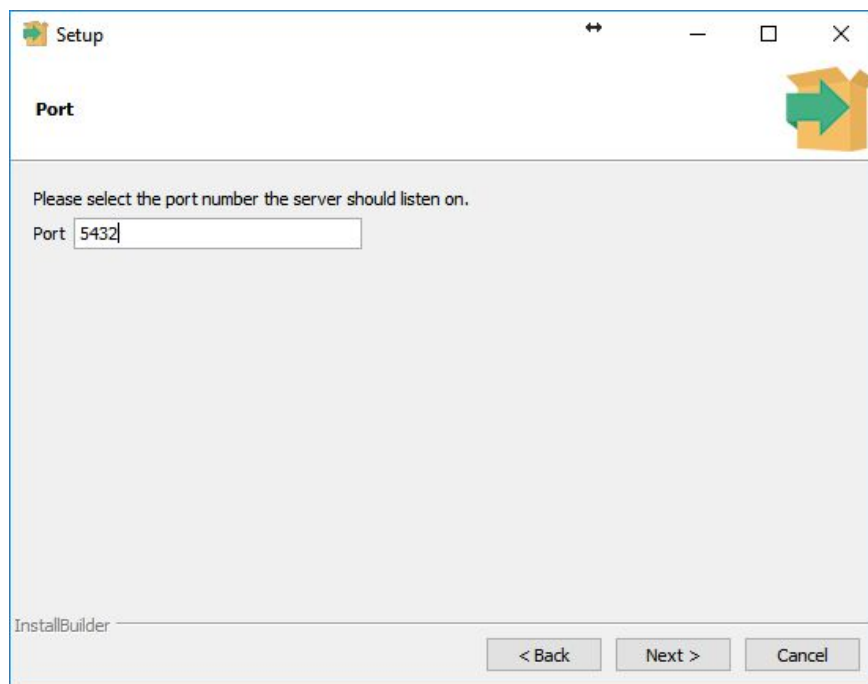
- 4.

Enter a password for the default “postgres” account. You MUST remember this password! Click “Next” when done:



The screenshot shows a window titled "Setup" with a standard Windows title bar (minimize, maximize, close buttons). In the top right corner, there is a green arrow pointing right inside a yellow box. The main content area has the heading "Password" and the instruction "Please provide a password for the database superuser (postgres)." Below this, there are two text input fields. The first is labeled "Password" and contains seven asterisks. The second is labeled "Retype password" and also contains seven asterisks. At the bottom left, the text "InstallBuilder" is visible. At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".

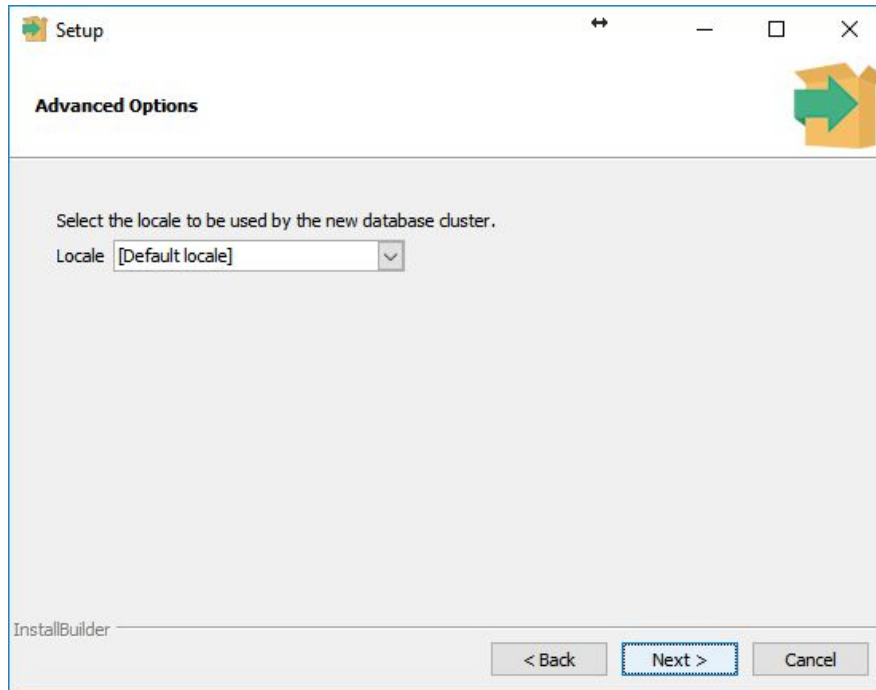
5. Select a port. The default is acceptable, and you should not change this unless you understand what you are doing. Click “Next” when done:



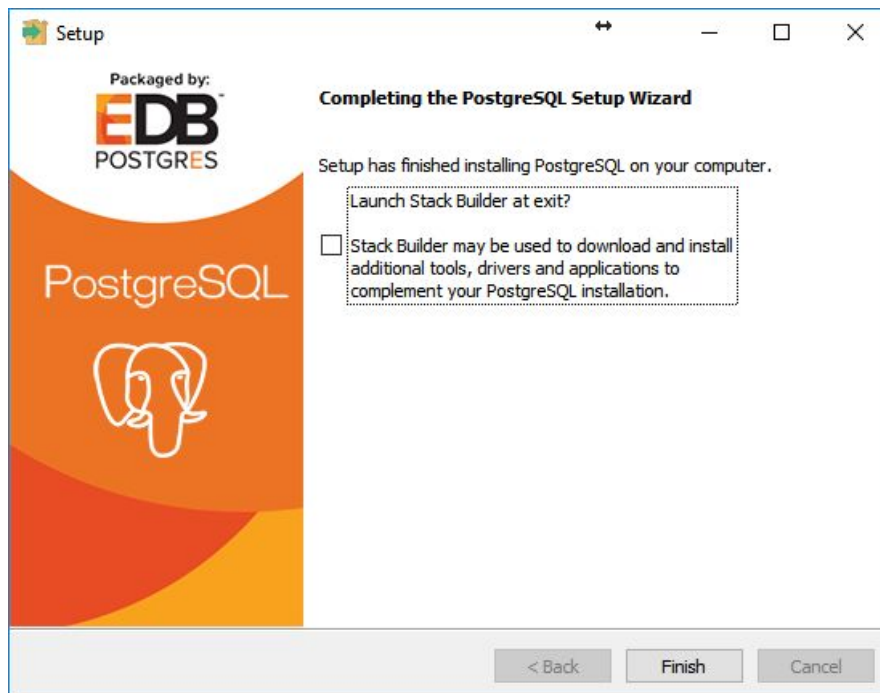
The screenshot shows a window titled "Setup" with a standard Windows title bar. In the top right corner, there is a green arrow pointing right inside a yellow box. The main content area has the heading "Port" and the instruction "Please select the port number the server should listen on." Below this, there is a text input field labeled "Port" containing the value "5432". At the bottom left, the text "InstallBuilder" is visible. At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".

- 6.

Select a locale – again, the default is fine. Click “Next” when done:

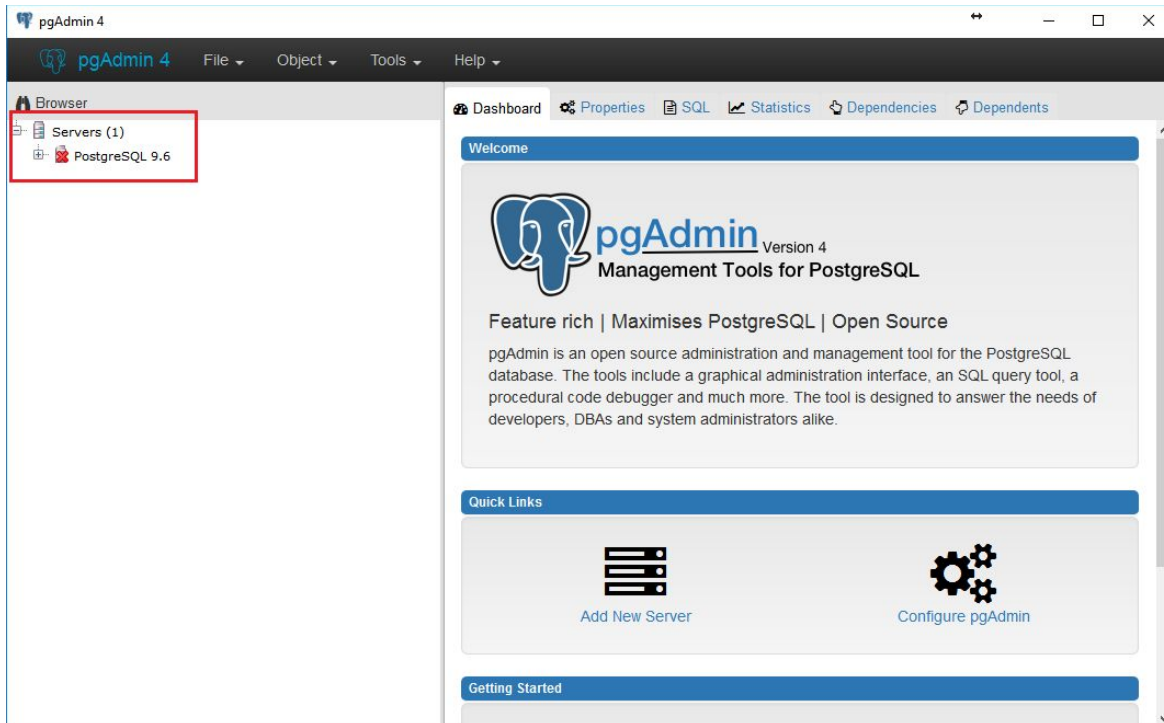


- Click “Next” again to begin installation. When installation has completed, you will be prompted to continue installing Stack Builder. **Uncheck the box, and click Finish. Do not install Stack Builder**, unless of course you know what you are doing:

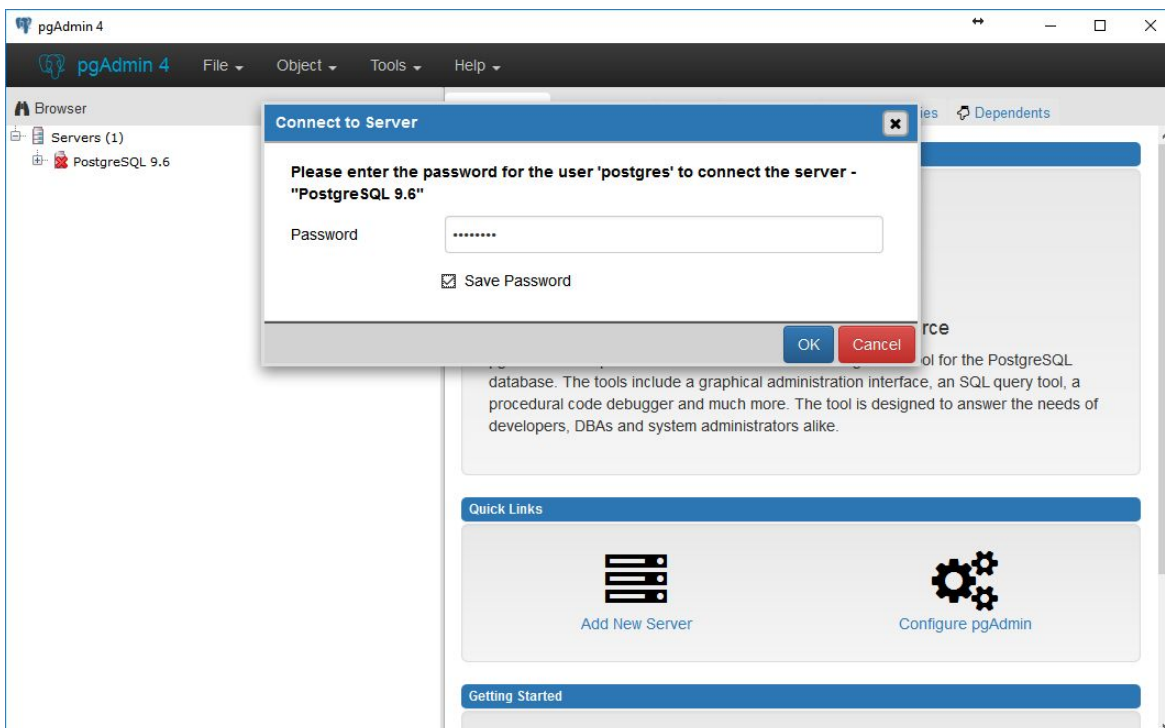


8.

Installing PostgreSQL Database will also have installed the PgAdmin utility. Open PgAdmin and try to expand the server list on the left:



9. This will prompt you for the password for the user “postgres” that you created in Step 4. Enter that password, and check the box to remember it:



10. Now you will be able to explore PostgreSQL Database fully. We'll play around with these tools more in the future, but for now, you have all the tools needed to proceed:

